KUWAIT
MINISTRY OF PUBLIC HEALTH

NATIONAL COUNCIL FOR CULTURE,
ARTS AND LETTERS

Bulletin of Islamic Medicine
Vol 1 Third Edition

Proceeding Of
The First International Conference On

Islamic Medicine

Celebrating The Advent
Of The Fifteenth Hijri Century

Supervised and Forwarded By
His Excellency The Minister of Public Health
Dr. Abdul Rahman Abdullah Al-Awadi

Kuwait - Rabie Awwal 1401
January, 1981

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FORWORD TO THE SECOND EDITION.

The First International Conference on Islamic Medicine was held in Kuwait on 6-10 Rabia Awwal 1401 A.H., under the umbrella of Islam. The gathering was unique. Since it included Heritage experts, Applied Clinicians and Scientists of Jurisprudence. All of them were enthusiastic, very keen and sincere in their discussions. This is reflected by the recommendations and The Islamic Code of Medical Ethics as approved. This gives us an idea about how Islam is great. It is not only a religion, but a complete method of life. When the followers were fostered by Islam, they succeeded and became pioneers in all the aspects of life.

The discussions and the comments made during the Conference were very fruitful and useful. So, I found it necessary to include them and all the papers which were not sent by the authors before the Conference, but presented in it and also, the seminars, Islamic Code of Medical Ethics and recommendations. This may reflect the spiritual attitude and the brother-hood during the Conference.

Further, this is our proceeding about the First International Conference on Islamic Medicine in your hands. We have tried our best to get it in its ideal form as far as possible. I hope it can give you the answers to some questions, which may arise in your mind. I shall not write a detailed forword in this volume, since the first one is already included. The papers in this proceeding can put spot lights on the prospects of the Islamic Medicine in our country. I hope, Allah Almighty gives us the power and patience to revive it. May He bless us all.

Dr. Abdul Rahman Al-Awadi.
Minister of Public Health.
KUWAIT.

FOREWORD •

H.E.Dr. Abdul Rahman Al-Awady
Minister of Public Health, Kuwait

"In the Name of God, Most Gracious, Most Merciful!"

It is out of God's grace that He sent us Islam, a religion for both this life and the hereafter. The message of our noble Prophet (ﷺ) was an essential turning point in the history of mankind. Islam clearly states that we should seek learning and knowledge, using both inductive and empirical methods. This is verified by the words of God:—

> ARE THOSE EQUAL, THOSE WHO KNOW AND THOSE WHO DO NOT KNOW *(Quran S 39: V9)*

> DO THEY SEE NOTHING IN THE GOVERNMENT OF THE HEAVENS AND THE EARTH AND ALL THAT GOD HATH CREATED? *(Quran S 7: V 185)*

The same can be inspired from the traditions of the Prophet (ﷺ) as He says:

> "SEEKING KNOWLEDGE IS AN OBLIGATION TO EVERY MOSLEM".

> "A TRUE SCIENTIST IS ONE WHO APPLIES KNOWLEDGE TO HIS WORK".

> "THE SUPERIORITY OF THE SCHOLAR TO THE WORSHIPPER IS LIKE MY SUPERIORITY OVER THE HUMBLEST OF YOU".

Islamic teachings urged all Moslems to increase their share of useful knowlege in all domains, especially in the field of medical sciences. By doing so, they would be, both useful to their people and blessed by God.

The Prophet (ﷺ) urged the people to turn away from magic-practice, priesthood and idolatory, and to seek treatment based on medical science; as He said:

> "O, SERVANTS OF GOD, SEEK FOR MEDICAL TREATMENT, GOD HAS PUT A REMEDY FOR EVERY MALADY, CLEAR TO WHOEVER KNOWS IT AND UNCLEAR TO WHOEVER DOES NOT KNOW IT".

This is how Moslems started their own pursuit in the field of scientific research. Their great achievements served the role of a lighthouse to the whole world for many centuries. These acheivements formed the foundation of the contemporary scientific awakening.

It is to be regretted, however, that as soon as Moslems lost their grip of that scientific approach, they were completely left out. They stood as mere witnesses of a fast-progressing world; a world that progressed by reasons of its exploitation of the Islamic heritage and the Islamic scientific approaches.

• Forword to the first edition.

The Moslems, thus suffered a relapse; they lagged behind, trying hard to catch up with modern civilization and modern scientific progress. They wasted long ages, they were lost in the darkness of ignorance. For full five centuries, we went on dreaming of our glorious past, incapable of contributing any new ideas to our present time.

Then, as communication media progressed vastly, removing barriers and shortening distances, we were able to witness the new awakening of modern science, and the glitter of material technical progress. So, by virtue of the wide gap separating us from them, their culture almost dominated our minds and our feelings; we almost forgot our glorious past and our great civilization; we almost forgot God, in our attempts to imitate their modes of behaviour, be they good or evil.

However, God wanted to retain to this nation the essence of its very being, namely, the pride Moslems take in their religion, which characterizes their nation as a homogeneous unique entity. He wanted to make this nation the best of all nations; a nation that seeks to restore its glory, following the same sound scientific approach through which it scored its great achievements in the past. Thus, if this nation wants to regain its fitness and righteousness, it must draw upon its past.

Now, by summoning this first International Conference of Islamic Medicine, we are trying to recreate the glories of our past, not through bombastic speech, but through learning and hard work. We also hold on to the scientific approach as a means of achieving our objectives.

The State of Kuwait is greatly honoured by hosting this distinguished elect of scientists and scholars, who work in the field of Islamic Medicine. They have come from all over the world to contribute to this Conference, which is held as part of the celebrations inaugurating the Fifteenth Century of Hijra. The cultural challenges facing us in this Century cannot be easily dealt with, unless we are armed with self-confidence and sound faith.

For all scientists, it is a good opportunity to meet here, in order to discuss our great heritage, which encompasses many different areas. However, it was decided that this time, we should limit our attentions to the following three areas:

First: The history of Islamic medical heritage.

Second: The applied studies conducted to prove the effectiveness of treatment, following the theories of Islamic Medicine.

Third: The principles and ethics of medical practice according to Islamic legislation.

It was really comforting to receive almost five hundred papers, all of high calibre, written by most worthy scientists. We remain indebted to those scientists and we ask God to reward all the efforts they strenuously exerted in order to reveal the truth about our glorious heritage to the whole world. We would have liked to include all the papers that we had received in this volume, but since this goes beyond the scope and space of this publication, we have chosen only those papers that represent the different aspects of the three abovementioned areas, avoiding redundancy as much as possible. We offer our apologies to the scientists whose papers we could not include here; however, we remain indebted to them for their sincere efforts and valuable contributions. We hope that we shall be able to publish all

these papers, by God's will, in the near future. We also thank those scholars whose papers appear here in a shortened form; we believe in the value and originality of these papers, but the space was too limited to allow the full texts. The time of the Conference was also too limited to allow us to invite all those scholars to come and deliver their researches.

On reviewing the papers submitted to the Conference, we came to recognize the following facts:

First: The Muslims have had a great heritage in the field of medicine. The laudable efforts of the scholars have contributed to the revelation of some aspects of this heritage, relying on correct reference and accurate chronology. This, undoubtedly, will encourage others to try to uncover the hidden treasures of that glorious heritage.

Second: Applied researches have shown positive results obtained from the treatment conducted along Islamic Medicine approaches. This can only urge us to work harder in order to gain more benefit from this kind of treatment, which does not cause as many side effects as other kinds of drugs do.

Third: Islam has set the foundations of the comprehensive rules which apply to the ethics of practising all professions in general, and the medical profession in particular. Islamic legislation provides the physician with a set of well-defined principles, that can enable him to perform his human duty, without causing any serious mischief to himself or to his patient.

Fourth: The Islamic Medicine approach is all-embracing, since it caters for both the body and the soul. It, thus, enjoys a unique privilege over modern medicine, which lacks this property. Surely, this materialistic world of our present time must be in urgent need of this kind of treatment, in order to rid itself from its illnesses which are getting greater and greater in number as life gets more and more complicated. The scientific approach expounded in this Conference will hopefully clear the way for Muslim scientists, it will help them to recognize the hidden treasures of Islamic medical heritage. The contents of this heritage can be investigated along the guidelines of Islam. We must regard the reviving of this heritage as a form of Holy War. It is a Holy War that aims at bringing the whole truth to light and restoring the due rights to their people. We should always stick to the scientific methods, and adapt ourselves to the modern styles of thinking, so that we may be able to counterbalance the modern ways of reasoning and induction. Nowadays, we cannot prove a cause to be right, unless we resort to scientific methods of thinking.

The contents of this volume are the total sum of a laudable effort exerted by faithful scientists who realize their duty towards their righteous religion. I hope that this publication will elicit more efforts in the domain of serious researches, in order to try to reach what God has made accessible to us, for the benefit of the whole mankind; and in order to make the whole world realize that the merit of Islam is not limited to the creation of a pure benevolent soul, but the creation of scholars who seek to comfort their society through useful knowledge in general, and through medical sciences in particular. God has said:

AND WE SENT THEE NOT, BUT AS A MERCY FOR ALL CREATURES
(Quran S.21: V.107)

It gives me great pleasure, on this occasion, to praise the great care shown by His Highness Sheikh Jaber Al-Ahmad Prince of Kuwait, and His Highness Sheikh Saad Al-Abdallah Al-Salem Al-Sabah Crown

Prince and Prime Minister. They have offered unfailing help and encouragement both in the domain of scientific research in general and in the medical field in particular. May God guide us all to the best ways of promoting our righteous religion; may our Arab and Islamic nations grow more glorious and prosperous.

EDITORIAL

All praise be to Allah, with whose grace and kind help we have been enabled to place this volume of papers ahd proceedings of the First International Conference on Islamic Medicine, in your hands.

Islamic Medicine, as one of the oldest systems of the healing art, has attracted the attention of the Modern Scientists and Scholars for a number of years now. It is regarded not only as a powerful system for the diagnosis and treatment of the physical ailments of the people, but as also a part of the Ibadah (Prayer) for the Physicians and the patient.

It was through the enthusiastic encouragement and the personal interest of H.E. Dr. Abdul Rahman Al-Awadi, Minister of Public Health, that the First International Conference on Islamic Medicine was convened in Kuwait from the 6th. to 10th. Rabiulawwal, 1401 A.H. (12th. to 16th. January 1981). As the first ever attempt to interest the scholars and scientists from all over the world in the wealth of knowledge contained in the original sources and in the great heritage of Islamic Medicine, the response has been really very encouraging. A large number of scholars not only contributed valuable papers and studies on different aspects of Islamic Medicine, but also participated in the deliberations and discussions during the various sessions. Kuwait had the proud privilege of welcoming a gathering of distinguished Scholars and Scientists in the field of Islamic Medicine.

A preliminary volume of papers received for presentation at the Conference was prepared under the editorial guidance of Dr. Ibrahim al-Sayyad and was made available to the delegates and participants to the conference. The present, is an improved version of the same volume. In this volume we have not only tried to incorporate a larger number of papers but have also included the comments and discussions that took place during the Conference. We have also tried to improve the physical presentation and format of the material.

Some useful studies presented in the Conference, but available only in the form of tape recordings, have been transcribed, edited and presented.

A number of papers, not included in the earlier volume but presented in the Conference, have now been included.

Due to the limited time of the Conference a number of useful papers could only be accepted for publication in the proceedings and not for the presentation in the Conference. These have been included in separate sections.

In order to conform to the various sessions, where they were presented, the papers have been re-arranged according to the broad subjects of the sessions.

All the comments and discussions conducted in English language have been included in the present volume.

All the recommendations of the Conference have been incorporated in a separate chapter.

The "Islamic code of Medical Ethics" adopted at the Conference has also been included as a separate chapter.

Whatever possible, the references have been checked and rewritten, to conform to the standard form suggested to the authors.

All translations of the verses of the Holy Quran and Hadith have been verified from the standard sources, the references checked and noted at the end of the quotations.

A number of diagrams, illustrations and photographs referred to, in the papers, but not included previously, have now been incorporated.

A number of typographical errors have been corrected and several paragraphs originally dropped due to typing errors have been included.

Besides, in a number of places some material which was originally edited, but was considered necessary by us, has been added. The present editors have also tried to thoroughly check the text of this volume (edition) with the author's original, to avoid, so far as was possible, any chances of misrepresentation or mistake.

Author's abstracts, where-ever sent with the articles, have been incorporated in the beginning. The abstracts, quotations from the Holy Quran and Hadith have been typographically made distinct and clear. In order to distinguish between the quotations from the Holy Quran and Hadith, those from the Hadith have been put in the quotation marks. A uniform pattern has been followed to indicate the sub-headings and references, similarly, uniform spellings for the names of persons and titles of works have been used, unless otherwise necessary in context of the text.

In some places, the Editorial Comments from previous publication have been retained, while some new editorial comments have been added wherever felt absolutely necessary.

An Alphabetical Index for Authors has been added in the end to facilitate searching. All entries are made under the name of the principal author, with cross references from the names of the joint authors and the various forms of the author's name.

We have also tried to visually distinguish the various chapter and parts of the proceeding by using a colour scheme. Thus Red indicates the part, Yellow the chapter and Green for the comments and discussions.

The list of the contributors has been revised and enlarged and the names and addresses (wherever available) of the joint authors of the articles have also been included.

In transcribing the discussions and comments, from the tape recordings, every effort has been made at faithful recording. We are, however, sorry that it was not possible, in certain cases to identify the speaker through his voice. The editors have, in some places to affect some changes and modifications in order to avoid repetition and for sake of clarity of expression, but every effort has been made to retain the spirit of the discussion.

Some authors, whose papers were available as tape recordings only, did not co-operate with us by sending their written papers as they had promised, inspite of our best efforts. We have tried to transcribe the papers after necessary editing and improvement of the transcript.

This is one of the two volumes of the proceedings of the Conference. The second volume is in Arabic language. As a number of papers were originally submitted in Arabic, and a considerable portion of the proceedings, were also conducted in Arabic, the second volume contains all these papers, comments, and discussions. Besides a major portion of the papers in English, excluding the papers from the Philosophy of Islamic Medicine, seminar, have also been translated into Arabic for inclusion in the second volume.

Both the text and symposia owe recognition to the patronage and the personal encouragement of H.H. Sheikh Jaber al-Ahmed al-Sabah, Amir of Kuwait and chairman of KFAS Board of Directors.

We express our deep sense of gratitude to H.E. Dr. Abdul Rahman Al-Awadi, for the very kind interest and encouragement that we received at every stage of this work; we are also very grateful to him for kindly contributing the foreword to this volume (edition).

Our very sincere thanks are also due to Dr. Nail Al-Naqeeb, the Under-Secretary of the Ministry of Public Health and Mr. Khalid Al-Sanai, the Assistant Under-Secretary, for financial affairs.

We are very grateful to the Foundation for Advancement of Science, Kuwait, who have, very kindly funded the publication of this book. In fact this welcome gesture is indicative of the Foundation's deep interest in the preservation and revival of the great heritage in Islamic Medicine.

We had the advantage of being able to use the work so ably done by Dr. Ibrahim Al-Sayyad and are still more in his debt for his kind co-operation. We thank him most sincerely.

We are highly appreciative of the help and co-operation offered by Mr. Tariq Ahmed El-Sakit of the Fahad Al-Marzouki Press. The management of the Press has offered their continued co-operation to us not only by accommodating to our various requests, but also in completing the job in a record time.

We acknowledge the great help that was provided by our small but highly co-operative secretarial staff. Without their constant help it would certainly be very difficult for us to complete this work in such a short time.

Last, but not the least we wish to thank most heartily, the numerous scholars and scientists who enriched the First International Conference with their valuable contributions and thought provoking and illuminating discussions.

We are conscious, that inspite of our best efforts we must have left out many things to be desired in a work of this kind. The Secretariat of the Islamic Medicine would like to receive opinions and friendly suggestions for consideration while preparing the proceedings of the next Conference.

May Allah help us in putting in our best efforts to the re-establishment of our valuable heritage.

Editors:
Dr. Ahmed Ragaie El-Gindy.
Hakim Md. Zahoorul Hassan.
and Ahmed Habib Kidwai.

PROGRAMME OF THE FIRST INTERNATIONAL CONFERENCE ON ISLAMIC MEDICINE.

MONDAY - 12th. JANUARY 1981. 6th. RABIUL AWWAL 1401.

REGISTRATION: (08.00 a.m. — 09.00 a.m.)
INAUGURAL SESSION: (09.00 a.m. — 10.30 a.m.)

1. National Anthem.
2. Recitation From The Holy Quran.
3. Inaugural Speech on behalf of H.H. The Amir of Kuwait.
   (In Arabic)
   H.E. Dr. Abdul Rahman Al-Awadi.
   Minister of Public Health. Kuwait.
4. Speech on behalf of President of Islamic Congress.
   (In Arabic)
   Dr. Ekmeluddin Ihsan Oghlu.
5. Speech.
   Dr. T. Adeoye Lambo.
   Deputy Director General, WHO. Geneva.
6. Speech on behalf of The National Committee for Celebrating Fifteenth Century Hijri. *(In Arabic)*
   Mr. Saadoun M. Al-Jassem.
7. Vote of Thanks. *(In Arabic)*
   Dr. Hassan Hathout.
   President of Organizing Committee of the
   Islamic Medicine Conference.

OPENING OF THE EXHIBITION.

FIRST SESSION: (11.00 a.m. — 01.00 p.m.)

Election of President, and Board of the Conference.

WHAT IS ISLAMIC MEDICINE?

Chairman: Prof. Al-Mahdi Bin Aboud.
Co-Chairman: Mr. Ibrahim Al-Shatti.
Moderator: Dr. Ibrahim Al-Sayyad.

Speakers:
1. Dr. Ahmed Al-Kadi.
2. Dr. Ibrahim Al-Sayyad.
3. Dr. Maher M. Hathout.
4. Dr. Tariq Abdullah.
5. Dr. Aboulwafa Al-Taftazany.
6. Dr. Fouad Hifnawy.
7. Dr. Mustafa Mahmood.

COMMENTS AND DISCUSSIONS.

SECOND SESSION: (04.00 p.m. — 06.00p.m.)
FIRST PART: Lecture of Prof. Fuat Sezkin on The Role of The Muslim Scientist In the History of Medicine.
SECOND PART: *(In Arabic)*

SEMINAR ON IBN SINA.

Chairman: H.E. Abdul Aziz Hussain,
Minister of State for Cabinet Affairs, Kuwait.
Moderator: Dr. Mustafa Helmy.
Speakers:
1. Dr. Ihsan Dogramaci.
2. Dr. Mahdi Ben Aboud.
3. Dr. Mohammed Abul Hadi Abu Ridah.
4. Mrs. Sadia Rashid.

COMMENTS AND DISCUSSIONS.

TUESDAY - 13th. JANUARY 1981.
7th. RABIUL AWWAL 1401.

FIRST SESSION: (08.30 a.m. — 10.30 a.m.)

HISTORICAL REVIEW: STUDY OF SELECTED WORKS IN ISLAMIC MEDICINE.

Chairman: Dr. Ibrahim Badran.
Co-Chairman: Dr. Farouk Al-Omar.
Moderator: Dr. Ahmed Shawki Ibrahim.
Speakers:
1. Dr. Sami K. Hamarneh.
2. Dr. Selim Ammar.
3. Dr. Amador Diaz Garcia.
4. Dr. A.Z. Iskander.
5. Dr. Ahmed Aroua.
6. Dr. Nazeer Ahmed.

COMMENTS AND DISCUSSIONS.

SECOND SESSION: (11.00 a.m. — 01.00 p.m.)

ACHIEVEMENTS OF ISLAMIC MEDICINE IN DIFFERENT BRANCHES.

Chairman: Dr. Mohammed Salhia.
Co-Chairman: Dr. Adnan Al-Akil.

Moderator: Mr. Mohammed Mofdi Abdul Latif.
Speakers:
1. Dr. Abdul Aziz b. Abdullah.
2. Dr. Kamal Samaraie.
3. Dr. Suad Hassain.
4. Dr. Carmen Pena Munoz.
5. Dr. Abdul Hafez Helmy.
6. Dr. Fariduddin Baquai.

COMMENTS AND DISCUSSIONS.

WEDNESDAY - 14th. JANUARY 1981.
8th. RABIUL AWWAL 1401.

FIRST SCIENTIFIC SESSION: (08.30 a.m. — 10.30 a.m.)

CLINICAL STUDIES ON THERAPEUTIC MEASURES MENTIONED IN ISLAMIC TRADITION OR USED BY MUSLIM PHYSICIANS.

Chairman: Hakim Mohammed Said.
Co-Chairman: Prof. Ekmaleddin Ihsan Oghlu.
Moderator: Dr. Ahmed Al-Ansari.
Speakers:
1. Dr. Omar S. Alfi.
2. Dr. Basheer Ahmed.
3. Dr. Ragai El-Mostehy.
4. Dr. M. Al-Moataz Al-Marzooky.
5. Dr. S.N. Salem
6. Dr. Ahmed Shawki Ibrahim.
7. Hakeem Nazeer Ahmed Siddiqui.
8. Dr. Allie Mousa

COMMENTS AND DISCUSSIONS.

SECOND SCIENTIFIC SESSION: (11.00 a.m. — 01.00 p.m.)

PHARMACOLOGICAL EVALUATION OF THERAPEUTIC PROCEDURES USED BY MUSLIM PHYSICIANS.

Chairman: Dr. Abdul Razzak Al-Udwany.
Co-Chairman: Dr. Abdullah Al-Khars.
Moderator: Dr. Tharwat Ghoneim.
Speakers:
1. Dr. M. Sabir.
2. Dr. Mohammed Ilyas.
3. Dr. M. Ahmed.
4. Mr. S. K. Nazimuddin.
5. Hakeem M. Iqbal Ali.
6. Dr. M. Tharwat Ghoneim.
7. Dr. H. Hussain Siddiqui.

COMMENTS AND DISCUSSIONS.

THIRD SESSION: (04.00 p.m. — 06.00 p.m.)

SEMINAR ON THE PHILOSOPHY OF ISLAMIC MEDICINE.

Chairman: Dr. Salimuzzaman Siddiqui.
Moderator: Dr. Ahmed Rajai El-Gindy.
Speakers:
1. Dr. Salimuzzaman Siddiqui.
2. Hakeem Abdul Hameed.
3. Dr. Kamal Mohammed Habib.
4. Dr. Ata-ur-Rehmman.
5. Dr. H. Wagner.

COMMENTS AND DISCUSSIONS.

SPECIAL SESSION: (06.30 p.m. — 08.30 p.m.)

MEETING OF THE BOARD OF THE CONFERENCE ON ESTABLISHING AN ISLAMIC MEDICINE ORGANIZATION.

THURSDAY - 15th. JANUARY 1981.
9th. RABIUL AWWAL 1401.

FIRST SESSION: (08.00 a.m. — 10.30 a.m.)

MEDICINE AND MESSAGE OF ISLAM.

Chairman: Dr. Abdul Aziz Kamel.
Co-Chairman: Dr. Ahmed El-Kadi.
Moderator: Dr. Abdul Sattar Abu Ghodda.
Speakers:
1. Mr. Abdullah Al-Akil.
2. Dr. Jumalisuddin.
3. Dr. Ali Akbar.
4. Dr. Agoos Azor.
5. Dr. G.M. Hussain.
6. Dr. Omer Hassan Kasule.
7. Dr. Suleiman Rajah.

SECOND SESSION: (11.00 a.m. — 01.00 p.m.)

MEDICAL ETHICS AS VIEWED BY ISLAM.

Chairman: Dr. Ahmed Kamal Abul Mogd.
Moderator: Mr. Arafat Al-Ashi.
Speakers:
1. Dr. Mohammad Fouad Tawfiq.
2. Dr. Yunus Muftu.
3. Dr. Hassam Gareeboo.
4. Dr. Ahmed Sharaf El-Deen.
5. Dr. Abdul Sattar Abu Ghoddah.
6. Dr. Ahmed Shawki El-Fangary.

THIRD SESSION: (04.00 p.m. — 06.00 p.m.)

SEMINAR FOR DISCUSSION OF THE KUWAIT PROJECT FOR A CODE OF ISLAMIC MEDICAL ETHICS.

Chairman: Dr. Hassan Hathout.
Moderator: Mr. Mohammed Fouad Tawfiq.
Speaker: Dr. Hassan Hathout.

FRIDAY - 16th. JANUARY 1981.
10th. RABIUL AWWAL 1401.

CLOSING SESSION IN FATIMA MOSQUE: (09.30 a.m. — 10.30 a.m.)

Chairman: H.E. Dr. Abdul Rahman Al-Awadi.
Co-Chairman: Dr. Ahmed El-Kadi and Hakeem Mohammed Said.
Moderator: Dr. Hassan Hathout.
Speakers:
1. Dr. Hassan Hathout.
2. Dr. Al-Mahdi Ben Aboud.
3. Dr. Ahmed El-Kadi.
4. H.E. Dr. Abdul Rahman Al-Awadi.

REPORT ON INAUGURATION OF CONFERENCE

The inaugural function started at 09.00 a.m. After the National Anthem and the recitation from the Holy Quran, H.E. Dr. Abdul Rahman Al-Awadi, Minister of Public Health, delivered the inaugural speech in Arabic on behalf of H.H. the Amir of Kuwait.

He said that Islam has played an important role in the civilization of the world, as this religion is a message to the mankind. He also said that the Muslim scientists always proved themselves as poineers in all the fields of life and in medicine as well. He declared that H.H. The Amir of Kuwait, has kindly and generously agreed to give some scholarships and prizes every year to encourage new generation and scientists of the age to conduct researches in the field of Islamic Medicine.

Later on Dr. Ekmeluddin Ihsan Ughlu gave his speech in Arabic. On behalf of the Organization of the Islamic Conference, he appreciated the efforts being done by the Government of Kuwait in reviving the Islamic Medicine, which is an important heritage of Muslims. He appealed to present Islamic treasures in a proper scientific way. Then Dr.T Adeoye Lambo delivered his speech in English and Mr. Saadoum M.-Al-Jassem spoke in Arabic.

He said that the migration of our Prophet Mohammed (ﷺ) from Mecca to Madina was an important event in Islamic History. So, Government of Kuwait decided to celebrate the advent of Fifteenth Century Hijri and in this connection the First International Conference on Islamic Medicine was being held, under the National Organization Committee, formed for this purpose.

In the end Dr. Hassan Hathout proposed a vote of thanks.

At the end of the function, an exhibition on Islamic Medicine was declared open by H.E. the Minister of Public Health, Kuwait.

Editors

ADDRESS TO THE ISLAMIC MEDICINE CONFERENCE

Dr. T. Adeoyo Lambo, OBE., MD.
Dy. Director General WHO, Geneva

The representative of His Royal Highness, The Amir of Kuwait, Your Excellencies, distinguished colleagues, ladies and gentlemen.

First of all, I would very much like to express the appreciation of the World Health Organisation to Dr. Abdul Rehman al-Awadi, the Minister of Health of Kuwait and also the president of the World Health Assembly and to those officers and those who are responsible for the planning of this very important Conference, for their invitation to the Director-General of the World Health Organization, Dr. Mahler, to attend this Conference and give address.

Unfortunately, D. Mahler is unable to attend this important Conference and has therefore asked me to represent him. I am here to represent not only the Director-General of World Health Organization, but the entire Organization, because of the significance and importance of this Conference.

For me personally, it is a great honour and privilege to participate in this Conference, first, because the history of medicine has been and will remain one of my major interests and second, because in some of the original manuscripts, scattered all over some of the Western European and North American libraries, can be found the most glorious and most voluminous pages in the history of medicine.

Islam is a religion which derives its sensitivity, its strength from the richness of its profound diversity of cultures, religion, politics, ethics, belief systems and social traditions. It is a religion which contains a profound philosophy of man, of human values and comes out with great intensity of the spiritual tendancy of this age as one of the highest planes in the sphere of human development.

When Prophet Mohammed (ﷺ) enlarged His intellectual theatre and put into His rhapsodies the true vision of His followers and of His soul, His philosophies became the consecration of His deepest religious convictions and the Quran contains not only the whole truth of Islamic religion but also the entire corpus of Islamic culture.

Islam, which is more than a religion has its roots in a deep religious faith moulded by the trials and passions of a singularly religious man, Prophet Mohammed (ﷺ). In Islamic philosophy and religion, *existence* and not *event* is the subject of its primary interest: it represents a cosmology, not a story. It puts man and his faith in the entire centre of the universe and makes the stars circle about him and this must have some justifications. And indeed, its justification (if I may be so brief on so great a subject) is

that *what in fact is false in the Science of Facts may be true in the Science of Values.* In fact, in Islamic Religion, there is no such dichotomy of facts and values.

Any attemps to evaluate the practical aspects of Islam shows clearly that it is the transcript of the real experience of humanity, as the founding father found it in His innermost soul and as He was deeply aware of it in the universal history of man. It is a religion which carries the imagination into a new phase, it is a religion which also sanctifies poverty and sorrow, at which Western religions of the day have always shuddered. It awakens tender emotions and furnishes subtle instruments of grace. The spiritual world which Islam has given to our existence constitutes a system complete and consistent within itself.

As in music, although it contains nothing of a material nature, it offers a field for the development of the human mind and presents laws and conditions which, within its sphere, must be obeyed, and which reward obedience with the keenest and purest pleasures, and which infact conditions certain satisfaction, intrinsic with which the specific need, desire or drives of individuals are satisfied.

I have mentioned this important aspect simply to remind ourselves that when we speak of Islamic Culture or even Islamic Medicine, we must think of Islam as a penetrating all pervasive cultural force. It has crossed many languages and enriched itself with the concomitant development of other disciplines and sciences - sciences and other disciplines such as philosophy, mathematics, astronomy, astrology, zoology and alchemy, geography and technology. These sciences and disciplines formed the basis of early Islamic Medicine with pronounced Hellenic stamp as being the basis which gave it a historic gab of antiquity; this is an important landmark in our study of the intellectual history of Arab-Islamic culture.

Today, when we attempt to examine the historical and intellectual movements of Islamic Medicine which dates back to around the 9th century, there are some impressive and out-slanding scholars who have not only left their mark but have also shaped the system not only in a way that we can appreciate today, but also in a most enduring way. Notable among them were al-Razi (Rhazes), Ali Abbas (al--Majusi) and the great Ibn-Sina (Avicenna) whose original and most valuable work can be found in the most outstanding libraries of today. These were the men who made the 10th and the 11th centuries the golden age of Islamic Medicine. These scholars of genius height, especially Rhazes and Avicenna had with, assiduity, interpreted the Hippocratic and Galenic medicine of antiquity but their great merit in fact, also lies in the development of therapeutic techniques based on original and also empirical observations. Rhazes' book "The Book of Pestilence", is regarded today as one of his major works and also regarded by medical historians all over the world as probably the first serious treatise on infectious diseases. At the age of ten, Avicenna was supposed to have read the Quran and learned theology, arithmetic and algebra. Therefore, these were men whose interests covered all branches of knowledge. I have mentioned these men of great heights simply to illustrate the diverse cultures from which Islamic Medicine came. Islamic Medicine therefore did not spring out solely on Arab soil, although the scientific works of Rhazes and Avicenna and others who were persians and of other nationalities, were written mainly in Arabic. In fact, the founding fathers of Islamic Medicine were Persians, Christians, Arabs and so on. The common factor is that they all lived within the sphere of Islamic culture.

The ancient Arabs had a wealth of pharmaceutical or pharmacopeia with therapies still in use today.

Up till today, Islamic Medicine, in spite of its great advances due to the development of modern technological medicine, remains part and parcel of Islamic culture and retains the cardinal ethical and moral codes as laid down in the Quran. In contradistinction to modern technological Western Medicine it has never divorced itself from certain fundamental moral, ethical and humanistic principles.

Your Excellencies, ladies and gentlemen, the health aspects of human life were one of the important areas to which Islam addressed itself. For example, with regard to practical aspect of preserving life and health, God The almighty said, I quote,

THOU SHALT NOT EXPOSE THYSELF TO DANGER

This is the first principle of our modern concept of Primary Health Care. On the question of weaning, God said: I quote,

MOTHERS SHALL BREAST-FEED THEIR CHILDREN FOR THE WHOLE TWO YEARS IF THEY DESIRE TO COMPLETE THE FEEDING TERM .

The process of formulating the precepts and regulations in fact the cardinal rules relevant to the life of man in all its health, social, spiritual and ethical aspects. The following excerpts from the Prophet's (ﷺ) teachings are a few examples of directives which have remained valid even up till today. I quote:

"THOU SHALT GIVE THE BODY ITS DUE"

"WERE IT NOT A STRAIN TO MY PEOPLE I WOULD HAVE PRESCRIBED THE TOOTHBRUSH AT EVERY PRAYER"

"THE INFECTIOUS SHALL NOT BE IN CONTACT WITH THE HEALTHY"

"IF YOU HEAR OF A LAND INFESTED WITH THE PLAGUE, DO NOT GO THERETO, AND IF THE PLAGUE OCCURS WHILE YOU ARE THERE IN A LAND, DO NOT LEAVE IT FLEEDING THE PLAGUE".

Some of the most important quotations in fact emphasise the principles of health, as we in fact, conceive them today. What we would like to emphasise at this Conference is the commitment of the World Health Organization to Islamic Medicine, to join hands with you, to do more research not in the whole area of just the modern aspects of Islamic Medicine but also to enlarge its sphere, its influence, its scope to collect and collacte to transmit, re-edit and do more penetrating work on the manuscripts and material to wealth of the alley founding (foundium) fathers of Islamic Medicine. This is a challenge to the great institution of World Health Organization.

Once again Sir, I would like to express our gratitude to you, especially to His Royal Highness The Amir of Kuwait, for giving opportunity for the scholars of all lands of the Islamic culture spread all over the world to start this movement of re-discovering the tremendous scientific heritage and for the opportunity for World Health Organization to be involved in this tremendous work. I thank you Sir.

REPORT ON THE ELECTION OF THE PRESIDENT, AND THE BOARD OF THE CONFERENCE.

Before the start of the first session on 12th January 1981, the election of the Executive Board was held. The following dignitaries were elected unanimously:-

1.	H.E. Dr. Abdul Rahman Al-Awadi.	President.
2.	Dr. Ihsan Dogramaci.	Vice-President.
3.	Hakeem Mohammed Said.	Vice-President.
4.	Dr. Ibrahim Badran.	General Moderator.
5.	Dr. Mehdi Ben Aboud.	Member.
6.	Dr. Ahmed El-Kadi.	Member.
7.	Dr. Hassan Hathout.	Member.
8.	Dr. Ahmed Rajai El-Gindi.	Secretary.

Editors.

PART ONE

WHAT IS ISLAMIC MEDICINE

CHAPTER ONE

(Papers Presented)

REPORT ON FIRST SESSION

This session was presided over by Prof. Mehdi Ben Aboud with Mr. Ibrahim Al-Shatti as Co--Chairman and Dr. Ibrahim Al-Sayyad as moderator. It started at 11.00 a.m. Seven speakers presented their papers (Six in English) under the title of "What is Islamic Medicine?" Then comments were allowed. The session ended at 1.00 p.m.

Editors.

WHAT IS ISLAMIC MEDICINE?

Ahmed El-Kadi

U.S.A.

With the growing movement for the restoration of Islamic values, there is an increasing demand on Muslim scientists to restore and develop the Islamic sciences. It is essential, however, for the Muslim scientist to have a clear and sound understanding of the science he is expected to restore and develop. The majority of Muslim health professionals have no clear idea as to what Islamic medicine is. Even the ones who have an idea may differ in their concept and definition of Islamic Medicine. The question then arises: What is Islamic Medicine?

Is it the old medicine, still being practiced by some Hakims in the east? Is it natural medicine utilizing mostly herbs, diets and lifestyle adjustments? Is it a madicine limited to the health related teachings found in the Qur'an and the prophet's tradition? Is it primarily faith-healing and prayers for the sick? Is it customary medicine given an Islamic label? Or is it some new discovery providing a cure for almost all ills? None of the above is in itself Islamic Medicine, but all together, and a great deal more, are its ingredients.

According to Islamic teaching, God has made available a treatment for every illness, He has created[1]. This teaching implies that every available and useful treatment known to us should be utilised, and that if a treatment for a certain illness is not yet known to us, it is our duty to search for it until we find it. Therefore, Islamic medicine cannot be limited to any branch of the healing arts which does not have the answer, or at least the potential to have the answer, to all illnesses. The treatment in question may be spiritual or physical exercise, nutritional adjustment, pharmaceutical preparation, be it all natural ingredients or purely synthetic, surgical procedure, radiation therapy, or a combination of any of these modalities.

Although Islamic Medicine may include, among many others, all the modalities of modern medicine, it differs from modern medicine in that it fulfills all the following six criteria: It is excellent and leading among other brands of the healing arts. It is a medicine with faith and Divine ethics. It is guided and oriented. It is comprehensive, paying attention to body and spirit, to the individual and the society. It is universal, utilizing all useful resources, and offering its services to all mankind. And last, but not least, it is scientific.

While modern medicine proclaims these criteria, i.e. to be excellent, ethical, oriented, comprehensive, universal and scientific, it has failed to fulfill any of them. An examination of modern medicine with regard to these six criteria will show how poorly it rates. United States statistics of the last

decade will be used as representative of modern medicine.

The first criterion is excellence. Performance of modern medicine will be evaluated according to its ability to save life, to eradicate or control disease, and to improve personal well-being.

Modern medical statisticsimay give the impression that the average age of the population has been extended, and that more lives are being saved. A key figure in mortality statistics is infant mortality since it affects total mortality figures and also the average age of the population. Infant mortality for 1978 is presented as 22,010 which is a great improvement on the 43,205 reported for 1970[2]. For some reason, however, modern medical statistics completely ignore the huge figure of 1,150,776 babies who died in 1978 during their first nine months of life, and who were classified as abortions and not as a mortality. This 1978 figure represents an almost 600% increase over the 1970 figure of just 193,491[3]. To count all dead babies will change infant mortality to 1,172,786 in 1978 as opposed to just 236,696 in 1970. As to mortality due to other leading causes of death, the progress made by modern medicine in some areas was almost cancelled out by the deterioration in other areas (Table 1). All areas combined, but without counting abortions, the mortality figure of 1,809,818 in 1970 decreased to 1,776,390 in 1978, or a meagre 1.8% improvement. Counting abortions, true total mortality was 2,003,309 in 1970, increasing to 2,927,166 in 1978, or a 46% deterioration. As to eradication or control of disease, modern medicine has made a few steps forward in a few areas and many more steps backward in other areas (Table 2). The total incidence of the so-called dangerous diseases has increased from 1,065,012 in 1970 to 1,281,952 in 1978, or a 20% deterioration of disease control over an eight-year period. The ability of modern medicine to improve personal happiness and well-being is also declining as manifested by the increasing incidence of suicide from 23,480 in 1970 to 27,500 in 1978[2]; and the soaring incidence of divorce from 708,000 in 1970 to 1,128000 in 1978[2]. It is obvious, with these poor performance figures, that modern medicine does not fulfill the first criterion of excellence.

The second criterion of Islamic Medicine is that it is a medicine with faith and divine ethics. All evidence indicates that modern medicine has no faith in God as the Supreme authority, and that modern medical ethics are by no means Divine. Modern medicine approves of the termination of the life of an innocent human being just for the convenience of another human being; it approves of pre-marital or extra-marital relations; it approves of homosexual relations; and it sees no harm in providing alcohol in the great majority of liquid medicinal preparations. All these are clear violations of God's teachings, and these are just a few of many examples. The supreme authority in modern medicine is the consensus of the majority of physicians regardless of God's opinion on a given subject.

The third criterion of Islamic Medicine is that it is guided and oriented. Examination of current medical practices proves that modern medicine is quite misguided and disoriented. The philosophical foundation of modern medicine is confused and lacks sound logic. Modern medicine is trying to save all the lives it can save, but is willing to destroy the lives of millions & millions of unborn babies. Modern medicine recognized electrical brain activities as a sign of life and would not dispose of any person as long as these activities are present. However, it is willing to dispose of huge numbers of unborn babies even though they have electrical brain activities. Modern medicine proves beyond any doubt that alcohol is hazardous to health, but is willing to add alcohol to most of the liquid medicinal preparations although

a substitute is within reach. Modern medicine is very quick to accept the request of young females for permanent sterilization, then it goes to painstaking lengths to restore fertility in the very same young females who later discover that their initial decision was wrong and that they do not want to be sterile. Modern medicine claims to be doing its best to prevent the development or the spread of disease, but it does not at all discourage and may actually, directly or indirectly, encourage certain socio-sexual behavior and attitudes which have proven to lead to the development and spread of disease. Modern medicine claims to be the most ethical profession, but it shows no hesitation in violating and ignoring the divine ethical rules.

The fourth criterion of Islamic Medicine is that it is comprehensive, paying attention to body and spirit, the individual and society. Examination of our modern medicine will show that its approaches are usually one-sided and inadequate, leading in many instances to disastrous consequences. Modern medicine has been greatly concerned with the physical growth of young children while it ignored the needs of their ethical upbringing and spiritual growth. This deficient approach has resulted in a large number of these children growing to be victims of drug abuse and juvenile delinquency, a problem of epidemic proportions and frightening magnitude. Modern medicine has promoted sex education but has ignored the proper ethical and moral restrictions which should be included in such programs. This has resulted in an increase in the number of unwanted pregnancies, an increase in the number of illegitimate children, and a soaring rise in the incidence of venereal disease, as well as marital problems and unhappy families results which are exactly the opposite of what was intended from the sex education programs. Modern medicine has fairly advanced knowledge of the physical components of peptic and cardiovascular disorders and also of ways and means of dealing with these components. The incidence of these disorders, however, is still quite high due to the lack of consideration and attention given to the spiritual and social needs of the patient and which may be playing an important role in the etiology of the disease.

The same one-sided approach is manifest at the level of basic science and clinical research. Considerable time, energy, and money are spent on the physical aspects of disease while very little if any, attention is paid to the spiritual and ethical aspects, be they the cause or the results of the so-called somatic diseases.

The fifth criterion of Islamic Medicine is that it is universal, utilizing all useful resources and offering its services to all mankind. Such a medicine must be willing to look into any potentially useful treatment modality, subject it to proper investigation, and utilize it if it proves to be useful. Modern medicine, however, seems to be quite reluctant to become involved with any treatment modality which does not originate from its own schools. Although some of these «non-conventional» treatment modalities may be effective and may have already passed the test of centuries and proved to be successful, modern medicine would look on them with suspicion or even with prejudiced condemnation rather than approach them with inquisitiveness and an open-minded investigative spirit. As a result of this restrictive attitude, modern medicine is missing a great deal of good ideas which could provide simple, safe, and inexpensive treatment for many disorders.

The sixth criterion of Islamic Medicine is that it is scientific. The last thing one would expect is to declare modern medicine non-scientific. Unfortunately, it is. There are requirements for a scientific

approach to qualify as such. These requirements, just to mention a few, include honesty in handling available data, accuracy of figures and statistics, thoroughness in considering all variables, consistency and some clarity of purpose. Critical examination of modern medicine shows that it fails to fulfill these criteria. There is no clarity of purpose as manifested by the numerous conflicting and contradictory practices and attitudes. There is no consistency of philosophy and policy as was demonstrated earlier in this discussion. Many variables are often ignored, many statistics lack accuracy, and consequently wrong conclusions are often reached. The fact that modern medicine is afflicted with increasing mortality and increasing incidence of disease inspite of all the technological advances is not reasonable and does not make sense. It indicates that there must be something missing, and there is.

The big question is: Can Islamic Medicine overcome all the problems of modern medicine, and can it provide its missing ingredients? The answer is a confident "yes". In all the problem areas of modern medicine listed in this paper, the deficiences are either lack of ethical and moral guidance, lack of standardized value system, disregard of certain restrictive or instructive rules related to ingested materials, or disregard of certain hygienic and social guidelines governing human relations and social life. These missing items are the very one abundantly provided by Islamic teachings.

The detailed elaboration on the correlation between various Islamic teachings and the course or development of various diseases is beyond the scope of this paper and will be the subject of separate investigations. The combination of Islamic teachings and the existing technological advances, which are fully supported by the Islamic teachings, produces a unique blend of healing arts which qualifies as Islamic Medicine, a medicine which is most up-to-date and progressive while in full harmony with divine teachings and guidance. The basic Islamic teaching asserting that there is a cure for every illness (and it is up to us to find it) is an unbeatable stimulus for study and research towards unparalleled progress and achievement. The establishment of such a healing art entails the total re-evaluation and revision of all existing basic and clinical sciences. In addition to providing the new medical foundation, the revised texts and restructured Curricula will reflect the link between the Creator and His creation thus reinforcing the concept of Oneness of God (Tawheed) and automatically improving the faith of the student through his own professional study. These texts and Curricula will also reflect the oneness of creationiby showing how the various systems of animated and non-animated creatures follow very much the same laws of nature, or better stated, laws of God, thus broadening the horizon of the student which will in turn make him a better scientist and a better person. It will be a monumental task to establish, but a task worth undertaking.

REFERENCES:

1. Sahih Al-Bukhari, LXX1. The Book of Medicine, Chapter 1.
2. United States Public Health Service, Washington, D.C., Annual Reports.
3. United States Center for Disease Control (CDC), Atlanta, Georgia. Abortion Surveillance 1972 and 1980.

Table 1

LEADING CAUSE OF DEATH AMONG AMERICANS
(SOURCE: U.S. PUBLIC HEALTH SERVICE)

CAUSE OF DEATH	NUMBER OF DEATHS		DEATH RATE PER 100,000	
	1978	1970	1978	1970
Heart & artery diseases	789,820	800,818	362.2	394.2
Chronic heart diseases	337,260	344,175	154.7	169.4
Sudden heart attack	303,630	357,241	139.2	175.8
Arteriosclerosis	29,190	31,682	13.4	15.6
Rheumatic fever	12,790	14,889	5.9	7.3
Hypertensive heart	10,020	14,991	4.6	7.3
Hypertension	5,460	8,273	2.5	4.1
* Cancer	*396,060	330,730	181.6	162.8
* Digestive organs	*104,990	94,703	48.1	46.6
* Lungs	* 98,820	69,517	45.3	34.2
* Genital organs	* 44,670	41,190	20.5	20.3
* Breast	* 34,950	29,917	16.0	14.7
* Urinary organs	* 17,080	15,514	7.8	7.6
* Leukemia	* 15,780	14,492	7.2	7.1
* Mouth and pharynx	* 8,590	7,612	3.9	3.7
* Other cancer	* 71,180	57,785	32.6	28.4
Stroke	172,520	207,166	79.1	101.9
Cerebral thrombosis	37,690	57,845	17.3	28.5
Cerebral hemorrhage	21,520	41,379	9.9	20.4
Other cerebrovascular diseases	113,310	107,942	51.9	53.1
Accidents	107,930	114,638	49.5	56.4
Motor vehicle	53,610	54,633	24.6	26.9
All other accidents	54,320	60,006	24.9	29.5
Pneumonia	54,330	59,032	24.9	29.0
* Violent deaths	* 48,580	40,328	22.3	19.9
* Suicides	* 27,500	23,480	12.6	11.6
* Homicides	* 21,080	16,848	9.7	8.3
Diabetes	32,780	38,324	15.0	18.9
* Ill-defined conditions	* 31,460	25,781	14.4	12.7
Cirrhosis of the liver	29,910	31,399	13,7	15.5
Infant mortality	22,010	43,205	10.1	21.3
Injuries in birth	11,640	2,801	53	11.2
Other infant diseases	10,370	20,44	4.8	10.0
Emphysema	15,970	22,721	7.3	11.2
Congenital defects	12,780	16,824	5.9	8.3
Nephritis and nephrosis	8,010	8,877	3.7	4.4
* Blood poisoning	* 7,780	3,535	3.6	1.7
Peptic ulcer	5,660	8,607	2.6	4.2
* Benign tumors	* 5,400	4,828	2.5	2.4
Hernia and intestinal obstructions	5,330	7,235	2.4	3.6
Bronchitis	4,050	7,156	1.9	3.5

CAUSE OF DEATH	NUMBER OF DEATHS		DEATH RATE PER 100,000	
	1978	1970	1978	1970
* Influenza	* 3,960	3,707	1.8	1.8
Anemias	3,170	3,427	1.5	1.7
Kidney infections	3,130	8,190	1.4	4.0
* Nutritional deficiencies	* 2,860	2,470	1.3	1.2
Tuberculosis	2,830	5,217	1.3	2.6
Gallstones	2,800	3,973	1.4	2.0
Asthma	1,790	2,322	0.8	1.1
Enteritis and diarrhea	1,650	2,567	0.8	1.3
Meningitis	1,590	1,701	0.7	0.8
Prostate disease	880	2,168	0.4	1.1
Appendicitis	730	1,397	0.3	0.7
Hepatitis, infectious	430	1,014	0.2	0.5
Syphilis	190	461	0.1	0.2
TOTAL MORTALITY REPORTED				
(Without Abortions)	1,776,390	1,809,818		
Abortions	1,150,776	193,491		
TRUE TOTAL MORTALITY	2,927,166	2,003,309		

* Increase in number of deaths from 1970 to 1978

Table 2

DANGEROUS DISEASES IN THE UNITED STATES: 1970-1978
SOURCE: U.S. CENTER FOR DISEASE CONTROL

DISEASE	1970 Cases	1970 Rate[1]	1978 Cases	1978 Rate[1]
* Amebiasis	2,888	1.42	3,937	1.84
* Anthrax	2	0.00	6	0.00
Aseptic Meningitis	6,480	3.18	6,573	3.01
* Botulism	12	0.01	105	0.05
Brucellosis (Undulant Fever)	213	0.10	179	0.08
Diphtheria	435	0.21	76	0.03
Encephalitis, Primary	1,580	0.78	266	0.14
Encephalitis, Postinfectious	370	0.18	65	0.03
Hepatitis A	56,797	27.87	29,500	13.53
* Hepatitis B	,8,310	4.08	5,016	6.89
* Leprosy	129	0.06	168	0.08
* Leptospirosis	47	0.02	110	0.05
Malaria	3,051	1.50	731	0.34
Measles (Rubeola)	47,351	23.23	26,871	12.32
Meningococcal Infections	2,505	1.23	2,505	1.15
Mumps	104,953	55.55	16,817	7.81
Pertussis (Whooping Cough)	4,249	2.08	2,063	0.95
Poliomyelitis, Total	33	0.02	15	0.01
Paralytic	31	0.02	9	0.00
* Psittacosis	35	0.02	140	0.06
* Rabies in Man	2	0.00	4	0.00
Rheumatic Fever, Acute[2]	3,227	2.45	851	0.60
Rubella (German Measles)	56,552	27.75	18,269	8.38
Rubella, Congenital	77	0.04	30	0.01
* Salmonellosis	22,096	10.84	29,410	13.49
* Shigellosis (Dysentery)	13,845	6.79	19,511	8.95
Tetanus	148	0.07	86	0.04
Trichinosis	109	0.05	67	0.03
Tuberculosis[3]	37,137	18.22	28,521	13.08
Tularemia	172	0.08	141	0.06
* Typhoid Fever	346	0.17	505	0.23
* Typhus Fever, Flea-Borne	27	0.01	40	0.02
* Typhus Fever, Tick-Borne	380	0.19	1,063	0.49
Venereal Diseases[3]				
Syphilis	91,382	45.30	64,875	30.00
* Gonorrhea	600,072	297.47	1,013,436	468.25
TOTAL	**1,065,012**	**530.97**	**1,281,952**	**592.00**

1. rate per 100,000 population .
2. not all states reporting.
3. newly reported active cases.

* Diseases which have increased from 1970 to 1978.

THE ISLAMIC VIEW OF MEDICINE

Ibrahim El-Sayyad,
Kuwait

I — ISLAM AND MEDICAL SCIENCE

1. The relation of Islam to medicine is a less component springing from the greater truth which governs Islam's view of man. For man in the Holy Quran is God's representative on earth. He is the creature honored by God who commanded the angels to bow down to him. He has appointed the earth for him to build upon and to cultivate. This paramount value assigned to man has entailed the raising of an array of guarantees which Qura'nic verses and traditions of the Prophet have confirmed to such an extent that any hostility to man is aggression against society as a whole. The Qur'an states:

> IF ANY ONE SLEW A PERSON- UNLESS IT BE FOR MURDER OR FOR SPREADING MISCHIEF IN THE LAND - IT WOULD BE AS IF HE SLEW THE WHOLE PEOPLE *(Quran s 5: V 35)*

The Prophet (ﷺ) also declares:

> "ONE MOSLEM IS INVIOLABLE TO ANOTHER MOSLEM WITH RESPECT TO HIS LIFE, HIS PROPERTY AND HIS FAMILY HONOUR " *(2 - 8)*

Having first ordained this supreme worth and prime responsibility to man, God has then fortified him with knowledge.

> GOD MOST GRACIOUS! IT IS HE WHO HAS TAUGHT THE QURAN. HE HAS CREATED, MAN: HE HAS TAUGHT HIM SPEECH *(Quran S55: V:1-4)*

Thus the picture becomes clear: God has honored man in that he has placed upon him the maximum responsibility, namely to maintain God's trusteeship on earth. He then bestows upon him the basic weapons of "science" and "knowledge".

2. The science of medicine is the most important branch of knowledge for the protection of this creature whom God has honored so that he might perform his mission on earth. Medicine is a translation of the right of the body vis-a-vis its own, as the Prophet (ﷺ) says:

> "THE BODY HAS ITS OWN RIGHTS OVER YOU"

3. True science is that which contributes to faith. Right faith is faith which gives scope to science. Such is the science which Islam desires. Islam intends science to be in the shadow of faith and in the service of its highest ideals. In this sense the Qur'an has directed

READ IN THE NAME OF THY LORD AND CHERISHER WHO CREATED
(S96:V1)

The Quran thus decrees reading bound to a specific provison: that one must read "in God's name". Hence study is directed toward the "The good".

4. Islam prefers the call of science over unprescribed worship. From God's Apostle (ﷺ) is the pronouncement:

> "THE SUPERIORITY OF THE SCHOLAR TO THE WORSHIPPER IS LIKE MY SUPERIORITY OVER THE HUMBLEST OF YOU" *(4 - 11)*

This is because most acts of worship fall short of providing benefit to others as they do not go further than the worshipper. For those who memorize and read the Quran devote themselves to their own purification and to the multiplication of their own merits. Yet society does not obtain from their worship any direct benefit which would accrue to the general good. As for science, its benefit transcends itself, not being restricted to the scientist but also benefitting the people.

5. The applied sciences like Medicine, therefore, have an exalted position in Islam. As in the Holy verse:

> AND IN THE MOUNTAINS ARE TRACTS WHITE AND RED OF VARIOUS SHADES OF COLOR AND BLACK INTENSE IN HUE. AND SO AMONGST MEN AND CRAWLING CREATURES AND CATTLE, ARE THEY OF VARIOUS COLOURS. OF HIS WORSHIPPERS, THE LEARNED FEAR HIM MOST *(Quran S.35: V.27-28)*

The fear of God has been an advantage to scientists working in the applied sciences which have been mentioned in the Holy Qur'anic verse including Geology, Medicine and Biology.

6. Indeed science which is beneficial to humanity is contrasted to the rituals of worship, in that the rewards derived from science do not cease at the scientist's death. The Apostle of God (ﷺ) has said:

> "WHEN A SON OF ADAM DIES, HIS WORK CEASES EXCEPT IN THREE AREAS; HIS ALMS WHICH CONTINUE, HIS SCIENCE WHICH BRINGS BENEFIT AND AN UPRIGHT SON WHO PRAYS FOR HIM". *(1-2-11)*

7. Furthermore, we may say that if worship is a means of gaining God's favour, science also is a way of finding divine acceptance assisting God's servants as well. It is thus required of scientists to guide their learning to what is pleasing before God. God's Apostle (ﷺ) has said:

> "WHOEVER LEARNS KNOWLEDGE WHICH SHOULD BE DIRECTED TO THE GLORY OF GOD BUT UTILISES IT TO GAIN FOR HIMSELF THINGS OF THE WORLD, HE WILL REACH NOTHING OF PARADISE ON RESURRECTION DAY" *(3-6-8-11)*

And in order that science may not be a two-edged sword, the Prophet of God (ﷺ) called for Godliness in the scientist's service, when he said:

> "SCIENCE IS FEAR OF GOD AND PIETY"

> "WHOEVER SEEKS SCIENCE TO OUTSHINE OTHER SCIENTISTS IN GLORY OR TO ENTER INTO CONTROVERSIES WITH THE FOOLISH OR TO ATTRACT THE ATTENTION OF PEOPLE TOWARDS HIM, HE WILL BE CAST INTO HELL" *(6-11)*.

8. Inspite of Islam's clear concern for medicine, there is needed a clarification of the relationship between the Qur'an and medical science. The Qur'an is not a book on medicine or astronomy, as some of its enemies try to find contradictions of these sciences. The substance of the Qur'an is greater than such incomplete informalion, forithe scope of the Qur'an's activity is man himself: his faith, feelings, works and relation to his Creator and his environment. The Qur'an corrects and restores validity to his conceptions and hypothesis about life and sets him on the true path, so that he may use his energies including his intellectual faculties in scientific research within the bounds legally permitted to man. Likewise, he treats the physical body of human society which in turn allows him to best use his energies with his God-given talents.

The Holy Qur'an is a book of right guidance aiming at the formation of a Muslim society which will establish God's message of truth on earth. The *Sunna* (the body of legal precedents found in the sayings and doings of the Prophet (ﷺ) , which is considered to be an elucidation and practical application of the Qur'an has dealt with such practical aspects of medicine as concern the welfare of Muslim society, as will be shown later in this essay.

The Apostle of God was not a physician nor did he claim for himself any aptitude for curing illness. Rather, he told sick people:

> "SEND FOR A PHYSICIAN"[8]

More precisely, the Qur'an and the Sunna have laid the broad lines for legislation in the various spheres of life, without entering into details. The Qur'an and Sunna have established the basic patterns within the bounds of which ijtihad (formulation of judgements in theological and legal questions) is possible, in order to harmonize Islamic law with every age and place, for the furtherance of the common good and the avoidance of harm.

9. If some expressions such as "Islamic Medicine" and "Prophetic Medicine" occur, this does not mean the medicine as practiced in the world today, is un-Islamic. These terms are intended to perpetuate the cultural heritage of the Islamic world in the age when the Islamic state was in the full flower of its achievements. This flowering was reflected in the various sciences including medicine. It was, furthermore, a true renaissance which benefitted from what it had inherited from previous eras, debated it, refined it and added to it the essential substance of its experience and creative endeavour. This renaissance then published the renewed and augmented science for the world in the best possible form at that time. The credit for all the stages of this development belongs to Islam. In the phase of translation, the driving impulse was as it has been said, that:

> "WISDOM IS THE LOST TREASURE OF THE BELIEVER: HE SEEKS IT WHEREVER HE MAY FIND IT".[9]

In the phase of mature formulation and inventive production proper, the motivating impulse was that Islam refuses to monopolize human achievements in any field. Therefore, this knowledge had to be made available to all. Now, after the centuries of cultural stagnation and the fragmentation of the Islamic body politic into the various regional entities, advantage must be taken of medical knowledge which others have perfected. Islamic medicine must catch up fully. Remembrance of the glorious accom-

plishments of the past must provide the spur for the achievements of the future and not a reason for pausing at the level already reached. Islam accepts all valid and beneficial science. The Prophet (ﷺ) has blessed such learning. He has encouraged specialists in the life sciences and has refused to bind them to any one commandment, when he declares:

"YOU ARE MORE KNOWLEDGEABLE IN THE AFFAIRS OF THE WORLD"[2]

II — ISLAM AND THE MEDICAL PROFESSION

1. Islam honors professional work for the sake of legitimate gain. The Prophet (ﷺ) has said:

"THE FINEST NOURISHMENT A MAN EATS IS THAT EARNED BY HIS OWN HAND"

(1-6)

Medicine is a profession practiced for legal gain which has been commended by the Prophet (ﷺ) :

"BLESSINGS UPON A GOD'S SERVANT WHO IS A CUPPER"

(4-6)

It was reported that He Himself (ﷺ) was cupped and gave the cupper his professional fee.

2. By his lawful work, the Muslim has the reward of worship. The Prophet (ﷺ) brought a young man back from the *Jihad* (Holy War), so that he might provide a living for his aged parents. He said to him: "Wage the Holy struggle for them", indicating that work at home should be worship through which his true good intention would be fully valid by being directed to God's favor. The Prophet (ﷺ) has said:-

"HE WHO SEEKS THE FACE OF GOD (IN ALL WHAT HE DOES)- ALL HIS SLEEPING AND WAKING HAVE THEIR REWARD"

(3-5)

3. In this cause, Islam calls the Muslim physician to proceed in his madical practice in accordance with three rules:

(a) To remove what is harmful from the Muslim community by providing the basic elements of good hygiene for the society. The Prophet (ﷺ) says:

"ONE TRUE BELIEVER WITH OTHER TRUE BELIEVERS-THEY ARE LIKE THE BRICKS OF A WALL RE-ENFORCING ONE ANOTHER"[1]

The physician, in the area of his competence, is required to offer his work and the blessings flowing therefrom for the good of the Muslim Community. In the Prophet's (ﷺ) words:

"REMOVE HARM FROM THE PATHS OF MOSLEMS"[2]

"GOD ABHORS THE INJURY OF ANY MOSLEM"[4]

(b) To perform the duty of brotherhood in God towards one's ailing Muslim brother. From the collected traditions of the Prophet (ﷺ) :

"A MUSLIM IS THE BROTHER OF A MUSLIM: HE NEITHER OPPRESSES HIM NOR HUMILIATES HIM. WHOEVER RELIEVES ANY DISTRESS OF A MOSLEM IN THIS WORLD, GOD WILL ALSO RELIEVE HIM IN THE LAST DAY AND WHOEVER GUARDS THE SECRET OF A MOSLEM, GOD WILL GUARD HIS SECRET

ON RESURRECTION DAY, AND WHOEVER WALKS THAT PATH IN SEARCH OF KNOWLEDGE, GOD WILL EASE HIS WAY TO PARADISE"

(2-3-4)

Thus the aim of the physician to relieve the pains of the sick is nobler than the desire for gain or earthly reward by virtue of his delight in the skills of his profession.

(c) Human compassion extending to all humanity, Muslims and non-Muslims, extends indeed to all living creatures. As the Prophet (ﷺ) has said:

"YOU WILL HAVE REWARD FOR MERCY SHOWN TO EVERY LIVING BEING"[8].

Again in the Prophet's (ﷺ) words:

"YOU WILL NOT TRUELY BELIEVE UNTIL YOU HAVE BECOME COMPASSIONATE" Companions said: "O, APOSTLE OF GOD, ALL OF US ARE COMPASSIONATE". whereupon He(ﷺ)replied: "COMPASSION IS NOT FOR A MAN TO SHOW MERCY ONLY TO HIS PEOPLE. HE MUST BE COMPASSIONATE TO ALL MANKIND"[9]

The Physician's position in the process of healing is to be an instrument of divine mercy and a vehicle by which God may relieve pains. When Abu Ramthah said to the Prophet (ﷺ): "Let me heal your illness", the Prophet (ﷺ) replied,

"YOU ARE A FRIEND. GOD IS THE PHYSICIAN".

This saying places the physician in continuing contact with God, as he asks Him for success in his work. Likewise, it keeps him from professional conceit when he is successful in his work. It encompasses his work but removes the element of gain.

III— THE ISLAMIC VIEW OF ILLNESS

Islam recognized illness as an unnatural condition afflicting certain organs of the body. The Prophet (ﷺ) said to Sa'ad b. Abi Waggas when he was suffering from a heart ailment:

"YOU ARE A MAN STRIKEN WITH HEART DISEASE. THEREFORE FETCH AL--HARITH B.KELDAH, THE BROTHER OF THAKIF - FOR HE IS A MAN WHO PRACTICES MEDICINE"[3].

Thus disease does not result from demons, stars or evil spirits. In this regard, Islam has forbidden all practices based on erroneous beliefs such divination of evil omens, the wearing of magic amulets, fortune telling and the like. In a tradition, the Prophet (ﷺ) says:

"WHOEVER WEARS AN AMULET HAS RELAPSED INTO POLYTHEISM". WHOEVER GOES TO A FORTUNE TELLER OR A DIVINER AND ASKS HIM ABOUT ANYTHING, HIS PRAYERS EXTENDING TO 40 NIGHTS WILL NOT BE ACCEPTED"[2]. "WHOEVER GOES TO A FORTUNE TELLER OR A SOOTHSAYER AND HAS BELIEVED WHAT HE SAID, HAS BECOME A NON-BELIEVER IN THE REVELATION RECEIVED BY MOHAMMAD (ﷺ). " LET THERE BE NO READING OF EVIL OMENS. PLEASING TO ME ARE WHOLESOME INTERPRETATION OF GOOD SIGNS AND THE GOOD WORD". "MAGIC SPELLS, AMULETS AND THE LIKE ARE POLYTHEISM"[4].

2. Islam does not specify symptoms and causes of diseases, as we understand them today, because human civilization had not yet gleaned this information. Nonetheless, precise directives were

aimed at the well being of Muslim society, as the Prophet (ﷺ) mentioned contagion, a healthy environment, nutrition and personal cleanliness. Such prescriptions do not differ from what scientists tell us nowadays in their knowledge of the causes and cures of diseases. The tradition of the Prophet (ﷺ), regarding plague is none other than the modern quarantine for contagious diseases but without mention of the infectious agent, "the microbe" or of the method of contagion:

> " PLAGUE IS THE SIGN OF A CALAMITY WITH WHICH ALLAH THE EXALTED AND GLORIOUS, AFFECTS PEOPLE FROM HIS SERVANTS. SO WHEN YOU HEAR ABOUT IT, DON'T ENTER THERE AND WHEN IT HAS BROKEN OUT IN A LAND AND YOU WERE THERE, THEN DON'T RUN AWAY FROM IT".
>
> (1-2)

3. The Muslim is required to protect his health, just as society is obliged to preserve itself against disease and further, to furnish positive health measures in their modern sense. God, the most high, said:

> "TRUELY THE BEST OF MEN FOR THEE TO EMPLOY IS THE (MAN) WHO IS STRONG AND TRUSTWORTHY *(Quran S.28: V.26).*

The Prophet (ﷺ) said:

> "IF A MAN HAS ONLY HIS ISLAM AND HIS HEALTH IT IS SUFFICIENT FOR HIM".

Nor is this strange for the believer whose faith is sound and steadfast, is most strong in fulfilling the message which God has entrusted to man, to live thereby on earth, carrying out God's trust. The Qur'an ensures those unbelievers who want to live a life, for the sake of life alone.

> THOU WILT INDEED FIND THEM OF ALL PEOPLE, MOST GREEDY OF LIFE, EVEN MORE THAN THE IDOLATERS, EACH ONE OF THEM WISHES HE COULD BE GIVEN A LIFE OF A THOUSAND YEARS: BUT THE GRANT OF SUCH LIFE WILL NOT SAVE HIM FROM (DUE) PUNISHMENT FOR GOD SEES WELL ALL THAT THEY DO (Quran S.2: V.96)

Islam does not accept that the *Umma* (the Universal Community of Islam) of Muslims should be the flotsam and jetsam of humanity, as though cast up by the tide, to live on the fringes of life in physical and mental want. To die, would be preferable to such a life.

4. Indeed aversion to illness is a natural phenomenon which Islam accepts. So when Abul Darda said to the Prophet (ﷺ) :"THAT I SHOULD BE HEALED AND GIVE THANKS IS PREFERABLE TO MY SOUL THAN THAT I SHOULD SUFFER ILLNESS AND BEAR IT PATIENTLY". The Propher (ﷺ) replied: GOD ALSO LOVES WELL BEING". Likewise the Prophet (ﷺ) said:

> "ASK GOD FOR HEALTH, FOR NO ONE IS GIVEN ANYTHING BETTER FOR CERTAIN THAN GOOD HEALTH"[4]

5. But when illness does occur, the Muslim is more able to accept this painful reality with a patience springing from his belief in the theory of tribulation. Illness is not the wrath of God nor punishment from Heaven, but rather it is an ordeal which brings expiation for sins. It raises the patient to a higher rank among believers, if the Muslim accepts it with patience and in anticipation of a reward in the hereafter. In the Prophet's (ﷺ) words:

> "NEVER A BELIEVER IS STRICKEN WITH DISCOMFORT, HARDSHIP, ILLNESS, GRIEF OR EVEN WITH MENTAL WORRY THAT HIS SINS ARE NOT EXPIATED FOR HIM".
>
> (1-2-8)

6. There is another aspect in which Islam is distinguished in its attitude towards sickness. This aspect, if initially it is concerned with the physician's conduct and attitude, is nonetheless in the final analysis, a type of psychological healing which we must classify within the realm of religion rather than in the humanities or in the moral sciences. The patient has the right toward the healthy namely, the right to be visited.

Then as he has a right to physician; he has the right to medical treatment. These rights stem from the strict certainty upon which the traditions of the Prophet (ﷺ) focus regarding visiting patients to what is similar to duty. These rights are among those of one Muslim upon a brother Muslim. They are not simply a matter of relieving him and a relationship with him, but it is also a relation with God. In the sacred tradition the Prophet (ﷺ) said:

> "VERILY, ALLAH, THE EXALTED AND GLORIOUS, WOULD SAY ON THE DAY OF RESURRECTION: O SON OF ADAM, I WAS SICK BUT YOU DID NOT VISIT ME". HE WOULD SAY: O MY LORD, HOW COULD I VISIT THEE WHERE AS THOU ART THE LORD OF THE WORLDS? THEREUPON ALLAH WOULD SAY: "DIDN'T YOU KNOW THAT SUCH AND SUCH SERVANT OF MINE WAS SICK BUT YOU DID NOT VISIT HIM AND WERE YOU NOT AWARE OF THIS THAT IF YOU HAVE VISITED HIM, YOU WOULD HAVE FOUND ME BY HIM"[12].

Thus the sick person is close to God, even as the Prophet (ﷺ) says:

> "VISIT THE SICK AND ASK THEM TO PRAY (CALL) FOR YOU; FOR THE PRAYER (CALL) OF THE SICK IS ANSWERED AND HIS SINS ARE FORGIVEN"[9].

again He(ﷺ)says:

> "IF YOU ENTER AND VISIT AN AILING PERSON, BID HIM TO CALL TO YOU, FOR HIS CALL IS AS THE CALL OF ANGELS"[6]

7. By this philosophy, the sick person is able to hold fast and to endure.. A physical disease should not be a factor causing psychological disease or psychosomatic upsets. Steadfastness of spirit often helps in the healing of the original disease.

8. Deriving from this philosophy is the fact that crises in health, no matter how severe, do not lead the Muslim to consider putting an end to his life. It is not conceivable, besides not being permitted, for a Muslim to wish for death. On the authority of Anas b.Malik, it is recorded of the Prophet (ﷺ) :

> "NONE OF YOU SHOULD MAKE A REQUEST FOR DEATH BECAUSE OF THE TROUBLE IN WHICH HE IS INVOLVED, BUT IF THERE IS NO OTHER HELP TO IT, THEN SAY:O ALLAH,KEEP ME ALIVE AS LONG AS THERE IS GOODNESS IN LIFE FOR ME AND BRING DEATH TO ME WHEN THERE IS GOODNESS IN DEATH FOR ME"
>
> (1-2)

9. Islam has granted an ailing person exemption from the obligations of Shari'a (law); as dictated by

necessity. In the Qur'an, it is written:

AND THERE IS NO FAULT IN ONE AFFLICTED WITH ILLNESS*.
(Quran S.24: V.61)

Thus gold may be used in reconstructive therapeutic procedures as the Prophet (ﷺ) commanded Arfaga. Similarly, silk may be used in skin diseases, as the Prophet (ﷺ) allowed 'Abdul Rahman b' Auf and al-Zubayr b' al-Awam to wear silk when suffering from itching, even though the wearing of gold and silk are normally forbidden to men.

IV — THE VIEW OF ISLAM TOWARDS PREVENTIVE MEDICINE AND CURE

1. Islam calls for the applications of the three levels of health care, to wit: preventive medicine, therapy and rehabilitation.

2. Inasmuch as preventive medicine aims to reinforce positive good health, Islam accords special importance to it. For the sound Muslim society is thus better equipped to shoulder God's trusteeship and to perform God's mission on earth. In this regard, we find the prophetic traditions characterized by a note of almost compulsion. The traditions of the Prophet (ﷺ) deal with curative medicine in their customary manner of legislting the ground rules of Shari'a, that is, by laying the basic principles to guarantee that the proper course would be following, without going into details.

3. In the sphere of environment, we find that the Prophet (ﷺ) has provided a splendid model to bind every Muslim to the *Umma* of Islam. This is the responsibility of every individual for the wellbeing of society and the obligation of every believer for his brother's welfare, exactly like his obligation to himself. The Qur'an has laid down the basic principle.

THE BELIEVERS ARE BUT A SINGLE BROTHERHOOD I SO MAKE PEACE AND RECONCILIATION BETWEEN YOUR TWO BROTHERS. *(Quran S.49: V.10)*

The Prophet (ﷺ) has said:

"NO ONE OF YOU BELIEVES UNTIL HE LOVES FOR HIS BROTHER WHAT HE LOVES FOR HIMSELF". (1—2)

again He ﷺ said:

"ONE MUSLIM IS TO ANOTHER MUSLIM, AS AND THE SAME BODY. IF ONE MEMBER SUFFERS, ALL THE OTHER MEMBERS LAPSE INTO INSOMNIA AND FEVERISHNESS"[3].

To carry the case further, the maintenance of one's own personal health is not enough. It is also our bounded duty to strive for a healthy environment. This point is embodied in various traditions.

"GOD BEING GOOD LOVES THE GOOD. GOD BEING CLEAN LIKES CLEANLINESS. GOD BEING GENEROUS LOVES GENEROSITY. GOD BEING MUNIFICIANT LIKES MUNIFICANCE. THEREFORE, CLEAN YOUR HALLS AND COURTYARDS"[13].

"LOOK TO WHATEVER HARMS PEOPLE AND REMOVE IT"[8].

"YOU SHOULD NOT PASS URINE IN STAGNANT WATER". (1-2)

4. In the realm of the prevention of contagious diseases, the Prophet (ﷺ) advises restrictions on

☆This Ayah does not convey this sense. It is in the context of combating and rejecting certain Arab superstitions that Quran declares that there is no fault in the blind, nor in one born lame, nor in one afflicted with illness, nor in yourself that you should eat in your own houses or in the houses of your relatives (which are considered taboo in the Arab society). Another Ayah that may be quoted here is from Surah Al Baqar, V. 185.

"...BUT IF ANY ONE IS ILL, OR ON A JOURNEY, THE PRESCRIBED PERIOD (OF RAMADHAN BE MADE UP) BY DAYS LATE. ALLAH INTENDS EVERY FACILTY FOR YOU. HE DOES NOT WANT TO PUT TO DIFFICULTIES..." *Editors*

the movements of the patient by saying:

"A DISEASE CARRIER SHOULD NOT INTRODUCE HIMSELF TO A HEALTHY PERSON, THE HEALTHY CAN ATTEND WHEREVER HE WANTS"[7]

Indeed the Muslim is required to keep the rules of quarantine in cases of plague, even though, by doing so, it might lead to sacrificing his own life. The Prophet (ﷺ) said:

"THE PLAGUE IS MARTYRDOM FOR ANY MUSLIM". (1-2)

5. With regard to personal cleanliness ritual purity of body is a condition for entry to Islam and cleanliness is a condition for the most important pillar of Islam, namely prayer. Concerning the importance of teeth and its influence on the various bodily organs, Islam has made dental care almost compulsory. In a saying of the Prophet (ﷺ):

"WERE IT NOT THAT I MIGHT OVER-BURDEN THE BELIEVERS I WOULD HAVE ORDERED THEM TO USE *MISWAK* AT EVERY TIME OF PRAYER"
(1-2-8-11)

Many traditions deal with cleanliness of food and dishes.

6. On the subject of safety and accident prevention, Islam has established a basic field of law which did not crystalizeiuntil the later decades of our present century. Every accident has a cause. To avoid accidents, the Muslim must remove their causes and protect himself. The Quran states:

AND MAKE NOT YOUR OWN HANDS CONTRIBUTE TO (YOUR) DESTRUCTION
(Quran S.2: V.195)

NOR KILL (OR DESTROY) YOURSELVES: FOR VERILY GOD HATH BEEN TO YOU MOST MERCIFUL *(Quran S.4: V.29)*

The Prophet (ﷺ) says:

"DO NOT LEAVE FIRE IN YOUR HOUSES WHEN YOU SLEEP". (1-2-8)

Then to Abu Dharr He (ﷺ) said:

"YOUR GUIDANCE OF A MAN IN A PLACE WHERE HE IS LOST IS ALMS; AND TO REMOVE STONES, THORNS OR BONES FROM THE WAY WILL BE COUNTED AS ALMS FOR YOU".[1]

7. In the area of curative medicine, Islam has commanded healing in a clear and decisive ordinance. The Muslim is no fatalist, neglecting medicine and abandoning himself to fate. Quite the opposite, it is compulsory for him to use medicine, which God has provided as a means of cure. When a man asked the Prophet about a medicine whereby he might be healed, wondering whether by doing so, he would be rejecting the decrees of Providence, the Prophet (ﷺ) replied:

"IT IS GOD'S DIVINE DECREE".[8]

Another wellknown tradition of the Prophet (ﷺ) states on the subject of healing:

"THERE IS A REMEDY FOR EVERY MALADY AND WHEN THE REMEDY IS APPLIED TO THE DISEASE IT IS CURED WITH THE PERMISSION OF ALLAH, THE EXALTED AND GLORIOUS".[2]

"O, SERVANTS OF GOD! SEEK THE MEDICAL TREATMENT. GOD HAS PUT A REMEDY FOR EVERY MALADY, CLEAR TO WHOEVER KNOWS IT AND UNCLEAR TO WHOEVER DOES NOT KNOW IT".[6].

These clear instructions have altered human understanding of disease and its cure. They have put an end to prevalent superstitions of illness and cures. They have set men on the right track in search of illnesses and their cures so that they may know what they had not known before.

8- Pursuing further the correct definition of the course of curative medicine, the Apostle (ﷺ) of God called for respect of specialization in the branches of medicine. For He summoned al-Harith b. Kilda to the man suffering from heart diseases. Again when He had sent for two physicians to cure a sick man, He asked them,

"WHICH OF YOU IS THE MORE SKILLED PHYSICIAN IN TREATING THIS AILMENT?"[7]

So that the patient might receive the most expert treatment.

9. In the time of the Prophet (ﷺ) , there were certain medicines prevalent which naturally he used during his illnesses like any one else. From this, some historians began to use the term, "Prophetic medicine". With the passage of time, there appeared a tendency to consider Holy everything the Prophet (ﷺ) did whether it concerned food or drink or healing and to imitate religiously his pattern, even though prophetic tradition is clear in stating that he commanded observance of what was revealed to him through divine inspiration. As for his worldly habits and practices not related to doctrine, however, private judgement as to their use was recommended, within the framework prescribed by Islam.

Islam does not prescribe that a Muslim should avoid the use of a new medicine simply because the Prophet(ﷺ)had not used it, because it did not exist during his time. This writer maintains that the Prophet's traditions concerning healing follow a general pattern for the legislation of Shari'a which provides a broad framework of general principles. When the Apostle of God learned that a certain lady was using an irritating substance as a laxative, He advised her to use senna.

It is thus clear that the Prophet (ﷺ) aimed to lay a general foundation for healing by non-harmful substances or by the least harmful substances.

We see then, that the Prophet (ﷺ) was close to formalizing laws regarding preventive medicine and to the rejection of anything harmful to Muslims. He tended to lay down broad guidelines which were in harmony with the spirit of Islam in the area of healing.

As for rehabilitation and corrective therapy, Islam strives to prevent incapacity due to disease. Islam accustoms Muslims not to succumb to poor health, but rather to pray even if only with the eyelid. All are required to work according to their capacity. As the tradition states:

"WORK: FOR EVERY ONE WILL FIND HIS WAY MADE EASY IN WHAT GOD HAS CREATED HIM FOR". (1-2)

Islam does not accept that a Muslim should live financially dependent on others, as the tradition says:

"THE UPPER HAND IS BETTER THAN THE LOWER HAND (THE UPPER WHICH BESTOWS AND THE LOWER WHICH BEGS)".[2].

Thus in the field of reconstructive surgery, Islam allows the use of gold even though it was forbidden to men. Practices which deform a person's body or alter his comely appearance, however, such as tattoing, these Islam has forbidden in the saying:

"MAY GOD CURSE THOSE WHO TATTOO".[2]

Formerly, some people used to bread away part of their teeth if they stuck out, for cosmetic purposes. In doing so, they removed the protective enamel from the surface of the teeth, causing decay for the sake of beauty. The Prophet (ﷺ)forbade this when He said:

"MAY GOD CURSE THOSE WHO FILE TEETH AND THOSE WHO SEEK TO HAVE THEIR TEETH FILED".[4]

Yet auifor surgery for cosmetic purposes where there is no known harm, then the operation falls under the general ruling:

"GOD BEING GOOD, LOVES THE GOOD".[13]

Muslim women are asked to appear in their most beautiful form before their husband's eyes.

v — ISLAM AND THE ETHICS OF THE MEDICAL PRACTICE

1. There should be no separate category of "professional ethics" in the domain of the general morality which typifies the behaviour of every Muslim. Islam aims to create the Muslim personality right from infancy, since Islamic character is part and parcel of the individual and his nature. It is the duty of family, school and state to provide the suitable environment in which moral corruption is not the order of the day and where the ideal followed is the word of God Most High.

AND THOUGH (STANDEST) ON AN EXALTED STANDARD OF CHARACTER
(Quran S.68: V.4)

In this manner, the younger generation may grow up smoothly, with a dispostion instinctively pure without contradictions. He finds before him the path of goodness easy. Hence the word of God Most High becomes a human reality.

The Muslim physician is the one who shoulders the trusteeship of Islam first and foremost and keeps the trust of safeguarding the good health of all Muslims and of warding off all harmful disease. For him in particular, it is most appropriate that his upbringing and education be Islamic and that his behavior should be modelled after the Prophet Mohammad (ﷺ. When 'Aisha, the Prophet's wife was asked about His moral principles, she said:

"HIS MORAL PRINCIPLES WERE (COINCIDENT WITH) QURAN".[1]

Thus adherence to the moral principles of Islam is to be part of the nature of the physician which he applies in his daily life without affectation, openly and before all. We may mention the story of the teacher who said to his young pupil, "kill this bird somewhere where no one will see you". The youngster disappeared for a while, but came back with the bird still alive. He said to the teacher, "I found no

place where I could be entirely alone, because whereve I hid, I felt that God was with me".

The Muslim physician senses that all his practice and dealings are with God; and that he keeps constant surveillance over him.

> LEARN: ONE SITTING ON THE RIGHT AND ONE ON THE LEFT
> *(Quran S.50: V.17)*

He must fear God in all his dealings with God's creatures. When he recalls the words of God's Apostle. (ﷺ)

> "A WOMAN WAS PUNISHED BECAUSE SHE HAD KEPT A CAT TIED UNTIL IT DIED". (1-8-11)

His perception of all living creatures will be through the eyes of compassion. It is, therefore, most fitting that he should be compassionate towards man, the most excellent of God's creature, whom God has honoured and made his representative on earth.

Since the time of Hippocrates, it has been the custom for a physician to commence his career by repeating the oath which binds him to ethical behavior in the exercise of his profession.

The problem of professional ethics is not solved by an oath nor can it be adequately dealt with as a required course of study in a program of clinical training. Legal rulings laid down by a medical union or a positive constitution cannot regulate the ethics of physicians. The cure of a patient carries moral responsibilities. In his daily practice, the physician will be faced by numerous situations requiring him to consult his conscience. Here his decisions will be affected by the degree of his commitment of the Lord. His judgement will emanate from the words of the Apostle (ﷺ) of God.

> "VIRTUE IS A KIND DISPOSITION AND VICE IS WHAT RANKLES IN YOUR MIND AND THAT YOU DISAPPROVE OF ITS BEING KNOWN TO THE PEOPLE".[3]

The concept of duty in Islam is that one should not work for man but for God:

> SURELY, MY PRAYER AND MY SERVICE OF SACRIFICE, MY LIFE AND DEATH ARE (ALL) FOR GOD, THE CHERISHER OF WORLDS *(Quran S.6: V.162)*

2. Under this fundamental code may be ranked all the virtues and ethical principles which the Quran and the blessed Prophet (ﷺ) have enjoined. They include the following ideals:

a) Patience:

> AND BE STEADFAST IN PATIENCE FOR VERILY GOD WILL NOT SUFFER THE REWARD OF THE RIGHTEOUS TO PERISH *(Quran S. 11: V. 115)*

b) The right path:

> DO GOOD; FOR GOD LOVETH THOSE WHO DO GOOD *(Quran S.2: V. 195)*

c) A radiant countenance:

> "GOOD DEED, RADIANT COUNTENANCE AND FORBEARANCE ARE ELEMENTS OF THE CHARACTERISTIC TRAITS OF PROPHETHOOD" (3-4)

d) Goodly words:

> "CHARITABLE WORDS ARE ALMS"[4].

e) Smiling:

"SMILING BEFORE YOUR BROTHER IS COUNTED AS ALMS"[4].

f) Pudency (honest shyness):

"EVERY RELIGION HAS ITS ETHIC: THE UNDERLYING ETHIC OF ISLAM IS PUDENCY". (6-7)

g) Compassion:

"GOD SHOWS COMPASSION ONLY TO THOSE OF HIS SERVANTS WHO ARE COMPASSIONATE"[2].

h) Kindliness:

"NO MOSLEM IS ALLOWED TO FRIGHTEN A MOSLEM". (3-8)

i) Modesty:

"WHOEVER LOVES OTHERS TO RISE WHEN HE ENTERS WILL OCCUPY HIS PLACE IN HELL FIRE". (3-4)

j) Good companionship:

"DO NOT BEFRIEND ANY ONE EXCEPT A BELIEVER AND LET NO ONE EAT YOUR FOOD EXCEPT A GODFEARING MAN (4-8)

3. There are, however, some special ethical aspects which touch a physician's work more than the work of others and oblige him always to remember Islam's judgement concerning them. There are instances involving the patient-doctor relationship.

a) Decently averting the eyes. As the Quran states:

"SAY TO THE BELEIVING MEN THAT THEY SHOULD LOWER THEIR GAZE AND GUARD THEIR MODESTY THAT WILL MAKE FOR GREATER PURITY FOR THEM. *(Quran S.24: V.30)*

Permission to examine a person's private parts does not provide a justification for lack of respect due to every Muslim. The physician must examine what is required. In such situations, a physician's honourable modesty gives the patient more confidence in his physician.

b) It is not allowed to inform a patient of the gravity of his illness if the physician despairs of the possibility of healing. Illness is one of the instances where Islam has allowed concealment of the truth. As the Apostle of God (ﷺ) said:

"WHEN YOU VISIT A PATIENT IMPRESS UPON HIM THAT HE WILL LIVE A LONG TIME, THIS WILL NOT CHANGE MATTERS BUT IT WILL SOOTHE HIM". (4-6)

c) In application of the Sharia's ruling:

"THERE SHALL BE NO HARMING, INJURY OR HURTING OF ONE MAN BY ANOTHER IN THE FIRST INSTANCE NOR IN RETURN OR INREQUIRAL". (3-8-11)

The physician must inform the patient in the case of a contagious disease. He must require him to be quarantined to prevent other Muslims from infection. There is obviously a difference between the patient's losing hope of recovery and his knowledge that he is a potential source of con-

tagion for others and must therefore, isolate himself. If the welfare of the community is opposed to the feelings of the individual, then the welfare of the community must come first.

When the Apostle of God ﷺ learnt that a man stricken with leprosy was coming to swear allegiance to Him on the side of Islam, He sent a message to him saying:

"GO BACK, WE HAVE ALREADY ACCEPTED YOUR ALLEGIANCE".[2]

d) In his practice, the physician is exposed to the secrets of the patient. He is, therefore, honourbound to keep his trust under Islam in this respect.

"WHOEVER GUARDS THE SECRET OF A MOSLEM, GOD WILL GUARD HIS SECRET IN THIS LIFE AND ON RESURRECTION DAY".[2]

e) If a patient consults him, let him keep strict confidentiality in the counsel he offers and the matter he has been consulted about. The Prophet (ﷺ) has said:

"THE MAN CONSULTED IS A DEEPER OF CONFIDENCE". (3-4-11)

f) A female nurse must attend the examination of female patient by a male physician or else an immediate relative of the patient must be present. This is an application of the Prophet's (ﷺ) saying:

"NO MAN IS ALLOWED TO BE ALONE WITH A WOMAN EXCEPT IN THE PRESENCE OF A CLOSEST RELATIVE".[1]

4. Another aspect of the physician's conduct is referred to as "*Islamiyat*" (specific Islamic observances attitudes and ethical principles) pertaining to the medical practice.

a) Beginning a medical examination or treatment with mention of God's name, for which there exist numerous values...

- Invocation of God's assistance for the successful outcome of the consultation or treatment. In the words of the Prophet (ﷺ) :

"ANY ACT OF SIGNIFICANCE NOT BEGUN IN THE NAME OF GOD WILL BE RENDERED INCOMPLETE".[3]

- Consciousness of his role as an agent in the implementation of God's work of healing. Such is the attitude of service and worship to God.

- Directing his work to God until the patient has recovered.

- Giving the patient a spiritual uplift and moral courage whenever he is in a critical state psychologically.

BUT TEACH (THE MESSAGE) FOR TEACHING BENEFITS THE BELIEVERS
(Quran S.51: V. 55)

b) In the eventuality of a patient's death, the physician must, in his capacity as a Muslim, even before being a doctor recite the Muslim credo as the Prophet (ﷺ) has prescribed:

"EXHORT TO RECITE THERE IS NO GOD BUT ALLAH TO THOSE OF YOU WHO ARE DYING".[2].

c) Avoidance of that which God has forbidden in healing, in observance of the Prophet's (ﷺ) instructions:

"GOD DOES NOT PLACE YOUR CURE IN WHAT HE HAS FORBIDDEN YOU" [1]

In modern medicine, there is a permissible substitute for every prohibited cure.

d) Avoidance of prohibited practices, such as abortion and tattooing. In the words of the Prophet (ﷺ) :

"MAY GOD CURSE THOSE WHO TATTOO, THOSE WHO SEEK FOR TATTOOING THOSE WHO FILE THEIR TEETH AND THOSE WHO SEEK TO HAVE THEIR TEETH FILED".[4]

e) The physician should not embark upon a treatment without being entirely confident in his capacity to carry it through competently. As the Prophet (ﷺ) said:

"NO MAN IS WISE EXCEPT THROUGH EXPERIENCE". (1-4)

He respects professional specialization in keeping with the Prophet's (ﷺ) words:

"WHOEVER PRACTISES MEDICAL TREATMENT WITHOUT BEING KNOWN TO POSSESS THE REQUISITE EXPERIENCE WOULD BE RESPONSIBLE FOR THE LOSS SUFFERED BY THE PATIENT". [3]

f) He should maintain his scientific competence by constant learning and teaching, for his profession reaches beyond him to others and his knowledge is for application. As the Prophet (ﷺ) said:

"WISDOM IS THE LOST TREASURE OF THE BELIEVER: HE SEEKS IT WHEREVER HE MAY FIND IT".[4]

g) He must deal with his medical colleagues in accordance with Islamic teachings. He shall avoid backbiting and disparagement of others:

"NEITHER NURSE MUTUAL HATRED, NOR JEALOUSY, NOR ENEMITY AND BECOME AS FELLOW BROTHERS". [2]

- He shall offer advice to those who need it.

"RELIGION IS COUNSEL". (1-2)

"He shall endeavor to instruct his less experienced colleagues".

"I RECOMMEND YOUR GENEROUS CARE ANY MEN WHO MIGHT COME FROM THE EAST TO LEARN OF YOU".[4]

- He shall not Lord it over a younger colleague:

"THOSE WHO ARE NOT COMPASSIONATE TO THE YOUNG AND DO NOT RESPECT OUR ELDERS, DO NOT BELONG TO US". (3-4)

h) By his knowledge, he shall benefit any sick person whom he can help. As the Prophet (ﷺ) has said:

"O MY GOD, I REFRAIN FROM ANY SCIENCE WHICH DOES NOT BRING BENEFIT TO PEOPLE".[4]. "WHOEVER CONCEALS KNOWLEDGE FROM HIS PEOPLE WILL BE BRIDLED WITH A BIT OF FIRE ON JUDGEMENT DAY". (11)

i) His discoveries of new cures shall be made public. He shall not monopolize his new methods of healing for purposes of gain. As the Prophet (ﷺ) stated:

"NO ONE MONOPOLIZES EXCEPT A SINNER".[2]

j) He shall respect the sacred honor of the dead as of the living. Addressing the Ka'ba the Prophet (ﷺ) said:

"THE BELIEVER HAS A RIGHT OF INVIOLABILITY GREATER THAN THAT GIVEN TO YOU (Ka'ba)".[5]

Of the honor of the dead, He ﷺ said:

"THE GUILT OF BREAKING THE BONES OF A DEAD MAN IS EQUAL TO THE GUILT OF BREAKING THE BONES OF A LIVING MAN". (6-7)

The horizons of Islamic teaching encompass all good practice which aims at human wellbeing, in situations where no clear text applies. Islam then gives the Muslim physician the possibility of acting in accordance with the benefit of humanity.

There is a growing need for physicians to be closer to God and increasingly committed to His revealed Word and the life and sayings of His blessed Prophet (ﷺ) upon whom be blessings and peace.

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ISLAMIC SOLUTION FOR MODERN RESISTANT PROBLEMS

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A medical survey of The American Society shows a group of diseases, physical and psychological, that are defying solution or containment despite a variety of programs, efforts and funds spent on their treatments. Among these are depression, suicide, alcoholism, drug addiction, homosexuality and venereal diseases.

Studying alcoholism as a moderate example, I conclude that the Islamic solution is suggested not as an alternative but as the only alternative.

A medical survey of the American Society shows several problematic ailments, both physical as well as psychological that resulted as a bi-product of the American way of life. They exert their impact on the fabric of this society inspite of the relentless efforts for treatment or at least the containment of these problems. The concerned observer will notice the widely spread diseases such as alcoholism, drug addiction, psychological depression, suicide, homosexuality and venereal diseases. The medical and social institutions are continually trying to study and undo these problems looking eagerly for the definitive remedy.

In this paper, I limited myself to the study of one of these diseases, using it as an example and a model for others: ALCOHOLISM.

I tried to project the size of the problem to show its impact on the society and to have a general outlook at the different efforts that are exerted and the funds that are assigned to contain the problem. I tried also to offer an objective assessment of the outcome of these efforts and the fruitfulness of this spending emphazing the waist and the lack of a substantial achievement.

ALCOHOLISM:

Definition: Alcoholism is an illness characterised by significant impairment that is directly associated with persistent and excessive use of alcohol, usually as an escape from stress. Impairment may involve physiological, psychological and social dysfunction.

This definition does not include the alcohol drinker or even the habitual drunk. Surveying the American Society statistics will offer to us very important warnings.

1. The number of alcoholics in the United States is estimated as ten million, constantly increasing.

2. The number of female alcoholics has doubled since the second world war. An ominous fact, if we take into consideration is the increasing number of congenital abnormalities & stillbirths of babies of alcoholic mothers.

If we look to another important section of the society, the youth who represent the outcome of the present and the hope of the future, they are in the most active and energetic years, we will really be distrurbed by the fact that in the age group of 7-12, 47 percent of them injected alcohol several times inspite of the strict law that makes it illegal for them to drink, to buy, or to be allowed into bars. As a matter of fact, this law only forced 40 percent of them to drink in their cars leading to a substantial increase to auto accidents.

If this is the size of the problem, it is quite impressive to study its impact presented by the data published by The National Institution of Alcoholism.

Sixty four percent of homicides in the United States could be related to alcohol, a disturbing figure if we know the enormous number of cases which increases annually by about seven to ten percent in the large cities.

Forty-one percent of assaults and thirty-four percent of rapes, thirty percent of suicides are related to alcohol-added to that the depressing data which relates sixty percent of child abuse to alcoholism.

If we move from the area of crime to the area of accidents we find that: seventy-five percent of auto accidents are due to drunk driving, fifty percent of fatalities to drivers are due to alcoholism, what is more ironic is that thirty percent of pedestrian fatalities are related to drunk drivers victimizing the innocent.

If we take the area of production and economy, we find that the alcoholic worker has twenty two more days of absenteeism compared to the average, his liability to industrial accidents is increased one hundred percent and his predicted longevity is reduced by 12 years with the consequencies in terms of pensions and compensations.

The loss due to alcoholism is estimated as thirty-two billion dollars a year, that could be a budget of a nation.

The previously mentioned facts lead the concerned medical and social authorities from the government to the private sections and universities to put enormous efforts and spend enormous funds to deal with this problem.

The scope of this paper will not accommodate the details of these efforts, so I will just mention the titles that highlight the different programs and I will keep in the record of your honourable conference a copy of a resolution passed by the American Medical Institution published in the alcohol report, September, 1980, indicating that the amount of thirty-two millions dollars assigned by the congress for alcoholic research is very inadequate.

PROGRAMS

1. Governmental Programs: The National Institute of Alcohol Abuse and Alcoholism, that manages

and encourages academic research in the scope of alcoholism.

2. Alcoholism Information Centers: For informing and educating the public and the potential alcoholics
3. Alcoholics Anonymous: a self helped group for backing and support
4. Al Anon and Al Ateen: To help the forty million near or co-alcoholics, families and children.
5. Programs sponsored by religious organizations, some churches offer special services to alcoholics and their families.
6. Industrial programs and Labor Union Programs.
7. Vocational rehabilitation and pre-employment programs.
8. Clinical programs.
9. Detoxification centers: Trying to keep the alcoholic until he sobers, dealing with alcohol toxicity and withdrawal manifestations.
10. Halfway houses: That offer shelter to those who graduate from the previous programs until they are ready to go back to their families or to an acceptable social alternative.
11. Alcoholism Clinics
12. Mental Health facilities
13. The physician's roles as public health leader

I don't have to emphasize the size of these efforts and their cost. I will try though to briefly screen some data concerning the outcome of these great efforts:

1 The number of the dropouts of any program before the fourth session is seventy-five percent of those who were registered.
2. Ninety percent of those who finish the program relapse back to their former drinking habits.
3. Even among those tiny ten percent who are remaining, seven percent become what is categorized under habitual drinker.

Pokorny et al reported that fifty percent of the relapses occured during the first month after finishing the program. We can conclude from the frustrating data that inspite of the variety in the treatment modalities, the disease continued to be resistant.

Here I would like to suggest the Islamic solution to this problem and to extrapolate as applicable to other similar problems.

The scholars relate the etiology of alcoholism to several factors as genetical tendencies, social values, etc., with the most emphasized factor of learning. They advocate that nobody is born as an addict,

but he learns to be so, as a way to face stress and as an escape from facing life.

The common denominator in all of the previous is that they try to deal with hhe problem after its materialization.

The Islamic solution, however, starts from the very basic. First from the relationship of man and the Creator, and his concept about the Almighty God. This relationship and concept that leads him to depend on and submit to God the ultimate belief that God is the one who will dictate the final results that leads to the feeling of peace and security (noticing the expression of the Quran, the peaceful secure soul) that does not seek an elusive way to face problems or escape from stress. Second: The Islamic solution after that depends on preventive measures and deterring measures.

The prevention here is that of absolute prohibition of the whole process that abrogates liquor from circulating in the society, cursed is the drinker, the seller, the buyer and caterer so it is erased from social acceptability and ends as a ceremonial activity.

The deter is in the form of a practical, limited, concentrated punishment that does not extend to affect innocent people.

Regardless to the common current thinking in the west acknowledging the fact that we are toxified by the western ways of thinking. Still I think that the jail sentence that is exercised is a total failure, financed by the tax payer, converts the alcoholic to a dangerous criminal graduated from the jail institution, and it inflicts great harm on his innocent family.

I see that the punishment of lashing with no excesses that does not leave scars or cripple the lashed, that takes only a few minutes, that does not hurt the family, is adequate to straighten the wrong doer and deterr others.

It surely hurts to see our Moslem societies borrowing solutions from Western banks that are declaring its bankruptcy. Even we see among us those who try to import these crippling diseases, falsifying an argument for alcohol legislation deteriorating into arrogance with God.

> HE KNOWS YOU WELL WHEN HE BROUGHT YOU OUT FROM THE SUBSTANCE OF EARTH AND WHEN YOU WERE HIDDEN IN YOUR MOTHER'S WOMB
> *(Quran, S.53: V.32).*

CONCLUSION

There are psychological and physical ailments of the American society that are resistant to treatment and are of major impact and grave consequences. I used alcoholism as one example of these ailments. The size of the problem is projected in the statistical data. The efforts exerted and the funds did not succeed in achieving tha required outcome. Islam, in our opinion, offers not only the alternative, but the ultimate and only solution through the formation of the faithful conscious and through the preventive and deterring measures.

> "THE WAY AND STAIN FROM GOD, WHO WILL HAVE A BETTER WAY OF STAINING?".
> *(Quran, S. 53: V.32)*

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THE NEED FOR AN ISLAMIC MEDICAL TEACHING INSTITUTION

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The commencement of the 15th century of Al-Islam is a most appropriate time to talk about the need for developing and building an Islamic University with medical teaching institutes and hospitals grounded in the laws of the Holy Quran. Medicine taught and practiced in these centers must have the Islamic character as described by Brother Elkadi in his presentation of "What is Islamic Medicine?" "The Islamic Code of Ethics" pronounced by Brother Amine should guide the conduct of the staff, faculty, students and workers in these institutes. An Islamic medical teaching institute will help to fulfill the need for having our own institutions with Islamic identity carrying the mark of strength and excellence. Islamic Medical Institutes are needed all over this world, because we do not have medical centers based on Islamic medicine in Muslim or non-Muslim countries. There is a tremendous need to present comprehensive medicine based on the dictates of the Holy Quran which will mean rewriting books, treatises, and reorienting medical care and research. Muslim scholars today find themselves in the same position as those during the first to eighth centuries of Islam.

Allah has blessed the Ummah to have a wealth of talent to meet this challenge as well as all of the other resources needed to realise this goal. Islam is the only religion which has at least forty-two Governments declaring themselves committed to it. Their collective decisions affect the course of World history. These Governments and their Third World Allies control the vital natural and mineral resources essential for the best quality of survival for Mankind. As the Almighty Allah wills, nothing can dwarf the role of Islam in this Fifteenth Century and Muslims must be aware of this as well as the other religions and ideologies are. Communism and Western Democracies are openly hostile or are trying to subtly undermine Islam on different fronts while pretending to be Islam's friends in a spirit of schizophrenia never before witnessed by mankind.

Muslims must strive with greater efforts to realize their collective potential, pray more fervently, and have the faith to make it a collective reality. Our words and our prayers must be translated into deeds and action. It is a sacred duty to make our most serious efforts in presenting Islam. What better way can we make this presentation to a humanity in dire need of it than through a university or universities with an associated medical teaching center, hospital and research institute?

For many centuries in the West, church and state have been trying to shield the people from knowing the facts about Islam. It is the sacred duty of Muslim Governments and Muslim individuals to show the strongest resentment at such insults to Islam. We must become more aggressive in establishing Da'wa. Cooperation in science and technology offers another solid basis to bring the Ummah into closer association. This cooperation carries great socio-economic and military potential for the Musim Nation.

The problem of the progress of science and technology in any society is not how that society liberates itself from the clutches of religion but how more religious it can make its educational program. The advances of science and technology in Western Democracies and Communist states can only continue appropriately and be applied properly through Islam. During the first eight centuries of Islam, while Europe and Western civilization were in the Dark Ages, Muslims carried the torch of civilization. This torch was very bright in Arabia, Persia, Byzantine, Songhai Empire of West Africa, North Africa, Spain and Southern Europe. The future of science, technology and industry is dependent on the natural resources found in Muslim and other Third World states of Africa, Asia, the Caribbean and in South America. These states have most of the reserves of strategic minerals and metals such as Uranium in Chad and Mali; Copper in Zambia, Phosphate in Jordan; Diamonds in Angola; Manganese in Guinea; Bauxite in Guyane and Jamaica; Gold in Ghana; Chrome in Zimbabwe and oil in Algeria, Saudi Arabia, Iran, Iraq, Indonesia, Gabon, Kuwait, Libya, Nigeria and the United Arab Emirates, One of the greatest features of the Islamic World during its eight centuries of prominence in science and technology was the tremendoous cooperation Muslims had with Christian and Jewish scientists. Many hospitals and medical schools had the scholarly service of non-Muslim scientists doing outstanding clinical and research work. These great institutions were financed by Al-Waqf and Zakat. Great hospitals and teaching centers included Al-Salahani Hospital in Palestine; Al-Nuri Hospital in Damascus; Jundi Shapur Medical School in Baghdad; Al-Mansuri Hospital in Cairo; Marrakesh Hospital in Morocco and Al-Andalusia Hospital in Spain. Noted physicians included Al-Razi and Ibn Sina of Persia or Iran, Al-Zahrawi of Spain, Ibn Maimon of Egypt and Ibn El-Nafis of Syria. These scholars translated and preserved worthy works of the Africans, Orientals, Greeks and Romans. Muslims incorporated knowledge obtained through their contacts with cultures and people scattered all over the world. These efforts preserved and advanced the composite knowledge of all the world while Western Culture was intellectually dormant. This knowledge and associated scholarly activities served as the catalyst and impetus for the Western Renaissance. Muslims believe that seeking knowledge is ordained by God. Knowledge is a kind of prayer and a kind of worship dedicated to Allah. Man knows more because God wants him to know more. Thus in Islam, man and religion rise together. Christianity fought Islam by separating church and state. Muslims had a reputation of being relentless scholars who started great universities when they conquered a land. Muslim scientists made great advances in astronomy, geometry, algebra, architecture, pharmacology, etc. Today, at the beginning of Islam's fifteenth (15th) century, a powerful revolution is taking place all over the world based on Muslims returning to the Guidance of Allah contained in the Holy Quran, and the Sunnah of Prophet Mohammad (ﷺ) . This is reflected in the growing energetic movement among Muslims in education in general and in science and technology in particular.

We are a part of a team of Brothers who are striving to establish an Islamic Institution in America, Insha-Allah. This Institute, Akbar Institute of Science and Technology, has been chartered by the State of Florida since nineteen seventy four. Unlike all other religions in America, Al-Islam does not have a hospital, Medical School or University. The Catholics have Notre Dame and Marquette; the Baptists have Wake Forest and Baylor Universities; the Methodists have Oberlin and Emory Universities; the Jews have Brandeis University and Mt. Sinai Medical Center; the Seventh Day Adventists have Loma Linda University; the Evangelicals have Oral Roberts University. Never before was the need greater and the time more appropriate for establishing institutes of medicine and associated universities everywhere, but

especially in the United States of America. It is a major site for grand anti-Islamic activity and thought. Islam is absolutely essential to lead America and the rest of the world into a greater light of truth and understanding. A non-sectarian Islamic University and Medical Center would be one of the best presentations of Da'wa and Tawhid. Akbar Institutes are being developed to serve as one of our international centers of academic and spiritual excellence. It is being designed to carry on the traditional high quality of medicine, science and technology known best at the height of Muslim civilization during the first through eighth centuries of Islam. This traditional excellence is initiating another Islamic Renaissance of infinite proportion and time, Insha-Allah. Akbar would provide an atmosphere of excellence in America where Muslims could have academic and spiritual pursuits in peace. Some of the best Universities in America and Western Europe are being directly and indirectly supported by the Islamic World through these universities investing in oil and other natural resource industries of Muslim and Allied Nations. Direct contributions have been and are being made by Muslim graduates and Islamic Governments to schools in America as Southern California, Harvard, Princeton, Cleveland Clinic, Baylor University etc. An Islamic University and Medical Institute can be one of the most powerful forces for the cause of Allah in America and the world. Allah has blessed the Muslims to be able to make this drama a reality, only if they have the will. The Ummah can help support Akbar institutes by remembering it in their prayers and by properly allowing endowment in the natural resources of Muslim and Allied Third World Nations. Muslims can contribute books, manuscripts, art pieces, lend religious scholars and faculty members for the development of Mosque and Institutes of Science and Technology. Brothers may further support through Zakat and Al-Waqf.

These Islamic Institutes would greatly influence proper Islamic opinion and thought through rendering outstanding service to all mankind, excelling in academics, research, and all forms of intercollegiate competition. Islam is the only remaining system to which the present world has to resort in its agonising search or a way out of the prevailing predicament. As Muslims observing, if anything, we can do that would be more courageous, noble and far-reaching during these times as we command attention by being custians of Allah's petroleum, vital minerals and metals, than leading men to the cause of the Creator by establishing great learning and healing centers.

May Allah bestow His best upon all righteous endeavor of the Ummah and crown our good with Brotherhood fro sea to shining sea. May we all most humbly strive with all our might to receive the blessings of faith and seek the pleasure of the Creator.

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MATERNITY MEDICINE IN ISLAM

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The aim of Mother Care in Islam, as it came in the Holy Quran fourteen centuries ago, is more or less what modern medicine advocates today. Islam specifies Mother's rights and privileges during maternity considering motherhood the most honoured aspect of marriage.

Throughout Islamic history, great achievements were attained by Muslims in the fields of Gynaecology, Obstetrics, and the training of midwives.

This paper deals with maternity problems in Islamic society, such as the high maternal mortality rate, because of lack of health care, as well as social, cultural and nutritional services. All such factors can be avoided by preventive methods and planning for the time of pregnancy to avoid abortion and sterilization which are prohibited by Islam, except on medical grounds. Modern science co-incides with the Islamic teachings, as regards breast-feeding, treatment of sterility and birth regulation. The paper presents some recommendations:-

1. *The great importance of field researches and collection of statistical data necessary for the evaluation of Maternity Services*
2. *The necessity of raising the standard manpower training.*
3. *Maternity hospitals and health centers should have enough beds and qualified trained staff, sufficient medical care should be provided for home deliveries.*

The World Health Organization has defined the needs of maternity care, normal delivery having a normal child by her free choice and not accidentally. Mothers should be trained to care for their children. The Organization recommended the following services:-

- Medical care for women before marriage and during pregnancy and after child birth
- Provision of services, for family planning, safe delivery and treatment of sterility.

This medical code is not new to Moslems. It has been included in the Holy Quran and the Prophet's (ﷺ) tradition.

Motherhood in Islam is almost holy, since caring for parents ranks second after the belief in Allah it is mentioned in the Holy Quran:

THY LORD HATH DECREED THAT YE WORSHIP NOT BUT HIM AND THAT YE BE KIND TO PARENTS . *(S.17: V.23)*

The Prophet (ﷺ) as well named the mother three times as the person to be loved and cared for, some explain this as each time he indicates a different role played by the mother i.e. pregnancy, child birth and lactation

A divorced mother, even if Christian or Jew, has the right to bring up her children and keep them under her custody during the period of childhood.

Although motherhood is a physiological function, great care and attention could prevent it from becoming an illness affecting and even killing the mother or child or even both.

Islam laid down certain doctrines to ensure security for the mother and to release her from some obligations, such as fasting in Ramadan during pregnancy, if this could affect her health.

Islam permitted the postponement of legal punishment of guilty mothers, until the period of pregnancy and lactation is over, that is if the kind of punishment could have bad affect on the baby. Islam secured custody of child for divorced women. Breast-feeding is a religious obligation. The husband should support the divorced mother all through lactation and custody. In Islam, a lactating woman is considered a mother, even when she is not the real mother.

A deeper examination of "Shariat" or Moslim Legislation, will show how Islam has honoured women. Islam considers woman the core of the family and family is the unit, which forms the society. Motherhood is the ultimate goal of marriage, so Islam abolished completely «burying the girls' alive» that was practiced before Islam and instructed us to care for girls in childhood, youth then as a wife and mother.

Guided by Islam's teachings Maternity medicine developed with science since the dawn of Islam. Inspite of the fact that Arab women - Moslems in particular - are embarrased to be examined by a male gynaecologist, this branch of Islamic medicine was never neglected but on the contrary it has flourished through mid-wives who were trained by doctors. One of the most famous physicians was called «al--Quabily» and he trained many qualified mid-wives in his time, who could examine women then re-tell their signs and symptoms, then even take part in experimenting and practising. Al Razi and al-Zahrawy did write about this method of training midwives to specialize in maternity medicine. Inspite of these difficulties in examining women, Moslem gynaecologists attained great knowledge and discovered some mysterious facts. They studied menses and amenorrhoea, cervical erosions and ulcerations.

In mid-wifery, they knew the foetal development and described antenatal care. They studied causes of abortion and discovered ectopic pregnancy. They were aware of signs of twin pregnancy and could differentiate between normal and abnormal foetal presentations and how to manage each case. They explained post-partum states, care of newly born and infant feeding. They described surgical procedures of delivery.

They could detect twins and recognized its signs. They differentiated between normal and abnormal pregnancies and child birth and methods of treating different cases. Moslem doctors described as well,

surgeries in obstetrics.

It is not possible in such a presentation to go into details of the great achievements of Moslem obstetricians and Gynaecologists and unfortunately we did lose a lot of our heritage through the past centuries. The rest is scattered in public libraries all over the world. Parts of the history of Gynaecology and Obstetrics can be found in al-Hawy by al-Razy, in Kamil al-Sena'a by Aly bin Abbas, al-Qanun by Ibn Sina, al-Tasreef by al-Zahrawi, al-Mukhtarat fi al-Tib by Muhazeb al-Din and al-Omda Fi al-Jiraha by Ibn al-Quff.

The Islamic world today faces great problems in Mother and Child care. The statistics published by the World Health Organization indicate the high maternal mortality rates of Moslem mothers compared to advanced countries. This is a great shame that Moslem mothers die while performing the most sacred duty, namely motherhood.

The causes of such high rates are the mothers' lack to obtain a reasonable degree of education, nutrition, health and social services. It is the right of the Moslem mother to have proper antenatal care to guard against hazards of maternity. It has been proved that hospital delivery is safer to the mother and child.

Since hospitals can provide ordinary services as well as for emergencies such as bleeding, toxaemia etc.. services should reach houses for home deliveries. Causes of maternal mortality include abortions, frequent pregnancies at short intervals as well as pregnancy in very young or old age.

Such causes are not very difficult to manage and can be avoided by controlling each cause in at suitable manner. Provision of preventive methods and the right treatment based on early diagnosis and continuous care as the solution to such problems.

THE DANGERS FACING MATERNITY

1. Frequent pregnancy could be dangerous. It has been confirmed that an interval of 2 to 3 years minimum is essential.

2. As for the number of deliveries it is proved that more than five children can be dangerous to the mother's health.

3. The ideal age for pregnancy is from 20-35 years, what comes before or after could be dangerous to mothers and harmful to the baby. There is a higher risk of congenital diseases with the old age pregnancies.

This leads to the subject of birth control which is of great interest to medicine, society and religion. Medicine, through international conferences, has formalized its opinion concerning Family Planning and Birth Control.

Medicine's main concern is scientific facts. It faces health problems and then tries to find solutions, here it agrees with religion which advocates good health and not murder. Religion protects the right of each individual to enjoy his life and "al-Ghazaly's" opinions on this point is satisfactory to us. Medicine

cares for birth control as much as it cares for the treatment of infertility. This shows that medicine is not an enemy of multiplication but an enemy to whatever endangers the health and life of mankind.

As for abortion, Islam as well as medicine, agrees that if not justified by medical reasons, it is wrong and harmful physically and psychologically. It could lead to death or sterility.

As regards lactation and breast-feeding, God made it essential and beneficial both for mother and baby, physically and psychologically and how it could be a method of contraception too, because with the onset of pregnancy, lactation ceases and this is harmful to the child.

The problems of maternity in the Islamic World have been the subject of research and study in three conferences held a few years ago, in the International Islamic Center for Population Researches and Studies, Azhar University, Egypt. The subject discussed was the *Place of Women in Islamic Family and the Child's future in the Islamic World.* I would like to summarise some of the views adopted at these meetings:

* The establishment of Information Centres in Islamic countries to collect and publish up-to-date statistics on family health which could be the basis for planning health programmes.
* Establishment of institutes, units and centres for maternal welfare which could offer health care for mothers on scientific basis.
* To stress the importance of premarital medical examination for both partners and registration of data in a medical form. This aims to guard against heritable diseases among children.
* Provision of clinics for antenatal care and securing enough beds in hospitals and health centers as well as medical care for deliveries at home.
* Field researches conducted by scientists in medicine and religion to asses the hazards of maternity and childhood to draw the conclusions necessary for planning.
* Each family has the right to plan its size according to its circumstances. The role of science is only to teach and explain all the points discussed before, in particular, the dangers of frequent pregnancy and the suitable age for conception. Abortion should be excluded as a means of family planning. Contraception should be used under supervision since it could be harmful and may cause sterility.
* The importance of breast feeding should be stressed. This is supported by religion and science. It also helps spacing of pregnancies.
* Improvement of the cultural and educational standard. Providing the best training for manpower working in the field, maternal and child welfare.
* Encouraging financial investment in health, education and social services directed to mother and child care.

At the end I would like to call upon Moslems everywhere to work on reviving our heritage on Maternity medicine & Gynaecology in general which is scattered all over the world in print and manuscript. To collect and republish it on Scientific basis and compromise between the past & the present to have our own science.

QURANIC PSYCHOLOGY

Mustafa Mahmood,
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To be *moral,* in a philosophical sense, is to be able to find a means of satisfying your desires without infringing the rights of others to satisfy theirs. In this sense, therefore, morality is primarily a socio-materialistic concept, in so far as its object is the equal distribution of pleasure.

The religious concept of morality is, however, diametrically opposed to this. To be religiously moral is to exercise self-control by curbing your desires and restraining your passion in order to attain your exalted status as a human being worthy of inheriting the Kingdom of God, and indeed, the whole world that has been put in your service. You could never be worthy of being a master of this world until you have succeeded in mastering your own "self", that is, being fully in charge of your inner kingdom.

Religious morality in this sense requires progress from the lower level of self-slavishness (being a slave to the self) to the higher level of being closer to God. Rather than a call for a better distribution of pleasure, morality is, in this sense, a call for breading the shackles of pleasure.

The two approaches, the philosophical and the religious, are therefore totally different and they produce totally different human beings.

Materialistic philosophy, furthermore, has produced a materialistic man who seeks immediate pleasure, an immediate materialistic reward for all human activity - hence his 'temporal' orientation, that is to say, his approach to reality in terms of the 'pleasure of the moment', and what time has to offer. But moments are by definition transitory and time perpetually flies, so that this kind of man inevitably feels he is being left behind, and, paradoxically, with a lump in his throat. The greater the fulfilment of his desires, the greedier and hungrier they get. He bets on time, with no assets for the future; for as a moral human being, he expects death to come, unexpectedly; and, as the fleeting moments give him satisfaction only to take it away from him, he lives in anxiety, pulled apart by conflicting desires, until death comes in the end.

A believer has a different psychological make-up, however, and a different sense of morality based on a different human vision. He sees worldly pleasures for what they are transitory and, in a very real sense, mortal. They constitute a test which, if passed, should admit him to higher ranks beyond this world. Indeed, the whole world is nothing but a path of transition from this world to the other, with God as the only security for such a trip. God is the only ruler who reigns supreme, and who determines His weal and woe. If all people decide to profit or do harm to him, they could not achieve anything that was not preordained, he believes, and that is why he is neither overjoyed by material gain, nor over-dismayed by material loss. If things do not go his way he would say to himself:

YOU MAY HATE A THING, WHICH IS REALLY GOOD FOR YOU, AND YOU MAY LOVE A THING WHICH IS REALLY BAD FOR YOU: GOD KNOWS AND YOU KNOW NOT .

(Quran, S.2: V.216)

He would fight, audaciously, never flinching from death, chanting

WHEREVER YOU MAY BE, DEATH WILL OVERTAKE YOU, THOUGH YOU SHOULD BE IN RAISED-UPTOWERS .

(Quran, S.4 : V.78)

IT IS NOT GIVEN TO ANY SOUL TO DIE, SAVE BY THE LEAVE OF GOD, AT AN APPOINTED TIME .

(Quran, S.3: V.145)

He neither envies nor covets the property of anybody; indeed, he pities the 'multitude who walk in darkness'. He listens to the whispers of his heart:

LET IT NOT DELUDE THEE, THAT THE UNBELIEVERS GO TO AND FRO IN THE LAND; A LITTLE ENJOYMENT, THEN THEIR REFUGE IS GEHENNAM, AN EVIL ABODE .

(Quran, S.3: V.196)

WE GRANT THEM INDULGENCE ONLY THAT THEY MAY INCREASE IN SIN .

(Quran, S.3: V. 178)

NO AFFLICTION BEFALLS IN THE EARTH OR IN YOURSELVES, BUT IT IS IN A BOOK, BEFORE WE CREATE IT; THAT IS EASY FOR GOD: THAT YOU MAY NOT GRIEVE FOR WHAT ESCAPES YOU, NOR REJOICE IN WHAT HAS COME TO YOU; GOD LOVES NOT ANY MAN PROUD AND BOASTFUL .

(Quran, S.57:V.22)

SAY: NAUGHT SHALL VISIT US BUT WHAT GOD HAS PRESCRIBED FOR US .

(Quran, S.9: V. 51)

These verses combine to inspire the believer with a serene mood, and perfect peace of mind:

IN GOD'S REMEMBRANCE ARE AT REST THE HEARTS OF THOSE WHO BELIEVE .

(Quran, S.13:V.28)

Such a believer finds ample recompense for the conquered desires, warmth in his heart, and the sweet sense of inner freedom and inward light.

Believing in one God makes for inner unity: he receives inspiration from a single source; he fears one authority, hopes to please one power, and seeks to establish a permanent relationship with one ideal. Such a unity of source and target has a unifying effect on the soul. His character develops internal harmony which precludes all possibility of conflict or discord within.

This is the clue to Quranic psychology: it has immediate ethical and hebavioristic implications which contrast shaply with Freudian psychology. Indeed, what is it that Freud has taught?

Freud believes that guilt is a kind of disease, that repentence is regression, that control of desires is repression, that regret is the outcome of a complex, and that forbearance is apathy.

Freud looked at all action in terms of behaviour and motive, in disregard of the real intention and

sincerity. He could only see the animal inside man, and dealt with human motivation within the framework of base appetites and lust. He believed that all dreams could be interpreted in this way: whatever was round, such as a cave, a ditch, a hole or a ring, stood for the female; whileas anything upright, such as a pen, a sword, a tower, a stick (and even a serpent) stood for the male; and all movement, such as walking, running, climbing, flying and swimming, stood for the sexual act.

He looked on the soul as completely isolated from its metaphysical sources but he could not recognize the devil's temptation, angelic whispers, or divine afflatus.

Of a child's attachment to his mother, he spun out an Oedipus complex--- an unconscious desire to kill the hated father, which assumes in the child theconscious behavitur oe flatterig him and endeavourint to ape him. In the world of adults, however, this is compensated for by worship of the heavenly father, which, according to Freud, represents a redemption of their unconscious desire to kill the earthly father.

Freud believed that human character assumed its final shape in the first five years of one's life; subsequently it became the destiny of the individual, and all psychiatry could do, would be in the nature of providing sedatives or helping the repressed feelings and desires to have an outlet. Freud could not see, in short, any other areas of the soul except the base, animalistic region.

The chief weakness of Freudian psychology is, however, its reluctance to recognize the possibility of change: Quranic psychology establishes this as a norm; cure is always possible because it involves a restoration of the original soundness of the human soul, the removal of extraneous element--- such as hate, malice, envy, lust etc..

According to the Quran, there are many levels of the human spirit apart from the low, animalistic one: the soul has seven 'grades' which proceed from *temptation* and *expiation,* to *inspiration,* and *peace,* to *harmony* and *content,* and finally, to *perfection.* Man can proceed from one grade to the next, higher and higher still, through obedience to God and genuine worship. Moderation has been established by the Quran as the ideal mode of behaviour.

We are met, everywhere, by instructive examples of the change within the soul from darkness to light, even instantly, by God's guidance. A prominent example was that of Omar Ibn-al-Khattab who, during the life of the Prophet, ﷺ instantly changed from a life of pagan cruelty and iniquity to one of exemplary and perfect justice.

WE HAVE STRIPPED AWAY ALL RANCOUR THAT IS IN THEIR BREASTS .
(Quran, S.15: V.47)

Such is the kind of instant psychological cure which we learn from the Quran and which is not to be found in any other secular discipline.

COMMENTS

AND

DISCUSSIONS

Dr. Faridud-din Baquai

Mr. Chairman and the great scholars, participating in this Conference. I am a surgeon and practise modern medicine. The point is that we have to find a reply as to what is Islamic Medicine? This point was raised by one of the speakers, but I feel that we have not been able to give a definite reply as to what we are talking and what we mean by Islamic Medicine. I think that we have to go to the fundamental of Islam, that is Quran. I had an occassion. I do not know much Arabic, and as such my knowledge of the Quran is also very little, and I can not make any comments, but I am sure *whatever I have understood from the Quran,* I think there is a reply of this question in Quran. Recently there was a controversy in medicine as to the curative side of medicine and the preventive side of medicine. Some of the people have advocated that we should lay more emphasis on the preventive side of medicine than the curative side of medicine and curative side of medicine just emerges as a result of preventive medicine, and if you look at Quran, the Quran has laid more emphasis on preventive side of medicine in terms of health. Unfortunately the verses of the Quran which have dealt with the subject of health, have not been translated in the scientific terminology to explain the scientific meanings of that particular verse. What I propose in definite terms is that the scientific people of Islam who believe that there is Islamic Medicine; who believe that God through His Book Quran, has sent us a teaching of health and told us the ways of healthy living and who know the scientific medicine as well, should sit down and translate these verses of Quran which relate relate to health in modern scientific terms. I could have been a little more elaborate but because of the shortage of time, I would think that I have conveyed what I wanted to say and the second thing which comes to mind is that the life of the Prophet Mohammed (ﷺ) Whose life itself is full of medicine. He has His ways of living, His teaching to the People, His ways to tell them when to do what and when not to do what. They are all scientific. The only thing is, once a thing is given in a scientific book, it becomes scientific but if a thing is given in an Islamic book or in religious book it becomes religious. But I propose again that from the life of The Prophet Mohammed (ﷺ) and Quran we should collect the things and translate them into modern scientific terminology and only then the modern scientific people would be able to appreciate what is Islamic Medicine. Thank you very much.

Chairman: (Prof. Al-Mahdi Bin Aboud).

Thank you brother for this inspiring observation but of course, we have to abide by the principle of equilibrium as a way. We have just said in the psychosomatic diseases that there are about 60 % of the entire agenda of diseases, the preventive and curative sides are merged.

CHAPTER TWO

(Some selected papers - Not presented)

1. ISLAMIC MEDICINE AND GALEN.
   Dr. Mouncef Al-Marzougi.

2. THE ISLAMIC MEDICINE: ITS ROLE IN THE WESTERN RENAISSANCE.
   Dr. Hijazi Abdul Rahim

3. ISLAMIC SCIENCE INFLUENCE IN THE DEVELOPMENT OF MEDICINE.
   Dr. José Luis Barcelo

4. ISLAMIC MEDICINE. ITS INTEGRATION WITH MODERN MEDICINE.
   Dr. K. A. Syed

5. ISLAMIC TIB EXCELLENCES AND HOW TO REORGANIZE AND ACQUIRE THEM.
   Mr. Noor Hussain Chaudhry.

ISLAMIC MEDICINE AND GALEN

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Republic of Tunisia

The purpose of this paper is to show the extent of the intellectual independence which Muslim medical men displayed with regard to the Greco-Roman heritage which Gelen represented over the centuries. We shall, likewise, see in the course of their interaction with the heritage of Galen, their vital role in crystalizing the sound scientific procedure which forms their major contribution to medicine. We shall further see some of the hackneyed Western attitudes which periodically come to the surface to do discredit to Islamic medicine, by considering it merely a passive transfer of the ancient medical heritage without gain or loss.

Objective research faces two main questions whenever it broaches the history of Islamic Medicine. The first question is the status of this heritage and its role in the development of the ideas which have enabled modern medicine to reach the level it has achieved. The second question is the kind of contribution Islamic Medicine has made in the framework of the human struggle against diseases.

The answers to these two questions are seldom dispassionate and objective, for they unconsciously enter the nature of a conflict which has existed between the Islamic world and the West for many centuries. At times it is a "hot war" and at times a "cold war" on one ground or another. Unfortunately, however, that conflict has not yet ended.

These two questions may be answered from various angles. Each of us could tackle the questions, devoting to them detailed consideration. For this essay, we have chosen to initiate the discussion by concentrating on the intellectual independence of Muslim physicians vis-a-vis the foremost representative of the ancient heritage, the Roman physician Galen (151-201 A.D.). Their emacipation enabled them to crystalize sound scientific procedure. Galen had been translated into Arabic in the ninth century A.D. Muslim physicians admired him and adopted a good amount of his knowledge, this, in spite of his own self admiration (in contrast of Hippocrates) and his confidence that his own writings correspond to objective laws. He was truly one of the great luminaries of medicine. He was one of the founding fathers of physiology, being the first to discover the role of the brain in its volitional activity. He was the first to describe seven cranial nerves, the muscles and the fact that the veins contain blood. As for his role in the study of plants and their medicinal use, he is already sufficiently wellknown.

In spite of the extent of his knowledge by the standards of his age, he erred in a number of points. He had confirmed that blood is generated in the liver which plays a role in its pumping. He understood

that there was a direct relation between the two ventricles of the heart which kept him from understanding the circulatory system. He knew that the lower jaw was composed of two bones. Yet more significant than all this was his ineffective method of procedure, for he dissected animals and applied the results of his findings to human beings, as though there were no difference between man and beast. From this misconception stem many of his organic and physiological errors. Likewise, we know that his categorization of diseases was mistaken for it was a classification and listing of symptoms which concealed the diseases and confused them with one another. As for his descriptions of therapeutic practises, they were usually, and to a large extent, quaintly odd and startlingly strange. Galen had not abandoned the use of amulets, incantations and magic rites, which indicate the intermingling of the scientific mind and the superstitious mind. One cannot understand the attitude of the Muslim physicians towards him if we do not emphasize the great reputation which Galen enjoyed down through the centuries. Many physicians of both East and West considered him as the first and foremost source for most medical matters. His name alone had become an authoritative source. Consequently, he played the same role in medicine as Aristotle played in philosophy. By virtue of his reputation, he paralysed the potentialities of medical science, blocking research and investigation, merely because of his followers' stubborn adherence to all that he wrote and classified and their blind faith that in his work existed all truth.

This widely accepted fame was what led Ibn Abi Usaibi'a in *Tabagat al Atibba* (Categories of Physicians) to call al-Razi the "Arab Galen" thus reiterating the extreme importance of the man. Among the accounts which give us an idea of his intellectual tyranny are the works of some of his adherents that man's constitution had changed since his time. They were thus obliged to explain his numerous errors in anatomy. History also preserves the famous outcry of a certain English physician, when he was confronted with the theory of the circulation of the blood attributed to Harvey. "Is it not better that I should err with Galen than be right with that quack called Harvey?". Such was the extent of intellectual ossification which disciples of Galen had reached in their dogmatism.

A close study of the history of Islamic medicine shows that Muslim physicians, even though they admired Galen and adopted much from him did not agree in practice with all he said. Indeed, we find among many of them a sharp criticism of him and a disregard for his writings and theories. We seldom find in the writings of the great Muslim physicians that blind faith in Galen which had become a substitute for scientific procedure among most thinkers and physicians of the West up until the time of Galileo, who in particular struggled against intellectual ossification.

We discern this emancipation from dogmatism in thought in the words of al-Razi, "Neither truth in medicine nor the healing described in books can be understood without the practice of a skilled physician using his good judgment". He is, of course, referring to the books of Galen. Likewise, al-Razi differs from him in his procedural methodology, in that we do not find in al-Razi that peculiar mixture of the scientific mind with superstitious beliefs which we come upon in the Roman physician. Al-Razi only pronounces from experience. He was one of the first to try drugs on animals before giving them to his human patients. He does not employ magic rites or incantations or strange and haphazard concoctions of elements. He simply tries, by objective thinking, to link the disease to the therapy which will effect the body directly.

As for al-Razi's methodology which we may discern in his clinical studies he is in opposition to Galen. He does not confuse symptoms and diseases. Al-Razi seeks to establish the characteristics and the individual course of each disease, in spite of the resemblence of symptoms. This point is clear in his famous study differentiating between small pox and measles. Ibn Sina copied numerous errors from Galen, although he was not afraid of being independent in his thinking. He gives his opinion on law, adding where he found it necessary: "Galen says and I say". We note the same independence and scientific methodology in Ibn Zuhr who dissected cadavers, not contenting himself with Galen's anatomy derived from animals. Ibn Zuhr was the first to try to link a definite disease to a precise attack of illness. This fact is clear in his study of the condition of pericardial effusion and tumors of the chest. Often he emphasized the importance of experimentation and observation and their superiority over the dogmatic opinions concentrated around the fame of Galen.

Abdul Latif al-Baghdadi was the most successful physician in his concentration on this point in the early 12th century A.D. He was not satisfied with any substitute to direct experience which he termed "feeling" or "teaching", thus mocking the subservient minds who were content with Galen's writings rather coming to grips with physical reality. Such is clear in the text of one of his works: "We observed something strange. A group of those who practise medicine had got a hold of Galen's *Book of Anatomy.* Yet it was difficult for them to understand because the text was insufficient without practical observation. We had been told that there were many dead bodies on a hill in Maks. We, therefore, went out there and observed from the shape of bones and joints, their articulations, their symmetry and the positions what we had not known before. We may say that these findings were not mentioned in the books or that the text was lacking or else what we observed was different from what had been written. What we see is a more valid proof than what we hear, even though Galen practiced a high degree of scrutiny and was vigorous in what he said and did.

Our Sensory perception is still truer than Galen.

This intellectual emancipation and reliance in the first instance on experience and observation enables Abdul Latif al-Baghdadi to prove some of the errors of Galen, as illustrated by his statement that the lower jaw was two bones joined by a strong articulation to the palate.

Al Baghdadi refused to submit passively to the opinions of Galen without proving their scientific validity, a matter of procedure which we consider as normal routine in our age when scientific methodology predominates. Such was not the case, however, in ages when submission before the mighty names of traditional authority was the order of the day. Then blind adherrence to the texts of the ancients, preference of theory over direct experience and confusion of superstition with physical reality were normal.

Al Baghdadi does not fear to reveal the shortcomings of the great Roman teacher in his basic tenet that sensory perception is more reliable than Galen's assertions in some instances. As al-Baghdadi says, "we have observed that in the case of this bone, it is one bone in which there is no articulation or suture originality. We have considered it many times, as God is our witness, in many persons exceeding in number two thousand of all types. In all of those we have observed that we only find one bone".

Ibn Nafis concurred with him in this finding, when he stated, "Regarding the functions of the organs,

one depends in their definition on what expert opinion and straight forward research necessitate. We should not agree with the views of our predecessors or their opponents". We know that Ibn Nafis' basic rejection of Galen's opinion on the function of the liver, heart and lungs was in fact the beginning of the discovery of minor circulatory system. For he did not believe in the theory that the blood flowed from the right ventricle to the left ventricle through apertures and that the function of the lungs was a cooling system above the heart.

Objective observation, in which all Muslim physicians believed as a governing principle, does not prove the existence of these apertures. Hence it became necessary to look again into the functions of the heart and lungs. On these subjects, Ibn Nafis states: "In the body of the heart, there exists a blank wall in which there are no apparent apertures, as others have supposes (i.e. Galen and his disciples). The blood, after being refined must pass through the venous (pulmonary) arteries into the body of the lung and come in contact with air. It becomes cleared then passes to the arterial (pulmonary vein) to the left cavity of the two cavities of the heart".

Thus appears, through the contact of the greatest Muslim physicians with Galen, the lamp of the Greco-Roman tradition, a bias of trite claims and assumptions which some Western historians routinely circulate. Islamic medicine was not simply a cold storage vault to which the heritage was consigned until enlightened minds received it during the European renaissance. Quite to the contrary, it constituted a phase of positive creative endeavour. More important than this is the fact that we see clearly through this relationship the quality of the contribuion of Islamic Medicine. It would be exaggeration to say that Islamic medicine had discovered all and had been a pioneer in all fields, as some Muslims historians claim who are committing the opposite error of these Western historians. The Islamic medical contribution was first in inaugurating sound scientific methodology:

1. A refusal to rely on the fame of illustrious authorities in the pursuit of truth.
2. An appeal to the applied expertise of the experienced physician.
3. A preference for experience, because sensory perception is more reliable than hearsay as Abdul-Latif al-Baghdadi stated.
4. A refusal to generalize in knowledge derived from animals applied to people and an attempt to study the human body directly.
5. The subjection of theory to scientific examination. Thereupon, if a theory conformed to facts, it was to be accepted; if not it was rejected. Thus Ibn Nafis contributed to the idea of the exclusive practise of medicine and medicine alone, as did Ibn Zuhr. Concentration on the importance of surgical practice for factual knowledge was the contribution of al-Zahrawi.

Such ideas which appear to us self-evident were revolutionary, new and creative when they first appeared. They constituted, beyond the slightest doubt, the real contribution of Islamic medicine and were a leading current entering the main stream of European renaissance which prepared the way for the explosion of medical knowledge.

We find an unbroken line between the medical vocation of al-Razi and the applied practice of the

experienced physician Paracelsus (1493-1541) who parted ways with Galen and Ibn Sina in his first lesson announcing his rebellion against the unaltered rigidity and dogmatism which had petrified thinking in Western European universities previously. This was five centuries after the occurrence of the analagous rebellion in Islamic medical thought.

Moreover, we observe a clear connection in Abdul Latif Al Baghdadi's striving for sound knowledge in physiology and his rejection of Galen's anatomy, on the one hand, to the great Italian scholar *Vesalius* (1514-1564) on the other who abandoned Galen's writings to search, probe and dissect for himself. We find a similar link between Ibn Zuhr in his comparison of the symptoms of a disease and physiological attacks of the disease and Morgani (1682-1711) who made of this comparison the focus of medicine for centuries. This we saw in Ibn Nafis' subjection of theory to the special characteristics of bodily organs and his endeavours to discover the objective link between the two.

In conclusion, we should recall to mind how strange it is that this sound, scientific methodology which formed the real contribution of Islamic medicine had scarcely appeared in the West when it dissappeared from the Arab World. For intellectual freedom disappeared from the period of decline. Then Muslim physicians resumed the very ossification and abject muddling along in a backward tradition which their predecessors had struggled against. Superstitious thinking crept back into the field. There occured a momentous retrogression in medicine parallel to the manifectations of decline in other areas. This decline brings us to the present status which can be summarized in the deteriorating situation of health conditions in most Islamic nations resulting from the backwardness of society as a whole and the backwardness of the medical sector in particular. Muslim physicians have been largely absent from research and investigation during this century which has witnessed an unpprecedented explosion of medical knowledge and capacity, this century for which our grandfathers had prepared and in which our grandsons do not participate.

Finally, we hope that this meeting will be an opportunity to relate the past to the present. We should focus on the past only so as to deal with the present and future more effectively. How much we need another symposium to deal with the future of Islamic medicine and how we may hasten its return to the arena of research and investigation, thereby joining the honorable past with a more honorable future. We look forward to achieving this goal, not by way of ideological controversy with one party or another. We wish to fiil, before the exammple of our predecessors, that we shall not have falle short in our mission through our desire to share worthily in the adventure of human intellect and to struggle against ignorance, pain and illness.

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THE ISLAMIC MEDICINE: ITS ROLE IN THE WESTERN RENAISSANCE

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At the end of the fifteenth century, an intellectual, cultural and scientific movement covered the whole of Eurupe and the Renaissance originated from it. The medical science belongs to this movement. It played an important role, thanks to many medical schools, which were established in Europe.

The Islamic medicine played a decisive role in the establishment and in the development of the European schools, more particularly in Salerno to the South of Italy and in Montpellier and Paris in France.

Nevertheless, the greater part of the French historic works do not know the role played by the Islamic medicine, as well as its scientific and historic importance. Few historians note the role played by the Arab medicine in the establishment of the Salernitan School and of the school of Montpellier. On the other hand, most authors concur in the denial of the existence of an Islamic medicine in the basic meaning of the word. They admit, that the Arabs have translated Greek and Indian works and that they have transmitted them later on to Europe through Spain.

In the medical and pharmaceutic history of Laignel- Lavastine and in the chapter about the Islamic medicine[1], the author Sanjurjo D'arellano says, "there is strictly speaking no Arab medicine but an abundant compilation written in Arab by Persians, Jews or Christians". Darembers[2], points out: "moreover, after so to speak replacing the Greek dress by the Arab dress, the science still was Galenic through the doctrines, as the Arab medicine as a whole is only a translation or a travesty of the Greek medicine". Barelety and Courych[3] think, "The main but not the only merit of the Arab medicine is the keeping and the transmission of many Greek and even Latin texts, which had been forgotton or lost during the first half of the Middle Ages". Castiglioni[4], "with the penetration of the Arab streams, the old tradition of Italic origin, which blends with the Greek medicine wearing new clothes, still holds good". Reuter de Rosemont[5], "the works of the Arabs can be regarded as the compilation of Dioscorides, of Galen and of the ones known at this time". Alexander Aimes[6], "the Byzantine school knew compilers only... It will not reappear before the tenth century through Rhazes and Avicenna, Abulcassis (twelfth century) and Avenzoar (thirteenth century) whose great merit was to transmit the works of the Greeks to the Salernitan School". Barbillon[7], "the inferiority of the Arab Science is obvious. Servility, fanaticism and superstition prevent the mind from striding. No anatomical discovery, no progress in the physiology a few original writings about the pulse, the eruptive fevers and the chronic deseases of the skin, the utilization

of a new pharmacopoeia, such is approximately the achievement of the Arab science. On the other hand, there are many unnecessary discussions, futile quarrels, childish quibbles in their works".

But looking at the phenomenon closely, it can be asserted that the Arabs not merely translated the Greek works. To the world, they have given doctors worthy of the name and to the medicine, they have given a form and a content unknown to the previous peoples and their medical schools were the example followed by the West, giving to its own schools the same organizatiion and teaching the same programs.

We are going to examine the Islamic medicine in the tenth century, then the part played by it in the European medicine and consequently, in the European awakening and in the Renaissance.

THE ISLAMIC MEDICINE IN THE TENTH CENTURY

As far back as the tenth century, the Islamic medicine took three elements as a basis:

(a) A new Medical Organisation
(b) A new Medicine
(c) A new pharmacopoeia

(a) THE MEDICAL ORGANIZATION:

Contrary to the Greeks, this organization was made up of; a school where theory was taught, a library often full of books and works of any kind and a hospital where it was learnt to examine the patient and to identify the illness. The hospitals of Baghdad, Ray and Ibn Toulon are just a few examples among other ones.

Furthermore, this organization required from any person wishing to practise medicine to have an authorization granted by a jury presided over by a scientist. This jury was also entitled to withdraw this authorization, if the knowledge of the doctor were regarded as insufficient[3].

(b) A NEW MEDICINE

Based, like with the Ancients, on the observation but defining each illness by several symptoms. This system enabled them to describe several new illnesses such as: the variola described by Rhazes and Avicenna, the measles, the Spina Ventosa, the smallpox, the pleurisy etc... The medical books were not only translations. The "*Continent*" of Rhazes was made up of 70 books and included the whole medical knowledge of the tenth century. The *Canon* of Avicenna has unquestionably remained the reference book during the whole middle ages. If Avicenna was called "Le Cheik-al-Rais" in the East, he was called "the Prince of Doctors" in the West[8].

(c) A NEW PHARMACOPOEIA

The Arabs are the fathers of pharmacy. They have discovered many matters and they have developed several medicaments. They also organized the pharmacy and the laws of this science. This

canbe found in a book, the title of which is "*Nichajat ar Rutba*", written in 1236 and a copy of which, dating from the fifteenth century, is in Sarajevo in Yugoslavia[9,10]. These elements made it possible for the Islamic medicine to expand very quickly and, as far back as the tenth century, famous names were noted; al-Razi in Iran, al-Macoudy and Ibn al Abbas in Iraq, Ibn al Jazzar in Morroco, Abulcases in Spain.

Europe was given the benefit of this development, as there are many Europeans in the Islamic schools and more particularly in Cordova in Spain. The most famous ones are; Gerber d'Aurillac, Gerard de Cremone, Arnaud de Villeneuve, Constantin l'African etc...

The first medical schools in Europe became famous thanks to the Islamic medicine. The first schools are; the Salernitan school in Italy, Montpellier and Paris in France.

THE SALERNITAN SCHOOL

In Salerno, the patients were looked after in a convent founded in the ninth century. The healing monks imitated a monk living in the neighbourhood, in the convent of Monte Cassino; he was called Desire and he had written a book, the title of which was; "*Themedical miracles of Saint Benoit*". He is famous, because he became later Pope Victor VIII. The reputation of Salerno remained local until the end of the eleventh century.

In 1077, Constantin, called "the African", arrived in Salerno. As he was born in Carthage, he had learnt medicine during his trip in Egypt, in Syria and in India. The story goes, that he was in Baghdad, where he studied Mesue and Serapion.

He had translated the books of Ali ben al Abbas, the most important one being "*Almalak*" made up of ten volumes of theoretical medicine and of ten volumes of practical medicine, without giving the name of the author. He had also translated a treatise on the ophthalmology of Honnein and the Viaticus of Ibn al Jazzar. He practised medicine as he had learnt it in the Islamic schools. This practice was new in Salerno; its medicaments too. Shortly, and thanks to this medicine, he became very famous. Then he organised the Salernitan School, imitating the Islamic medical schools of the East and of Spain. "The studies took place either in the library or in the hospital and the student was directed in his work by a group of teachers"[4]. The Salernitan School became famous thanks to this new organization and to this new medicine.

As regards the program of the school, it included not only the works translated by Constantin but also a few books written by the teachers of Salerno but "in which signs of Arab influence are often found"[4]. The most famous books are;

De Aegritudinum Curatione — it is an anonymous book made up of two parts; the first one deals with illnesses from the head to the foot. The second one includes comments and explanations made by the seven teachers of the school. The resemblence of the first part to the works of al-Razi, Ibn Sina and Ibn al-Jazzar is obvious.

The *Liber Simplici Medicina,* also called the *Circa Instans,* which is only an updated translation of the

book of Constantin de Gradibus Simplicium, this being also a translation of some Arab works[11].

The Antidotarium includes a few recipes copied out from the works of Galen, as well as many Arab pharmaceutic prescriptions.

In short, we can say with Turchini[12], that the coming of the Islamic medicine in Salerno has been a fundamental element in the development of the school, in its brightening up and in its celebrity.

The success of the Salernitan School has encouraged the creation of other schools and their organization on the same lines. The most famous schools were: Bologna, Padua, Pisa and Naples in Italy, Montpellier and Paris in France.

THE SCHOOL OF MONTPELLIER

At the end of the twelfth century, medicine was practised by the monks of the convents, by some Islamic doctors living here and by a few Jews, more particularly after many of them had left Spain, just as the Almohades came into power in 1147[13].

The anarchy dominated the practice of medicine at this time. Anybody could open a school to teach medicine and look after the patients[14].

In 1220, Cardinal Conrad, the Legate of Pope Honorius III, brought this disorder to and end by creating the medical school of Montpellier and by organizing it on the lines of the Arab medical schools. In this way, nobody could practise medicine without having the authorization granted by a jury consisting of scientists and presided over by a religious.

At this time there were 16 teaching books, 13 of which were books of Islamic medicine. These books were;

> The *Canon* of Avicenna: the *Antidotarium,* the *Continent,* the *Al-Mansouri* and the *Aphorisms* of Rhazes, as well as the treatise about Pestilence; the guide of doctors and the spring water, the book of fevers by Isaad; the *Isagoge* of Honein, the translations of Constantin (Ibn Al Abbas, Mesue and Ibn Al Jazzar), the *Techne, De Morbo et Accidenti* of Galen; the *Aphorisms* of Hippocrates.

During all the thirteenth and the fourteenth centuries, the Islamic medicine was the most important subject in the teaching program of the medical school of Montpellier. The teachers commented on Avicenna, they explained Rahazes, Mesue etc... Galen was quoted from time to time Hippocrates was rarely quoted. As regards the other Greek doctors, they were purely and simply unknown[8].

Among the most famous teachers, there were Arnaud de Villeneuve, Ermengaud Blein, Pierre de Capestang, Jean Jacme and other ones, who were called the Arabic Scholars, as they taught the Arab medicine to the exclusion of any other one.

"*The book of the lessons and keys*" in the Records of the University, gives us a precise idea about the programs of the school of Montpellier from 1489 to 1500[15].

	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500
AVICENNA	4	3	4	4	6	5	5	4	6	5	4	3
GALEN	2	0	2	0	3	2	4	2	2	2	1	4
HIPPOCRATES	1	0	0	1	2	1	1	1	0	1	1	1

and we see:

1) that the works of Avicenna had the lion's share from 1489 to 1500 and that it is only from 1500, that the works of Galen superseded, for teaching, the ones of Avicenna.

2) that Hippocrates did not have the importance given to him by the Westerners.

Even after 1500, the Islamic medicine was still taught in Montpellier and it had still its defenders. We find a typical example in the book of Austruc[16], "Rene Moreau, a teacher of the University, reproached Jacobus Sylvius, another teacher of Montpellier for being a follower of the Arabs and of the Barbarians and for not attending to Hippocrates or to Galen. In the same way, he repooached the university of Montpellier for its taste for the Arab medicine, what proves that, even in the middle of the sixteenth century, the Arab medicine exercised an important influence in Montpellier". Moreover, Astruc says, "surely, Montpellier had taught the Arab medicine for a long time. It was not in a position to teach other medicines. This fondness for the Arab medicine was common to all the universities".

This enables us to say, that the Arab medicine accompanied the school of Montpellier from its creation to the second half of the sixteenth century. It made it possible for the school of Montpellier to develop, to open out and to become a scientific centre, not only in France but also in Europe, towards which students and patients made their way.

THE SCHOOL OF PARIS

The phenomenon, which occured in Salerno and in Montpellier, also occured in Paris and the program of the school of Paris was identical with the one of Montpellier. We shall not come back to that, especially as one of the most famous teachers of Paris was Gilles de Corbeil, and old Salernitan. But we give an example confirming, what has been previously said: in 1395, the library of the school of Paris had eight books[17], five of which being books of Arab medicine: the *Concordance* of Jean de Saint Aimand, the *Concordance* of Jean de Saint Flour, the *Usu Particum* of Galen, "*the Simple*" of Mesue and the *Practice* of Mesue, the *Theriaca* and the *Antidotarium* of Abulcasis, as well as the precious one, the most beautiful and the most remarkable jewel of the university, the *Totum Continens* of Rhazes, We know the history of this book with Louis XI, who wanted to have a copy of the *Continent* in his library. He adked the library of the school of Paris for this book on loan. This was authorized, after stormy discussions, for a deposit of twelve silver plate sets and hundred gold crowns. This gives and idea about the value and the importance of the Islamic works.

This paper gives us an idea about the part played by the Islamic medicine in the creation of the European medical schools. We can also say, that without the Islamic medicine, the Islamic hospitals, the

Islamic pharmacies and the medical schools, the Salernitan school and the school of Montpellier would probably never have been created.

The movement started in Salerno and in Montpellier covered the whole of Europe very quickly and, at the end of the Middle Ages, there were eighty universities in Europe, nineteen of which were French ones. Each year, they brought multitude of scientists, doctors, pharmacists, surgeons and philosophers such as Roger Bacon, Guy de Chauliac, Thomas Alquin Henri de Mondeville, and other ones, who have created a scientific movement and a cultural movement, which were the ferment of what became the Renaissance later. In short, we can assert two things:

1. The Islamic medicine has been an essential element of the European Renaissance.

2. We do not find in the most French works any proof of recognition.

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ISLAMIC SCIENCE INFLUENCE IN THE DEVELOPMENT OF MEDICINE

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The objective of this work is to obtain a series of events, which show the decisive influence given by the Islamic science, in relation to the development of medicine. Its main objective is to state the real importance of the Islamic contribution, which when objectively considered, has enabled the present standards obtained by medicine. Such event has been injustly forgotton and generally unknown. It also attempts to help the creation of a correct idea about Islam, whose population and governments, after many years of wars and sufferings, feel a strong need for helping all countries, to ensure a common spirit of cooperation in the interests of humanity.

The Holy Quran Says:

PRAISE TO GOD WHO SENT TO HIS SERVANT, THE BOOK WHERE THERE ARE NO DEVIOUSITIES . *(S.18:V.1)*

CHAPTER I - GENERAL CONSIDERATIONS - THE ISLAMIC SPIRIT

It is impossible to deny that the human personality presents great variety of thoughts and thinking habits within the boundaries of memory. The same applies to the collective personality of a community. In this case, the common tradition represents the collective memory which maintains together all the thinking habits of the community. What distinguishes a country, is precisely the common tradition, this is the collective memory. This rule overtakes all geographic, ethical or racial national limitations or of any other type and can also be applied to civilizations.

Psychologically, a civilization is the total of the common traditions of a country, independently from its geographic or ethical conditions. Technically, a civilization is the combination of the progresses of the community in theoretical and applied science, industry, social organization, literature and fine arts branches and in other intellectual activities.

This is civilization but not culture; the culture is not based on the intellectual acquisitions. It is a spiritual state, a permanent condition of a personal soul or of a collective community soul. Culture is a purely ethical concept, is a totally spiritual residue, nonpalpable, although clearly sensed, formed in a soul or in a community, by continuous ideas and actions, in accordance with ethical principles. The civilization is a fertile soil for culture but frequently can exist without it. On the contrary a person or a

community may show the maximum culture without civilization, that is, without what we generally call educatiion and without knowledge of mechanics, science or literature.

Aeroplanes, fountain pens, anti-toxic serum are products of the civilization. The use of the aeroplane in the anti-toxic serum transport or the use of a fountain pen in the signing of a cheque for hospital benefits are manifestations of culture.

In this sense, Islam has established a progressive civilization, at the present, one of the largest of all times, and has also accumulated a strongly developed culture. Without taking into consideration the apparent decadence of the political power and the pretended desintegration the collective personality of Islam has survived to all types of changes, mainly because of; that the collective personality criterion of a common civilization. Common tradition was never extinguished. This is the spirit of Islam, which has to be recognized by its maximum defamators.

Although the decadence of the Islamic worlds influential power on the development of all type of world events is apparent, the survival of a large series of absurd mistakes and deceptions in the world of medicine has come to a bad establishment of false attitudes. It is our intention, therefore, to abolish such mistakes which lead to the incorrect judgement on the civilized attitude of Islam.

For example, the story of the Caliph who gave the order to Amr ibn'Al'As to feed the stoves of the baths of the city - during six long monts - with the books and texts, coming from the famous library of Alexandria, where among others, were valuable medical texts, is one of those big false defamations. Such stories are used in the creation of pretty novels and bad history books. The famous library of the Ptolomeos had already been burnt by Julius Caesar in the year 48 B.C. And another one, also very important, known as the "Daughter Library" was destroyed around the year 389, as consequence of an order given by the Emperor Teodisio.

Therefore, it is completely false and wrong to blame the Arabs for the destruction of that scientific source, which was the famous library of Alexandria, though in history books, such lies are still being printed.

In the same manner, true justice has not been done to prove the contrary and locate things in its place in the history of medicine. Thanks to the Islamic science, to the Arab Medicine the accident was able to obtain a large amount of knowledge, which enabled the posterior development of this science. Nobody should be kept from the truth, unless because of the continuous false propagation of information, practices and texts. From the Islamic world came knowledge to the Medieval Europe which was then in complete darkness. This work needing a deserved amplification, intends to prove in the following chapters the decisive influence of Islam to the progress of medical science.

CHAPTER II - ISLAMIC MEDICINE, LEADER, CREATOR, MEDIATOR

Already, since its beginning, Islam had direct relations with four large civilizations; Bizantine, Sasanidopersian, Indhu, and Chinese. The Arabs, who had conquered a very large area between Gibraltar and China, had with them three very important factors; Intelligence, activity and spirit; The first of them was a sharp virgin intelligence, which looked for constructive means, the second was the spiritual

impulse of religious enthusiasm and the third was an unnatural gift for beautifulness and for imaginational and expressive power, which without doubt, fomented the high degree standard of general appreciation to the intellectual and spiritual interests.

As a consequence of all these, after a century Islam came to be one of the most important civilizations and cultures. After the main phases of the Islamic expansion the Arab strong collective stimulus gave way to recapitulation of technical, scientific, industrial, economical, hygienic, literary, artistic and philosophical achievements. In medicine, Islam came to be the leader of all countries and established, without doubt, the base of our existing culture and civilization.

It is generally known that the main points of contact between Islam and Occidental Europe were; The Iberian peninsula, Sicily, Middle East and during the crusades also Syria and Palestine, where peaceful contact periods had political, economical and cultural impacts between the Islamic world and the small states which settled for almost two centuries in those areas.

Precisely one of the main roles played by Islamic world in the scientific field, was the conservation, consolidation, coordination and development of ideas and knowledge which, ancient civilizations had compiled and to this the Arabs added many original and outstanding ideas.

Fortunately, it is being recognised that precisely medicine and pharmacy are those scientific branches in which the Islamic world has most decisively influenced our existing progress. The methodic translations of thousands of arabic works, was a prosperous industry which enabled the transfer of the Islamic medical knowledge to Medieval Europe.

In the same manner, the Arabs established sufficiently equipped hospitals almost one thousand years before these started to be founded in the western world as official institutes. Baghdad had 6000 medical students and almost one thousand medical practitioners. And one hundred years later, Damascus had a central hospital which jointly supervised a large medical college. Also the main hospital of Cairo was established in several buildings, four large parks, music was also played for the entertainment of the ill. They paid five golden pieces to the patients who were cured to maintain themselves during convalescence. As it can be seen, the hospitals are of Islamic creation and after having been extended in the Arab world, were introduced into Europe by the crusades.

Also the first pharmacies and chemists were established in the Islamic world, they could be counted by hundreds in Cordoba, Baghdad, Cairo and many other cities. The Arabs brought to Europe, drugs as Ruibarbo, Camphor, Mirra, Ginger and Vomica Nut, only to mention some of them; nobody then denies that they created the first pharmacies of history and in its medical classic work, Ibn Sina names more than 700 drugs.

All the strong Islamic science was passed to Europe, thanks to the Christians investigators, one of them Roger Bacon, known as the creator of natural science in Europe and whose knowledge came rom the Arabs; to Gerberto, who later became Pope Silvester II, who lived before Bacon and who was proved to live in Muslim Cordoba. He studied under Arab teachers. Albert the Great, in his works, makes constant observations of almost a dozen Arab scientific authors, whose books he knew well, through its Latin translations and finally not wanting to make this list too large, to our Raimundo Lulio, born in the

Baleares. He knew perfectly the Arabic language and had in his library, hundreds of Islamic texts, from which he acquired his high scientific knowledge.

And the greatest encyclopedic works whose creation is wrongly attributed to the Christian occident, have its origin in the long and hard labour of Islamic encyplopedic authors. The Occidentalists feel themselves proud of the encyclopedia, spiritual daughter of that great spiritual. century ; 18 + h Century; although the encyclopedic writers of the Islamic world lived, four, five, six or even eight centuries before their European colleagues.

The first regular encyclopedia in Arabic was composed by a society, which had its best period in Basra, during the last period of the tenth century. These men divided in 4 orders, named themselves "*Ikhwan as-Safa'*", (Purity brothers). Their joint work, composed of 51 treatises, practically covers all the knowledge of the era about mathematics, medicine, natural science and theology. How many of their texts were later used by the Christians in their search for knowledge and truth.

The next two Arabic encyclopedias were much more larger and complete and each of them was the job of a single person. The author of the first, Nuwayri lived at the end of the 13th century. The creator of the other ibn Faddallah was his contemporary. Another encyclopedia was written by Qalqashandi, his work was printed in Cairo and was formed of 14 volumes.

With respects to dictionaries, another very important aspect of the Islamic scientific literature, the Islamic apportions are also unmeasured. An outstanding example is the *Great dictionary in Arabic language* equivalent to the "Oxford Dictionary", "Webster", or "Larrousse" which was written by Safidi, who lived during the fourteenth century. And a hundred years earlier, ibn Qifti, wrote an encyclopedic work, named "*History of the Philologists*", Jukut composed a large "*Dictionary of Men and Letters*", and the great ibn Abi Usaibi'a, the famous "*Life of Doctors*".

CHAPTER III: CHARACTERS AND WORKS; NEW INVESTIGATIONS

A long work would be to mention all the great figures preceding the Islamic Medicine but is also an injustice, not to remember them, even superficially, as testimony of our admiration.

At the Head of the list of Arab doctors, already in the first century of Islam, is al-Harith ibn Kaladh (died in 734), who had studied in Persia and who was the first scientifically educated in the peninsula and to obtain the honorary title of Tabib "Doctor" (Medicine) of the Arabs; according to the rules of the time, his successor was his son al Nadr whose mother was maternal aunt of the Prophet (ﷺ)

Within the doctors of the Umayyas court, the most outstanding were: Ibn Uthal and Tayadhuq, some of his nomenclature has been kept up to our days, although not the three important books attributed to him; also, an important doctor of Persian origin, was Masarjawayh, who translated, from Syrian into Arabic, a medical treatise, originally written in Greek, the work called "*Ahrun*" was the first scientific book written in Islamic language. The Caliph al-Walid separated people affected by leprosy and to give them a special treatment; and Umar II passed the medical Colleges from Alexandria to Harran.

Al-Razi was without doubt the greatest and most original of all the Islamic doctors. Immediately after

al Razi, the most known name is Ibn-Sina.

Other outstanding figures of the Islamic medicine forgotton between the occidentals were Ali Ibn Isa, ibn-Jazhla who wrote and important thesis about therapeutics; and Ali ibn al Abbas.

This list could have been very long but we want to end it with a totally original contribution to the field of investigation about Islamic medicine to show some works totally unknown attributed to Islamic scientists.

Large number of investigations enabled me to verify that there exists in large quantities and still without detailed examination important works, many of them coming from translations of very ancient Greek texts. Here is an initial detail that can be and must be used as base for future investigations:

In the first place, the important work executed in Muslim Spain by the doctor Ibn-Zuhr, the most genuine continuation of Hipocratic tradition in Islam (525/1130) and whose important works has been partially diluted in the night of time.

In the second place, the use of *Causal, anomalistic and emoiric* series, which differentiates the purely hermetic tendency of the Islamic scientists (same by the Kufa Arab Grammar School) and the great importance which it would have in all types of Islamic scientific texts.

And in the third place to consider the need to dedicate special attention to what we consider the unknown parts of Arab texts in relation to medicine and similar sciences from which we choose the following collection of works:

a) The group executed by Ibn-al-Nadim al-Warraq formed by 22 volumes

b) The texts attributed to Prince Khalid-b-Yazid-b Mu'Awiya dealing with the application of alchemy to medicine

c) The texts related to the relation of talismatic science to medicine, e.g. by Ahmad-b-Muhammad Masmudi

d) The Arab translation of Persian executed in the medical center of Jundishapur of an important article of Hindu toxicology and stated by some writers as Stauss as "Toxic Manual of Canayka".

e) The texts executed by the Andalusian-Islamic Doctor Philosophist, Ibn Sab'in (668), partially compiled by Ibn Tulun and whose importance has not yet been determined.

From all what has been said the importance of the Islamic science of the past, has been in the progress of medicine in the future. The time has come to recognize such facts and to locate the Islamic world, in its place in the field of science, in the place that by justice it belongs. In the year 953, Otto the Great, King of the Germans, sent an Ambassador of his to Cordoba to a monk named John and who lived for over three years in the capital of the Iberian Caliphate. He learned Arabic to perfection and when back to his country took with him, hundredsof valuable medical scientific manuscripts, which helped in the diffusion, all around Occidental Europe in a rapid and surprising way, the essence of the great Arab Science.

ISLAMIC MEDICINE
ITS INTEGRATION WITH MODERN MEDICINE

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An attempt has been made to explain the basic theories and philosophy of Islam and Islamic Medicine and its points of differences from Modern Medicine. Islamic Medicine is closely interlinked with Islam which is a complete way of life. A Muslim has an unshakable faith in QURAN. The progress of Modern Sciences and Medicine has not come as a surprise to him; he is not against them either. He knows he cannot live without Modern Medicine today, solely on the antiquated drugs and techniques of the past. But he can adopt Modern Medicine only after Muslimizing it.

The modern scientists are also realizing their mistakes of going too much into analytical knowledge without synthesizing it. They are also turning back to the holistic theories of Islamic Medicine.

A Muslim living in the present century is constantly under the onslaught of western culture and style of life, which is the fruit of western technology and medicine. Muslim countries are also rapidly getting industrialized. But they should not repeat the mistakes of the west by blindly aping them.

By holding fast to the basic principles of Islam and Islamic Medicine and yet taking advantage of Modern Medicine, Muslims should take the best of both worlds.

It is my purpose to bring into forefront the advantages and disadvantages of Islamic Medicine and Modern Medicine and attempt their integration, particularly their basic philosophies and theories.

Islamic medicine is at once an applied science, an art and an aspect of the whole of life touching upon activities ranging from eating to bathing. The origin of this science is prophetic and sacred. Islamic Medicine is related to Islam through injunctions contained in the Quran and Hadith concerning Medicine. The Divine law teaches many rules concerning personal hygiene, dietary habits, prayers, fasting and sex-life.

THE PHILOSOPHY OF ISLAMIC MEDICINE

The basic philosophy of Islamic Medicine is that Man is the symbol of Existence (Al-Insano Ramzul

Wajud) is a key to the understanding of Existence and the whole Universe.

RELATION OF SOUL AND BODY

Man has a physical body in which is put the soul - or psyche and they are interlinked.

FOUR HUMOURS

The physical body proper is comprised of four humours. The concept of humours originated in medicine with Hippocrates who on the basis of naked eye observation of fresh blood concluded that the red portion of the blood is the blood humour, the white material mixed with blood is Phlegm, the yellow coloured froth appearing at the top layer is the yellow bile, while the heavier part which settles down below is the black bile. This concept was further developed and expounded by Galen and Arab physicians to an extent that all diseases were regarded by them as being the result of irregular or improper distribution of the four humours.

The four humours, blood, phlegm, yellow bile and black bile are composed of four elements and four natures. Each humour is related to two natures and two elements. Thus blood is hot and dry like fire, phlegm is cold and humid like water. Yellow bile is hot and humid like air and black bile is cold and dry like earth.

The ancient theory of humours contained the idea that chemical substances are transported in the body - that their presence, abundance, deficiency and balance, influence the nature of body function, the quality of man's disposition and the total reaction pattern. The humours mix together to form the constitution of the individual. Every person is supposed to have a unique humoral constitution which represents his healthy state. Thus there are four types of constitutions and temperaments (1) Sanguine (Blood) (2) Phlegmatic (Phlegm), (3) Choleretic (Yellow Bile) (4) Melancholic (Black Bile) which shows the preponderance of one kind of humour in that constitution.

THE CENTRAL ROLE OF HARMONY AND EQUILIBRIUM BETWEEN OPPOSITES

When the humours are normal in quantity and quality and well mixed so that the condition of Eukrasia prevailed, man was healthy. When however, as a result of disturbances, one humour came to dominate in an abnormal way, the balance was upset, their mixture was bad, a Dyskrasia prevailed and the individual was sick. What then happened was that an Organism by virtue of its innate healing power which was called Vis Medicatrix Naturae (Tabiat Mudabbara Badan) endeavoured to restore the balance. The humours which were considered crude in the beginning of the disease underwent a process of ripening or Coction. When they had matured, the faulty matter was driven off in the urine, the stools, the sputum or as pus. Whereupon the balance was restored and the patient cured or if the disturbance was such that nature could not overcome it, the patient succumbed.

The very important practical consequence of these views was that the physician was taught to direct the entire treatment in such a way that it would assist the innate healing power of the body and to avoid whatever might possibly antagonise it. He did this by prescribing an appropriate diet, the effect of which

could be enhanced by drug. Drugs are also assigned temperaments and there are degrees of these temperaments.

THE THREE SPIRITS

But neither these humours nor their mixtures is the cause of life. They are only the vehicle which make possible the manifestation of life. Muslim physicians believe in the Spirit (Ruh) which is the subtle body (quasi material substance) standing between the physical body and the force of life which comes from above.

The spirit or *Ruh* in its medical sense is of three kinds:-

1. Vital spirit with its centre in heart
2. Psychic spirit with its centre in brain
3. Natural spirit with its centre in liver

SIX EXTERNAL FACTORS ESSENTIAL FOR HEALTH

Besides the internal causes of health, Muslim physician believed that six external factors are essential and are very important for the maintenance of normal health. They were called the Six Necessities "*SITTAH DARURIYAH*" as follows:

1. *AIR* including the effects of various climates, soils, etc....
2. *FOOD*. Including times of meals, what should be eaten and drunk and their amounts.
3. Body rest and movements *(EXERCISE)*
4. *SLEEP*
5. *EMOTIONAL REST* including the question of which emotional states help or harm health
6. *EXCRETION AND RETENTION* including the effects of sexual intercourse.

EMPHASIS ON THE ABILITY OF THE BODY TO RECOVER

Health rather than illness is the natural state of the body. The natural force of the body to restore any disequilibrium is called in Latin as *Vis Medicatrix Naturae*. Arab physicians adopted this (PHYSIS) or *Tabiat Mudabbara Badan* as their basis of treatment. The use of medicaments is seen as an aid to this innate healing power within the body.

HYGIENE AND PUBLIC HEALTH

Preventive Medicine and Hygiene have always been emphasized by Islamic Medicine. The teachings of Islam lay great stress on cleanliness and personal hygiene. Regular ablutions are needed for the five times' prayers. The use of the tooth-brush goes back to the Holy Prophet (ﷺ).

Fasting is one of the corner-stones of Islam and it is prescribed by way of both physical and spiritual health. Eating less than one's appetite and eating slowly has direct medical effects.

The effect of diet was considered by Muslims to be more powerful than even of drugs and they paid great attention to the kind of food and the manner of its consumption. Health is a condition of living in harmony within oneself and with the environment. The environment includes everything. What one eats and drinks according to his particular inner constitution, and the vast cycle comprising the air, water, soil, the climatic conditions and even the cosmic forces.

These are the highlights of Islamic Medicine - and if one is a faithful believer - a practising Muslim, an active Muslim who sincerely believes in Allah and His Unity and Love for His Creatures, then such a Muslim has complete harmony and equilibrium of mind and body and he will successfully tread his journey on this earth. He will have no mental conflicts.

If there were such beautiful principles of Islamic Medicine, how is it that it could not stand the test of time? It lost ground first because of the downfall of Muslim Powers. Secondly the Tibb Physicians or Hakims lost the motto of service to Humanity and deviated from the true spirit of Islam. They started indulging in corrupt selfish and secretive practices. Every good Hakim took all his experiences to the grave - but never thought of making it known to his desciples, or his students for the benefit of mankind.

Now let us consider the highlights of Modern Medicine.

THEORIES & PHILOSOPHY OF MODERN SCIENCES WHICH INCLUDE MODERN MEDICINE

Modern science is related to the rationalistic universe emanating from the philosophical world-view of the 17th century through its reliance upon human reason as the ultimate criterion of Truth, its limiting or reality to the physical domain and its restricting of the relation between man and nature to the level of the senses and of reason analysing the results of some perception.

Modern science is thus anti-metaphysical. "It is based on the conception of the Universe as a conglomerations of dead matter out of which by some unexplainable process life may become evolved in forms"[1].

In modern science any self-evident or obvious assertion is not taken as granted, unless it is taken on the anvil of experiment. It is empiricised, analysed, systematized, theorised and verified.

Unprecedented amount of knowledge has been amassed in every branch of science. But modern science believes in analysis and experimentation only. Modern science is always self-correcting, progressive and ever-changing, with the result that this science starts on a shaky foundation. There is nothing firm, sure like faith.

Let us take a look on the Leaps of modern medicine which is part of modern sciences.

THE LEAPS OF MODERN MEDICINE

1. The microbial theory of disease and the science of Bacteriology

2. Rise of Organic Chemistry and the discovery of Antibiotics
3. Blood Transfusions
4. Immunization
5. Discovery of X-Rays and Radicactivity
6. Conquest of pain and Anaesthesia
7. Tropical Diseases, their conquest and prevention
8. Deficienoy Diseases; Discovery of vitamins and hormones.

The most spectacular advances in modern medicine are in Diagonostic procedures:

1. Cardiac Catheterisation
2. Catscan
3. Radio Immuno-Assay

The advances in therapeutics are also amazing, like:-

1. Coronary Bye-Pass surgery
2. Organ Transplants - Heart, Kidney and Liver transplants. Kidney transplants are done routinely these days.
3. Very potent new drugs
4. Test-tube babies

This is a far cry from the old humoral theory and these advances took place in step with the other technological advances - to suit the needs of mankind. The concept of Disease changed from the humoural pathology to the cellular pathology. Disease used to be explained in terms of anatomical lesions, physiological lesions and lastly etiological factors. But the swing is turning back to multifactorial causes of Diseases according to many recent thinkers.

We cannot rely solely upon the humoral theories. How can we treat these infectious diseases with Tibb medicine solely? But we have to remember the fundamental principle. All these new concepts of disease are simply over-arching of the fundamental principle. Modern medicine has discarded the humoural theory which is bad. What they have really done is that they have only overarched this theory and have gone deeper into these themes. They have analysed but forgotton to synthesize.

Let us consider the minus points of Modern Medicine.

EXISTENTIAL ANXIETY

As there is no active faith in the Etenal Reality Allah the Al-Mighty, the Glorious, modern man is faced with this Existential Anxiety. 'Who am I?', Why am I here in this Universe?', and 'How shall I be able to find a satisfying and fulfilling way of life?'. Modern Man has tried to solve this problem by giving the philosophy of Existentialism. This emphasizes Man's responsibility for himself and for becoming the kind of person he should be. (Compare it with Islamic view - of Man as a vicegerent of Allah and with a mission).

ECOLOGICAL DISEQUILIBRIUM BY POLLUTION OF AIR, WATER AND SOIL

Modern Man has played havoc with the natural environment in the span of only one century.

Only the catastrophic ecological crisis which has come to the surface during the past decade has caused a belated interst within certain circles in Natural History as the repository of wisdom and the vision of Nature as a totality and organic whole. This pollution of natural environment is having disastrous effects on both physical as well as mental health of mankind. When there is environmental disequilibrium, can there be any humoral equilibrium within Man?

IATROGENIC DISEASE

"Many of the new diseases which replace the old ones are latrogenic in nature that is to say they are the result of the well meaning but injudicious use of therapeutic agents. In these days when tranquilizers take the place of baby-sitters, blood transfusions are given thoughtlessly, indiscriminately and even headlessly, exposure to diagnostic or therapeutic ionising radiation has become universal, antibiotics are now regarded as the cure-all for the most minor infections and steroid therapy is the refuge of the destitute, it is small wonder that the old maladies are replaced by new man-made ones, and that allergies to multitude of antigens have become so commonplace that they are said to exceed pathogenic organisms in number. No drug is completely safe. If we continually interfere with nature, we must pay the penalty.

OUR IGNORANCE ABOUT THE CAUSE OF DISEASE STILL EXCEEDS OUR KNOWLEDGE

The causes of many killer diseases like Cancer, Coronary Thrombosis and Diabetes are still not known. The following will show how the faulty western style of life can be one of the main causes of these diseases.

It appears that most of the risk factors which have been shown to play a role in the multifactorial causation of the Ischaemic Heart Disease are related to both the social structure and ways of life of 'Western Society' in general and to certain personality and situational characteristics which make these western psychosocial behaviour patterns more risky for some individuals than others. It is already clear that in the fight against Ischaemic Heart Disease the knowledge of the role of psychosocial factors lead to two broadways of application.

1. To induce people to modify their prestnt 'risky' western habits of eating the wrong kinds of food, smoking and neglect of exercise and
2. To induce people to change their western ways of interhuman communications, now often characterised by alianation and competitive conflicts into mutual co-operation, understanding and support".

Addressing the IV Asian Cancer Conference in Bombay on environmental carcinogensis, Dr. Higginson[3] said that social factors or lifestyle - cultural practices, behaviours and diet-could be responsible for a variety of cancers. He further stated that "cancer is a whole sequence of events which may be modified". You can no longer think of cancer in terms of carcinogens alone. Until the biochemical rela-

tionship between life-style and cancer becomes clear, the only practicable way to cancer prevention was at the individual level; by giving up smoking and all excesses, especially of food and drink.

A jungle of very potent synthetic drugs now act on individual parts and functions (forgetting that Man is more than the sum of its parts).

William Douglas[4] writing on the potency and uncertainty of Autocoids expresses his views.

AUTOCOIDS

A motely of substances of intense pharmacological activity that are normally present in the body or may be formed there and that cannot conveniently be classed with other member of this broad group such as the Neurohumours and Hormones. These different substances have been variously described as Autocoids.

Autos (self) and Ados (Medicinal Agent or Remedy)

Histamine, Serotomin, Angiotensin, Bradykinin and Prostaglandins.

What is the significance of this group of Autocoids? What is their role in the body? What is their value as drugs and what is their place in therapeutics?

Unfortunately, only rather imprecise answers can be given to these questions. But the core of the matter is that while the Autocoids possess an astonishingly wide range of pharmacological activities and in vanishingly small amounts, there are comparatively few instances where a physiological role can be stated with assurances.

Regarding the method of finding your way to the Therapeutic Jungle, Goodman and Gilman[3] advise,

"The flood of new drugs in recent years has provided many dramatic improvements in therapy, but it has also created a number of problems of equal magnitude. Not the least of these is the 'Therapeutic Jungle', the term used to refer to the combination of the overwhelming number of drugs, the confusion over nomenclature and the associated uncertainty of the status of many of these drugs".

A reduction in the marketing of close congeners and drug mixtures and an improvement in the quality of Advertising are important ingredients in the remedy for the "Therapeutic Jungle".

Warning voices of the independent medical profession are drowned by the reclamation of interested organisations. Propaganda and propitiation (by the highly capitalised and organised pharmaceutical

industry) dulls the edge of criticism. Some drugs that are aggresively peddled by pharmaceutical manufacturers may do more harm than good.

Take the example of 'Amidopyrine' group of drugs which are banned in UK and United States, but are freely marketed in third world countries.

Modern analysis splits the action of individual chemical entities on individual organs or functions, and fails to take account of the sum total. No doubt analysis is the first step in the study of a phenomenon, but it leads to the understanding of the whole phenomenon only upon synthesis. It is the realisation of this fact that had led to the recent movement of psychosomatic or holistic medicine.

RETURN OF THE PRODIGAL

Some modern scientists are turning back to the theories of traditional medicine - about the multiple causes of diseases. Lipowski[5] writing in an overview defines Psychosomatic Medicine as follows:

"In this sense psychosomatic has an ideological and philosophical connotation - one that affirms the complexity, multicausality and a sustemsview of man's functioning as a psychobiological unit in dynamic interaction with his social and physican environment".

Psychosomatic Medicine offers a conceptual framework and a rallying point for all those dissatisfied with reductionist and dogmatic approaches to the study of human behaviour in general and to the determinants of the status of health and diseases in particular.

Boyd[2] turning back to the traditional theories of equilibrium and balance writes, "Health is a condition in which the organism is in complete accord with its surroundings, with that exquisite coordination of the different functions which characterises the living animal or plant. Disease is a change in that condition as a result of which the organism suffers from Discomfort (Disease).

"But the student in his new-found enthusiasm for pathology must not forget that it is the whole patient who comes to consult the doctor, a total human being with a past, present and future, not just a disordered liver, a cardiac lesion, a lump in the breast or an electrolyte disturbance. The art of healing is the true function of the medical profession and science is only one of its instruments. It is true that one of the greatest changes has been from empirical to scientific medicine and knowledge of causes has brought a spectacular upsurge of preventive medicine. But the biochemistry cannot predict what the clinical course will be for any particular patient.

Boyd[2] writes about the "Multiple causes of Disease" and adds, "Perhaps one of our fundamental errors in discussing causation is to assume that there must be one and only one cause of a lesion or a disease. That of course is absurd...". Moreover we are apt to forget that with regard to the normal regulation mechanism by which health is preserved there may so easily be too much or too little. Thus our red blood corpuscles are continually being destroyed, but if the process is unduly speeded up we speak of haemolytic anaemia. It may be overdone as in Rheumatoid Arthritis. The disturbed regulatory mechanism can be seen in diverse psychosomatic diseases like Bronchial Asthma, irritable colon, peptic ulcer and hypertension.

INTEGRATION OF ISLAMIC MEDICINE AND MODERN MEDICINE

Hold fast to the basic principle of Islam and Islamic Medicine and take advantage of Modern Medicine only in areas where there is no antagonism, where there are no false gods, where Modern Medicine is searching the truth, the absolute truth. Certain rightminded people are still seeking the truth with modern science. They have true guidance from Almighty.

SUMMARY AND CONCLUSION

The basic principles of Islam and Islamic Medicine are sound. Yet we cannot live without Modern Medicine as we are living in this century of material progress. But is the Modern Medicine cure-all for every disease? Has it banished disease from the surface of the earth? Are the analytical concepts of today leading us to the right path? Are the Western life-styles conductive to health? Are we going to swallow all the drugs that the west is going to dump on us? Are we going to fall in the same pitfalls in which they have fallen?

Islam has taught us the slogan of golden mean, a balance and equilibrium. We will keep the balance between the Spirit and the Matter if it pleases God.

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ISLAMIC TIB EXCELLENCES AND HOW TO REORGANIZE AND ACQUIRE THEM

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Having a bird's eye view on the history of Islamic Tib, it becomes, evident that it is as old as the universe.

As Islam is a complete code of life and the Holy Book (Quran) enjoins upon Muslims to meditate over natural phenomenon to draw conclusion, so it was but natural that the followers of this faith should explore all avenues in this universe. Their observations and experimentations on the herbs of jungle produced invaluable medicine which has really enriched the world of Islamic Tib.

Europe owes much to the Muslims in the field of science. About one thousand years back when Europe was in complete darkness, Muslims were assiduous in making important discoveries. The subject that most attracted them was science. In this field they made enormous discorveries from which later on Europe took much advantage.

Hazrat Adam Aleh'e-'Slam was the first man who was Hekeem and a Doctor. Later on, his son Sheies (Hadrat Idrees) adopted this profession practically and then it was transmitted to Hadrat Soleiman (Aleh-e-Slam). The Arabian Islamic Tib history first began in A.D. 610 when the glorious period of Islam started. The first Arab doctor or physician was al-Harith ibn-Kalada, an elder comtemporary of the Holy Prophet Mohammad(ﷺ) and his son Nadr was like his father, had some skill in medicine. He was killed at the Battle of Badr.

Islamic Tib history could be identified as follows:

(a.) Early Period
(b.) Age of research and writing on medicine work
(c.) The Golden Age of Islamic Tib.

(a) EARLY PERIOD

In the seventh century, the Arabs first entered into the heritage of Islamic civilization. The Arabian pre-Islamic and early Islamic poetry shows that the Bedouins possessed a certain knowledge of the animals, plants and stones of their vast peninsula. They had also rudimentary knowledge in medicine, hygiene and meteorology.

(b) AGE OF RESEARCH AND WRITING ON MEDICINE WORK

Besides the Khilafat-e-Rashida, the Umayyad Caliphs also developed the fundamental knowledge in Islamic Tib and other sciences. In this regard, Valied I and Hadrat Omer ibn Abdul Aziz II - 717 - 719 (Razi-ullah-o-ta, ala-unho) were notable who established the hospitals (dar-ul-shafa) and medical schools.

The rise of the Abbasids about 749 inaugurated the epoch of greatest power, splendour, and prosperity of Islamic rule. At the very dawn stands the figure of a Muslim whose shadow lies straighforward on the science of the Middle Ages in the Orients as in the Occident. Jabir ibn Hayyan called as-Sufi (that is 'the Mystic'), Jabir practised as a physician. He is known as the father of the Arabic alchemy.

He is said to have been closely attached to the family of the Barmecides, the powerful viziers of Harun-ar-Rashid. He died at Kufa in A.D. 803.

During the reign of the Caliph Al-Ma'mun (813-33), the task of learning reached its best climax. The monarch created in Baghdad another regular school for research of Islamic Tib in Arabic. It was equipped with a library. One of the medical writers there was Hunayn-ibn-Ishaq.

Ibn-Ishaq (809-77), a particularly gifted philosopher and physician of wide erudition, the dominating figure of this century of Muslim writers and physicians.

Some of the writers and physicians took advantage by translating the Greek wisdom into Arabic. Thus it was transmitted to the Islamic World the whole legacy of the most voluminous of the Greek scientific writers.

Hunayn himself translated his "*Aphorisms*" in Arabic and this version remained classical for the later Arabs who frequently commented on it. Most of Hunayn's works were translated by Hunayn's disciples. These versions were often revised by the master, (Hunayn) who himself rendered into Syriac and Arabic nearly all the commentaries that they had themselves written upon medicine. Hunayn translated the "*Synopsis*" of Oribasius (325-403), the *Materia Medica* of Dioscurides which had been badly rendered by a former translator. This work was yet again translated into Arabic in Spain during the second half of the tenth century.

The superiority of Hunayn's workmanship was so generally recognised that many of the minor translators ascribed their productions to this great master. Hunayn's own influential books on Tib, made numerous discoveries than his translations from which later on Europe took the advantage.

Among the Arabs and Persians the most renowned to his influential books were the "*Questions on Medicine*", a manual in the form of query and answer, and the vast "*Ten Treatises on the Eye*", which was the earliest systematic text-book of ophthalmology known. Several important works of Hunayn, though lost in their Greek original, have been preserved in the Arabic translations made by Hunayn or his pupils.

At this period, as well as later, full liberty to teach all sciences, was granted in the schools and mosques of Baghdad.

In Physics, al-Kindi is the most frequently named scholar. Not less than 265 works are attributed to this Muslim Philosopher of the Arabs.

In natural history, a special type of literature arose during the eighth century. It took the form of accounts of animals, plants and stones composed with a literary aim, but containing useful information for physicians. One of the most prominent authors of such works was the famous Arabic physician and philologist Al'Asma'i of Basra (A.D. 740-828). He composed books on the horse, on camel, on wild animals, on plants and trees, on the vine and the Palm-tree, on the making of man and the medicine too.

Pharmacological and toxicological treatises were composed by many of the Arabic writing physicians from Jabir ibn Hayyan onwards. Paper was introduced into the Islamic world in the eigth century and in A.D. 794 the first Islamic paper-manufacture was established in Baghdad.

(c) THE GOLDEN AGE OF ISLAMIC TIB

At the end of the period of research and writing the physicians and scientists of the Islamic world stood on a firm foundation of Arabic Science, increased by a large share of physicians and scientist thought and experience. Their work had been learned as very original. From the beginning they relied on their own resources and to develop from within.

Now, the sciences, particularly medicine, was rapidly developing under the possession of Muslim scholars. In medicine, in place of pandects compiled from antique sources, we find imposing encyclopaedic works in which the knowledge of former generations is carefully classified and set against that of the moderns.

The famous and surely the greatest of the writers of Baghdad Medical School is al-Razi, the author known to the Latin West as Rhazes (865-925), was born at Ray near modern Tehran. Rhazes was undoubtedly the greatest Muslim physician of the Islamic World and one of the great physicians of all times. He studied in Baghdad and was acquainted with Greek, Persian and Indian medicines. The writings of al-Razi on medicine included manifolf characters.

The most celebrated of all the works of al-Razi is that on Smallpox and measles. It was early translated into Latin and later into various other languages, including English, being printed some forty times between 1498 and 1866. Al-Razi gives sound and detailed advice as to the treatment of he pustules afte ther full development of small-pox. These pustules are of course, the cause of the unsightly scars left by the disease, which is still common in the East.

The greatest medical work of al-Razi, and perhaps the most extensive ever written by a medical man, was his "*al-Hawi*", a comprehensive book, which includes indeed Greek, Syriac, and early Arabic medical knowledge in their entirety. Throughout his life al-Razi must have collected extracts from all the books on medicine which he had read, together with his whole medical experience. These he combined in his last years into this enormous manual. For each disease al-Razi first cited all the Greek, Syrian, Arabic, Persian and Indian authors, and at the end gave his own opinions and experiences. He also preserved many striking examples of his clinical insight. The '*Hawi*' was translated into Latin first time in 1279 by a Sicilian Jew.

The greatest work of al-Razi was propagated in numerous manuscripts during the following centuries. It was repeatedly printed from 1486 onwards. By 1542 there had appeared five editions of this vast and costly work.

Besides medicine, al-Razi left writings on theology, philosophy, mathematics, astronomy and the 'natural sciences'. The last deals with matter, space, time, motion, nutrition, ggrowth, putrifaction, meteorology, optics and alchemy. The importance of al-Razi's alchemical work has been brought to light during the last few years only. His great 'Book of the Art' of (Alchemy) was discovered in the library of an Indian prince.

A prominent contemporary of al-Razi was the writer known to the West as Isaac Judaeus (855-955). This Egyptian became physician to the Fatimid rulers of Qairawan in Tunisia. His works were among the first to be translated into Latin, the task being accomplished by Constantine the African about 1080. They exercised much influence on Western medieval medicine and were still being read in the seventeenth century.

In the Eastern caliphate there arose a generation of prominent Muslim physicians but here we will first mention one famous of them, Ali ibnul-Abbas known to the Latins as Haily Abbas (d. 994). He composed an excellent and compact encyclopaedia. The whole Medical Art, known also to the Latins as *"Liber regius"* (al-Kitab al-Maliki). This book was translated twice into Latin at an early date, but it was superseded by the *'Canon'* of the great Avicenna.

Abu 'Ali al-Hysayn ibn Sina, known universally to the West as Avicenna (980-1037) was one of the greatest scholars of the Islamic World, though less remarkable as a (philosopher) than as a physician and physicist. Nevertheless his influence on European medicine has been overwhelming. Ibn Sina concentrated the legacy of tribution in his gigantic *'Canon of Medicine'* (Al-Qanun fi't-Tibb), which is the culmintation and masterpiece of Arabic systematization. The medical encyclopaedia deals with general medicine, and a detail in 760 drugs, diseases affecting all parts of the body from the head to the feet, special pathology and pharmacopoeia.

The book was translated into Latin by Gerard of Cremona in the twelfth century and only this book continued to be printed and read into the second half of the seventeenth century in Europe. Probably no medical work ever written has been so much studied, and it is still in current use in the Orient. This another important book is *al-Nayat* which was printed in Rome in 1002 AH (1593AD) also.

While the Eastern Islamic World was gradually acquiring supermacy in medicine, Western Islam developed also as a centre of this science. In Spain, during the glorious reigns of the Caliph 'Abdul Rehman III and al 'Hakam II' of Qurtuba were notable centres in Islamic Tib.

I think that it will be quite useful and significant to discuss the importance and problems of surgery at that time when Muslims were assiduous in making important discoveries.

Surgery has always been one of those fields of medicine, the learning and practising of which faced tremendous obstacles. A thousand years back the cutting of any part of the body for surgical purpose was not permitted. Any one found doing any such act was given due punishments. This state was due

to religious and social prejudice which took this practice as something immoral. For this very reason no doctor dared to perform surgery. His task was restricted to prescribing medicine for patients. Still quite a few managed to write on surgery like al-Razi, Ibn Sina, Ali bin Abbas, al-Tibri and a few others. They only wrote books and that also with the precautions that no one would disclose it to the authorities. In such an atmosphere, undertaking of a surgical operation was almost impossible. With all these restrictions surgery remained undeveloped. The best place for the doctor for surgical operations and experiments was the battle field, a place where soldiers were wounded by sharp edged weapons or an arrow or spear in the body and hence the body was cut open. The rest of the work was to join the broken bone and to close wounds so that the bleeding stopped. Thus the doctor tried his hand on wounded soldiers and learned the basic surgery from there. Whatever the doctor learned in the battle field was then noted down for the benefit of others. These books reached Zahrawi but in a very bad shape. The important aspects were not clear. With the fear of death nobody touched these books and therefore, they remained underground. Zahrawi was the one who took courage and applied his mind to surgery. He was quite aware of the fact that if it reached the authorities he would lose his life yet he was not deterred by this and worked hard to learn more about surgery. He took bold steps to achieve positive results. This was perhaps the greater achievement of Zahrawi, to have revived, recompiled the earlier books and to add his own important discoveries in that hostile atmosphere.

Al-Zahrawi was one of those Muslim scientists who laid the foundations of modern surgery. His name was Abul Qasim Ibn Abbas al-Zahrawi. In Europe he was known as Abul Casis. He was born in the year 936 A.D. He flourished under the 8th Ummayed Caliph Abdul Rehman III in the tenth century at Cordoba (Qurtaba) as his special physician. The Ummayed Caliph (Abdur Rehman III) constructed a lovely city near Qurtaba, known as Madina-tuz-Zehra. It was in this city that great surgeon al-Zahrawi was born. As soon as he completed his studies he took a job in the hospital which was specially made by the Caliph Abdul Rehman III in Qurtaba. He keenly observed the methods which were applied to cure various diseases. After years of work in the hospital he developed his own concepts and wrote three books. He also wrote books about the operations he performed. These books remained standard text books for nearly 1000 years. One of them still survives and is kept in Pakistan as التصريف لمن عجز عن التاليف rare book in the Islamic Research Institute Library, Islamabed, the name of this books is 'Al--Tasrif-ul-Mun-Ajza-un-Talif'. The importance of this book can be guaged by the fact that this book was studied by students of surgery in Europe till the 19th century. It was still more important because it was written in an atmosphere which imposed restrictions on the production of such a book. This was quite a daring one as he had also written about his surgical operations which he secretely performed on different occasions. In that environment it was like bringing a crime to light. What problems Zahrawi must have faced in performing these operations, we perhaps cannot visualise and imagine. Under all that fear and tension, he still managed to perform successful operations, it was quite an achievement on his part.

This book of Zahrawi was translated in Latin known as "*Liber Theoricae Non Practice Al-Sahravi*". His manual of surgery was published in Venice in 1497, at Basle in 1954 and at Oxford in 1978. Its significance can be seen that the Europeans were extremely impressed by this book and they advised all the students of medicine to read it. Houler wrote, "because of importance of this book, it took the name of the author. Now it is known as Zahrawi". The other two books also gained importance but unfor-

tunately have not survived. This book of Zahrawi *'Al Tasrif'* is in two parts. The first part is theoretical and second practical. First part did not gain much of importance because it was about the causes of diseases and their cure. Different parts of body were discussed in it. In this part Zahrawi himself writes, "When I completed this book for you, which consists of the basic medical discissions and explained important aspects of medicine, then I thought I should also include the surgical part which is essential for the students of surgery which has been ignored in our city. Though indications of surgery procedures are present in the earlier books, but the cruel hand of time has washed them away and wrong notions have taken their place. I thought I should learn the different parts of body such as all bones, their joints, how to recognise a bone, their number etc. I saw many people who are not aware of true medical knowledge but act as if they know everything. One must avoid such things. Do not cure the disease in a wrong manner, neither call yourself a big doctor". The fame of his book *'Al Tasrif'* was because of its second part which was on surgery. There is no doubt that Muslims wrote a lot on medicines and the books written by Ibn Sina, Ibn Rushd, Imam Razi Ibnul Haitam and al Zahrawi remained in the course of medical students for a long time. A French writer Leban writes, "In the tenth century in Andalusia (Undlus) it was because of Muslims that knowledge was given importance. In those days there was no place other than Undlus where people went to seek knowledge".

The second part of Zahrawi's book is most important. It attracted the attention of all medical men of Europe. It gives a detailed account of the principles, problems of surgery and their solutions.

The most important aspect of it is that it also showed the 278 pictures of the equipment used for the surgical purposes. All tools that Zahrawi used for surgical operations were very lucidly described. The part of surgery that Zahrawi has discussed relates to operations of those diseases of the body which cannot be cured by medicine. He remarked therein that operation should be that last resort. First of all medicine should be tried and only when it does not work then an operation should be undertaken. This is what is taught to 20th century doctor.

It is worth telling here that Muslims are also pioneers in the discovery of anaesthesia. Zahrawi also advised opium before any operation ion so as to reduce the pain.

Zahrawi discussed most of the operations that we talk of today such as stone in the kidney, piles, brain, teeth, throat and eyes, etc. He also mentioned about heart and said that heart failure occurs due to sudden shock or over burdening of nerves which affect the blood circulation which in return affect the heart. Zahrawi also described in the said book, the ways by which broken bones could be joined. Other aspects of bone problems such as slipped discs, dislocations etc., cutting the extra growth of bones, operating on those parts of body which become numb were also discussed.

Zahrawi had thoroughly discussed the operation of the brain. He described the different parts of brain, the cutting of the skull bones and joining them back.

Post-mortem is still undertaken with a lot of problems, even today people object the post-mortem by doctors. One finds it difficult to imagine Zahrawi again and again stressed on the importance of a post--mortem examination.

Stone in the kidney, was clearly understood by Zahrawi. He knew the problem well and suggested

medicine before undertaking operation as he feared the loss of kidney.

Zahrawi did not write these things on mere assumptions. Before writing his book *'Al Tasrif'*, he had thoroughly and successfully dealt with his limited problems. The operations he performed with his limited tools were proved seldom failures. He advised pouring alcohol after the operation as it would heal the wound soon i.e. he knew about he antiseptic action of alcohol.

Zahrawi will be remembered as long as surgery remains in practic. He has made an important contribution in this field. All the modern versions of surgery are modified versions of his concepts. Has the Muslims kept pace in this field of knowledge, they would have been leading in many fields today. Zahrawi died in Qurtaba in the year 1013 A.D.

Abu Rayhan Muhammad Al-Biruni (973-1048) known as the Master (al-Ustadh), was perhaps the most prominent figure in the phalanx of the universally learned Muslim scholars who characterize the Golden Age of Islamic science. His "Chronology of Ancient Nations" and his "Indian studies" are known in good English translations.

The famous philisopher al-Farabi, a Turkish Muslim (A.D. 951) must be mentioned here for his important book on the classification of science. Two similar works of classification composed some time after, was the 'Key of science', written in 976 by Muhammad al-Khawarzimi. The other was the famous work *'Fihrist al-Ulum'* i.e. Index of Sciences (988) by Ibn al-Nadim.

Optics was developed to its highest degree by Abu 'Ali al-Hasan ibn al-Haytham (Alhazen) of Basra (965). Alhazen opposes the theory of Euclid and Ptolemy that the eye sends out visual rays to the object of vision.

We may see at a glance the scientific institutions during this golden age of Islamic science. Hospitals were early founded, probably on the models of the old and celebrated academy-hospital of Jundeshapur. From the Persian name for this is derived the title used for a hospital throughout the Islamic world (bimaristan). We have authentic information concerning at least thirty-four such institutions which were dispersed through the Islamic world from Persia to Morocco, from Northern Syria to Egypt. In Cairo the first hospital was founded by the governor Ibn Tulun about A.D. 872.

Cordoba (Qurtaba), al-Azhar mosques were most important among these institutions at that time also. It was Al-Azhar Medical School which first provided the scientific knowledge to the first European University in Sicily.

In Baghdad the first hospital was created at the order of Harun ar-Rahis at the beginning of the ninth century and five others were installed during the tenth. Travelling hospitals were found in the eleventh century. The hospitals were divided into two sections, for men and women, and each had its own wards and dispensary, some hospitals possessed a library too.

Other sciences and medicines were mostly taught in mosques. In the early centuries of Islam, these were liberally placed at the disposal of scholars. There are also records of academic libraries founded by caliphs, princes and other prominent men. A 'House of Wisdom' was created in Baghdad by the Caliph al-Ma'mum about A.D. 830.

The pilgrimage to Mecca and Medina, the duty of evey Muslim, favoured the spread of science, since it compelled students from India and Spain, from Asia Minor and Africa, to pass through many lands where they could visit mosques and academies with prominent scholars.

In Spain, the philosophical bias predominated among medical men. The prototypes of this combination were the two Muslims, Ibn Zuhr (Avenzoar) and Ibn Rushd (Averroes). The former (D. in Seville 1162) was an aristocratic physician at the court of one of the Almohade rulers. His chief work is the "Facilitation of Treatment" known by its Arabic name *al-Taysir*, translated into Latin as Theisir in 1280. This book gives proof of remarkable independence of thought, being largely based on personal experience. Ibn Rushd (d. in Morocco in 1198) wrote some sixteen medical works, one of which is wellknown in its Latin translation. This is the "General Rule of Medicine" (Kulliyyat fi't-Tibb). Ibn Khaldun (d. 1406) the talented Arabic philosopher of history, the greatest intellect of his century was a violent guardian of alchemy.

Sicily, which had been under Muslim control for 130 years became a fertile centre for the spread of Arabic sciences.

Thus hundreds of translations from the Arabic literature descended on the barren soil of Europe. The Muslims helped the Europeans in establishing the universities in numbers and these became the centres of the new learning.

After the sixteenth century medicine and science, particularly in northern Italy, began to refer more and more to translations from the Arabic rather than the Greek. In the second half of the fifteenth century all the Arabic works on medicine and science were printed.

CONCLUSION

The purpose of this paper is to draw the attention to our grand forefathers' valuable services and achievements in Tib. All efforts are that in order to reorganise such an Islamic Tib on the basis of technical, scientific and theoretical research principles which will cause a revolutionary impact. If it happens so, there could be a common Islamic Tib among the Muslim countries, which would not rely on others, more particularly the Europeans.

I have a revolutionary idea which is although a costly and not so easy for a common physician, but a well established institution can do it easily. Anyway, the idea is to have a coloured film or albums of (Islamic Tib) medicinal herbs indicated for various diseases in medical books etc. And, similarly we can produce a coloured fims or albums on the periodical growth and development medicinal herbs in days, weeks and months etc. The process of growth of herbs can regularly be observed through modern scientific techniques.

Moreover, highly technical and scientific research on international level among the Muslim countries in particular, and the World in general, can help to coordinate, recognise and remove the local and regional difference of the periodical growth and development of medicinal herbs which appeared due to geographical factors in coloured film.

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PART TWO

SEMINAR ON IBN SINA

Part Two: *Seminar on Ibn-Sina*

CHAPTER ONE

(Papers presented)

1. REPORT ON SECOND SESSION
   Editors.
2. IBN SINA'S BLESSED MEMORIES AFTER 1000 YEARS.
   The copies of the pages of some manuscripts of his works - Reflecting facts of his knowledge.
3. ABU ALI AL-HUSAYN IBN ABDULLAH IBN-SINA
   (Some facets of his life and work)
   Dr. Ihsan Dogramaci
4. AVICENNA, PHYSICIAN, PHILOSOPHER AND SCIENTIST.
   Hakim Mohammad Said and Mrs. Sadia Rashid.
5. COMMENTS AND DISCUSSIONS.

REPORT ON SECOND SESSION

This session was held in two parts.

In the first part, Prof. Fuat Sazkin gave a general lecture in Arabic on "The Role of the Muslim Scientists in the History of Medicine".

The second part of the session, which started after Maghrib prayers was a seminar on Ibn Sina. This session was presided over by H.E. Mr. Abdul Aziz Hussain, Minister of State for Cabinet Affairs, Kuwait, Dr. Mustafa Helmy acted as moderator. In his speech H.E. the Miniter welcomed the delegates to this session on Ibn Sina. He dwelt with the contributions of Ibn Sina out his great influence as physician and philosopher in the history of sciences. He also pointed and that as a part of the commemoration celebrations of the great Islamic scientist Ibn Sina, the Ministry of Public Health Kuwait has decided to name one of its Hospitals after him.

In this seminar two papers in Arabic and two papers in English were presented, followed by comments of the participants. The session ended at 6.00 p.m.

Editors

"IBN SINA'S BLESSED MEMORIES AFTER 1000 YEARS"

The following are photocopies of the first pages of some manuscripts written by Al-Sheikh al-Rai's 'IBN SINA' which reflect aspects of his religious, medical, philosophical and literary characteristics.

In this respect, we would like to express our great thanks to all those who helped us to procure these valuable manuscripts from the Sulaimaneyah Library in Istanbul, and particularly to mention:

1) H.E. Prof. Dr. Ihsan Doqramaci (Chairman of Council of Directors of the Turkish Universities).
2) Prof. Dr. Ekmeleddin Ihsanuglo (Director, Center of the Islamic Studies on History of Culture, Arts and Literature, affiliated to the Organization of the Islamic Center, Istanbul)
3) Dr. Hidayet Nuhuglu (Lecturer of Libraries' science and an expert of the Islamic Center, Istanbul)
4) Mr. Moammar Oliger Director of Sulaimaneyah Library, Istanbul).
5) Mr. Neuzat Kaya (Vice-Director of Sulaimaneyan Library, Istanbul).

They include:

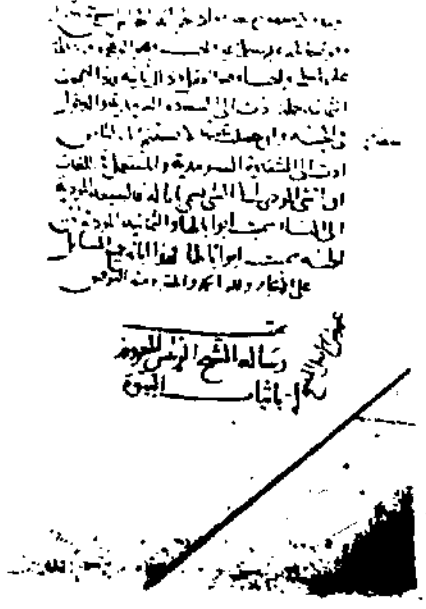
1) Treatise on Muslim prayers and explanation of Surahs of the Quran
2) First page of "al-Qanun"
3) First page of "Kitab al-Najat" in philosophy
4) "Al Urjuza Fi-Tib" (His famous medical poetry)

Editors

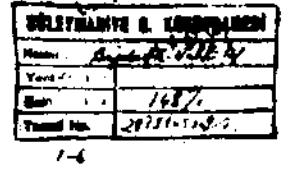
رسالة الصلوة عن الشيخ الرئيس ابي علي بن سينا قدس الله روحه

بسم الله الرحمن الرحيم وبه نستعين

الحمد لله الذي خص الانسان بشرف الخطاب والهمه مدافعة للقضاء
وملازمة الصواب طهر قلوب اوليائه بتاييده وقدس وصفي سرايره
خواصه بلذة كشفه وانسه وجعل للانسانية في عقد المخلوقات
نضارت فاصلة وخاطب البشرية من بينهم فجعلها عاقله لما ابدع
الافلاك وخلق الاركان وانشاء النبات وكمل الحيوان ثم خص
الانسان من بينهم بشرف النطق والفكر والبيان حتى كانه من فضالة
للانسان سايرالاكوان فاعلم ايها الاديب الفهيم ان الله حق وله التعبد واليه
التضرع لانه مستحقه والصلوة على خير البرية والمطهرين من كدورات
البشرية سيد الاولين والآخرين محمد وآله الطاهرين بارك الله عليهم
التمست مني ايها الاخ الشفيق والصاحب الصديق ان الخص لك رسالة
في الصلوة واشرح حقيقتها المتعلقة الى ظاهرها المشهود والى باطنها
المطلوب المرغوب وان ابين فيها وجوب اعداد الصلوة على الاشخاص



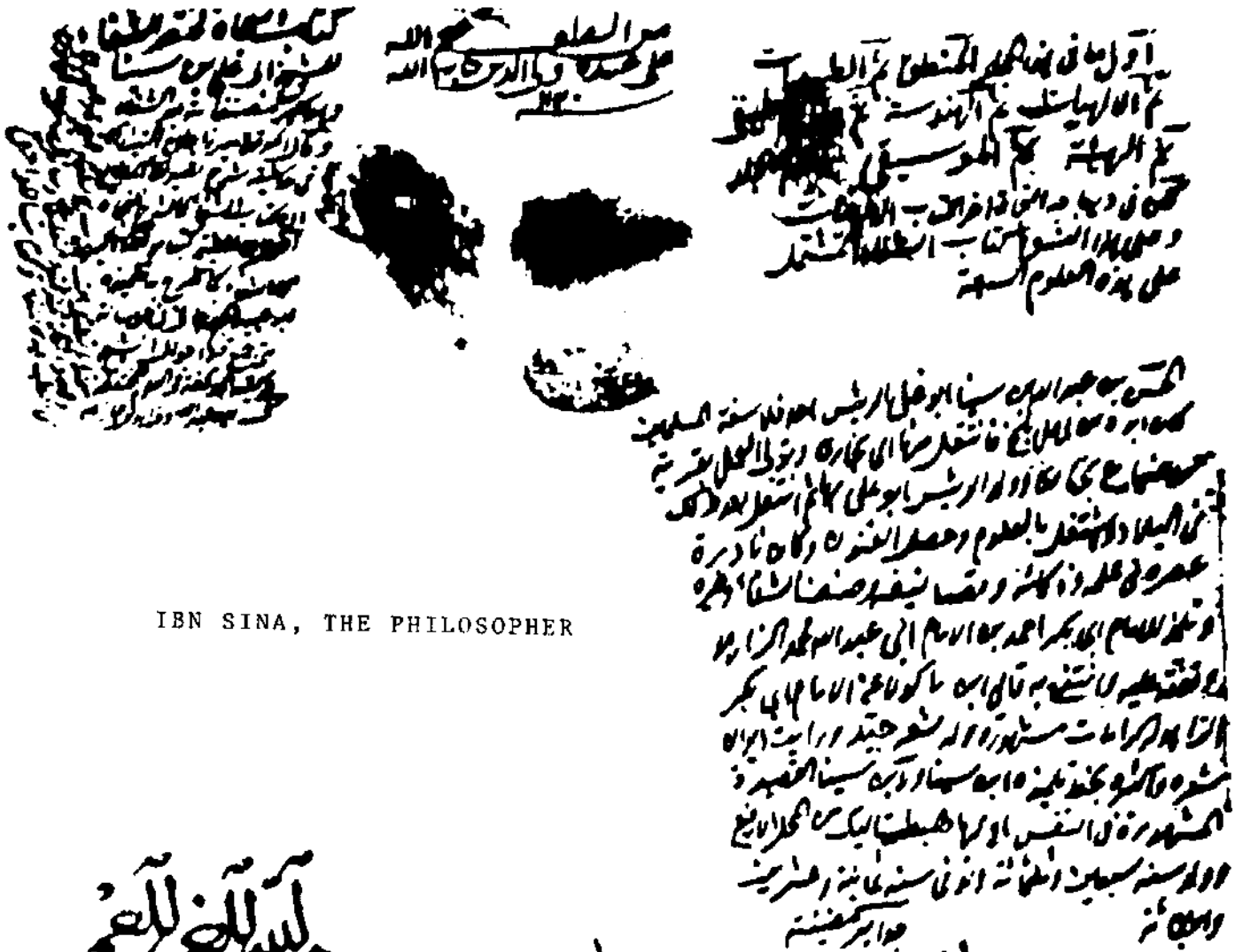
تفسير الاخلاص والمعوذتين
تاليف الشيخ الرئيس ابو علي
الحسين بن عبدالله
بن سينا



كتاب الاول في كليات فن الطب

بسم الله الرحمن الرحيم وبه نستعين

الحمد لله حمدا يستحقه لعلو شانه وسبوغ احسانه وصلواته على النبي محمد وآله الطاهرين وبعد
فقد التمس مني بعض خلص اخواني ومن يلزمني اسعافه فما تسمح به وسعي ان اصنف في الطب كتابا مشتملا على
قوانينه الكلية والجزئية اشتمالا يجمع الى الشرح الاختصار والى ابقاء الاكثر حقه من البيان الايجاز فاجبته
بذلك ورأيت ان اتكلم اولا في الامور العامة الكلية في كلا قسمي الطب اعني القسم النظري والقسم العملي ثم من
بعد ذلك اتكلم اولا في كليات احكام قوى الادوية المفردة ثم في جزئياتها ثم بعد ذلك في الامراض الواقعة بعضو
عضو فابتدي اولا بتشريح ذلك العضو ومنفعله واما تشريح الاعضاء المفردة البسيطة فيكون قد سبق مني
ذكره في الكتاب الاول الكلي وكذلك منافعها ثم اذا فرغت من تشريح ذلك العضو ابتدأت في اكثر المواضع
بالدلالة على كيفية حفظ صحته ثم دللت بالقول المطلق على كليات امراضه واسبابها وطرق الاستدلالات
عليها وطرق معالجاتها بالقول الكلي ايضا فاذا فرغت من هذه الامور الكلية اقبلت على الامراض الجزئية و
دللت اولا في اكثر ما ايضا على الحكم الكلي في نوعه واسبابه ودلائله ثم خلصت الى الاحكام الجزئية بعوارضه
البسيطة او مركب وما كان سلف ذكره من الادوية المفردة ومنفعتها للامراض في كتاب الادوية المفردة في
الجداول والاصباغ التي اري استعمالها فيه كما يقف ايها المتعلم عليه اذا وصلت اليه لم اكل الا قليلا
منه وما كان من الادوية المركبة انما الاحرى به ان يكون في اقراباذين الذي اري ان اعمله اخرت ذكر
منافعه ومضاره وكيفية خلطه اليه ورأيت ان افرغ من هذا الكتاب الكلي كتاب ايضا في الامور الجزئية يتضمن
بذكر الامراض التي اذا وقعت لا تختص بعضو بعينه ونورد هذا الكتاب الكلي الكتاب الثاني وان اسلك في
هذا الكتاب مسلكي في الكتاب الجزئي الذي قبله فاذا انتهيا بتوفيق الله الفراغ من هذا الكتابين جمعت بعض
القراباذين وهذا كتاب لا يسع من يدعي فن الصناعة ويكتسب بها ان لا يكون جملة معلوما محفوظا تاما
فانه يشتمل على اقل ما لا بد منه للطبيب واما الزيادة عليه فامر غير مضبوط وان اخر الله تم في الاجل وساعد



بسم الله الرحمن الرحيم

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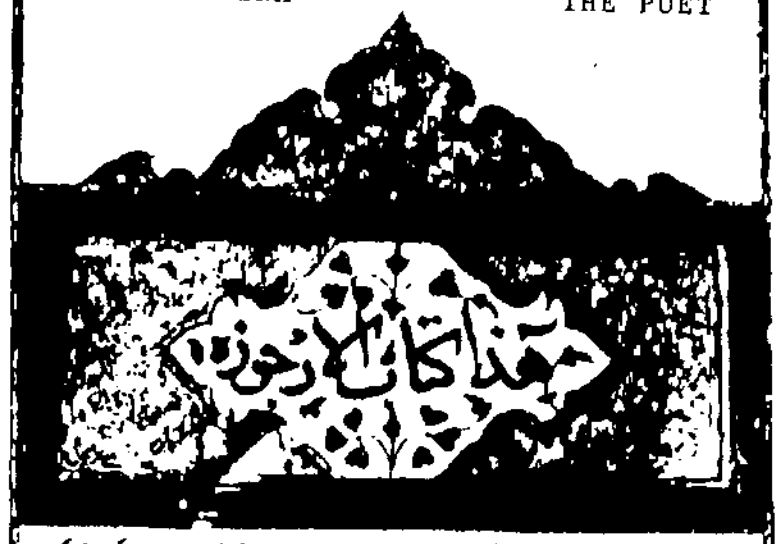
امّا بعد حمد الله والثناء عليه بما هو اهله و
مستحقه والصلوة على رسوله محمد وآله فان
طايفةً من الاخوان الذين لهم حرصٌ على اقتباس
المعارف الحكمية سألوني أن اجمع كتابًا يشتمل
على ما لابدّ من معرفته لمن يوثر ان يتميز من العامة
ويتجاوز الى الخاصة وتكون له بالاصول الحكمية
احاطة وسألوني ان ابدِ افيه بافادة الاصول
من علم المنطق ثم انلوها بمثلها من علم الطبيعيات
ثم اورد من علمي الهندسة والحساب ما لابدّ منه

IBN SINA THE POET



بسم الله الرحمن الرحيم وما توفيقي الا بالله

قال الشيخ الرئيس ابو علي بن سينا رحمة الله عليه

لما جرت عادة الحكماء وفضلاء القدماء يخدمه الملوك

والوزراء ورؤساء القضاة والفقهاء بتصانيف المنثور

والمنظوم وتواليف الصنايع والعلوم لاسيما

شراء الاطباء فانهم كثيرا ما نظموا الاراجيز

والقوا الكنانيش ليتبينوا الكفهم من واجزهم

وماهرهم من عاجزهم فينتج ذلك اطلاع الملوك

على القوانين الطبية والمناهج الحكمية ورأيت

IBN SINA

Abu Ali al-Husayn Ibn 'Abdullah Ibn Sina.Some facets of his life and work

Ihsan Dogramachi,
Ankara, Turkey

I feel highly privileged to have been invited to be with you today and to relate some facets of the life and work of Ibn Sina, the «Prince of Physicians», an intellectual phenomenon and a universal genius, being aware that to do full justice to this great man within a brief time is impossible.

Ibn Sina or as he is known outside the Islamic world, Avicanna, was born 1000 years ago, in Afshana, near Bukhara, in Turkistan, what is now Uzbekistan in U.S.S.R., which during the 7th to the 10th centuries, was one of the leading Islamic cultural centers. Following the death of his father and the political chaos caused by the death of the local political ruler, he left Bukhara at 21 years of age and spent the rest of his life in various towns in Persia. He may well be the physician known most widely and over the longest period in the history of the world.

Ibn Sina was once asked by one of his students called Behmenyar why he did not proclaim himself a prophet. This clearly indicates the very high esteem he was accorded by his contemporaries. His answer may easily be guessed, because he was a devout Moslem and remained so throughout his life.

Ibn Sina was a perfectionist. He learned and mastered Persian and Arabic when young, and by the age of 10, he had mastered the Quran. Once, when presenting his opinion on an Arabic word in the presence of the Emir, a scholar commented that although Ibn Sina's wisdom was never questionad in other fields, he did not feel the man to be sufficiently versed in Arabic to present an authoritative view. Badly slighted by this remark, Ibn Sina undertook an intensive three year study of Arabic literature and grammar, ordering rare books from distant places with his customary zeal. Then he composed three Arabic poems, using only the rarest of words, as well as three essays, each in a different classic style. He had these bound in one volume and had the book soiled and rubbed so that it might appear used and old. This was presented to the Emir with the statement that it had been found while he was hunting in the country and was not fully understood. At Ibn Sina's request, the book was handed to the same wise scholar who had insulted him earlier, so that the man might make the necessary interpretations. The gentleman was completely humiliated as he sensed that the masterpiece was the product of his chance remark made long ago.

Ibn Sina was extraordinarily handsome, and his adventurous life reads like a novel. During his travels, he was brought to the services of kings and rulers who employed him as their musician, companion and minister.

Ibn Sina was a man of superior intellect and a prolific author. He began to write at a very young age and in the 57 years of his life, he authored more than 200 works. The first great product of his pen was "*el Shifâ*", in which he set forth his views based on Aristotelian thought (Meshai). His most famous work in medicine was an unwieldy volume of more than one million words, his *al Qanun fit - Tibb* or *Canon of Medicine*. Despite its being a medical textbook, the *Qanun* also gained fame as a philosophic treatise. Based on the experiences of Greek physicians during the Imperial Roman Age, other Arabic works and his own clinical observations, this bok of great intrinsic worth and its formal perfection was used in medical instruction throughout the Islamic world and Europe for some 600 years, in which period it retained its supreme medical authority. Its first translation into Latin (12th Century) was printed fifteen times before 1500, followed by a new Latin translation in 1527. It is known, for example, that it was still used as a textbook in the Universities of Montpellier and Louvain, in 1650. It was also the second book ever to be printed i Arabic, in 1593. Thus, Ibn Sina was earning his fame in Latin Europe, where he was the focal point of the "School of Avicenna".

One of the philosophic currents of Islam, preferred by the Meshai sect, was based on Aristotelian thought and received the admiring attention of Ibn Sina, particularly in its systemization by Farabi. In fact, he confessed to one of his biograpers that he had read Aristotle's treatise on Metaphysics 40 times without understanding it. He had then read Farabi's work on Aristotelian thought once and understood it immediately. This event aroused in him a longstanding admiration of Farabi, who had died some 30 years before Ibn Sina's birth. In fact, Ibn Sina undertook to expand and clarify the sometimes obscure language of Farabi in his explanations of the philosophy. In any case, both Farabi and Ibn Sina used Aristotle's work solely as a point of departure. They found original solutions to many problems posed by Aristotle.

Ibn Sina's scientific theories are based on sub-division into theoretical and practical sciences. The theoretical side consists of Physics, Mathematics and Metaphysics, whilst the practical deals with Economics and politics.

Before Ibn Sina left Bukhara, he had come into contact with intellectuals such as Abu'l-Rayhan al--Biruni and Abu Nasr al-Irak. It was at this point that the scientific debates between Ibn Sina and al--Biruni on physics and astronomy began.

If we consider Ibn Sina's philosophic and scientific debates with Biruni and others of his contempories, as well as the long years he spent in politics and his practice of medicine which included many statesmen, it is evident that such a life, lived to the full, would lead an extremely gifted man to become a figure of importance. He attracted not only devout supporters but also determined adversaries throughout both the Islamic world and Europe and his writings had a profound effect on philosophers and writers for succeeding centuries.

For some years, Ibn Sina roamed Transoxania and Iran, serving the local warring princes. In 1015, he became Vizier and physician to the ruler of Hamadan but on the latter's death, in 1022, he was imprisoned for four months. Released during a temporary takeover of the city by yet another ruler, Ibn Sina disguised himself as a dervish and departed for Isfahan, where he remained for the rest of his life as physician to Ata' al-Dawla.

IBN SINA'S GREAT INFLUENCE ON WORLD MEDICINE

The fame of the *Qanunn,* Ibn Sina's monumental medical textbook, was such that he overshadowed even such figures as Hippocrates and Galen until the end of the 17th Century. Osler describes it as "the most famous medical textbook ever written" and as a "medical bible for a longer period than any other work".

It appears from his biography, as dictated by him to his disciple Abu Ubayd Juzjani, that at only 16 years of age he was a physician of such renown that the ruler of Bukhara, Nuh bin Mansur, called upon him when he became ill. The ruler when cured, put his rich palace library at the disposal of Ibn Sina. In that Library, the young physician read works of which no one had even heard the name and by age 18 had learned everything that was to be known at that time.

Following is a story showing that basic emotions need the interpretation of an outstanding, medically oriented mind.

The nephew of King Kabus became sick with an obscure ailment which baffled everyone. Ibn Sina was called to treat him. After performing a thorough examination and questioning the patient, he requested someone well acquainted with the city to name one district after the other while he felt his patient's pulse. When the name of one particular street and, then, of one alley was mentioned, another person was called to name the owner of the various houses in that street and to name all the inhabitants of that house. All this time, Ibn Sina kept noting the effects on the patient's pulse and watching his emotional reactions. When a particular name was mentioned, he stopped and ordered that the girl with that name be brought. Ibn Sina pronounced the ailment to be Love and prescribed a union between the two young people as a cure. The young patient verified the diagnosis, was happily married and cured.

Ibn Sina was first a physician, who because of his contributions to the science and art of medicine rightly earned the surname "Prince of Physicians".

His writings include broad fields of medicine. Ibn Sina's contribution to psychosomatic medicine was substantial. An account of his managing and curing a deluded man is of interest: A patient believed himself to be a cow and demanded to be slaughtered. When his relatives failed to comply, he refused food. Ibn Sina prepared to butcher the patient. Before lowering his sword, he palpated the patient's muscles and pronounced, "The cow is too thin, it should be fattened before slaughtering". The patient started to eat and was rid of his delusion.

Gruner, in his 'Treatise of Medicine of Avicenna', published in London in 1930, pointed out several ideas held by Avicenna that are today looked upon as modern contributions. These include his observations on the close relationship between emotions and bodily changes, the physiology of sleep; the healthful importance of purifying drinking water, the climatic influence of health and illness, the importance of dietetics, the introduction of drugs into the urethra, the use of vaginal tampon, the use of anesthetics orally, the idea of testing the strength of drugs by anuma experimentation and the treatment of insanity by artificially induced malaria.

Ibn Sina described many diseases accurately, such as tetanus, pleuritis and he noticed the con-

tagiousness of tuberculosis. Also described by Ibn Sina, were the guinea worm infection, anthrax and diabetes mellitus.

He also wrote treatises on medical laws and on medical definitions and on the pulse and colics. Ibn Sina was the first to describe trigeminal neuralgia and he differentiated facial paralysis into central (upper motor neuron) and peripheral (lower motor neuron) types. He wrote about the pupillary reactions to light and described the six motor muscles of the eye. He gave and accurate clinical description of meningitis and its differential diagnosis. It is interesting to note that Ibn Sina recommended fluid extract of cheese for the treatment of diarrhea. He considered breast milk the best food for infants and listed methods for infant feeding.

IBN SINA AND PHARMACY

Ibn Sina's *Qanun* includes in addition to medical knowledge, passages totally devoted to pharmacy, despite the fact that at that time pharmacy had not gained identity as a speciality of its own.

Ibn Sina classifies drugs by color, odor and effect. By taste alone, he divides them into 8 groups. When remedies are classified by their effects, they divide into 41 groups. Ibn Sina lists the errors which can occur in their preparation and changes which may occur when they are cooked. He then describes the methodology of their preparation such as grinding, crushing and heating. He fills long pages analyzing and describing the effects of each drug.

Ibn Sina's writings on drugs in the *Qanun* are found in a separate section, in which he distinguisheds complex drugs from simple ones. This section of the *Qanun* comprises 12 articles in which are listed such varied types of drugs as antidotes for poisons, pastes, fruits preserves, jams, lozenges, pills, oils, ointments and infusions. The names of the compounds, the indications for their use and how they are to be prepared and stored are all described. The compound drugs are either prepared by the physician personally or with the aid of his apprentices. The "simple" drugs are described separately.

Following the detailed listings of the medicines, the author presents an extensive discussion of the drugs to be used for each organ of the body for each illness, with amounts recommended. Drugs are given in relations to the stage of the disease. At the beginning, preventive drugs are recommended and at later stages therapeutic drugs. If the disease is undiagnosed only mild drugs to ease the patient's symptoms are prescribed until the nature of the disease is understood.

Ibn Sina himself prepared two original poison antidoted and a number of other drugs and with his literary contributions is an important figure in the early history of pharmacy.

THE PHILOSOPHY OF IBN SINA

His "Mashriki" or "Ishraki" thoughts were to have a profound effect on the Azerbaijan philosopher Suhreverdi el-Maktul, author of Ishraki Philosophy.

Ibn Sina adapted the "experimentation" of the physical and in particular medical naturalist Abu Bakr al-Razi and brought it into concordance with Aristotle and Farabi's "rationalism". We encounter examples of this in particular in his *Qanun,* where he discusses his own observations and experiences.

In Nature's and therefore in matter's relationship with God, the concept of time was reduced to zero by Ibn Sina, and matter was accepted as etenal, which caused Ibn Sina to be criticized by Ghazali and because this idea departed from Aristotelian thought he was also criticized by Ibn Rushd.

The concept of matter as harboring in its constitution, activity in force, led Ibn Sina to an idea of perfection. The idea of the aim of Nature as a constant striving for perfection is nearly reconciled with what is actually its opposite, determinism. Of course, this interpretation of "determinism" led to the interpretation of some miracles as rare occurrecnces of nature, but Ibn Sina never became a disbeliever. On the contrary, he was sincerely devout. He was in the habit of going to the mosque to mediate and also sought divine inspiration through dreams in order more easily to undrestand difficult questions.

Ibn Sina's conception of matter shows that he was never swept into a mechanistic trend of thought. As the modern day Turkish writer Himi Ziya Ulken showed, in Ibn Sina's philosophy the so-called first perfections and second perfections bring to mind the philosophy of the Englishman Locke who lived 650 years later, in which he set forth a theory of the first and second qualities of matter.

LITERATURE

Ibn Sina, who was able to squeeze into his very active life a rich and productive literary effort, was one of the thinkers with the greatest influence on the Islamic and Christian circles during the Middle Ages. A major part of his literary production is made up of such books as *esh-Shifa, en-Nejat, el Hidaye, Kitab en-Nefs, el-Ishara* and *et-Tenbihat* and *Hikmat-ul-Alai,* in addition to his *Qanun fit-Tibb,* all of which have long been esteemed. It is a fact that he also produced writings other than these frequently cited works. It was by this means that Ibn Sina showed himself to be much more than a literary man confined to a library.

Iran, which at the time was in an agitated state, drew Ibn Sina into politics, and he was appointed to various administrative posts. It is a trait to be admired that despite all his activities in public life, not only was he able to produce his great books but at the same time he attended to the queries of his friends and acquantances on all sorts of subjects and gave written replies to them even in cases where his previous writings had already dealt with these questions. We have today in our possession nearly 20 essays of this type. These include writings on psychology, logic, astronomy and physics, addressed among others to the great Islamic intellectual Ebu Rayhan el-Biruni, Ibn Sina's faithful pupil Ebu-Ubeyd el Juzjani; the famous Baghdad physician Ebu-el-Faraj bin-Tayyib, Ebu Tahir bin-Hassul who wrote about Turks, and the famous philosopher Ibn Miskawayh.

Ibn Sina also carried on an exchange of correspondence with the famous mystic Eby Said bin abi--el-Khayr, who was the esteemed sheikh of Nishapur, a great center of mysticism of logic, psychology and mysticism and received the philosopher's view in essay form.

MYSTICISM AND LOVE

Like many of the physicians of his day, Ibn Sina besides his many other interests expressed valuable views on love and mysticism. In his Essays on th Nature of Love, he defined love thus, "True

love consists of finding and desiring the one who is good, beautiful and really compatible". According to this, love is a leaning toward perfection made up only of good. To love is to find good, to find perfection and to retain it.

Ibn Sina does not see love as an attribute of living creatures only. He is of the opinion that love can be found in all things. And the highest degree of love is not in beauty but in goodness. Good loves good. The primary and absolute good is God, and He is loving of Himself.

Ibn Sina, in touching upon the leanings of delicate and courageous persons, especially towards lovely faces, dwells on the beauty of the face. Love in the presence of a beautiful face, takes its force from animal and human strength. In humans both these are factors. In moderation, love of a face which reflects godly beauty is taken as a sign of good fortune and can be a means of approaching God. The desire to embrace and to kiss is not considered wrong provided that one does not go further and that the animal instincts can be kept quiescent.

The most perfect of all loves is the love of absolute good. i.e., the love of divine being. It can be said that Ibn Sina's conception of love led him toward a mystical philosophy. Nevertheless, it should be pointed out that for him, the pleasures of the intellect were superior to those of the emotions. Since to dwell on material things is a big obstacle to perfection, in Ibn Sina's mystical writings the word "comfort" (Farah) is used rather than "pleasure". God is comfortable with Himself. His existence is flawless and He is loving of it. Learned men, those who proceed beyond logic and science to be in touch with truth, are mystics, and these are the ones who can reach high posts. Piety, devotion and abstinence save the learned man from being a "kal-ahl". The learned man is brave, generous, forgiving and never vindictive. He desires only Al-Haqq (God) and worships only Him. The learned man's goal is to reach Him.

Ibn Sina was such a many-faceted person that it is extremely difficult even to outline his accomplishments. I have referred to a few, without so much as touching upon his contributions to psychology, morals and many other aspects of his overwhelming life's work.

AVICENNA: PHYSICIAN, PHILOSOPHER AND SCIENTIST

Mohammed Said and Sadia Rashid
Pakistan

Sogdiana - at present a part of Afghanistan - lay at the fringe of Iran or Khurasan, properly speaking, till the Mughal times. Geographical and racial distinctions were not so marked in the age in which Ibn Sina lived and the region from which that genius' father hailed, Balkh, and its environs has produced some of the most outstanding geniuses of Iran - Jalal al-Din Rumi, Nasir-i-Khusrau, and the mystic Ibrahim Adham. Herat, also in Sogdiana, and Ghazni, has produced Najib al-Din Samarqandi, Abd Allah Ansari, Abd al-Rahman Jami (although his family originally hailed from Iran proper), and the mystical poet, Hakim Sana'i of Ghaznah.

What the racial make-up of the people during the 10th Century was we do not know, but Iranian influence, at least culturally speaking, was very strong, and, since the Turkish migrations had not occurred to a very sizeable extent, probably the racial make-up of the people of the region was Iranian. It is probably the absence of any racial feeling and the cosmopolitanism of the region that also produced men like Imam Bukhari, in all probability an Iranian like Ibn Sina (Avicenna).

Ibn Sina's father originally hailed from Balkh, and his mother's name was Sitarah (The Star), a pure Iranian name. He was born at Afshanah near Bukhara in 370 A.D./980 A.H. His native language was Persian, although for the most part he wrote in Arabic, as also another compatriot of his, al-Biruni. His father and his brother came under Ismaili propaganda, especially rampant at the time, but although he knew of the Ismaili tenets, he seems to have been free from them. One of the characteristics of this cosmopolitanism - probably the result of the region having been melting-pot of races - was that *shuobiyyah* (nationalism) was at its minimum in this region. We do not encounter a nationalist like Firdausi or Abu Hamzah Isfahani in this region. A fellow-Balkhan was to write some three hundred years later:

> "What is to be done, O Moslems? for I do not recognise myself I am neither Christian, nor Jew, nor Gheber, nor Moslem I am not of the East, or of the West, nor of the land, nor of the sea; I am not of Nature's mind nor of circling heavens".

The cosmopolitanism and tolerance of Rumi surfaces in another way in Ibn Sina:

> "And great once I became, no more would Egypt have me And when my value rose, no one would care to buy me".

Ibn Sina did not pass a placid youth. Kingship in those days was like quicksand, and it is said Ibn

Sina fled from Gurgan in order to avoid presentation at Sultan Mahmud's Court. This version is not absolutely authentic and all that can be safely said is that, when he was consulted by princes on medical matters, his advice was sought on political matters as well. He was minister several times, and his advice was given weight; but an outstanding person like him could invite tragedy for himself, sometimes being persecuted by his enemies and sometimes coveted by princes opposing those to whom he wished to remain loyal. It was during the last fourteen years of his life that he enjoyed some semblance of peace at the Buwayhid court. He died at an age of 57 in 428/1037 at Hamadan in West Iran, during an expedition of the prince Ala-al-Dawlah.

Ibn Sina is one of the most original minds of all times. The figure nearest to him in the West is that of St. Thomas Aquinas. But, while Aquinas had Albertus Magnus as his mentor, Ibn Sina had none to guide him. And in more than one way Ibn Sina outdistances him. He was a philosopher, a scientist, a poet, a physician and an exponent of music - in all these disciplines he occupies a very high place.

Let us first take up philosophy. The field is so vast that it cannot be covered in a short paper like this. An achievement of Ibn Sina is to reconcile the various schools of Muslim thought and Greek philosophy. Thus he had to cope with the questions raised by the Mu'tazilites and their explanations held to be "rational" at one time, religious orthodoxy of the Mutakallimun and syncretist tendencies favoured by the Ismaili heterodoxy.

A very crucial problem of metaphysics bogging philosophers of the age was the "eternity of world". Farabi explained the creation in Neo-Platonic fashion as successive stages of emanation proceeding from God. The point Ibn Sina had to resolve was whether matter was to be considered as eternal, as Aristotle had taught, or created, as the theologians held. Ibn Sina came out with a hypothesis according to which a thing may be eternal with respect to its essence, or it may be eternal with respect to time. A thing that is eternal with respect to essence is that whose essence has no origin from which it exists, and the latter is that for whose age there was no begninning. In the *Kitab al-Najat* he postulates a prior-period during which the "created" was non-existent, and that prior period was terminated.

Thus everything that for its existence had a temporal beginning, apart from a creative beginning, must have been preceded by time and matter, and previous to that was non-existent altogether. Now it could not have been existent and non-existent at he same time, and therefore it must have been earlier, which implies that there was a period prior to its existence which has expired and is no more. And what constitutes that period is "either a quiddity to itself" which in this case is time, "or a quiddity to something other than itself, which is its time". In both cases, it is a proof of the existence of time.

About the theory of time he has also something new to say. There is, of course, the phenomenal time, characterised by moments (anat), with respect to motion. Then there is that which, if compared with time and measured by it, is found to have a permanence corresponding exactly to the permanence of time and to what is in it. This correlative is called *dahr* (eternal duration). And finally there is that which in the Bergsonian philosophy is called pure Duration which is Divine, and is *Sarmadiyyan* in the philosophy of Ibn Sina.

We cannot go deeper into the metaphysics of Ibn Sina for the present. He has something new to

offer in natural sciences. For example, regarding the formation of large stones, he says that this may occur all at once when the effect of intense heat is suddenly turned upon a large mass of clay, or gradually with the passage of time. Hills may be formed through some accidental reason or their formation may be essential. Like Aristotle, he believed earthquakes to result from winds, rather than tremors, but he is correct when he says that hills may be formed accidently through earthquakes. Valleys and deep depressions come about in the same way. He is also prescient when he says that the world was inhabitable in primordial times and follows Aristotle in suggesting that it was submerged beneath the ocean. Like al-Biruni he believes that the process of petrification could have taken place beneath the waters due to the intense heat confined under the sea. The influence of Ibn Sina's theory regarding stone formation persisted for a long time after his death. Rumi, for instance says in the *Divan-i-Shams-i-Tabriz:*

> *I would be like the ray-beams of the sun if I revolve round habitations. I have in my possession water and clay from which I am mined as jacinth and agate.*

Thanks to the studies undertaken by al-Kindi, al-Biruni and Ibn Sina that the medieval scientists had some idea of the composition of stones. Ibn Sina divides mineral bodies roughly into four classes, viz, stones, substances that can be fused, sulphurous substances and salts. This means that he was aware that salts are the substances having high melting-points, and when he says that some are strong and some weak, he underlines the concepts of chemical affinity. In saying that some are malleable and others not, he has already advanced the concept of distinction between metals and non-metals in terms of their physical properties, as metals are malleable and ductile. Soheil M.Afnan, speaking of Ibn Sina's observation of natural phenomena and their explanation, says:

> "If (his observations) do not always conform to modern scientific knowledge, some come remarkably close to it and others are in entire agreement".

Here are some explanations of natural phenomena offered by Ibn Sina:

1. The reddish and black marks that present a "dreadful" appearance around the disc of certain stars are gases that have caught fire because of their constant motion. Also when these gases are very dense and tend to trail behing a star, the fire burns fiercely and forms tail to it. This is how the comets come into existence. The halo is caused by the reflection of the light that passes through clouds around the luminary.

2. In the case of the rainbow, its formation results when the clouds are opposite the source of light and the reflection is caused by the angles. Once the sun is on the horizon, the rainbow appears as a complete semi-circle to the spectator, because it is on the same line with him, but the semi-circle diminishes when it rises.

3. He has also explained metereological phenomena. Winds, for instance, lose their moisture and become warm after passing over hot land. Water vapour that becomes trapped in the earth condenses into water, and finally rises again with force in the form of fountains. Winds are formed when certain regions are hot and others cold. Cyclones occur when violent winds meet each other, and then start turning around.

4. He was aware that oil is formed through pressure underneath the earth which is at the basis of Engler's theory of the formation of petroleum. He says certain gases when trapped in the earth come to form different minerals according to the place and the time involved, e.g. gold, silver, mercury & oil.

5. Another major contribution of Ibn Sina is his total discrediting of alchemy. In this respect he is the equal of Francis Bacon in heralding a rationalistic approach towards science. This practice had penetrated so deeply into the fabric of Muslim science that even al-Kindi and Abu Nasr Farabi had argued for it as a legitimate pursuit.

6. With respect to air, he says that he himself has observed it suddenly thicken and change, mostly or entirely, into rain or hail or snow, and then clear up again just as before. He had seen it turn into clouds or into mist covering mountain summits, or even the surface of the plain because of the cold. And frost forms on cold nights. These phenomena are not due to the water present in the air being attracted towards itself as a result of the cold, since water by nature can move downwards only. Air and water, according to him, have some common denominator, and water by the process of evaporation turns into air. He seems to be aware of the force of compression, for he says that when air is violently agitated, it develops burning property. (Here he anticipates the discovery of oxygen, discovered some 700 years later.) Men therefore make use of this property of the air by devising special instruments like bellows. Air can ignite wood and other inflammable objects and fire therefore is nothing else than air having the property to ignite. While discussing the properties of air, he adds, by way of intercalation, that the elements are derived from each other, and the corruption of one element leads to the corruption of another. There is alteration and transformation in them when there is a change in quality. When this happens, "the disposition for the form most suited to it changes, and therefore, it takes a new form". Clouds are formed when the water-vapour rises very high, the cold of the upper regions turns it into cloouds through condensation. When transformed into drops, it falls as rain. When it settles down over the land and is visited by the cold of the night, it is turned into dew. In case the clouds freeze, we get snow; but, if it turns into rain, and then freezes, we get hail.

Thus Ibn Sina, considering the age in which he lived, made some lasting contributions to natural sciences. In chemistry, for instance, he has rejected atomism and is convinced of the basic unity of structure in all metals. He was against the transmutation of gold and regarded all metals as unalterable differentia apparently because the quantitative and qualitative proportions of the four composing energies were not known.

In biology he conforms for the most part to Aristotle, but he has quite a few original things to say. He points to the various faculties as being differentia of the vital faculty but each having its own innate strength and purpose. It is this vital faculty that gives rise to life and emotion, while the physical faculty caters to the physical requirements - nutrition, growth and multiplication. The nervous faculty is responsible for the conative, cognitive, perceptive and intellectual faculties of the brain. Psyche is distinguished from soma (the body) but only as mass from energy. While he places the nervous and mental functions in the brain, he places the mainspring of the emotions in te heart where these are affected by both sensory impressions and the quantity and quality of humours.

In the *Kitab al-Shifa* (Sanatio), his philosophical treatise, he devotes a separate chapter to music. According to George Sarton, the musical part of the *Shifa* "Marked much progress upon al-Farabi's musical treatise *(Grand book on Music),* itself so far ahead of occidental knowledge on the subject". The Chapter deals with magadizing (tadif), doubling with the octave, and organizing *(tarkib),* doubling with the fourth and fifth. Such a system in itself is a big leap forward towards the harmonic system. (Doubling with the third also seems to have been allowed). Considering the series of consonances represented by the series, (n + 1)/n, Ibn Sina observed that, when n=31, the intervals begin to sound alike, and that above the value, n=45, the ear is unable to distinguish the tone, (It is to be noted that the value n=32, corresponds to a quarter of tone.)

With all this, Ibn Sina in natural sciences and mathematics was more theoretical, and, as Sarton has said "and such as we would expect in a late Neo-Platonist". Yet in his approach towards the subject, he is very original. He explains, for example, the casting out of nines and its application to the verification of squares and cubes. He made astronomical observations probably towards the end of his life (at Hamadan), and devised a measuring contrivance, the purpose of which was similar to that of the Vernier, to increase the precision of instrumental readings. He has not formulated any physical law, but his studies have no doubt helped the future scientists to come out with physical laws. Nevertheless, he made some profound observations upon various physical questions, e.g. motion, contact, force, vacuum, infinity, light, heat etc.. He observes, for instance, that if the perception of light is due to the emission of some sort of particles by the light-source, the velocity of light must be finite. Like his contemporary, al--Biruni, he also made investigations on specific gravity.

Having discussed Ibn Sina's contribution to philosophy and natural science, we come to his medicine. His philosophic background enabled him to understand and appreciate the problems of human temperament more profoundly, and it is for this reason that his treatises, *Shifa* and *Canon,* remain unsurpassed.

Greek medicine reached the Muslim world before philosophy via the medical school at Jundishapur. During the time of the Holy Prophet (ﷺ) himself, we come across Harith b.Kaldah who studied at the Nestorian institution. Then during the Ummayyad age a Persian Jew, Masarjawaih, translated the Pandects of Ahron into Arabic. Ahron was a Christian monk who lived in Alexandria not before the Arab conquest. This was followed by Mesue Senior's *Jawahir- al- Tibb al-Mufrada* (The Essential Features of Drug Simples) and translations during the 'Abbasid age by Hunayn, who undertook large scale translations, If his claim is to be given credence, he translated the whole of Galen's works, from Hippocrates (including his Aphorisms), and some of Galen's commentaries on Hippocrates. This spate of translations later appeared in the form of original works and, by and large, Muslim pharmacology is characterized by the five types:

1. Synonymic lists of materia medica arranged in alphabetical types

2. Books on poisons

3. Medical Formularies

4. Extensive lists of materiae medicae mainly alphabetical— generally including therapeutic con-

siderations & opinions of other writers on the same subject.

5. Tabular, synoptic treatises.

The age of translation yielded to some works of high order in medicine. Ali Ibn-Sahl Rabban al--Tabari (fl. 850 AD) produced his *Firdaws al-Hikmah* (Paradise of Wisdom). Like the *Canon,* it includes to some xtent philosophy and other disciplines like astronomy, but breaks new ground in that it includes not only Greek but also Hindu sources.

Tabari was followed by even a greater figure, al-Razi (865-925) who has been called by Edward G. Browne "the greatest and most original of Muslim physicians, and one of the most prolific as an author". His *al-Hawi* (Continens) is unlike the Canon, not a theoretical work but a record of clinical experiences. Although he was interested in philosophy, al-Razi mostly wrote treatises of practical nature, e.g. *Smallpox and Measles; On the fact that even skillful physicians cannot heal all diseases;* and *On why people prefer quacks and charlatans to skilled physicians.*

The literal meaning of Qanun (Canon) are codes of laws and series of principles. Ibn Sina therefore wrote the work not as an encyclopedia of the knowledge of his own time but as knowledge based upon reasoning, logic and principles. According to an authority. "Numerous passages occur in the Canon which show that it is a series of notes or skeleton outlines, not too lengthy to be memorized by his pupils". The work comprises five volumes. The first volume discusses the general principles. It defines medicine and discusses the scope of medicine, followed by discourses upon temperament, temperament of organs, temperament of age and sex, nature and variety of humours, origin of humours, diseases of the organs, muscles, nerves, arteries and veins, faculties and functions, diseases and their aetiology, signs and symptoms, pulse, urine, regimens to be followed for different ages, preventive medicine, management of temperamental abnormalities, effect of climate, and treatment. The second volume consits of 2 parts. The first part discusses the determination of the temperament of drugs by experiment and influence. Conditions for researches on drugs have been laid down, e.g. the experiments to be conducted on the human body, freedom of the drug from extrinsic and intrinsic alterations, trial to be an allopathic basis and made in simple disease, and determination as to whether the drug is qualitatively and quantitatively appropriate to the nature and severity of the disease, and so on. General principles regarding drug action and methods of collecting and preserving various drug products are described as well. The second part lists 760 drugs arranged alphabetically. Some new drugs from the subcontinent, such as *Kabab-i-khandan* (Zanthosyllum supp;) have been described. Each drug is described under the following heads; (i) identification of the drug. (ii) part used, (iii) temperamental characteristics, (iv) drug action on each system and on special diseases, (v) specific actions, (vi) antidotal properties, (vii) alternative remedies and succedanea and (viii) adjuvants.

The third volume discusses the aetiology, symptoms, diagnosis, prognosis and a systematic treatment of diseases. It describes diseases of the head, e.g. abnormal temperaments of the brain, and headache, epilepsy, paralysis, etc.. diseases of the eye, nose, ear and throat; diseases of the alimentary tract, genitourinary system, diseases of the muscles, joints and feet. (The section on ophthalmic diseases translated into German under the title, *Die Augenheilkunds des Ibn Sina* in 1902).

The fourth volume treats of general diseases. Part I deals with fevers and their teatment, Part II with boils and swellings, leprosy, minor surgery, wounds and their general treatment, injuries, ulcers and glandular swellings, Part III with poisons, and art IV with "beauty culture".

volume fifth is an *aqrebadhin* (the Arab equivalent for formulary). A notable predecessor to Ibn Sina's work is the formulary by al-Kindi. It comprises description of special prescriptions and theriacs, methods of preparing pills, pessaries, suppositories, powders, syrups, decoctios, confections, elixir etc., prescriptions for different diseases; weights and measures. (part of the work has been translated into German by Sontheimer under the title, *Zusammengesetzte Heilmittel der Araber* 1845).

The impact of the Canon has been immense. Translated a century later after its appearance into Latin by Gerard of Cremona, it gained so much popularity that in the last thirty years of the fifteenth century it was issued sixteenth times and more than twenty times in the sixteenth Century. This is besides the separate part of the work. It was still being printed and read in the second half of the seventeenth century and consulted by medical practitioners regularly. It continued as a textbook up to AD 1650 in the Universities of Montpellier and Louvain. The medical curriculum in Vienna and Frankfurt on the Oder, in the sixteenth century, was largely based on the Canon and the *Ad Almansorem* of Razi. Afnan, speaking of tis popularity, avers:

> The translation of the *Canon* by Andrea Alpago (d. 1520) of Italy was followed by even later versions which were taught in various European universities, especially in Italy and France. It superseded to a great extent the *Liber Regius;* and it was not until human dissection came to be allowed that European anatomists detected certain anatomical and physiological errors of Galen which had been transmitted to Europe though the works of Avicenna.

It was not the European anatomists who noted Galen's errors; 'Abd al-Latif Baghdadi (1162-1231) had already pointed to Galen's error with respect to the anatomy of the jaw in his book of travels in Egypt, *Al-Ifadeh wa'l I'tibar fi al'Umur al-Mushahadah wa'l Hawadith al-Mu'ayanah bi Ard Misr.* And in the days when the principle of magnification was unknown, Ibn Sina can hardly be blamed for anatomical errors.

A special feature of the Canon is its broadness and catholicity. It has now been established beyond doubt that Ayurvedic works had become available in Arabic in the seventh century and during the 'Abbasid period Salih Ibn Duhn and Mankah were the transmitters of this tradition. Some descriptions in the Canon, such as those of the pulse, are reminiscent of the Chinese system.

A major contribution of Ibn Sina is to the aetiology of disease.

Taking cue from Aristotle, he believes that complete knowledge of a thing is possible only if we take into account the material of which a thing is made, the "efficient cause" that moulds it, the "formal cause" which determines its shape and quality, and the "final cause" or function for which a thing is made. Ibn Sina introduces a theory in which the concept of the elements symbolize qualities of mass and energy at the same time and interaction between the four causes. He thus establishes not only the unity between organs and functions in the body but also brings the body and the outer world in appropriate space-time relationship.

Now the human body is material but is vivified by the vital force. The vital force is a life-principle organized from the humours. He defines psyche as the differentia of the vital force, expressing itself as mind at the cognitive level and as emotions in the heart and thus an integral part of the body.

This concept of causation, then implies that the internal organs belong to each other beyond the anatomical limits. Anatomy egards the heart as a circumscribed organ while for Ibn Sina it is the part of force occupying the whole of the body. If we combine the ancient with modern kowledge, we might just as well say that the arterial vessels with the blood contained in them and the autonomic nervous system including its hypothalamic centre are one great composite of the functional heart whose operation pervades the whole body.

The *nafs* in Ibn Sina is anima, Anima in accordance with the nature of an organism, acts as the ultimate determinant of formative factor for its growth and activity. The basic thesis with Ibn Sina is thus that the whole is greater than the sum of its parts and that man is a dynamic organism, with each individual having its own unique temperament. His dynamism cannot be explained on the basis of analysis.

With the help of these concepts Ibn Sina offers a constitutional approach according to which disease is to be explained in terms of the individual's genetic structure; the kind of temperament, structure, and strength of faculties possessed by him; environmental factors and Nature's own effort at the restoration or maintenance of his life-functions.

The concept of the elements in Ibn Sina, in which heat and cold are two opposite types of energy and dryness and moisture are two opposite qualities of mass, is to be found in Aristotle who, with respect to the nature of primary qualities had said:

> Two of the qualities, the hot and the cold, are active, the other two, the dry and the moist, passive, We can satisfy ourselves on this by looking at instances. In every case heat and cold determine, conjoin and change things of the same kind, and things of different kind, by moistening, drying, and softening them. Things dry and moist, on the other hand, both in isolationand when present together, in the same body, are the subjects of determination and of... other affections.. The account we give of the qualities when we define their character shows this too. Hot and cold we describe as active, moist and dry as passive, for it is by virtue of its being acted upon in a certain way that a thing is said to be easy or difficult to determine.

The late Dr. O Cameron Gruner translates Ibn Sina's elaboration of the Aristotelian thesis (in the *Adwiyah Al-Qalbiyah)* (De viribis Cordis paragraph 1122) as follows:

> The truth is that the first principles behind all generable and corruptible substances are primary, active of kinetic energies & occur either simply in fire, air, water and earth or linked to a composite temperament.

The late Dr. Mazhar H. Shah has analyzed the Avicenna concept of elements in his *The General Principles of Avicenna's Canon of Medicine.* He points out to the capacity of the concept of elements as symbols of the qualities of mass and energy to fulfill all the Aristotelian causes and conditions that could be affirmed with respect to any object. Thus the "substance" of an object can be described as the ele-

ment dominant in its composition, "quantity" as the magnitude of the combining elements; "relaxation" as extrinsic, when two objects are involved in relation to each other and intrinsic when its various constituents are involved; "space" instrinsic, as the spatial arrangement of particles in the orbit of a particular element, e.g. water, as steam; "quality" as the temperament being predominantly of one or other element; condition or "state" as of an element - solid, liquid, gaseous; "activity" as the radiation of fire, diffusion as of air and gravitation as of earth; "passivity" (Reactivity) as the pliability of water and resistance of earth; "movement" as the activity of elements, and "time" as the bearer of change in the mutual relationships of elements. Dr. Shah in this context further observes:

> It is thus clear that, according to Avicenna, the organization of various objects in nature is the result of an interaction of the four qualities of mass and energy, and that the four elements mentioned in the *Canon* are merely symbols employed to understand the various actions and reactions of the body & its environment in qualitative terms.

Ayurveda has three temperaments: Vata, Pitta and Kapha - as propounded by Charak and Sushruta. Hippocrates has also three temperaments - apoplectic, phlegmatic and melancholic. Galen propounded four temperaments - sanguine, choleric, phlegmatic and melancholic. Ibn Sina formulated four temperaments - hot and moist, hot and dry, cold and moist and cold and dry. Since then several temperaments have been formulated, among those that are wellknown being those due to Eppinger and Hess (1917 and 1931) and Pavlov. The former formulated two temperaments, sympatheticotonia and vagotonia, while Pavlov propounded 4 temperaments - lively, impetuous, calm and weak. These 4 types correspond exactly to the Galenic classification of temperament into the sanguine, choleric, phlegmatic and melancholic types.

> Ibn Sina does not touch upon humours in detail - in fact, he says: "There are certain other aspects of humours which are really the concern of philosophers and not of physicians; hence these have been omitted".

The humoural concept may be regarded as a precursor to the scientific researches of Garrod (1902) and Landsteiner (1901) and it is this kind of work that would show whether there is any biochemical basis for human individuality.

The "heart" in Ibn Sina's system is not just the structural heart described by the anatomists but functional heart which, as the centre of emotions, thermo-regulation, sleep and water metabolism is centred in the diencephalon, a portion of the brain which in the phylogeny of the race was the first to develop. The pituitary gland which subserves as well as regulates the functions of this region may also be included in the concept of the "heart". In *De Viribus Cordis* (paragraph 172) Ibn Sina says:

> "The foundation or beginning of all these faculties is traceable to the heart, as is agreed upon even by those philosophers who think that the source of visual, auditory and gustatory power lies in the Brain".

The *Canon* abounds in original observations made by Ibn Sina during the course of medical practice, e.g. the distinction of mediastinitis from pleurisy; contagious nature of phthisis; diffusion of disease by water and soil; sexual diseases and perversions; nervous diseases and careful description of the dis-

eases of the skin. The materia medica describes about 760 drugs and Ibn Sina has outlined pharmacological methods. The book on materia medica and pharmacology contains a passage upon experimentation on p.115 of the 1593 edition published in Rome. The passage according to A.M. Gaichon sets out the three methods - agreement, difference and concomitant variations - which are usually associated with the modern scientific approach.

The reason why Ibn Sina is known far better as a physician than as a philosopher is that the *Qanun* is a far more coherent work, while his philosophical dissertations are diffuse. The *Canon* remained far more accessible than the works of Hippocrates, even though Arnold of Villanova (1235-1312) described him as a "professional scribbler" whose misinterpretation of Galen stupefied European physicians. Ibn Zuhr of Spain described the *Canon* as "wastepaper". Such criticism belittle the critics rather than the *Shaikh Al-Rais.* If he stupefied the European physicians, why at all should he have been studied in Europe and why did not European scholars come out with their own interpretations of Galen? Nor is Sarton's contention that "His triumph was too complete; it discouraged original investigations and sterilized intellectural life", correct; there were many physicians, surgeons and scientists after him among the Muslims - Abu al Qasim Zahrawi, Ibn nafis, Ibn Rushd, Baha al-Dawlah, Najib al-Din Samarqandi. And Diya al-Din Ibn Baytar with a list of drugs more than four times that given by Ibn Sina was to appear three centuries later. Even his mnemonic poem, *Urdjuza-fi-al-Tibb,* which established the essentials of Ibn Sina's theory and practice-principles, observations, advice on therapeutics and dietetics, simple surgical techniques - went into several Latin translations between the 13th and 17th centuries under the title, *Cantica Avicennae.* It was edited with a French tranalation by H. Jahier and A. Noureddine (Paris, 1956) under the title, *Poême de la Médicine,* together with the Latin translation by Armengand de Blaise.

A.M. Gaichon in his work, *lla Philosophie d'Avicenne et son influence en Europe medievale* (The philosophy of Avicenna and its influence upon Medieval Europe), shows that Ibn Sina's influence on philosophy was less absolute and more disputed, but more lasting in Europe, and St. Thomas Aquinas did not hesitate to borrow certain of his proofs in Catholic theology. The translation of the *Shifa* also came at a time when Aristotle was known only through his "Posterior Analytics", the "Topics" and the "Refutation of the Sophists". It was through Ibn Sina that the metaphysics of Aristotle, his treatise on soul and the heavens was transmitted to the West. Even when Aristotle became known, it was still thought that the *Shifa* "augmented his work on the subject of the origin of the world, on God, the soul, the intellignece and angels". Such a heritage is destined for individuals who can be counted on finger tips.

COMMENTS

AND

DISCUSSIONS

Dr. Nadir Hatnavi.

Of course Ibn-Sina was a genius but one other very important factor was his very hard work and I am going to tell you an example. When Ibn Sina was young, there was a discussion held about Arabic words. He made a comment in the presence of Amir and one of the Scholars of Arabic present there said to Ibn-Sina, "You are a genius, but in Arabic it is better you listen only". He was badly slighted by this remark and he went and undertook an intensive study of Arabic Literature and Grammer by himself, ordering rare books from distant places, with his customary zeal. Then he composed three Arabic poems using only the rarest words as well as three essays, each in a different classic style. He had these bound in one volume and had the book sewn and wrapped so that it might appear used and old. This was presented to the Amir with the statement that it had been found while he was hunting in the country and did not understand it fully. At Ibn-Sina's request the book was handed to the same wise scholar who had in-sulted him earlier, so that the man might make the necessary interpretations. The gentleman was completely humiliated, as he sensed that the master piece was the product of his chance remark made a long time ago. So, it shows that Ibn-Sina was sensitive, very hard working man and he was also a perfectionist. This is, perhaps the influence of an inherited genes, that he may have possesed. Thank you.

Dr. Mushtaq (Kuwait University).

I was really pleased to attend this meeting and the symposium on Ibn-Sina. Actually since I am associated with an educational institution, it made me think and I want to share this thinking with the audience and the president here. You see, the product is always the reflection of the process which produced it, what I mean is that Ibn-Sina was Ibn-Sina due to the reason that he went through a certain type of educational process. Now in the present Islamic world we do not have Ibn-Sina . What is the reason? Now, this is the time, I would say this, we have started thinking in terms of Islamic World, Islamic Medicine, Islamic Block and all these things. We should also think about the Islamic Educational system. Anywhere in the Islamic world, does Islamic Educational system exist? It is a transplant from somewhere else, which probably does not suit our requirements. We are producing graduates but not thinkers. We have to produce thinkers. We do not have to measure the ability of the human being by the small pieces of papers which they get from the universities. It is the mind which should be developed. So, with this note I would like to suggest that when we are thinking of Islamic Medicine we must think about the Islamic Educational system, which could lead to create Ibn-Sina, Ibn-Betar , Razi and Iqbal , you know people like this. I think this could lead to, you know, evolution and development of Islamic Medicine, evolution of political part in Islam and evolution of all the facets of life and we should be thinking in that direction I think, pretty soon.

Thank you.

Dr. Haji Ali Akbar.

I am Dr. Haji Ali Akbar. I am far from the East, from Indonesia. You see, in these two hours my knowledge about Ibn-Sina has increased very much. So, I ask only one favour, a small favour, that we should like to request you first, to provide us nature of your work about Ibn-Sina. If yet not, the second one is, we have established an Islamic Medical School in Jakarta, It is the one and the newest one based on Islam. So, another one is how to confirm the nobility of the personality of Ibn-Sina in that can produce new generation, new Ibn-Sina and not one but many Ibn-Sina in the future. That is a small favour for us. Thank you.

(Speaker's name not mentioned.)

Respected Chairman and the honourable delegates, I have heard to the many learned speakers on Ibn-Sina. As I also belong to the discipline of Islamic Medicine, which is called as the Unani medicine in India. For this particular reason that the system has been accumulated and organized initially in the Greek and later on developed in Arabia and migrated to India and Pakistan, where it is now flourishing as a seperate entity and descipline in comparison to other disciplines of medicine and arts. (medicinal art). As the last narrator, some professor from Karachi had already mentioned about dedication of Unani drugs but I have something more to say, that is there is a book Kitab--al-Advia-tul-Qalbia, written by Ibn-Sina. I have seen in our university and in the faculty of Unani medicine, there is a project we are working on this Kitab-al-Advia-tul-Qalbia, and we have seen that the drugs mentioned as Cardiotonic in this book are by enlarge healthy Cardiotonic activity and this have been proved pharmacologically, through the experiments on the animals and most important to see is that the drugs used in the system of medicine in indigenous system, what is called probably (formerly) known as, and these drugs have the potency when (these drugs) are in crude form and these drugs do not loose potency, even at a high temperature. I have an example to quote, e.g. there is a drug known as Jadwar (Zhadwar) in Unani system of medicine. It is a *delphinium denydatum* and is reported as Cardiotonic by Ibn-Sina in his popular book Kitab--al-Advia-tul-Qalbia. When this drug was analysed pharma-cologically, we have seen that the drug has an adrenaline effect in the blood pressure and it does not loose potency even at high temperature of 50°C, when the other drugs used in modern system of medicine do loose the potency in the high temperature. Also, when this drug is used in the crude form in aquous or alcoholic extract which and when the active principles isolated from such drugs, the effect of the dug is changed and not only changed but sometimes, when the potency of the drug increased, it has more effects on the body which are toxic and that it is less effective in respect of exact effect for which the drug is to be used on the human beings and animals too. The point I want to impress upon is that the

scientific research which is to be conducted on the indigenous (Unani) drugs should use them in crude form as prescribed by the eminent Unani physicians. In case the form of drug is changed, I think the drug will no longer belong to the Unani system. There are many drugs in the modern system of medicine which are used in the treatment of the various dieases and I can say that they have been originated from herbal drugs itself but nobody knows that these drugs have come from the Unani system of medicine. This is a matter of pleasure and an honour for me to be among the delegates in the very great and the first International Conference on Islamic Medicine, hence I suggest that as the Government of Kuwait is proposing to have a permanent center of Islamic Medicine, the researches on Islamic Medicine ought to be based so that, these drugs do not become the modern in the general term of the medicine, I mean to say, the drug should not become an Allopathic in nature. They very basic feature of the drug is to be maintained. Thank you very much.

Dr. Ata-ur-Rehman.

With the permission of the Chair, I am Dr. Ata-ur-Rehman, from the Post Graduate Institute of Chemistry, Karachi University.

We have heard today the glorious contributions of Ibn-Sina to science and this should provoke some thoughts on what methods we should adopt regarding the future. Whether it is enough to plan a center in Kuwait, of Islamic Medicine as you are planning here. This is certainly a first step and a good one, but what really is needed to put our strongly based traditional systems of medicine on the firm scientific footing? And the answer, as far as I see it is one. That we have a huge number of medicinal plants, a huge treasure of these medicinal plants, which have been used in different Islamic countries. What is required, is that either Kuwait Government by itself or in collaboration with other Muslim countries should set up a center for clinical and general pharmacology, where these medicinal plants could be examined intensively for biological activity, this will necessarily have to be a multi-disciplinery affair in which people from other disciplines like bio-chemistry, microbiology, vi-rology, toxi-cology, they all have to get involved, but there is a definite systematic way of doing this and the sooner we get started the better. It is not enough to just talk about back, and think in the capitulate of past. We are living today, and we have to look into the future and in order to do so we must act immediately. So, what I would plead here in this conference is that at the end of all the deliberations we can succeed in the light of great works and the demonstrative ability of people like Ibn-Sina, because one thing is clearly visible in all these works, that is dedicated, scientific, untiring work and the observation, the experimental method and then deriving knowledge from the results. So, it is clear that we have this treasure of traditional medicines and we must set up a clinical pharmacology and general pharmacology units in some place in the Islamic countries, where there are numbers of chemical products, which are isolated or the concoction as a whole, which can be sent to the center for examination of biological activity and if it is

toxi-cologically safe, these herbal concoctions which are used by our Tabeebs, can be introduced in an integrated pharmacopoeia directly into medicine but we can only get these works accepted after there has been an accumulation of considerable statistical data to back up the claims made for the biological activities associated with various herbal prescriptions used in the Tibbi system of medicine. Thank you.

CHAPTER TWO

(Some selected papers - Not presented)

IF AVICENNA HAD A COMPUTER

Dr. Abdul Aziz Ghaussy.

IF AVICENNA HAD A COMPUTER

A.Aziz Ghaussy
U.S.A

In the history of medicine, few names stand as bright as Hippocrates,Galen and Avicenna.

Hippocrates, whom we know as the father of medicine, was the first physician to give rational explanations of disease. According to his theory, illness was the result of an imbalance among the four basic elements of nature: water, air, fire and earth. Demonic influences, supernatural powers and disfavor of the gods were no longer included in the etiology of disease. The harmony of these elements of nature created an equilibrium in the "cosmos". Since man is considered a micro-cosmos, nothing could better explain illness but harmony or disharmony of those elements. Hippocrates theory was later refined enabling more specific qualities to be identified. Eventually the patient, not the nature of the illness, was the center of his thoughts. Thus, the physical examination came into existence.

Galen initially stressed the disease and his theory that virtually every illness was the result of a combination of different symptoms. For example, he identified various ailments as: seven diseases of bile, twelve of bladder and four types of spitting blood. He described and separated basic temperaments such as sanguine, phlegmatic choleric and melancholic, and used them to explain nearly every illness. Galen was not only an astute physician, but one of the most influential writers of all times when it came to medical subjects.

He was the highest authority in medicine for more than eight hundred years, his work was unimpeachable. He brought the science of medicine together and left few questions unanswered. Thousands of physicians and scholars were fascinated by his ideas. They were based on the imbalance of 'humors' also known as body fluids, and this imbalance which he determined was the cause of illness. He labelled Phlegm, blood, black bile and yellow bile as the four humors of classic medicine. Harmony or disharmony of blood (warm and moist), phlegm (cold and moist), yellow bile (warm and dry) and black bile (cold and dry) could indicate good or poor health. He considered fevers to be internal "boiling" and a cough or diarrhoea to be external discharge of excess fluid.

No one equalled Galen or challenged his body of knowledge effectively as Avicenna. Avicenna shook the foundation of a system. He challenged the highest authority in the world of medicine and he, himself became the CHIEF الشيخ الرئيس . In many instances he showed that previous concepts of what was right and what was wrong could be discussed. The splender of Galenic works disappeared when his "al-Qanun" came upon the scene. There was, during this period, for the first time, emphasis

on the body organ and its physiology. The Bacteria and Microbe were discovered and the infectious nature of certain diseases were declared. Anesthesia was introduced and blood pressure and circulation were explained. In addition, new medication including minerals, vegetables and animal substances were added to therapy. The Medical knowledge of the Chinese and the Indian were combined with the knowledge of the Greeks and Romans. Thousands of new books were written, many of which became the standard text books in the East and West. More than ever before clinical instructions were being given, and institutions along with better hospital facilities were being built.

For the first time, clear cut clinical descriptions of an illness were given which enabled certain diseases to be recognised. There was more emphasis on original observation rather than on what was written in text books. The experiences of a wise doctor brought a new pragmatic approach to the treatment of a wise doctor brought a new pragmatic approach to the treatment of disease. His thoughts and ideas were now included in the medical curriculum in learning institutions and universities throughout the world.

Without a doubt, there has not been such an outstanding addition to the field of medicine as the computer since the Lannecestethoscope. Like the stethoscope, it soon will be the daily companion of every physician. In a time period of less than a generation, the computer has changed medical practice and it is surely changing the world of medicine. The computer, not merely a calculator, or a large cabinet filled with electronic devices, or a machine used for banking and big business purposes. It now has entered the medical practice and became the physician's most important tool as well as a friend to the patient. It is a thinking device, very much like the brain of the physician but it has the capacity of accurately storing vast amounts of information.

Some physicians enter the field of medicine through the path of philosophy. These physicians have to use a combination of philosophy and logic alongwith their experiences to give them their intuition. In order for a physician to collect information, he needs to analyse data, understand and remember precisely what he has been taught in medical school and what he is now learning in his practice. If he does this properly, he will earn the additional title of "excellent". But even as an excellent physician would say, one is not capable of completing certain tasks such as a computer can. What is time consuming for a physician may be quick and simple for a computer. Tasks such as organizing, calculating and analyzing collected data may be done within a fraction of a second.

Computers, in many instances, have made «exploratory Laparotomy» unnecessary. A computer axial tomography finds its best application in the diagnosis of a tumor, abscess, mass or lesion or a stone (whether it is in the kidney or in the gall bladder), computerised axial tomography will give the best results.

Coming back to the world of medicine, if we had to ask "who should have a computer?", what do you think the answer would be? Well, Hippocrates: time was too early, because mankind was awakening from the beliefs that a disease was a punishment of God, and he was ridding himself of demons. If a computer was available during Hippocrates' time, there was not enough information readily available about disease and illness to make it the valuable tool it is today.

As for Galen and his followers, they certainly had more information about medicine, pharmacology and other allied sciences, but they were involved with adding and mixing ingredients of different so-

-called "Galenical" medicine. They were in search of hot medicine to treat cold ailments and a moist medicine to combat a dry disease. Their theories were based on speculation. Therefore, they did not have enough concrete data to effectively utilise a computer.

How about Avicenna? Wouldn't you agree that he would be the best man to have a computer? Through Avicenna's efforts, the relationship among philosophy and other allied science was acknowledged. All the available information at that time was edited, commented and well written in an encyclopedia. We can ask this question in another way, "If Avicenna had a computer", what do you think the end results would be? Without a doubt, his residence would have been the medical center of the world. His room would be the central medical library and the content of his book "al-Qanun fit-tib" would be the frame work used throughout the world. Included in this original textbook, one would find flow charts for all medical programs.

There would not be any need for "Index Medicus" because all the medical knowledge would have been available through the computer and Avicenna. There would be no need for so many Computer Information lines:

Medline
Infoline
Toxiline

There would only be one, with a single computer line, called "Aviline".

If Avicenna had been able to record his medical discoveries in computer, many of todays discovered subjects in medicine would not need to have been re-discovered, thus there would have been fewer Nobel Prizes awarded for "New Discoveries". Recognition for these would have already been attributed to the original discoverer: "Avicenna". Imagine the vast volume of information our former genius could have made available to every physician. That would have been a blessing for the patients and the doctor. So certainly, one could say:

"If Avicenna Had Had A Computer, The Course Of Medicine Would Definitely Be Different".

PART THREE

THE HISTORICAL REVIEW

Part Three: *The Historical Review*

CHAPTER ONE

(Papers presented)

1. REPORT ON THE FIRST SESSION.
   Editors.
2. MEDICAL TECHNOLOGY IN IBN AL-QUFF'S SURGERY.
   Dr. Sami K. Hamarneh.
3. A REVIEW OF ISHAQ IBN UMRAN'S BOOK ON MELANCHOLIA.
   Dr. Salim Ammar
4. AL-KITAB AL-MUSTAINI OF IBN BUKLARISH, the first book ordered in Tables on simple Drugs in Muslim Spain.
   Dr. Amador Diaz Grarcia.
5. CRITICAL STUDIES IN THE WORKS OF AL-RAZI AND IBN SINA: AN ASSESSMENT OF THEIR INFLUENCE ON MEDICAL RESEARCH.
   Dr. A.Z. Iskandar.
6. THE PHYSIOLOGY OF RESPIRATION, ACCORDING. TO IBN SINA.
   Dr. Ahmad Aroua.
7. THE EARLIEST WORK ON ISLAMIC MEDICINE IN PERSIAN (ON CLINICAL MEDICINE):
   Dr. Nazir Ahmed.

REPORT ON FIRST SESSION

This session was held from 8.30 a.m. to 10.30 a.m., under the chairman-ship of Prof. Dr. Ibrahim Badran, with Dr. Farooq al-Omar as Co-Chairman, who said that this Holy Quran is the guide for all but it is not a book of science. It teaches us how to live a richer and fuller life. He praised the efforts to revive this Islamic Medicine and pointed out that the man behind these efforts is Dr. Al-Awadi. Now how are we going to make use of this excellent idea, how are we going to put this in practice is the most important thing he said. It is very important how we can combine the Iman and the behaviour in our professional life. How far we are successful in collecting and following up our heritage. He said that if we are able to give satisfactory answers to these questions we are moving in the right directions. Six scholars presented their papers under the title of "Historical Review and Study of Selected Works in Islamic Medicine". In the end comments and discussion on papers were allowed.

Editors.

MEDICAL TECHNOLOGY IN IBN AL-QUFF'S SURGERY

Sami K. Hamarneh,
U.S.A.

INTRODUCTION

Medico-surgical technology and manipulations during the Middle Ages need evaluation. A majority of historians of science had been harsh in their judgement of the Arabic-Islamic contribution because of neglect or minsunderstanding. Some recognised important activities in alchemy, drugs and pharmaceutical preparations, natural history and cosmology, astronomy and astrology, botany and agriculture and horticulture. Only a few, however, considered the significant development attributed to surgery. This was revealed and confirmed in a recent discovery - an excavated site at al-Fustat (old Cairo). A good number of surgical instruments came to light dating 2nd/8th Century. They proved that this activity had lingered and continued in Islam from the Ptolemies and the Byzantine periods[1].

The 3rd/9th Century was not only a time of translations, but in developing surgical technology as well. Ibn Masawayh and his student Hunayn al-Ibadi recognized the importance of anatomy and surgery. They demonstrated through texts, illustrations and charts the first known drawings on ophthalmology[2]. Their comtemporary, al-Tabari, described important chapters related to medical technology and pathology[3].

The healing arts ushered its golden Age (4th/10th) Century in the works of al-Razi, a clinician, alchemist and surgeon. After his death, the star of his countryman, al-Majusi (d.994) risen. He devoted several sections on surgical manipulations and technical discussions[4]. The greatest surgeon in Islam thus far, however, was Abu'l-Qasim al-Zahrawi (d.ca.404/1013). He devised, described and depicted about 150 surgical tools - including dentistry and obstetrics. His famous treatise on surgery was carefully translated by Gerard of Cremona (1114-1187). It greatly influenced Western Europe[5].

IBN AL-QUFF'S SURGICAL MANUAL

The second climax in Arabic surgery was reached in the 7th/13th Century in the work of Amin-al-Dawlah Abu'l-Faraj Muwaffaq al-Din Ya qub b. Ishq ibn al-Quff al-Malaki al-Karaki (born in the city of al-Karak-Jordan, 630/1233). He practiced in Ajlun and in Damascus where he died on 685/1286. His surgical manual, *al-Umdah fi Sina at al-Jirahah* is the largest and most complete text of its kind in Arabic up to his time[7]. In the introduction, he reiterated that students and colleagues complained about

their lack of enthusiasm. Many of them possess only casual interest, skill of knowledge of the art. Professionally incompetent, they were contented with little regarding training and experience, and without familiarity of anatomy or the treatment of diseases. Repeatedly requested, realizing the need for reliable guide book on surgery, the author willingly undertook to write *al-Umdah* in-twenty treatises[8].

Ibn al-Quff explained that surgery is the exploring and understanding of body, its conditions and the circumstances occuring to all injuries causing disunity, severance of organs *(tafarruq-al-ittisal),* and the detatching or sunderance of certain sections. It aims to restore injured parts by bringing them to their normal functions and nature, in three types:

1. Natural disposition and sunderance of parts such as the dislodging abscesses or removing tumors

4. Spontaneous or self-control manipulations and purposeful employment of various surgical tools & techniques of bloodletting and cupping.

3. On natural injuries as in the case of splitting bones of the skull & other fractures, & hitting of swords, arrows or darts[9].

Among the humors, the blood was considered the most honourable - qualities as hot and wet. The heart is being the hottest organ and in constant motion. Here natural heat and pneuma originate. Bones are the coldest and dryest having earthly substance. Disease and swellings are the result of seasonal humor's disequilibrium. They are considered conditional body's apparent or sensed injury characterized as hot-wet, cold-dry or cold-wet, involving four mechanisms:

1. Natural disease occuring from time of birth as in asthma, varicose veins and the clot in shock

2. Diseases of quantity

3. Diseases of quality

4. Diseases of location or positional diseases, either joining or in proximity to other parts such as in the cases of stiffening of joints, chill or ague, tremor & hernia.

Concerning treatment of parts, the surgeon considers the following:-

1. Body's natural temperament indicating direction of cures by always recommending the treatment opposite to symptoms of the disease[10].

2. Guessing and supposition by designating peculiar or accidental properties, as in saying the bone is dry.

3. Substantial intrinsic essences e.g., the hollowing of the nerves, the loosening of the lungs, or the dense and compact nature of kidneys.

4. Ranking sensitivity denoting power, "as in saying that red meat is strong".[11].

PHLEBOTOMY ARTERY CUTTING AND CAUTERIZATION:

Many treatises were written in Islam on the topic of bloodletting (venesection). Ibn al-Quff defined it as a voluntary eruption and disunion by incising veins using lancet dissecting knife, scalpel axe or hatchet. It is pathologically recommended in disequilibrium due to excess of blood humor with fever in 32 locations - head, hands and feet. Amputation applies when there is surplus of blood flow or error after venesection.

For cutting artery, the surgeon should clean around and adjacent connecting tissues, and suspend by a hook. Using a suitable needle with silk thread, he thus ties the artery tightly cuts in half and binds to heal. For example, the temporal artery can be drawn out in cases of hemicrania, catarrh or influenza. Shave the location, mark in ink, then cut the skin right where the artery is. Lift up by hooks, clear around the tissues and cut the artery from both sides, join and bind[12].

Cautery, likewise was popular in stopping bleeding "preventing corruption", and drying or warming humid organs. Al-Zahrawi recommended that all cauteries can be made of iron[13]. In sciatica for example, Ibn al-Quff described four methods in cauterization:

1. By using simple cautery injected inside of a tube at the joint.
2. By applying cautery on three locations simultaneously: above and behind deep in the joint; above the knee; and above the ankle.
3. By taking a cup-shaped device made of iron or brass contained two more cup-tubes one fitting inside the other all open from both sides and allow smoke out during the operation. Join all into an iron handle, heating the cautery in fire and apply deep into the socket of the hip while the patient lay up over the sound side. It will cure.
4. By using two cups one inside the other and apply to the hip's socket while pouring warm water in between. Since the operation will be painful, the patient must be warned in advance[14].

ON CUPPING AND LEECHES

When body had excess of blood humor, the surgeon may resort to cupping with or without scarification to decrease the amount of humor or divert its direction. If without scarification, he then uses fire or abstain. At all times, the practitioner ought to be a servant of nature *(physis),* following its own insinuation. The main locations for cupping include the back proper, the sides of neck and chin, upper part of the back between the shoulders and the collarbone and back of hands. If fire to be used, ignite piece of cotton or soft wool and place inside the cup and suck it to stick in place.

For sucking blood, the leeches performs better, but less in phlebotomy. The surgeon ought to distinguish between poisonous leeches and those which are not and are considered and used as "medical". They usually are hunt one or two days earlier, they set them inclined downward to empty their "bellies". Once hungry they suck easily to the skin. As soon as one becomes "full", it falls off and another may be put on according to the need[15].

LANCING AND BONE SETTING

Ripping over abscesses are applied surgically or by drugs. But if an artery or a vein were injured or cut, needle a silk thread and tie. Apply snow to stop bleeding.

In bonesetting, the surgeon ought to do the job as soon as possible. He then applies splints from all sides made of oleander or pomegranate woods extending above and below the fracture. The binding should not be too tight to cause much pain, and interfere in body's nourishment. Taken off every other day, it helps in relaxation and towards normal healing process.

Dislocation is the complete putting out of the joint from its natural place. It is sinking or depressing at one time or bulging out and protuberance at another. When only partial, it is then considered bruising, contusion or spraining.

If an ailing part of the body had unusual pain, then physically and psychologically may be treated in the following manner:

1. In inducing cooling off action for helping to reduce or stop pain «by blocking the flow of the vital spirit and penetrating the power of sensation».
2. In inducing cooling off period by "thickening the essence of spirit through special penetrating channels".
3. In allowing cold and dry temperaments to oppose and fail the feeling of being hot and moist leading to dullness, troper and numbness.
4. In helping toxicity and insensitivity to lessen pain[16].

For incising cysts, let that be crosswise and under suspended with hooks then stitching. In scruofula the cutting, by clipper or shear, should be not too deep into the swelling but rather clearing out the tissues around, then lift with hooks and extract gently.

In cases of breast cancer, the only possibility is uprooting the veins, cutting clean by safety razor in a circular fashion, allow the blood flow, squeezing out the blood vein and apply medicated dressings[17].

SUTURING

Technology and number of stitching is mentioned here in the case of restoring, recovering and closing the viscera. If the incision was larger than ordinary then a thin scepter-like devise is used. Sutures should be neither too soft nor hard, moderately spaced one stitch from the other, being not too far from the wound's edge and employing the most appropriate needles and suturing in the four following methods:

1. By inserting the needle from the outside of the skin towards the inside through the muscles and the fascia to the other side. «Then from the other outer side to the inside in the same order through the first side and so on. Some recommended that one stitch on each side be

conjointly tied and the thread cut. Then the needle be inserted from the outside skin to the inside and to the opposite side from outward then tie two stitches and cut».

2. By joining one side to the other in a similar way, that is from the fascia to its opposite side, muscle to muscle, and skin to skin, and suture together.

3. By joining all parts from one side to that on the other, insert the needles through them all from the outside to the outside.

4. By taking two needles, tie all the parts from both ends just like the cobbler in tanning the hides[18].

ON CIRCUMCISION AND EXTRACTION OF STONES

In the circumcision process, the author discusses the four following techniques used:

1. To allow the prepuce inside a scissors-type cuter so that the glans be outside. Cut by razor.

2. To have a rounded device put inside the foreskin, push and hold the glans inside and make a sharp cut.

3. Put the prepuce and glans inside and tie with sild thread, push manually and cut.

4. Insert a probe inside the foreskin and hold with jigsaw, push in between the glans, and cut by sharp edge[19].

Here explainded also a case of retention of the urine in view of obstruction due to stone stuck at the mouth of the bladder connecting the upper part of the penis. "It requires the use of a silver, gold or brass catheter. Anoint and insert to about the penis' length, entwined in double thread, twisted or folded in cotton or soft wool at the opposite side of the catheter. Bathe in warm medicated liquid or fomentation in hot water, rub and embrocate. Again insert up and down gently and draw out the thread and the cotton and the urine will rush out at once". If there is a burning sensation, use a convenient syringe[20].

Finally, the author considered the extraction of stones from kidneys or the bladder. If the stones are larger in size they are generally easier to take out. Ask the patient to jump up and down or dance and the stones generally fall to the neck of the bladder. If the stones are smaller then allow the patient to be seated straight up in front of the surgeon, while hands held between thighs. Anoint the forefinger and insert in the patient's anus to find the stones out, and employing pressure pull to the bladder down. The surgeon's assistant turns away the scrotum closely of the small incision to the left. If the incision needs to increase with pressure, the stones will fall one after another. If the incision needs to be still larger, then rude, strong forceps will be used to pressure the stones down, crush and extract peacemeal, but watching that the patient's life is not in danger[21].

CONCLUDING REMARKS

Ibn al-Quff in his *al-Umdah* brought about experiences, personal observations and techniques of surgical importance. He described types of instruments he devised and used, as well as operations and

treatment he prescribed. He excelled in various skills performed: cautery, types of cupping, and the employment of leeches for good uses. He emphasized the immediate and wise application of caring of fractures, binding processes, dressing, use of splints, and bone setting. He, interestingly, realized the importance of care for patient's mental and physical well being and the manners of healing process. He explained in detail the techniques and practical applications for suturing abdominal wounds. He further referred to practical performance of circumcision. Finally, he gave useful information on the extraction of stones, and the usages of catheters and syringes. In all of that he revealed excellent knowledge of medical and surgical technology, acquired great manipulating skill. His analytical, scientific observations confirm his significant contributions to Arabic surgery amid medical, social and technical problems that demand continuing treatment.

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A REVIEW OF ISHAQ IBN UMRAN'S BOOK ON MELANCHOLIA

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Almost one thousand years ago, Ishaq Ibn Umran left Iraq for Africa where he practised medicine in Qairawan, serving. Prince Ibrahim Ibn al-Aghlab and, later on, Ziyad-Allah al-Thaleth al-Aghlabi. He set the foundation of "Dar el-Hekma" (House of Medical Profession) in Qairawan. According to Ibn Abi Usaibi'a, he was the first to introduce the principles of medical treatment in the Arab West. He wrote eleven books, none of which reached us except the book on Melancholia (Melancholy or Hypochondria), of which the only manuscript is kept in the Munich Library in Germany.

Prof. Abdel Aziz Mansour (of the "College of Jurisprudence and Theology") has helped me in investigating the manuscript. Our attempt aimed at making a scientific analysis, comparing the standards of psychiatry in Ibn Umran's time and in our time, with respect to the concept of melancholy case. Up till now, no other research has been conducted on the same lines as the present one.

The present research has led to the preparation of a complete Ph.D. thesis submitted to the college of medicine in Tunis. For the first time in the history of colleges of medicine in Tunis, the thesis is written in Arabic.

The manuscript comprises two treatises, the first of which is related to the definition of Melancholia and the background to its causes and different clinical aspects.

The second treatise is a comprehensive report of the different kinds of treatment, such as psychological treatment, hygienic diets, methods based on the environment, physical methods (like applying ointments or taking baths), and lastly, treatment through drugs. This last item was very meticulously expounded by Ibn Umran; he described the ways of manufacturing drugs and the ways of using them, stating all the courses of treatment which are mostly applied at the present time. He described almost all forms of melancholy except the nervous and reactional ones; besides, he did not mention the word suicide even once.

Thus, the specialized researches which clear the dust from our valuable Islamic Arabic heritage can supply us with more knowledge and insight in the field of pharmacology. Moreover, such heritage should be regarded as sacred, because it is a basic property of the principles of

Islamic medicine that it aims at the welfare of the whole mankind. As such, Ibn Umran is considered to be one of the pillars of Islamic medicine.

Our objective here is to concentrate on the analytic comparison between Ibn Umran's contributions and our present-day knowledge concerning melancholia cases.

Formerly, Dr. Ahmad el-Sherif has dealt with the manuscript in an overall way, in his thesis (witten in French) in 1908. Later on, Mr. Abu Bakr Abu Yehya (who is reputed to be interested in the history of medicine and pharmacy in Tunis) has also referred to the manuscript in his writings. Today, we in turn, try to study and evaluate the book in the light of our experience in psychiatry, and on the basis of a logical technical analysis which covers all the aspects of the subject.

1. INTRODUCING ISHAQ IBN UMRAN

He was born in Samarra in Iraq. He learned medicine at a young age, and became a distinguished member of the scientific circles of Dar el-Hekma in Baghdad. He moved into Qairwan in 224 (of Hijra) at the request of Prince Ibrahim al-Aghlabi. Then he served Ziyad-Allah al-Thaleth al-Tamimy who became the Prince in 240 (of Hijra). It is said that medical practice was not really introduced in the Arab West before the advent of Ishaq Ibn Umran. He was one of the pioneering physicians in Qairawan, together with Ishaq Ibn Suliman al-Israeli and Abu Ja'far Ahmad Ibn al-Jazzar. At the end, he was condemned to death by the tyrant Ziyad-Allah Al-Thaleth. Today, each of the two departments of psychiatry in the University Hospital in Tunis and the University Health Station in Algiers carry his name.

2. THE BOOK ON MELANCHOLIA

The manuscript, containing 78 pages, is enclosed in a volume consisting of four treatises. This volume, written in Syria in 1757 A.D., is kept in the Arabic Section of the Munich Library (carrying the serial No. 805). The manuscript consists of two treatises.

THE FIRST TREATISE

Ibn Umran wanted to introduce a complete analysis of that disease because, according to him, none of his predecessors had treated the subject comprehensibely. Galinus had referred to it briefly. Rufus the Ephesian had limited himself to the epigrastic aspect of the disease. That is why, Ibn Umran sought to define this disease in a logical scientific way, and to explain its causes, its bases, its different forms and the differnet causes of treatment.

1. Introducing the disease

Melancholia is a disease whose minor cause is the black gall. It causes a mental disease, and the melancholy settles either in the pit of stomach or in the centre of the head. Its psychological symptoms are fear, distress, depression and panic.

2. Causes of the disease (Physio-pathology)

These are divided into:

a) In-born causes, resulting from physical constitution and natural temperament.

b) Causes resulting from indulgence in food and drink, and neglect of cleaning functions. Such indulgence and neglect cause an inbalance among the six binding functions of action and movement; stillness, sleep and waking; eating and drinking; inhaling and exhaling; emptying and abstention and casual psychological events, like the pains caused by the loss of a beloved person or a desired object.

3. Forms of the disease and their symptoms

Ibn Umran interprets the causes of the disease in terms of the theory of the «four liquds»: blood, phlegm, choler, and melancholy; expecially malancholy. Out of this mixture, he deduces the following three disease forms:

a) a form related to the pit of stomach and epigastrium

b) a form related to the centre of the head

c) a form starting from the lowest parts of the body & going up towards the head.

These three forms have identical symptoms, which are: extreme depression, utter distress, fear, panic and continuous unjustifiable distraction.

Here, Ibn Umran describes the symptoms which characterise some of the cases; for example, a patient may go through imaginery terrifying thoughts of feeling guilty or being pursued, another may think that his head has been severed, a third may believe that he hears terrible voices all the time. The patient, in all these cases, loses self-control and the ability to make proper distinctions. All such patients feel a strong need to see a physician, out of terrible sufferings and complete despair. From the physical point of view, they all suffer bodily weakness and insomnia.

Ibn Umran also describes the clinical symptoms of the three forms mentioned above, as follows:

a. The form related to the head is accompanied by insomnia, headaches, eye-glittering and greed for food (which is the most serious); this form is characterized by outbursts of rage, even jumping like animals.

b. The epigastric form is accompanied by black winds in the belly, it is characterized by extreme depression and the tendency to stay alone and to escape to far-away places.

c. There are other forms which precede or follow epilepsy (which Ibn Umran calls 'the great disease').

REVIEWING THE FIRST TREATISE

It is obvious that, in the first treatise, Ibn Umran deals with the following issues:

سهل من ذلك الادهان بالزيبق والسبان لما فيهما من الحرارة واليبس
[illegible] من اشخوخة يغلب عليه على الاعضاء اليبس مع
[illegible] المرطبات في فصول السنة فينبغي ان يستعمل في كل احد
[illegible] مزج الفصل وخالفه فيمزج في الصيف بالادهان
[illegible] من الشيح والورد والبنفسج وفي الشتاء بالادهان
المعتدلة مثل دهن الخروع والزيبق والسبان وفي الربيع والخريف
بالادهان المعتدلة مثل دهن البزر ودهن الاترج ودهن
[illegible] كان فيما اريعلد في المرطبات . تمت المقالة
[illegible] تم كتاب الكتاب وكمال لنسخا ابن لوقا . ولله الحمد
كافيا ومينا

بسم الله الرحمن الرحيم وبه نستعين

مقالة في المالنخوليا

[illegible] مختصر وضعه اسحق بن عمران الطبيب في الداء المعروف
[illegible] وهو توسوس السوداوي تذكرة على نسه بما ساء
[illegible] من النسيان سيما عند دنو من الشيخوخة فوكان الداء
[illegible] نسيان . ورحمة لمن ينظر فيه من عجبي الطبرابيا
[illegible] . قال اسحق بن عمران لم اقرا لاحد من الاوايل في المالنخوليا كتابا
[illegible] ولا بيانا شافيا في هذا المرض بل من المتقدمين يقال
[illegible] وفي الاقسيمي وهذا اجمل واذ كان وضع في هذا المرض
[illegible] مقالتان احتشد فيه بجميع عقله واحسن واجاد في
[illegible] وعن عوارضه وطريق معالجته فانا اخص بصناعة

صنفنا واحذار من هذا المرض وهي العلة السوداوية والتي ذكر صنوفه
الباقية الا انه محمود ممدوح بما فضل من وضعه كتابه لان من اتى بايسر
شيء من الصواب مما ينتفع به فاضل ممدوح كمن قد اتى به على الدواء
وبلغ الغاية واذ كان قد قصر عن المراد . فلما كان لا ارى في هذا الداء
على هذا السبيل من تقدمه الاوايل عن ذكره والبحث عنه وعن اسبابه
وخاصة حاليته حرفانه لم يذكره في كتاب مفرد ولما كان ذكره لنا ذكرا
مشتركا . رايتنا ان نضع هذا الكتاب فيه وفي اصنافه وطريق علاجه
ونسلك في ذلك من الكلام ما كان محضا فيلسوفيا جزل المعاني
وندع الهذر والكثار اذ كنا انما خاطبنا بقولنا فيه انفسنا ومن
تمسك بالحكمة واستضاء بنورها وترودى بحليتها وبابه العصمة
والتوفيق ومنه استمد التاييد والتسديد على بلوغ ما اريد انه
خير معين . قال اسحق بن عمران ان اسم المالنخوليا الرتيع بالحقيقة
على نوع هذا الداء وانما وقع على جنسه لادق وعوارض السوداويا فاما
نفس الداء فانما تعرف معرفته بالصفة والنعت وذلك ان مرض
يحل في الجسم وتلحق اعراضه واضراره للنفس فاما معلوله من الجسم في فم
المعدة والصفاق الشراسيفي منه او في تسرجوهر الدماغ في صنوفه
الاخر . فاما اعراض في النفس فالخوف والحزن وما شاكل عوارض النفس
واسقامها لان الحزن حده فقد محبوب ما والخوف حده توقع
مكروه ما ولها كيفية كونه وصفته ينتهي الناذكرها باستقصاء اذا
نحن ذكرنا قدمنا الاربعة المطلوبة التي حدها معرفة انية الشيء هل
له وجود وعدم . ثم معرفة ماهيته ايما هو وما حده ثم معرفة كيفيته

a. the importance of somatic processes which occur in melancholic cases and masked depressions (which are quite frequent in our countries nowadays);

b. the importance of psychological events (such as the loss of a beloved person and extreme anxiety); these two factors representing the fundamental axis of the modern psychopathological interpretation of nervous depression (according to most schools of psychoanalysis);

c. the following clinical forms:

- the form characterised by loss of activity, inaction of self-will, fear and panic (which can be compared with the modern type of 'stuporous depression', characterized by extreme restriction and tension, accompanied by anxiety and leading to mental confusion, even to psychodepressive mania);
- the raving forms, which deprive the patient of the ability to make correct judgements or proper distinctions, and which always deal with painful terrifying subjects;
- the hallucinating forms, whether visual, aural, or sensory, in which the patient feels deprived of some of his limbs, or even his whole body.
- the epigastric forms (explained in minute detail), inspite of the complexity of its manifestations.
- the forms which precede or follow epilepsy (today, we all know the relation that exists between epilepsy and depressive raving moods)

THE SECOND TREATISE

This is concerned with the techniques of treatment. Here, Ibn Umran deals with drugs, and partial and complete courses of treatment. The following course, classified according to modern criteria, are dealt with in detail:

— psychotherapy
— sociotherapy
— hygienic diets
— physiotherapy
— chemical therapy

1. Psychotherapy

- In order to relieve the patient of his distress, the physician should resort to utmost kindness, soothing words, logical devices, sympathy, music and fresh-air strolls.

2. Hygienic diets

- The physician should take good care of the patient's general hygienic conditions, by balancing the six factors mentioned above, namely, action and movement, stillness, sleep, and waking; eating and drinking; inhaling and exhaling; and psychological events.

3. Physiotherapy

- The patient should take daily baths in clear hot water and in cold water, even in mid summer. After drying his body thoroughly, he could apply such ointments as linseed oil, almond oil, lily oil, or mustard oil, either to the head alone or to the whole body.

4. Chemical therapy

Ibn Umran gives all the necessary details concerning the preparation of the drugs from each kind of herb, also the dosage to be applied. These drugs are divided into two sorts: those suitable for partial treatment, and those suitable for full treatment. The drugs are also divided as to the different forms of melancholia they are supposed to treat. These divisions run as follows:

1) Nuts, drugs in the form of scented tablets, composed mainly of myrobalan, scammony and almond oil.

2) Crushed wheats, drugs in the form of paste, suitable for diarrhea.

3) Liquids

4) Palatals, drugs used for refreshing the heart & mind

5) Suppositories, anal drugs to relieve constipation.

6) Laxatives, used for refreshing or as tranquillizers

7) Drugs extracted from opium and poppy-covers used only in serious cases.

COMPARATIVE ANALYSIS

After illustrating the first part of the second treatise in this brief way, we may arrive at the following conclusions:

1. Ibn Umran was completely knowledgeable about almost all the simple and complex cases of melancholia known to us today.

2. He did not describe the nervous and reactional forms which we know today, may be because the society he lived in was devoid of the cultural complexities we can witness nowadays.

3. He did not resort to myth or to false conceptions like, for example, 'jinns', he did not resort to heriditary reasons either. Rather, his analysis was scientific, logical and empirical».

4. He never mentioned the word 'suicide', this is due to the fact that the close family ties and the strong religious motives never allowed such a deed.

5. Lastly, he concentrated on the principal courses of treatment, however varied, and on the factors which relate them to each other. Modern psychotherapists may not be able to add much to these; in fact they can stand short of some of them.

We can, now contribute some ideas about the comparisons between the cases described by Ibn Umran and the cases we deal with nowadays.

Today, we still come across the classical melancholic forms dealt with by Ibn Umran in male and female patients, especially female ones. These are manifested as depressive mania, or else as epigas-

tric cases. We also still come across hallucinating forms, coloured by hysteric anxiety factors as well as other forms of distraction and mental confusion, especially in women after repeated pregnancies or long suckling, and in men after harsh consecutive psychological shocks.

Nowadays, the great increase in the number of cases is caused by the different struggles and battles fought by the developing Arab and Islamic countries, especially those who are eager to catch up with modern civilization as quickly as possible. They have to deal with two contradictory worlds simultaneously, that is why they suffer more psychological tensions, more failures and more causes for despair, anxiety and panic.

CONCLUSION

The question that should now be asked is the following: How many physicians or psychotherapists would now deal with a patient as broad-mindedly, as kindly and as eagerly as stipulated by Ibn Umran; how many would employ more than one course of treatment without contradictions; how many would lend attentive ears to a patient's complaints, before prescribing a certain course of treatment?

This research and similar ones can help in clearing the dust from our original scientific heritage. Furthermore, they can greatly enlighten us, add to our knowledge and insight, and remind us of the sanctity of our responsibility as physicians. We should, when faced with such cases as those described by Ibn Umran (and which are greatly multiplying nowadays) employ all our resources of patience, understanding and attention; so that we can be content that we have accomplished, to some extent, Ibn Umran's recommendations made almost one thousand years ago..

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AL-KITAB AL-MUSTAᶜINI OF IBN BUKLARISH,

(The first book ordered in Tables on Simple Drugs, in Muslim Spain)

Amador diaz Garcia
Spain

I intend to compile in this work an index of the simple drugs contained in al-Kitab al-Mustaᶜini fi l-tibb of Ibn Buklarish, the text of which I have edited and translated into Spanish. At the same time, I shall make a critical study of the usefulness of the drugs and their therapeutic uses in the different diseases. Afterwards, I shall study the persistence of these drugs and their transmission and survival, through the times, in the pharmacopoeias of other western and eastern countries. Al-Kitab al-Mustaᶜini represents the first application of the method of synoptic tables in the Arabic West and in medical work.

Al-Kitab al-Mustaᶜini of Ibn Buklarish is the first book ordered in the form of synoptic tables in al-Andalus, although this method had been previously used in the Arabic East. This book is the only work of Ibn Buklarish which has come to us. It consists of a large compendium in which the auther has accomplished an ambitious project; that is to compile whatever had been written formerly on simple drugs, to order it and to explain it in a clear and comprehensive form.

The author is Yunus (or Yusuf) b. Ishaq b. Buklarish al-Isra'ili, one of wisest scholars of al-Andalus on the art of medicine. The existing data about him are very scarce. Hajji Khalifa mentions, in his book *Kashf al-Zunan*[1] only: "*al-Mustaᶜini fi l-tibb*". Ibn Abi Usaybiᶜa, *in his Kitab ᶜuyun al-anba' fi tabaqat al-atibba'*[2] says about him:

> "He was a jew, one of the greatest scholars of al-Andalus on the art of Medicine, and had a large experience and a profound knowledge of simple drugs and served as a physician to the dynasty of Banu Hud. He wrote a book ordered in synoptic tables on simple drugs in the cuty of Almeria for al-Mustaᶜin bi-llah Abu jaᶜfar b. al-Mu'tamin bi-llah b. Hud".

This text, in spite of its shortness, is the only source we have to know the author of *al-Mustaᶜini.*

So then, Ibn Buklarish served as a physician to Banu Hud, according to the works of Ibn Abi Usaybiᶜa.

Regarding the author's name, it appears in different forms, and some writes hesitate between Yunus

and Yusuf. It seems that the correct name is Yunus. His surname is written sometimes with *Kasr* (i) on the *ba'* (b) and sometimes with *fath* (a) on it, but in most cases it is written with *damm* (u) on the *ba'*. Likewise, opinions differ on the origin of this name. Some scholars think that it is the alteration of the Latin word "jocularis", with the sense of "jongleur" or "minstrel", and others think that it refers to *Biclaro*, a place name. Anyway, I think that it is the shortening of *Abu Klarish*, a family name or nickname, inasmuch as *Clares* is a common family name in Spain that is in use even in our time.

The title of the book regards the name of the Emir al-*Musta'ini*, billah Abu Jacfar Ahmad b. al--Mu'tamin bi-llah b. Hud (d. 503 A.H./1110 A. D.), the fourth king of the dynasty of Banu Hud, which ruled over one of the most famous "party-kingdoms" or *mamalik al-tawa' if*, whose capital was the city of Saragossa in Northern al-Andalus, and whose government lasted from 410 to 536 A.H.[3].

Ibn Buklarish wrote, besides *al-Musta'ini*, another book under the title of *Risalat al-tabyin wa--l-tartib*[4], of which there is not actually any copy today. In this treatise, which is mentioned by the author in the Introduction to *al-Musta'ini*, he classified the foods, and spoke about the four strengths: the attractive, the retentive, the digestive and the expulsive, and of their effects on the different organs of the body.

In regards the copies of the manuscript now extant there are few; in fact, we only know three copies in the European libraries and another one at the General Library of Rabat.

The manuscript number 5009 of the National Library of Madrid is an old copy, written in the city of Toledo in the XIIth or XIIIth century. Its margins are full of notes in Spanish, Hebrew and Arabic. It is composed of 140 folios written in a beautiful Maghrebi handwriting, and contains two parts: a long introduction about the theories of Galen, and a list containing more than seven hundred vegetal, animal and mineral medical substances. After the introduction, we find in each page a synoptic table containing six simple drugs, whose Arabic text is divided into five columns:

1) Name of simple drugs.
2) Nature and degree.
3) Their explanation in different languages or synonyms.
4) Substitutes of them.
5) Usefulness, properties and methods of use. (This section is in the opposite left pages).

Each one of these sections has a great importance for the researchers on the field of Arabic medicine, especially the fifth section.

The third column referring to the explanation of the names of the drugs in different languages is very important from the point of wiew of Linguistics, because the author offers the names of simple drugs in Syriac, Persian, Greek, Arabic, *'ajamiyya rumiyya*[5] and *'ajamiyya 'ammiyya*[6]. Sometimes, the author distinguishes between the *'ajamiyya* of Saragossa and the *'ajamiyya* of al-Andalus, which was the vulgar language in the Southern part of the Iberian Peninsula.

The number of substances that appear in the manuscript of Madrid is 666, besides the substances which were in some lost folios, with an average of six or five, or sometimes four substances in each

folio.

Let us pay attention to the author's words about this synoptic tabular order:

> proceeded in (my book) in the same method of my predecessors and ordered it in accordance with the tradition of philosophers. These taught that proper writing should have three characteristics. The first one is the compilation of all that which dispersed (knowledge); the second is a full (and clear) compendium of it all; the third is to put it down in writing, which includes the vowels. My book includes these three characteristics. I have never seen any other book of my predecessors till now which deals with simple drugs and contains as much (information) as I have gathered in this one, because I have metioned each drug together with its properties, its degree of heat, coldness, moisture and dryness, and the synonyms used for each one whether usual or unusual, in Syriac, Persian, Greek, Arabic, *ᶜajamiyya rumiyya* and *ᶜajamiyya ᶜammiyya*".[7].

The alphabetical order employed in the manuscript is the maghrebi order. On the broad margins there are numerous notes, and also the rest of the text that is not containable within the synoptic tables.

In regards the manuscript number 3 F 65, kept in the National Library of Naples (Italy), it is composed of 143 folios and contains three different books: *al-Kitab al-Mustaᵓini* of Ibn Buqlarish (*sic*) al-Mutatabbib, the *Kitab al-Ikhtiyarat wa-l-khawass al-mukhtar* of Ibn *ᶜAbdun al-Baghdadi, and the Ikhtiyarat falakiyya* of Aristotle. *Al-Kitab al-Mustaᵓini* comprises folios 1 to 94. The name of the copyist, Hasan b. Yusuf b. Hasan b. Ahmad b. Salih b. 'Shuᶜaᶜ al-Din al-Ansari, appears in the folio 79 r, and the place of the copy, the city of Almeria, in southern Spain, and its date, 14th Dhu l-hijja 888 A.H. (11 January 1482 A.D.).

As to the third manuscript is a dateless copy kept in the Leiden University Library in Holland under number 1339, which was brought by the Dutch scholar Gulius from Morocco in 1624. This copy is not old except in some of its parts, which copied again and completed what was missing in the time of the mentioned Gulius.

The manuscript kept in the General Library of Rabat, under number 481, is a very beautiful copy, but it is much more recent than the other copies.

This copy was finished on 29th Muharram 1309 A.H., corresponding to the 4th of September 1891 A.D., by Muhammad al-Fatimi b. al-Hasan b. Abi Bakr al-Siqilli al-Husayni who states that he had extracted the copy from an incorrect original in whose correction and revision he took many pains. This copy contains many notes written after the writing of the book.

We find in the Rabat copy the same tabular order and the same distribution which we see in the rest of the manuscripts.

Therefore, *al-Kitab al-Mustaᵓini* represents the first application of the method of synoptic tables in Muslim West and in a medical work following what Ibn Butlan had tried in his book *Taqwim al-abdan* and Ibn Jazla in his work *Taqwim al-sihha*[8].

It seems from Ibn Abi Usaybi'a words that *al-Kitab al-Musta'ini* was written in the city of Almeria in Southeastern Spain, in spite of Renaud' opinion is that this is not convincing.

Probably, Ibn Buklarish was born in Almeria, or at least lived in this city, which was in that time an important centre of culture, under the government of Banu Sumadih. After the fall of this city into the hands of the Almoravides, Ibn Buklarish left Almeria and took refuge in Saragossa under Ahmad al-Musta'in bi-llah, and offered to him his book which apparently he had written previously.

The great number of sources and references which Ibn Buklarish mentions, points out that he was a scholar endowed with a vast knowledge, and that he had at his disposal a great library or a rich collection of books. In fact, we know that there was a library of this kind in Almeria, the one of Abu ja'far b. 'Abbas, minister of the king Zuhayr, who managed to gather over four hundred thousand books, bound and complete, besides innumerable booklets and loose sheets[10].

The importance of *al-Musta'ini* lies in two aspects: the scientific, and the linguistic aspect. From the scientific point of view *al-Musta'ini* is a very important book, because the author offers information about many simple drugs. From the linguistic point of view it includes a list synonyms of simple drugs in several foreign languages, more than in any other Arabic book, and it is very useful for the study of the origin of Spanish.

Sometimes, the investigators had used *al-Musta'ini* as a source for their linguistic studies, among them the Spanish arabist Simonet, who used the manuscripts of Leiden, Naples and Madrid to compile his *book Glosario de voces ibéricas y latinas usadas entre los mozarabes*[11]. The Dutch orientalist R. Dozy did the same to compose his famous work *Supplément aux dictionnaires arabes*[12], who selected the Arabic and Arabized words contained in the manuscripts of Leiden and Naples of *al-Musta'ini.*

In 1930, the French orientalist H.P.S. Renaud published the first of his three studies on the History of Arabic Medicine in the West, and he devoted it to the study of *al-Musta'ini* of Ibn Buklarish, in which he gives a description and a general analysis of *al-Musta'ini,* following the manuscript of Rabat, and offers a few names of simple drugs and their synonyms in Berber language[13].

Finally, in 1968 Martin Levey and Safwat S. Souryal published a traslation of the Introduction of *al-Musta'ini* into English[14].

In his long introduction the author prepares his readers to understand the tabular section, which comprises over one hundred - twenty - one folios. This introduction is permeated by Galen's ideas, and it is divided into four parts:

1) Section on knowledge of the strength of simple drugs. In it, the author says that the factors by means of which the ancients knew the strength of drugs and deduced their degrees were three: the first, their taste; the second their odor; and the third their effect upon the normal body. Afterwards, the author studies the absorption of the drugs, and, finally, he gives many examples of heating and cooling drugs in the three degrees.

Among the heating drugs in the first degree, he mentions: Wormwood[15], lavender[16] lemongrass[17],

camomile[18], melilot, citron, nard, malabathrum, bush basil[19], senna, and other similar simples.

Among the heating drugs in the second degree, he mentions: Grand basil, sweet basil[20], sweet hoof[21], honey, aristolochia, embelia, wild ginger, saffron amber, aloe, musk, and similar ones.

Among the heating drugs in the third degree, he mentions: dodder, anise, assa-foetida[22], common polypody, bael fruit, Arabian jasmine, Indian quince, Chinese cinnamon, oleo-gum resin, sweet flag, ginger, hyssop, harmel, clove, and similar ones.

Among the heating drugs in the fourth degree, he mentions: Euphorbium, marking nut, latex plant, pepper, tar, leadwort[23], mustard, *naft*, and similar ones.

Among the cooling drugs in the first degree, he mentions: Acacia, lichen, emblic myrobalan, myrobalans, acorn, myrtle, papyrus, coral, rose, barley, endive, spinach, and similar ones.

Among the cooling drugs in the second degree, he mentions: Fleawort, barberry, plantain, sumach, gallnut, black nightshade[24], snake cucumber, cucumber, pumpkin, watermelon, lettuce, currant fruited rhubarb, and similar ones.

Among the cooling drugs in the third degree, he mentions: Dragon's blood plant, tabasheer, Indian nut, camphor, sandalwood, tamarind, common purslane, house leek tree, knotweed, and similar ones.

Among the cooling drugs in the fourth degree, he mentions: Black poppy, metel nut, opium, henbane, *ramik*, iron, antimony, mercury, and similar ones.

2) Section on knowledge of the nature of compounded drugs, how they must be prepared, and what should do whoever wants to prepare them, and the necessity of their preparation. In this part Ibn Buklarish defines moderacy (balance) as the equivalence of parts and their harmonization. Likewise, he offers the definition of health as the equality of natures, equality of humors and their persistence in the equilibrium, even though some of the natural or unnatural fuctions of man are not present. Then he defines illness, which, according to Ibn Buklarish, is not more than the opposition of humors and their deviation from the equilibrium, because of the preponderance of one or two elements (i.e. heat, cold, dryness and moistness) over the other elements, according to the three degrees. After that, he offers the definition of equilibrium (moderacy) of compound drugs then the rules of their preparation; then the method of knowing the degree of a drug compounded by simples ones of different nature; then the comparison between the degree of deviation of the body of the patient from the equilibrium and the degree of the remedy. Afterwards, he gives instructions to correct the noxious effect of some drugs, or to change their unpleasant taste, or to prevent vomiting, or to prolong or delay their effect.

3) Section on the strength of laxatives drugs according to opinion of Galen, in which the author mentions the methods to evacuate the different humors by means of the nature or the effect of some medicines. Then the author of *al-Musta'ini fi l-tibb*, following always the opinion of Galen, studies the metabolism of humors in the body and its relations with the four strengths (attractive, retentive, digestive and expulsive); then the question of bloodletting and its dangers; then the methods to give the laxatives, their rules according to seasons and the influence of work and movement, the appropiate time to take them, and their relations with meal and sleep, etc.

4) Section on the reasons which induce the ancients to the substitution of drugs and how they discovered them. The author mentions in this part the difference between the natural essential qualities and the essential properties of drugs, and he establishes the laws of the substitution. After that, he classifies the drugs, according to their effects:

Attractive drugs, like: Dittany[25], thapsia, red anemone, cyclamen, dung, pitch, asafetida, sagapenum, narcissus root, gum of the Nabatheans, etc.

Astringent drugs, like: Wild olive, house leek tree, lemon-grass, pear, celery, aloe, pips of raisins, poppy, saffron, turpentine, henbane, dates, broiled egg yolk, coagulated blood, sweet cyperus, shoots of vine, acorn, rennet of hare, burnt wheat, lycium, and similar ones.

Drugs which putrefy, like: Arsenic, borax[26], cantharides, rice seed, nettle, and similar ones.

Drugs which reduce the excess of flesh, like: Colocynth root, fresh root of mandrake, squirting cucumber[27], snail shell ashes, scales of copper, verdigris, borax, an similar ones.

Drugs which cicatrize and heal wounds, like: cleansed burnt copper, gallnut, dry pomegranate rinds, scoria of lead, litharge[28], burnt lead, burnt antimony, lead ceruse, borax, burnt yellow vitriol, scales of copper, scales of iron, verdigris, and burnt quicklime.

Drugs which ulcerate the external part of the body, like: Beet root, garlic, water mint, mustard, arsenic, red copper[29], pellitory, quicklime, bast of the root of caper, black cumin, and thapsia.

Drugs which open swellings, like: Red anemone, onion, garlic, gall of cow, lily oil, feverfew, and narcissus tuber.

Resolutive drugs, like: Camomile, aged oil, marshmallow, costus, incense, colocynth root, borax, Armenian wormwood, Jew's mallow, fleawort, bast of pine, water lentils[30], etc.

Drugs which strengthen the organs, like: Cinnamon, gallnut, mastic, lavender, myrrh, aloe, etc.

Drugs which ripen the pus, like: Lukewarm water, oil mixed with tepid water, wheat bread, starch, pig fat, calf fat, butter, incense, liquid pitch, sesame, cabbage, and similar ones.

Emollient drugs, like: Goat fat, goose fat, chicken fat, bull fat, buffalo fat, stag fat, gum ammoniac, storax, galbanum, false bdellium, squirting cucumber oil, colocynth root, oil of lily, marshmallow leaves, mastic, Nabatean gum, red anemone, opopanax, butter, fresh butter, hyssop and so on.

Drugs which cleanse the skin, open it, and remove the filth of wounds and the body, like: Bitter vetch, barley, beans, lupine, burnt goat dung, milk whey, bitter almond, sweet almond, almond tree, red anemone, dry plantain leaves, aristolochia, stavesacre, root of acacia, orache seed, wormwood juice, white hellebore, black hellebore, common polypody, verjuice, wild mustard, Nabatean resin, mastic, sagapenum, root of colocynth, beet, latex plant, ground ivy, burnt horn of stag, burnt horn of goat, powder of narcissus root, tragacanth, and egg white.

Drugs which generate the semen and excite to intercourse, like: Chiick peas, beans, pine nut, fig,

rocket, asparagus, orchis, skink[31], galingale, common ash fruits, secacul, and ginger.

Drugs which cut down the seminal fluid, like: Long cucumber, cucumber, blite, purslane, orache, pumpkin, melon especially the Palestinian species, mulberries, caper, palm pith, rue, pepper, agnus castus[32], etc.

Drugs which blacken the hair, like: Ladanum, myrrh, myrtle juice, wild poly, costus oil, cabbage, tender hyssop, copper filings, iron filings, red anemone, skin of green bean rotted in dung, acacia, green walnut shell rotted in dung, also gallnut treated with drugs, burnt copper[33], and similar ones.

Drugs which make eyebrows grow and blacken them, like: Gum acacia, gallnut, sumac, juice of cooked henna, myrtle seed, vine leaves, mulberry, fig leaves, bast of oak tree, outer shell of walnut, red anemone, and similar ones.

Drugs which make to disappear the hair, like: quicklime, arsenic, dried then pulverized sea hare[34], milk of a bitch that has recently had a little, rind of bean, tar, aged oil, vine gum, borax, pumice stone.

Drugs which have a thin nature, like: Burnt Armenian wormwood, agnus castus, lemongrass blossom, sweet flag, amomum, licorice root, the two aristolochias, plantain, luffa, wild ginger, dittany which is *tiqtamiyun*, or mountain mint which is the *poleo cervuno*[35], aged oil, gallnut, euphorbium, yeast, asafetida, Nabatean resin, wild mint, river mint, false acorus, horehound, cinnamon, millet, tar, costus, gum, pistachio, mastic, black cumin, blasam, rue, common polypody, sagapenum, garlic, dry fig, nitre, burnt yellow arsenic, wormwood, ash, quicklime, scented salt, burnt opopanax, sulfur, yellow vitriol, nard, vitriol, verdigris, red copper, borax, red arsenic, lion fat, panther fat, hyena fat, castoreum, marjoram, *naft*, and similar ones.

Drugs which have a thick nature, like: Plantain root, flower of the wild pomegranate, pips of raisins, elecampane, long cucumber, cucumber, acorn, and turnip.

Refining and warming drugs, like: Garlic, onion, garden cress, mustard, pepper, pellitory, mints, rocket, parsley, wild celery, garden celery, sweet basil, radish, cabbage, beet, fennel, caraway, rue, rue seed, aneth, cumin, mastic, seed of turpentine tree, wild carrot, anise, wild mustard, long pepper, white pepper, cardamom, cubeb, and similar drugs.

The work which I offer here logically is only an advance of my further investigation.

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2. IBN ABI USAYBI A, *Uyun al-anba' fi tabaqat al-atibba'. Sources d'informations sur les classes des médecins,* publié, traduit et annoté par Henri Jahier et Abdelkader Noureddine, Alger 1377/1958, P.54.
3. CF. H.P.J. RENAUD, *Trois études d'histoire de la médecine arabe en Occident. I. Le* Musta'ini *d'Ibn Beklares, in Hespéris, vol. 10 (1930), PP.135 - 150.*
4. See the Introduction of *al-Kitab al-Musta'ini,* MS Madrid, f. 11r, MS Rabat, f. 9r and v, and MS Naples, f. 8r.
5. *Al-'ajamiyya al-rumiyya* was a blend of Greek and Latin, which was used in the world of druggists and pharmacists in that time.
6. *Al-'ajamiyya al-'ammiyya* was the Spanish usual language among common people in 11th century A.D.
7. Introduction of *al-Musta'ini,* f. 2r.
8. *CF. RENAUD, Le Mustacini d'Ibn Beklares, P.141, and his study on Taqwim al-adwiya* of al- Ala'i, presented to

the VIIIth History of Medicine Internacional Conference, Rome 1930.

9 *Cf.* RENAUD, *Le* Mustacini *d'Ibn Beklares,* P.138.

10. Cf. ANGEL GONZALEZ PALENCIA, *Historia de la Espana Musulmana,* Barcelona 1945, P.170.
11. Printed in Madrid 1888.
12. Printed, in two volumes, in Leiden 1881; 2nd ed. Leiden-Paris 1927.
13. See note 3 above.
14. MARTIN LEVEY and SAFWAT S. SOURYAL, *The Introduction to the* Kitab al-Musta'*ini of Ibn Biklarish (Fl.1106),* in *Janus,* vol. 55 (1968), PP.134 - 166.
15. *Artemisia absinthium* L. Cf. Diosc. III, 23; IB, 113; Sam., P. 187; Mans. 43; Ghaf. 27; *Tuhfa,* 1; *Sharh,* 281.
16. *Lavandula Stoechas* L. Cf. Diosc. III, 26; Ghaf., 101; Sam. P. 187; Bir. P. 72; Aver. 9; Mans. 23; IB, 62; *Tuhfa,* 13; IW, P. 115; *Sharh,* 6 Dozy, I,22.
17. *Andropogon Schoenanthus* L. It is also called tibn *Makka.* Cf. Diosc., I, 18; IW, P. 115; IB, 29; Sam. P. 175; Kindi, 94; *Tuhfa,* 34.
18. *Matricaria Chamomilla* L. Cf. Diosc. III, 137; *Sharh* 39; *Tuhfa* 86; IB 220; Ghaf. 157; IW 115; Sam. 245.
19. *Ocimum minimum* L. It is also called *al-habaq al-Kirmani.* Cf. *Tuhfa* 443; *Sharh* 360; IB 1268.
20. *Calamintha acinos* Benth. It is *al-habaq al-raqiq* or *al-habaq al-qaranfuli.* Cf. Diosc. III, 46; IB 1676; Mans. 954; Sam. 195; IWaf. f. 47 b; *Tuhfa* 327; *Sharh* 47; Dozy, II, P. 262.
21. It is the cover of a kind of shell-bearing animals, resembling nails. Cf. Diosc. II, 8; Ghaf. 111; *Sharh,* 15; IB 104; Mans. 40.
22. *Ferula Assa-foetida* L. Cf. Diosc. III, 80; Ghaf. 34; *Tuhfa,* 14; IB, 158; *Sharh,* 18; Bedevian 1609.
23. *Lepidium latifolium* L. Cf. Diosc. II, 174; IB 1369; *Tuhfa,* 442; *Sharh* 367; Bedevian 2075.
24. *Solanum nigrum* L. Cf. Diosc. IV, 71-75; IB 1589; *Tuhfa,* 219 and 310 *Sharh* 297; Bedevian 3243.
25. *Origanum Dictamnus* L. Cf. Sam. 175, 259; IB 2138; Diosc. III, 288; Dozy II, P. 595.
26. It is also called *liham al-dhahab, lisaq al-dhahab* and *milh al-sagha.* Cf. Diosc. V, 89; *Tuhfa* 401; Sam. 247, 250; IWaf. 162; *Sharh,* 383; IB 431.
27. *Ecballum elaterium* Rich. Cf. Diosc. IV, 150; IB 1740, 1584; *Sharh,* 292; Bedevian 1477.
28. It is also called *martaq.* Cf. Diosc. V, 62; *Tuhfa* 256; Sam. 259; IB 2114.
29. Cf. Diosc. V, 77; IB 1134; *Tuhfa* 161; *Sharh* 142.
30. *Lemna minor* L. Cf. Diosc. IV, 87; IB 451; *Tuhfa* 201; *Sharh* 170; Dozy II, P. 101; Asin 292; Bedevian 2063.
31. It is a kind of saurian animals, *Scincus Officinarum* Saur. = *Lacer ta Scincus* L. Cf. Diosc. II, 66; IB 2285, 1197; *Tuhfa* 131, 385; *Sharh* 129; Kindi 145.
32. It is also called *Shajarat Maryam. Vitex Agnus-castus* L. Cf. Diosc. I, 103; *Tuhfa* 62, 81, 191; IB 354, 1700, 1706; *Sharh* 308; Bedevian 3610.
33. It is burnt copper. Cf. Diosc. V, 76; IB 1071, 2217; *Sharh* 357; *Dozy,* I, P. 317.
34. It is a small sea-shell animal, *Aplysia depilans* L. Cf. Diosc. III, 134; Ghaf, 116.
35. It is the transcription in Arabic letters of the two Latin words *pulegium cervinum* and its translation in Spanish *poleo cervuno.* It is a kind of mints. Cf. note 25 above, and *Sharh* 242. *Origanum Dictamnus* L. Cf. also IB 2138.

ABREVIATIONS AND SELECTED BIBLIOGRAPHY.

al-Arbuli	الأربولي	Amador Diaz Gercia, *Un tratado nazari sobre alimentos: al-Kalam ᵉalà l-agdiya de al-Arbùli. Edicion, traduccion y estudio, con glosarios* (I), in *Cuadernos de Estudios Medievales,* 7-8 (1979).
Asin	أسين	Miguel Asin Palacios, *Glosario de voces romances registradas por un botanico anonimo hispano-musulman* (s. *XI-XII),* Madrid 1943.
Aver.	ابن رشد	*Quitab el Culiat (Libro de las Generalidades)* por Abu el-Ualid Mohamed ben Ahmed ben Roxd, el Maliki el Cortobi (Averroes), Larache 1939.
Bedevian	بديفيان	Armenag K. Bedevian, *Illustrated Polyglottic Dictionary of Plant Names,* Cairo 1936.
Bir.	البيروني	*Al-Biruni's Book on Pharmacy and Materia Medica.* Edited... by

		Hakim Moh. Said and Dr. R. Ehsan Elahie, and with Preface, Commentary and Evaluation... by Sami K. Hamarneh, Karachi 1973.
Diosc.	د.	Cesar E. Dubler, *La "Materia Médica" de Dioscorides traducida y comentada por D. Andrés de Laguna (Texto critico),* Barcelona 1955.
Dozy	دوزي	Reinhardt Dozy, *Supplément aux dictionnaires arabes,* Leyde Paris 1927; 3eme. éd., Leyde-Paris 1967.
Ghaf.	الغافقي	*The Abridged Version of "The Book of Simple Drugs" of Ahmad ibn Muhammad al-Ghâfiqî by Gregorius Abu' l-Farag (Barhebraeus),* edited by M. Meyerhof and G.P. Sobhy Bey, Cairo 1950.
IB	ابـن البيطـار	*Traité des Simples par Ibn al-Beithar.* Traduction du Dr. Lucien Leclerc, in *Notices et Extraits des Manuscrits de la Bibliothèque Nationale,* Paris 1877-1883, 3 vols.
IMas.	ابـــن ماســـويه	Amador Diaz Garcia, *El "Kitab jawass al-agdiya" de Ibn Masawayh. Edition, traduction y estudio, con glosarios* (I), in *Miscelanea de Estudios Arabes y Hebraicos,* 37 (1978), PP. 1-60.
IW	ابـن الوحشية	Martin Levey, *Medical Arabic Toxicology. The Book on Poisons of Ibn Wahshiya and its Relation to Early Indian and Greek Texts,* in *Transactions of the American Philosophical Society,* New Series, Vol. 56, Part, 7, Philadelphia, 1966.
IWaf.	ابن وافد	*El "Libre de les Medicines particulars". Version catalana trescentista del texto arabe del Tratado de los Medicamentos Simples de Ibn Wafid, autor médico toledano del siglo XI.* Transcripcion, estudio proemial y glosarios por L. Faraudo de Saint-Germain, Barcelona 1943.
Kindi	الكنديّ	Martin Levey, *The 'Aqrabadhin' or Medical Formulary of al-Kindi with a Stydy of its Materia Medica,* Madison 1966.
Levey	ليفي	Martin Levey and Safwat S. Souryal, *The Introduction to the Kitab al-Mustaʿini of Ibn Biklarish (Fl. 1106),* in *Janus* 55 (1968), 2-3, PP. 134-166.
Mans.	المنصوريّ	Ibn al-H'achcha, *Glossaire sur le Mans'uri de Razès.* Texte arabe établi... et publié... par G.S. Colin et H.P.J. Renaud, Rabat 1941.
Renaud	رينو	H.P.J. Renaud, *Trois études d'histoire de la médecine arebe en Occident. I. Le* Mustaʿini *d'Ibn Beklarés,* in *Hespéris* 10 (1930), PP. 135-150.
Sam.	السمرقندي	Martin Levey and Noury al-Khaledy, *The Medical Formulary of al-Samarqandi and the Relaion of Early Arabic Simples to Those Found in the Indigenous Medicine of the Near East and India,* Philadelphia 1967.

Sharh	شرح	*Sharh asma' al-ʿuqqar (L'Explication des noms de drogues) Un glossaire de matière médicale composé par Maïmonides.* Texte publié..., avec traduction, commentaires et index, par Max Meyerhof, Le Caire 1940.
Simonet	سيمونيت	Francisco Javier Simonet, *Glosario de voces ibéricas y latinas usadas entre los mozarabes, precedido de un estudio sobre el dialecto hispano-mozarabe,* Madrid 1888. Reprint, Amsterdam 1967.
Tuhfa	تحفة	*Tuhfat al-ahbab. Glossaire de la matière médicale marocaine.* Texte publié pour la premiere fois avec traduction, notes critiques et index, par H.P.J. Renaud et G. Colin, Paris 1934.

CRITICAL STUDIES IN THE WORKS OF AL-RAZI AND IBN SINA: AN ASSESSMENT OF THEIR INFLUENCE ON MEDICAL RESEARCH

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AL-RAZI

Medieval authors wrote confused and contradictory accounts of al-Razi, the most original physician-philosopher of the Arabic Islamic world. In this paper we correct previous statements about the age at which he started to study medicine, and the hospitals of which he was a director. We also provide evidence, from manuscripts and printed books of *al-Hawi fi'l-tibb* (Continens), that these notes represent a commonplace book, and constitute al-Razi's own private library. Furthermore, we give extracts from his well-known books in order to justify our contention that al-Razi wrote a medical encyclopaedia which he called *al-Jami al-Kabir,* in more than twelve books. We have recovered three volumes of this hitherto unacknowledged work of al-Razi, in manuscripts catalogued as *al-Hawi fi'l-tibb,* in the Bodleian Library (Oxford), and the Ecorial Library (Spain). The rough drafts of three of al-Razi's books which he never published, probably because of his premature death (*On urine; On crisis and critical days;* and *On treatment of convalescents*) are to be found in their entirety in manuscripts of *al-Hawi fi'ltibb.*

Extracts from al-Razi's book *On blood-letting and on cuppings* are published here for the first time. These excerpts throw light on his repeated visits to Egypt, on medical education in his time, and on the status of «complete physicians» and their assistants. Assistant physicians specialized in «particular medical procedures», such as blood-letting, cuppings, and other minor works which were to be entrusted to them by «complete physicians».

Al-Razi's *Doubts on Galen,* so far unpublished, gives evidence of his opposition to scientific dogmas. His criticism of Galen's *On demonstration,* a work which was lost in part even in the time of Hunain ibn Ishaq, is dealt with in this paper. The adaptation of the human eye to the intensity of light, that is the dilatation of the pupils in darkness and their constriction in light, as expounded by al-Razi offers a good example of independent thinking. He rejects Galen's doctrine of "the transference of visual pneuma from one eye, if closed, to the other, thus causing its pupil to dilate". Al-Razi mentions that he wrote a large treatise on this subject. Historians of medicine should look diligently, in uncatalogued manuscript collections, for al-Razi's *Treatise on the cause why the pupils become narrower in light and dilate in darkness.*

The authority of books on medicine was unacceptable to al-Razi, who asserted that reason *(al-aql),* "should govern and not be governed;should control, not be controlled; and should lead and not be led".

Extracts from his *Doubts on Galen,* and from his book *On the properties of things,* show that al-Razi believed in the progress of scientific knowledge, that he distrusted his predecessors, and rebelled against the authority of books.

He was a famous clinical observer and a practising surgeon who treated great numbers of patients and cured them from disease. He was an avid reader and a voluminous writer, and applied theory to practice. Al-Razi did not fear to reject theoretical doctrines if they contradicted actual exerience. He participated in laying a sound foundation of medicine by recording to posterity his accurate observations and great experiences.

IBN SINA

If it is permissible to make a comparative statement between al-Razi and Ibn Sina, one would not hesitate to say that the difference between them was in quantity, not in quality: al-Razi was the most original physician-philosopher of Islam, while Ibn Sina, first and foremost, was a great philosopher and a physician of immense influence on his successors.

Ibn Sina's major contribution to medicine is the encyclopaedic work *K. al-Qanun fi'l -tibb* (Canon) which he started to write in Gorgan. Part of it was later written at Rayy, the birthplace of al-Razi, and it was brought to a conclusion at Hamadan. *K. al-Qanun,* a one-million word book, was very well received by doctors, who favoured it over al-Razi's *al-Hawi fi'l-tibb,* over Ali ibn al-Abbas's *Kamil al-sina ᶜa al--Tibbiyya* (Complete art of medicine), and even over Galen's works.

CONTENTS OF K. AL-QANUN

This work is divided into five books: book I, *Generalities;* book II, *Materia medica;* book III, *Headto--toe diseases;* book IV, *Diseases that are not specific to certain organs;* and book V, *Compound drugs.*

The anatomy of *al-Qanun* is divided between book I and book III. This distribution of anatomy between two books was a target for Ibn al-Nafis' criticism, who chose to write a *Commentary on anatomy in K. al-Qanun,* in one book. The title *al-Qanun* (Principles or code of laws) probably played a part in the decline of medicine. Some enthusiastic commentators suggested that it was complete and sufficient, and could not be improved by additions from any other sources. This unhealthy attitude towards the authority of books held Arabic medicine, and, to a certain degree, early medieval medicine in Europe (which relied in part on Latin translations of Arabic books) in a static condition of no progress. Ibn Sina, however, was not to blame. His contemporaries and successors lacked a critical turn of mind. They preferred the authority of books to actual research. Al-Razi's progressive traditions and his refusal to accept statements unverified by experiments, his notion of the importance of control experiments, and his criticism of the books of Galen were overshadowed by Ibn Sina's *K. al-Qanun.*

SOURCES OF K. AL-QANUN

With a few exceptions, very little authentic information is known about the text books that were read by Arabic-speaking doctors.

Hunain ibn Ishaq in his *Missive to Ali ibn Yahya,* wrote a detailed list of Galen's 129 books on

medicine and philosophy which he translated from Greek into Syriac and Arabic, and mentioned the names of some physicians and book collectors, for whom translations were made.

Again, much light is thrown on al-Razi's medical education, from his commonplace book, *al-Hawi fi'l-tibb,* and from his own published commentaries and abstracts of Galen's works. Al-Razi compiled a list of his own books: his medical bibliography includes, among other works, such books as *Résumé of Galen's large book "On the pulse"; Résumé of Galen's book "On the method of healing"; Summary of Galen's "Diseases and symptoms"; Summary of Galen's the "Diagnosis of diseases of internal organs"; Interpretation of "Galen's commentary on the 'Aphorisms' of Hippocrates";* and his *Doubts on Galen.* In the latter work alone, al-Razi launches criticism of material in twenty-eight of Galen's books.

Without specifying any textbooks, Ibn Sina writes in his autobiography that he excelled in medicine, to the point that distinguished physicians began to read under him, when he was not yet sixteen years old. In his medical education, therefore, he cannot have read Galen, at least as profoundly as Hunain or al-Razi. None of the books of Galen or those of other physicians of Antiquity appears in Ibn Sina's bibliography. Elsewhere, we provided evidence that Ibn Sina's *K. al-Qanun* leans heavily on al-Razi's *al--Hawi fi'l-tibb.*

TWO MANUSCRIPTS OF K. AL-QANUN IN THE HANDWRITING OF IBN AL-TILMIDH

Hibat Allah ibn Jumaiᶜ, one of the physicians of Salah al-Din al-Ayyubi, wrote that Ibn al-Tilmidh, the famous physician of Baghdad, owned a copy of *K. al-Qanun* which he had transcribed from Ibn Sina's autograph. Ibn al-Tilmidh's own copy remained the definitive edition of this book for centuries after his death.

We have recovered a large section of this particular copy of *K. al-Qanun,* which contains books IV and V (incomplete at both ends), in MS Ar. 108, at the University of California Los Angeles. In book V of this manuscript, in a section on «theriacs and confections», Ibn al-Tilmidh inserted a marginal note on a plant name mentioned in the text, followed by his own signature: *bi-khatt Saᶜid ibn al-Tilmidh* (in the handwriting of Sa id ibn al-Tilmidh). The wrieter of these few lines, also wrote in his own handwriting the text of *K. al-Qanun* in MS Ar. 108, which has preserved fragments from Ibn al-Tilmidh's autograph of *al-Hawashiᶜ ala K. al-qanun li-ibn Sina* (Marginal commentaries on Ibn Sina's Canon of medicine).

Another manuscript, at the University Library Cambridge: Browne MS P. 5 (10) has a large section of book III of *K. al-Qanun.* It was also written and signed by Ibn al-Tilmidh himself. Like MS Ar. 108, Browne MS P. 5 (10) has preserved fragments from Ibn al-Tilmidh's *al-Hawashiᶜala K. al-qanum li-ibn Sina.*

K. al-Qanun, which was translated into Latin, and into many other languages, was printed several times in the East and West. Ibn Sina's elaborate reasoning appealed to scholars of the Middle Ages, when passages that were obscure were considered to be sublime.

١ـ ابن النديم ، كتاب الفهرست ، نشر ج . فلوجيل . ليبزج ١٨٧١ ـ ١٨٧٢ ، ج١ ، ص ٢٩٩ ـ ٣٠٢ ، ٣٥٨ ، رسالة للبيروني في فهرست كتب محمد بن زكرياء ـ الرازي ، نشر ب . كراوس . باريس ١٩٣٦ ، ابن القفطي ، تاريخ الحكماء نشر ج . ليبرت ، ليبزج ١٩٠٣ ، ص ٢٧١ ـ ٢٧٧ ، ابن أبي أصيبعة ، كتاب عيون الأنباء في طبقات الأطباء ، نشر ١ . ميلر ، القاهرة . كونيجزبرج ١٨٨٢ ـ ١٨٨٤ ، ج١ ، ص ٣٠٩ ـ ٣٢١ ، ابن جلجل الأندلسي ، طبقات الأطباء ، نشر فؤاد سيد القاهرة ١٩٥٥ ، ص ٧٧ ـ ٨٠ (رقم ٢٨) .

٢ـ ألبير زكي اسكندر ، الرازي ومحنة الطبيب ، المشرق ، ٥٤ ، ٤٩٥ ي ٤ ـ ٦ (١٩٦٠) .

٣ـ ألبير زكي اسكندر ، تحقيق في سن الرازي عند بدء اشتاله بالطب المشرق ٥٤ ، ١٦٨ ـ ١٧٧ (١٩٦٠) .

٤ـ كتاب الفهرست ، ج١ ، ص ٣٠٠ ، ص ٣ ـ ٤ ، رسالة للبيروني ، ص ٦ رقم ٨ القفطي ، ص ٢٧٤ ، س ١ ـ ٢ ، عيون الأنباء ، ج ١ ، ص ٣١٧ ، س ١٧

٥ـ رسالة للبيروني ، ص ١٩ ، رقم ١٤٨ ، القفطي ، ص ٢٧٣ ، س ١٠ ، عيون الأنباء ، ج ١ ، ص ٣١٥ ، س ١٨ ـ ١٩ . وطبع هذا الكتاب بعنوان : رسائل فلسفية لأبي بكر محمد بن زكريا الرازي مع قطع بقيت من كتبه المفقودة ، نشر ب . كراوس ، القاهرة ١٩٣٩ ، كما ترجم كتاب الطب الروحاني إلى اللغة الانجليزية :

A.J. Arberry, The Spiritual Physick of Rhazes, translated Feom the Arabic, London, 1950.

٦ـ انظر مقدمة كتاب الطب الروحاني في رسائل فلسفية لأبي بكر محمد ابن زكرياء الرازي ، ص ١٥ ، س ٢ ، ٢ ـ ٧ .

٧ـ يذكر الرازي اسم المعتضد في كتاب (الأبنة) باسم (الداء الخفي) انظر المخطوط رقم (١٥٨٨ د) ، ورق ٤٥ ظهر ، س ٢ ـ ٤ (الخزانة العامة برباط الفتح) ، ثم المخطوط طباطبائي رقم ٣٥٢ ، ص ١٢٤ ، س ٢١ ـ ٢٣ (مجلس شوراي ملى بطهران) . ولم يحقق النص العربي لكتاب (الأبنة) حتى الآن ، وانظر الترجمة الانجليزية التي نشرها

F. Rosenthal, «Ar-Razi on the Hidden illness», Bulletin of the History of Medicine, 52(I), 54-60 (1978).

٨ـ عيون الأنباء ، ج ١ ، ص ٣١٠ ، س ١٠ ـ ١١ .

٩ـ (رسائل فلسفية) ، ص ٩٧ ـ ١١١ ، وترجم هذا الكتاب إلى اللغة الانجليزية :

A.J. Arberry, «Rhazes on the Philosophic Life», in Asiatic Review, 45 n.s., 703-713, 1949

١٠أ (رسائل فلسفية) ، ص ١١٠ ، س ٢ ـ ٧ .

١١ـ نفس المرجع ، ص ١٨ ، س ١٤ ـ ١٥ .

١٢ـ نفس المرجع ، ص ١٠٠ ، س ١٢ ـ ١٣ .

١٣ـ نفس المرجع ، ص ٩٩ ـ ١٠١ .

١٤ـ الرازي ومحنة الطبيب ، ص ٤٩٦ ـ ٤٩٨ . ورأى الرازي في استمرار التقدم في البحوث الطبية يشبه إلى حد كبير رأي جالينوس في كتابه (في لن الطبيب الفاضل فيلسوف) . وانظر :

P. Bachmann, Galens Abhandlung daruber, dass der vorzugliche Arzt Philosoph sein muss. Arabish und deutsch herausgegeben. (Nachrichten der Akademie der Wissenschaften in Gottingen Philologisch-historische Klasse, 1965, Abh. I), Gottingen, 1965 P. 18, 11. 57-60

١٥ـ الرازي ومحنة الطبيب ، ص ٥٠٥ . وانظر ايضاً ما يذكره جالينوس في هذا الصدد في : Bachmann, Galens Abhandlung, P. 26, 11. 143-145

١٦ـ كتابالفهرست ، ج ١ ، ص ٢٩٩ ، س ٢٠ ـ ٢١ ثم ص ٣٠٢ ، س ١٩ ، القفطي ص ٢٧٣ ، س ٩ .

١٧ـ (رسائل فلسفية ، ص ١٠٩ ، س ٧ ـ ٨ . وللاطلاع على مخطوطات كتب الرازي انظر المراجع الآتية :

C.Brockelmann, Geschichte der Arabischen Litteratur, Leiden, 1943, vol. 1, PP. 267-271; Supplementband, Leiden,

1937, vol. 1, PP. 417-421; F. Sezgin, Geschichte des arabischen, Schrifttums, Leiden, 1970, vol. 3, PP. 294; M. Ullmann, Die Medizin im Islam (Handbuch der Orientalistik, 1 Abt., Erganzungsband VI), Leiden and Cologne, 1970, PP. 128-136

١٨- كتاب الحاوي في الطب للفيلسوف . . أبي بكر محمد بن زكريا الرازي المتوفي سنة ٣١٣ هـ / ٩٢٥ م ، دائرة المعارف العثمانية ، حيدر أباد الدكن ١٣٧٤ - ١٣٩٠ هـ / ١٩٥٥ - ١٩٧١ م ، ٢٣ جزءا .

١٩- أنظر مقدمة الرازي في كتابه (إلى من لا يحضره الطبيب) المعروف باسم (طب الفقراء) في مخطوط بمعهد ولكن لتاريخ الطب رقم (WMS.Or.23) ورق ظهر ، س ٦ - ١٢ ، وكتابه (الطب الملوكي) في مخطوط بمكتبة الجامعة بلايدن ، رقم (Or.585-4) ورق ٤٦ وجه ، س ١٦ - ٢٠ .

٢٠- (الحاوي في الطب) ج ١ ، ص ٢٥٥ ، س ٥ ، نفس المرجع ، ج ٤ - ص ١٨٣ ، س ١٦ .

٢١- قارن مادة كتاب (الحاوي في الطب) ، ج ٨ ص ١٠١ - ٢٢٠ بمادة كتاب (القولنج) في مخطوط بمكتبة الجامعة بكمبردج ، رقم (Add. 3516) من ورق ٤٨ ظهر ، س ١٢ إلى ورق ٦٢ ظهر س ١١ ، ثم مخطوط بمكتبة الجامعة بلايدن رقم (Or. 585-3) من ورق ٢٦ وجه إلى ورق ٤٥ ظهر .

٢٢- قارن مادة كتاب (الحاوي في الطب) ج ١٩ ، ص ٢٤١ - ٤٠٤ بمادة كتاب (المنصوري) في مخطوط بمكتبة بودليانا باكسفورد ، رقم (Marsh 248) من ورق ٧٦ وجه إلى ورق ١٠٨ ظهر . وانظر أيضا ما يذكره :

J. Friend, The history of physick from the time of Galen to the beginning of the sixteenth century, London, 1726, vol. 2, P. 46

٢٣- انظر :

W.A. Greenhill, A Treatise on the small-pox and measles, London, Sydenham Society, 1848.

قدم Greenhill الدليل على أن مصدر مادة كتاب (الجدري والحصبة) هو مذكرات (الحاوي في الطب) ، واستخدم في ذلك مخطوط بمكتبة بودليانا باكسفورد رقم (Marsh 156) من ورق ٢٨٢ وجه إلى ورق ٢٩١ ظهر .

٢٤- قارن مادة (الحاوي في الطب) ، ج ٢٠ ، ص ١ - ٦١٧ بمادة - كتاب (الأدوية المفردة) في مخطوط بمعهد ولكم لتاريخ الطب ، رقم (WMS. Or. 123) من ورق ٥٢ ظهر إلى ورق ٨٦ ظهر .

٢٥- يذكر ابن أبي اصيبعة (ج ١ ، ص ٣١٤ ، س ١٤ - ١٧) انه بعد وفاة الرازي اشترى ابن العميد . أستاذ الصاحب بن عباد - مسودات (الحاوي في الطب) من أخت الرازي ، ثم جمع ابن العميد تلاميذ الرازي من الأطباء الذين كانوا بالري ورتبوا هذه المسودات ، فخرج هذا الكتاب على ما هو عليه من - الاضطراب .

٢٦- انظر :

Liber dictus Elhavi id est Continens artem medicinae (transl. by Feragius; ed. by J. Britannicus), Brescia, 1486.

٢٧- انظر : ألبير زكي اسكندر ، الرازي الطبيب الاكلينيكي ، المشرق ٥٦ ، ٢٤٨ (١٩٦٢) .

٢٨- انظر المرجع السابق ، ص ٢١٧ - ٢٨٢ ،

E.G. Browne, Arabian medicine, Cambridge 1921, 51-53; M. Meyerhof, «Thirty-three clinical observations by Rhazes (circa 900 A.D.) in Isis, 23, 321'356, Arabic texts 1-14 (1935); O.Temkin, 'A medival translation of Rhazes' clinical observations 'in Bulletin of the History of Medicine, 12 (1), 102-117 (1942)

وأنظر أيضا : محمود نجم آبادي ، ترجمة قصص وحكايات المرضى ، تأليف : أبو بكر محمد زكرياي رازي باحواش وملحقات ، طهران ، ١٩٦٤ .

٢٩- الرازي ومحنة الطب ، ص ٥١٣ .

٣٠- انظر : A.Z. Iskandar, A catalogue of Arabic manuscripts on medicine and science in the Wellcome Historical Medical Library, London, 1967 PP 1-26

٣١ـ كتاب الفهرست ، ج ١ ، ص ٣٠٠ ، س ٤ ـ ١٢ ، عيون الأنباء ، ج ١ ، ص ٣١٧ س ٢٧ ـ ص ٣١٨ ، س ١١ .

٣٢ـ (رسائل فلسفية) ص ١١٠ ، س ١١ ـ ١٥ .

٣٣ـ المرجع السابق ، ص ١٠٩ ، س ٧ ـ ٨ .

٣٤ـ انظر : البير زكي اسكندر ، كتاب المرشد أو الفصول مع نصوص طبيعة مختارة لأبي بكر محمد بن زكريا الرازي (٢٥١ ـ ٣١٣ هـ : ٨٦٥ ـ ٩٢٥ م) . مجلة معهد المخطوطات العربية ، ٧ (١) ، ص ٢٤ ، ٦٣ ، ٦٨ ، ٧٢ (١٩٦١)

٣٥ـ انظر المخطوط رقم (WMS. Or. 9) ورق ٢٤ وجه ، س ٢ (معهد ولكم لتاريخ الطب) ، وانظر Iskandar, A catalogue of Arabic manuscripts ثم اللوحة رقم ٧ في هذا الكتاب . PP. 64-65

٣٦ـ من المخطوطات المفهرسة لهذا الكتاب القيم : بغداتلي وهبي (اسطنبول) رقم ١٤٨٨ / ٢٦ ورق ٢٣١ ظهر ـ ٢٤٨ ظهر ، مجلس شوراي (طهران) رقم ٣٨٢١ ، ورق ١٥٠ ظهر ـ ١٨٥ ظهر ، وملي ملك (طهران) رقم ٤٥٥٤ : ٢٣ ، ص ١ ـ ٢٩ (راجع (Sezgin, III, 77) ويذكر الرازي كتاب (الجامع الكبير) في المواضع الآتية : مخطوط ملي ملك (طهران) رقم ٤٥٥٤ / ٢٣ ، ص ١٩ ، س ٢٩ ـ ٣١ ، ثم س ٣٦ ، ٤٠ ـ ٤١ ، ص ٢٠ ، س ١٦ ـ ٢٠ ، ثم س ٢٣ ـ ٢٥ ، ٢٧ ـ ٣٣ . نشير في الهوامش إلى مقتطفاتنا من كتاب (الشكوك على جالينوس) في مخطوط ملي ملك فقط ، وذلك لتعذر الحصول على نسخ ميكروفيلم للمخطوطين الآخرين .

٣٧ـ الحاوي في الطب ج ٢ ، ص ٢٦ ، س ١٨ ـ ص ٢٧ ، س ١ .

٣٨ـ مخطوط رقم (Marsh 156) مكتبة بودليانا ، ورق ٢٣٨ وجه ، س ٧ ـ ٩ ومسودات كتاب (الجامع في الحميات) تقع في ورق ٢ ظهر ، س ١ ـ ورق ٣١٤ ظهر س ٤ . وانظر كذلك (الحاوي في الطب) ج ١٤ ، ص ١ ـ ٢٥١ ، ج ١٥ ، ص ١ ـ ٢٢٥ ، و ج ١٧ ، ص ١ ـ ١١٩ .

٣٩ـ مخطوط رقم (Bodl. Or. 561) مكتبة بودليانا، ورق اظهر س١ من ١ ـ ورق ١٩ وجه، س ٢ ، مخطوط رقم (٨١٥) مكتبة الاسكوريال ، ورق ١ وجه ـ ١٦ وجه ويذكر ابن النديم في كتاب (الفهرس) (ج ١ ، ص ٣٠٠ ، س ٨ ـ ٩) كتاب (صيدلة الطب) على أنه الجزء السابع من أجزاء كتاب (الجامع الكبير) وأما ابن ابي أصيبعة ، فيذكر في عيون الأنباء (ج ١ ص ٣١٨ ، س ـ ٢ـ٣) إن (صيدلة الطب) هو الجزء الخامس من (الجامع الكبير) .

٤٠ـ مخطوط رقم (Bod Or. 561) بودليانا ، ورق ١٩ وجه ، س ٣ ورق ١٢٥ وجه ، س ١٤ ، ومخطوط رقم (٨١٥) الاسكوريال ، ورق ١٦ ظهر ـ ١١٣ وجه ويذكره ابن النديم كتاب (الفهرست) ج ١ ، ص ٣٠٠ ، س ٩) كالجزء التاسع من أجزاء (الجامع الكبير) كما يذكر ابن أبي أصيبعة (ج ١ ، ص ٣١٨ ، س ٤ ـ ٦) كالجزء السابع .

٤١ـ مخطوط رقم (Marsh 156) بودليانا ، ورق ٢ ظهر ، س ١ ورق ٢٩٧ وجه ، س ٨ ، وانظر :

A.Z. Iskandar, «A study of ar-Razi's medical writings, with selected texts and English translations, a thesis submitted for the Degree of Doctor of Philosophy in the University of Oxford, 1959, PP. 204-207

٤٢ـ مخطوط رقم (Marsh 156) ورق ٤١٦ ظهر ، س ٦ ـ ورق ٤٧٢ ظهر س ١٠ ، Iskandar, A study of ar-Razi, PP. 202-203

٤٣ـ مخطوط رقم (Marsh 156) ورق ٣١٤ ظهر ، س ٤ ـ ورق ٤١٦ ظهر س ٦ ، Iskandar, A study of ar-Razi's medical writings, PP. 198-201

٤٤ـ مخطوط رقم (Marsh 156) ورق ٣٠٢ وجه ، س ١٧ ـ ورق ٣١٤ ـ ظهر س ٤ ، Iskandar, A study of ar-Razi's medical writings, PP. 194-197

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G. Bergstrasser, «Hunain ibn Ishaq uber die syrischen und arabischen Galen-ubersetzungen», in Abhandlungen fur die Kunde des Morgenlandes, 17 (2), 34-35, No. 71 (1925)

وللاطلاع على مخطوطات هذا الكتاب ، مع الاشارة إلى الأصل اليوناني ، انظر :

Sezgin, vol. 3, P. 115, No. 57, Ullman, P. 59 No. 97

٤٦ـ عيون الانباء ، ج ١ ، ص ٣٢١ ، س ١ ـ ٣ ، رسالة للبيروني ، ص ٨ رقم ٢٨ . وللاطلاع على مخطوطات هذا الكتاب انظر :

Brockelmann, vol. I, P. 270 No. 21; Supplementband, Vol. I P. 420, No. 50, Sezgin, vol. III, P. 287, n. 18

٤٧ـ الرازي الطبيب الاكلينيكي ، ص ٢٣٨ ـ ٢٣٩ ، ثم :

Iskandar, A catalogue of Arabic manuscripts, P. 10, note 2

٤٨ـ مخطوط رقم (٨٥٧) الاسكوريال ، ورق ٥ وجه ، س ٢ ـ ٥ .

٤٩ـ نفس المخطوط السابق ، ورق ١٠ وجه ، س ١٩ ـ ٢٢ .

٥٠ـ الخليفة العباسي المأمون (١٩٨ ـ ٢١٨ هـ / ٨١٣ ـ ٨٣٣ م) .

٥١ـ مخطوط رقم (٨٥٧) الاسكوريال ، ورق ١٣ ظهر ، س ١٤ ـ ١٨ .

٥٢ـ للاطلاع على المراجع العلمية التي كان يدرسها كل من مارس (الأعمال الجزئية) في الطب (أي الجراحة) تحت اشراف « الطبيب الكامل » .

وتلك المراجع التي كان يستند اليها الطبيب الكامل ، أنظر :

A.Z. Iskandar, «An attempted reconstruction of the late Alexandrian medical curriculum», in Medical History, 20 (3), 235-258 (1976)

ثم ترجمتنا العربية لهذا المقال تحت عنوان : مدرسة الاسكندرية ومناهج التعليم الطبي في اوائل العصر الوسيط ، مجلة معهد المخطوطات العربية ، ٢٤ (١) . ، ٢٣ ـ ٥٦ (١٩٧٧) .

٥٣ـ مخطوط رقم (٨٥٧) الاسكوريال ، ورق ٥ ظهر ، س ١٣ ـ ٢١ .

٥٤ـ سورة يوسف آية ١٠٥ ، القرآن الكريم .

٥٥ـ كتاب (المرشد أو الفصول) ص ١١٩ ، رقم ٣٦٤ .

٥٦ـ مخطوط رقم (٤٥٥٤ / ٢٣) ، ملي ملك ، طهران ، ص ٢ ، س ١٤ .

٥٧ـ نفس المخطوط السابق ، ص ٢٧ ، س ٣٩ .

٥٨ـ Bergstrasser, Hunain, P. 47, No. 115

نشير إلى صفحات النص العربي في هذا الكتاب لحنين بن اسحق .

٥٩ـ مخطوط رقم (٤٥٥٤ / ٢٣) ملي ملك ، ص ١ ، س ٢٩ ـ ٣٢ . وانظر :

S.Pines, «Razi critique de Galien», in Actes du VIIe Congres International d'Histoire des Sciences, Jerusalem, 1958, Paris n.d., PP. 480-487

٦٠ـ نفس المخطوط السابق ، ص ١ ، س ٣٤ ـ ص ٢ ، س ١ .

٦١ـ مخطوط رقم (٤٥٥٤ / ٢٣) ، ملي ملك ، ص ٢ ، س ٢ .

٦٢ـ نفس المخطوط السابق ، ص ٢ ، س ٦ ـ ٧ .

٦٣ـ نفس المخطوط السابق ، ص ٢ ، س ١٠ ـ ١٢ .

٦٤ـ نفس المخطوط السابق ، ص ٥ ، س ٦ ـ ١٧ .

٦٥ـ نفس المخطوط السابق ، ص ٥ ، س ٢٩ .

٦٦ـ عيون الأنباء ، ج ١ ، ص ٣١٨ ، س ٢٩ .

٦٧ـ المرجع السابق ، ج ١ ، ص ٣١٩ ، س ٤ .

٦٨ـ المرجع السابق ، ج ١ ، ص ٣١٩ ، س ٤ ـ ٥ .

٦٩ـ المرجع السابق ، ج ١ ، ٣٢٠ ، س ٢٣ .

٧٠ـ المرجع السابق ، ج ١ ، ص ٣٢١ ، س ٢٠ .

٧١ـ انظر المراجع رقم ٢٧ و ٢٨ فيما سبق .

٧٢ـ يتكون هذا الكتاب من سبع عشرة مقالة ، ويقع في جزأين : الجزء الأول في تركيب الأدوية على الجمل والأجناس ويعرف أيضا باسم (قاطاجانس) ، وهو في سبع مقالات . والجزء الثاني في تركيب الأدوية بحسب المواضع الآلة ويسمى (الميامر) عشر مقالات انظر :

Bergstrasser, Hunain, P. 36, No. 79, Sezgin, vol. III, P. 118 No. 64

وفي طبعة : Ullmann, P. 48 No. 50

C.G. Kuhn, Claudi Galeni opera omnia, Leipzig, 1821-1833

20 vols in 22

أخطأ الناشر ، فقدم (الميامر) De compositione medicamentorum secundum locus, (Kuhn, xii, 378-1007) على (قاطاجاني) De compositione medicamentorum per genera (Kuh, xiii, 362-1058)

وقد صححنا هذا الخطأ في مقالنا المذكور في رقم ٥٢ سابقا :

«An attempted reconstruction of the late Alexandrian medical curriculum», P. 251, note 118

٧٣ـ مخطوط رقم (٤٥٥٤ / ٢٣) مللي ملك ، ص ١٨ ، س ١٩ ـ ٢٢ .

٧٤ـ نفس المخطوط السابق ، ص ٢١ ، س ٩ ـ ٣٨ . وللاطلاع على مخطوطات كتاب جالينوس في البحران انظر :

Sezgin, vol. III, P. 95, No. 18; Ullmann, P. 43 No. 29

٧٥ـ مخطوط رقم (٤٥٥٤ / ٢٣) مللي ملك ، ص ٢١ ، س ٢٠ ـ ٢٨ .

٧٦ـ كتاب الفهرست ، ج ١ ، ص ٣٠٠ ، س ٢٩ ، عيون الأنباء ، ج ١ ص ٣١٦ ، س ٣٠ . وانظر : الرازي الطبيب الاكلينيكي ، ص ٢٣٦ ـ ٢٣٨ .

٧٧ـ راجع المقالين الذين كتبهما :

G.C. Anawati and A.Z.Iskandar, «Ibn Sina» in Dictionary of scientific biography, supplement 1, vol. 15, New York, 1978, PP. 494-501.

٧٨ـ القفطي ، ص ٤١٣ ـ ٤٢٦ ، عيون الأنباء ، ج ٢ ؛ ص ٢ ـ ٢٠ . وللاطلاع على المخطوطات الطبية لكتب ابن سينا ، انظر :

Brockelmann, vol. I, PP. 596-599; Supplementband, vol. I, PP. 823-826 Ullmann, PP. 152-156;

جورج شحاته قنواتي ، مؤلفات ابن سينا ، القاهرة ، ١٩٥٠ .

٧٩ـ انظر :

W.E. Gohlman, The life of Ibn Sina, a critical edition and annotated translation, Albany, New York, 1974

ويشير في كتابه إلى مختلف الطبعات العربية .

٨٠ـ عيون الأنباء ، ج ٢ ، ص ١٨ ، س ٢٨ ـ ٢٩ .

٨١ـ انظر المقال الذي كتبه :

R. Arnaldez and A.Z. Iskandar, «Ibn Rushd», in Dictionary of scientific biography, vol. 12, New York, 1975, PP. 1-9

٨٢ـ Iskandar, A catalogue of Arabic manuscripts, PP. 26, 35-37

٨٣ـ المرجع السابق ، ص ٣٣ ـ ٣٤ .

٨٤ـ راجع مقالنا عن :

«Ibn al-Nafis» in Dictionary of scientific biography, vol. 9, New York 1974, PP. 602-606

٨٥ Iskandar, A catalogue of Arabic manuscripts, P. 27

٨٦ـ المرجع السابق ، ص ٣٣ ـ ٦٤ .

٨٧ـ طبع النص العربي لهذه الرسالة ، مع ترجمة المانية ، انظر المرجع رقم ٤٥ فيما سبق .

٨٨- كتاب الفهرست ، ج ١ ، ص ٣٠٠ ، س ٢٣ - ٢٤ ، رسالة للبيروني ، ص ١٥ رقم ١٠٨ ، القفطي ، ص ٢٧٤ ، س ١٨ ، عيون الأنباء ، ج ١ ص ٣١٩ ، س ٣١ .
٨٩- كتاب الفهرست ، ج ١ ، ص ٣٠١ ، س ٩ ، رسالة للبيروني ، ص ١٥ ، رقم ١٠٩ ، القفطي ، ص ٢٧٥ ، س ١١ - ١٢ ، عيون الأنباء ، ج ١ ، ص ٣١٩ ، س ٣١ .
٩٠- كتاب الفهرست ، ج ١ ، ص ٣٠١ ، س ١٠ ، رسالة للبيروني ، ص ١٦ ، ص ١٦ رقم ١١١ ، القفطي ، ص ٢٧٥ ، س ١٢ - ١٣ ، عيون الأنباء ، ج ١ ، ص ٣١٩ ، س ٣٢ .
٩١- كتاب الفهرست ، ج ١ ، ص ٣٠١ ، س ١٠ ، رسالة للبيروني ، ص ١٦ ، رقم ١١٠ ، القفطي ، ص ٢٧٥ ، س ١٢ ، عيون الأنباء ، ج ١ ، ص ٣١٩ ، س ٣١ - ٣٢ .
٩٢- كتاب الفهرست ، ج ١ ، ص ٣٠١ ، س ١٧ ، رسالة للبيروني ، ص ١٦ رقم ١١٢ ، القفطي ، ص ٢٧٥ ، س ٢٠ ، عيون الأنباء ، ج ١ ، ص ٣٢٠ ، س ١٥ .
٩٣- كتاب الفهرست ، ج ١ ، ص ٢٩٩ ، س ٢٧ ، رسالة للبيروني ، ص ١٣ ، رقم ٨٨ ، القفطي ، ص ٢٧٣ ، س ١٧ ، عيون الأنباء ، ج ١ ، ص ٣١٦ ، س ١ . وانظر - المرجع رقم ٣٦ المذكور سابقا .
٩٤- مخطوط رقم (٤٥٥٤ : ٢٣) مللي ملك ، ص ٢ ، س ١٤ .
٩٥- المخطوط السابق ، ص ٥ ، س ٣٥ .
٩٦- المخطوط السابق ، ص ٦ ، س ٧ .
٩٧- المخطوط السابق ، ص ١٠ - س ٢٢ .
٩٨- المخطوط السابق ، ص ١٢ ، س ٣٣ .
٩٩- المخطوط السابق ، ص ١٢ ، س ٣٣ .
١٠٠- المخطوط السابق ، ص ١٥ ، س ٣ .
١٠١- المخطوط السابق ، ص ١٥ ، س ١٧
١٠٢- المخطوط السابق ، ص ١٨ ، س ١٣ ، ثم س ١٩ . وانظر المرجع رقم ٧٢ المذكور سابقا .
١٠٣- المخطوط السابق ، ص ١٨ ، س ٢٢ .
١٠٤- المخطوط السابق ، ص ١٨ ، س ٤١ .
١٠٥- مخطوط رقم (٤٥٥٤ / ٢٣) مللي ملك ، ص ٢١ ، س ٣ .
١٠٦- المخطوط السابق ، ص ٢١ ، س ٩ .
١٠٧- المخطوط السابق ، ص ٢١ ، س ٣٩ .
١٠٨- المخطوط السابق ، ص ٢١ ، س ٣٩ .
١٠٩- المخطوط السابق ، ص ٢٢ ، س ١١ .
١١٠- المخطوط السابق ، ص ٢٢ ، س ٢٢ .
١١١- المخطوط السابق ، ص ٢٢ ، س ٢٥ .
١١٢- المخطوط السابق ، ص ٢٢ ، ٢٨ .
١١٣- المخطوط السابق ، ص ٢٢ ، س ٣٨ .
١١٤- المخطوط السابق ، ص ٢٢ ، س ٤١ .
١١٥- المخطوط السابق ، ص ٢٣ ، س ٢٠ .
١١٦- المخطوط السابق ، ص ٢٣ ، س ٣٠ .
١١٧- مخطوط رقم (٤٥٥٤/ ٢٣) مللي ملك ، س ٢٣ ، س ٣٣ .
١١٨- المخطوط السابق ، ص ٢٧ ، س ٣ .

١١٩ـ المخطوط السابق ، ص ٢٧ ، س ١٢ .

١٢٠ـ المخطوط السابق ، ص ٢٧ ، س ٢١ .

١٢١ـ المخطوط السابق ، ص ٢٧ ، س ٣٩ .

١٢٢ـ القفطي ، ص ٤١٤ ، س ١٨ ـ ٢٠ ، عيون الأنباء ، ج ١ ، ص ٣ ، س ١٢ ـ ١٦ ، ثم انظر Gohlman, PP. 24-26

١٢٣ـ W.Mc Guckin de Slane, Catalogue des manuscripts arabes, Paris, 1883-1895, P. 515 (MS 2859)

١٢٤ـ عيون الأنباء ، ج ٢ ، ص ١٩ ، س ٣٢ .

١٢٥ـ المرجع السابق ، ج ٢ ، ص ١٨ ، س ٢٥ ـ ٢٧ .

١٢٦ـ المرجع السابق ، ج ٢ ، ص ٢٠ ، س ٢ .

١٢٧ـ Iskandar, A catalogue of Arabic manuscripts, PP. 29-32

١٢٨ـ

A.Z. Iskandar, «An autograph of Ibn al Tilmildh's «Marginal commentary» on Ibn Sina's Canon of medicine», in Le Museon, 90 (1,2), 177-236 (1977)

١٢٩ـ

A.Z. Iskandar, «Another fragment from the autograph of Ibn al-Tilmidh's «Marginal commentary» on Ibn Sina's Canon of Medicine», to be printed in Bulletin of the School of Oriental and African Sltudies, 44 (1), ... (1980)

١٣٠ـ للاطلاع على مخطوطات وطبعات كتاب « القانون » انظر :

Iskandar, «An autograph of Ibn al-Tilmidh's «Marginal Commentary» on Ibn Sina's Canon of Medicine», PP. 190-191, note 98

١٣١ـ طبعت الترجمة العبرية في ايطاليا Ha-Canon ha-gadol - Avicenna Naples, 1491

وانظر الطبعة اللاتينية في المرجع رقم ٢٦ المذكور سابقا .

THE PHYSIOLOGY OF RESPIRATION, ACCORDING TO IBN SINA

Ahmed Aroua,
Algeria

Presenting the physiology of respiration as it was described by Ibnou Sina in the Canon of Medicine, intents to highlight the importance of the Arabo-Islamic contributiion in the evolution of medical science.

Although Ibnou Sina did not have a clear notion of the pulmonary blood circulation, his physiology of respiration represents an advanced step in comparison with the ancient medicine.

In addition of the anatomy, the innervation and the respiratory mechanics, he noticed with a great perspicacity:

1. The nature and the role of the respiratory exchanges which comprise:

- *the introduction of an aerial substance which get into the blood and elaborate the vital spirit.*
- *the vaportion of blood from its disposals such as smoke vapour and confined heat.*
- *the regulation of body temperature by ventilation*

2. The role of the chemical changes within the environment in which the exchange occur in the respiratory moves.

3. The nature of the vital spirit, called «rouh» and defined as a gaseous substance elaborated from the air, «subtle, fluid and ascending, so it is not necessary to revert the container in which it is to flow».

The analysis of the respiratory function as we find it in the Canon of Medicine reveals the important contribution of Islamic medicine in the knowledge of human physiology.

While respiration appears to us as one of the best known biological functions, it is somewhat difficult to visualize the tortuouse path that led to a better knowledge of the biological phenomenon of respiration. Respiration physiology as it emerges from a reading of Ibnou Sina's Canon of Medicine is a major historical landmark in the approach to respiratory mechanics

and in the subtle exchanges which take place both in the lungs and in the tissues between the living organism and the external environment.

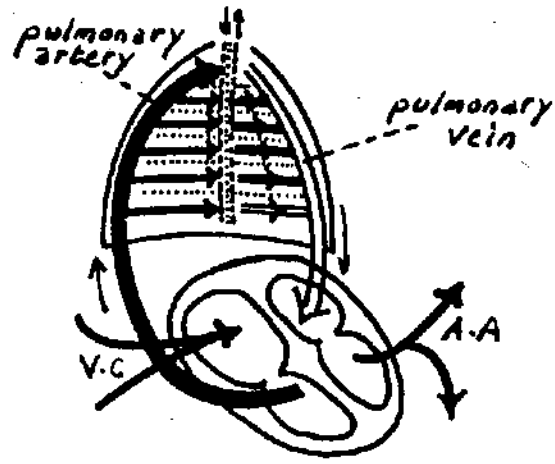
This is why we deem it relevant to consult Ibnou Sina's work on the subject in order to highlight the contribution of Arab-Islamic medicine to the evolution of human sciences, which inspite of tremendous achievements of the modern era are still faced with unknown factors and mysteries.

I-BRIEF RECALLING OF MODERN RESPIRATORY PHYSIOLOGY

When presenting a scientific paper, it is customary to start with historical references. Since we are dealing with a matter of History, it appeared useful, for a better grasp of it, to reverse the process by briefly recalling our present knowledge in this respect.

1. The Respiratory System and Cardio-pulmonary Circulation

We know that the trachea divides and subdivides in the lung down to the alveoli where exchanges between the outside and the blood in the capillaries covering them take place. We also know that venous blood come from the right ventricle of the heart through the pulmonary artery which divides itself down to the capillary network which lines the alveoli & then goes into the remifications of the pulmonary vein which takes it back to the heart through the left auricle.



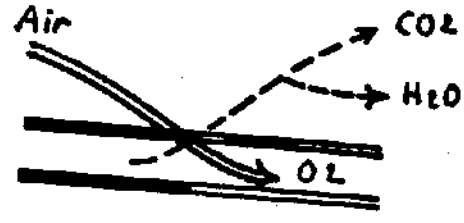
2. *Respiratory mechanics*

Respiration is achieved through the inspiratory and expiratory movements which fill the lung with air and subsequently empty it. These movements are caused by respiratory muscles, the most important of which is the diaphragm. They are controlled by the nervous system and determined by the chemical changes which occur in the environment where the exchanges take place.

3. *Exchange at the Pumonary level*

Two processes are involved:

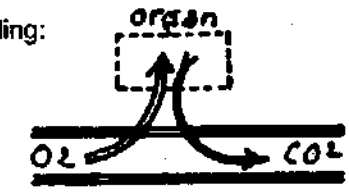
(a) introduction of oxygen from the air into the arteriovenous capillaries, through the alveolar wall



(b) elimination in the opposite direction of carbon dioxide (CO2), and water vapour (H2O)

4. Respiratory exhanges in the tissues

They occur between the tissues and the blood circulatory stream, including:

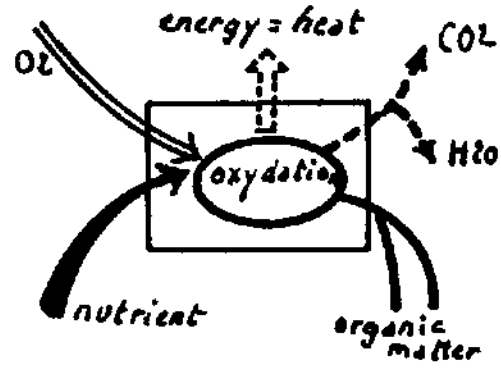


(a) the introduction of oxygen (O^2) in the tissues

(b) the elimintation of (CO^2) from the tissues into the blood stream

5. Metabolism inside the tissues

This involves 2 additional processes: anabolism which produces organic matter [3] catabolism which causes its degradation. O2 is involved in the oxydation of nutritive substances & in particular carbohydrates, inorder to release energy in the form of heat & get rid of carbon dioxide & water vapour

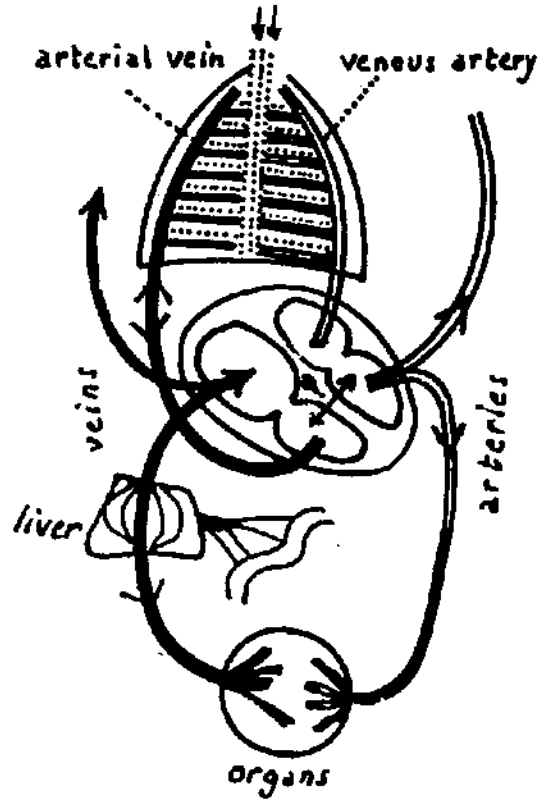


II-PHYSIOLOGY OF RESPIRATION IN IBNOU SINA'S CANON OF MEDICINE

The comparison with what we know today of the respiratory phenomenon, without of course going into details with respect to biochemistry and micro physiology, enables us to have as clear an idea as possible of respiratory physiology as conceived by Ibnou Sina.

1. The respiratory system and blood circulation

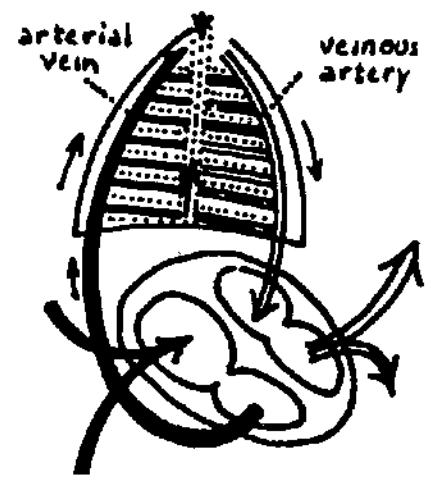
After a description of the lungs and neighbouring organs of the chest, Ibnou Sina states: "the trachea divides in two, then branches out towards the lungs by following the arteriol and venous ramifications down to its ultimate openings which are narrower than those corresponding to it". He further explained: "its remifications with veins enable it to retain the nutrients. The smallness of its openings enable it to allow fresh air to get into the blood without the latter flowing through". Regarding the pulmonary circulation, Ibnou Sina said: «two arteries originate from the left cavity of the heart. One goes up toward the lung where it branches out to inhale fresh air and supply the lung with nourishing blood.. contrary to other arteries, it has only one layer, and this is why it is called the venous artery. That single



layer accounts for a greater flexibility and ease in following systolic and diastolic movements which enable it to permeate the lung with a light and aerated blood...» Ibnou Sina gives further enlightment on these vessels: «the ramifications of the trachea and veinous artery are both responsible for the respiratory action. The venous artery and the arterial veins jointly contribute to supplying processed and purer blood from the heart to the lungs...»

As to major circulation, he referred to it in the anatomy of blood vessels: «arteries are organs originating in the heart, longitudinal in length and hollow in shape and of a fibrous and tendinous nature. They have diastolic and systolic movements with rest intervals., whose purpose is to supply the vital spirit to the heart and expel the smoke vapour from it. Subsequently they bring the vital spirit to the other organs of the body. Then for the viens, they are similar to the arteries, but originate from the liver and do not have pulsations. Their function is to provide blood to the organs of the body...»

There we can see Ibnou Sina's mistakes in the wake of ancient physicians, particularly Galen. First his belief that blood circulation has two independent systems, one in charge to feeding and the other of transport of the vital spirit and its residues. Then, the confusion of the direction of circulation and ignorance of the communication between arterial and venous circulation.



This erroneous belief was to prevail until Ibnou Nafis, Ibnou Sina's commentator, made the required corrections and described the pulmonary circulation by clearly stating: "It is compulsory for the lighter blood to go through the arterial vein (pulmonary artery now) and permeate the lung in order to mix with air and purify the subtle part, then go into the veinous artery (pulmonary vein) which takes it back to the left cavity of the heart after having mixed with air and become capable of producing the vital spirit..".

2. *Respiratory mechanics*

Ibnou Sina described with accuracy respiratory movements and highlighted the action of muscles, in particular, the predominant role of the diaphragm: "the respiratory movement when it is natural, free and healthy, is performed thanks to the diaphragm. If there is a need for forced respiration, the other chest muscles participate with it" Besides, he describes the various respiratory nerves originating from the skull or the spinal cord.

But what is noteworthy is that he showed us the role of humoral changes in the triggering off of respiration movements: «the purpose of respiration is to fill the lungs with fresh air which entertains cardiac impulses and the heart is constantly taking fresh air from it and expelling smoke vapour into it, until two things happen to the inhaled air:

- one, it loses its fresh temperature by heating his inhaled air
- two, it loses it qualities because of the accumulating smoke vapour which mixes with it.

It thus becomes incapable of filling its vital function, and it becomes necessary to release and replace it...»

3. *Repiratory exchanges in the lungs*

What is the most important in Ibnou Sina's study of respiration, is undoubtedly the explanation of the intimate processes of respiratory exchanges. It is important to stress at the outset that inspite of a somewhat tedious vocabulary for us, Ibnou Sina covered the major aspect of the biological role of respiration.

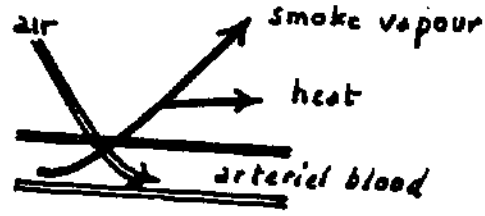
First, by describing air and its biological role: "air is a constituting element of our body and of our vital spirit, and as such, it is a substance that reaches out to the vital spirit to correct its qualities, not only as a constituting part, but also as a regulating agent." The author then commented upon this role:

"this regulation of the vital spirit includes two processes: ventilation and purification"

Ventilation means the control of humoral qualities of the vital spirit which has suffered from excessive confinement. This additional control is made, thanks to inspiration, into the lungs and the permeable ramifications of arteries. When air arrives there and gets mixed, it prevents the burning and the confinement of it.

As to purification, its role at the time of expiring is to release together with air the smoke vapour which the selective natural power transmits to it, smoke vapour being for the vital spirit, what residual humours are for the body.

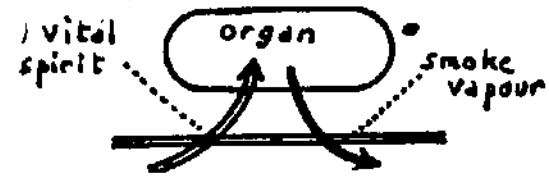
Thus (heat) regulation is being carried out by the passage of air into the vital spirit, when inspiring and purification through its disposal when expiring...»



4. Respiratory exchanges inside organs

It was not within Ibnou Sina's province to define the precise nature of the vital spirit and he restricted himself to stating that it was a vaporous substance made up from air, nor did he define the place where it was evolved, except by indicating that it was in the heart. However, he gave an acceptable definition to the vital spirit. He used the word «rouh» which was translated by "vital spirit", but he made a clear difference with the other word «rouh» which means soul or spirit. He told us: "the vital spirit (rouh) is a subtle (light) fluid and ascending substance, so it does not need to revert the container in which it is to flow.."

This definition clearly indicates that it is a gas made from the air which is dissolved in the blood in order to be transmitted to the organs. Thus, speaking of the vascularisation of meninges by arterial blood he said: «they branch out in the body of the encephalon, through ventricles and ventricles walls, meet the ends of the ascending branches (of the artery), then the ends of the descending branches of the veins.. and thanks to its lightness and fluidity, the vital spirit may spread in the encephalon in sufficient quantity to heat it...» We hereby understand that the vital spirit penetrates the organs from the blood vessels. The result is activity and heat formation, while the residues of the vital spirit are disposed off in the blood in the form of smoke vapour.



5. Metabolism and combustion within organ

We find in Ibnou Sina's work relevant ideas on the transformation of nutritive substances into specific organic matters and we notice:

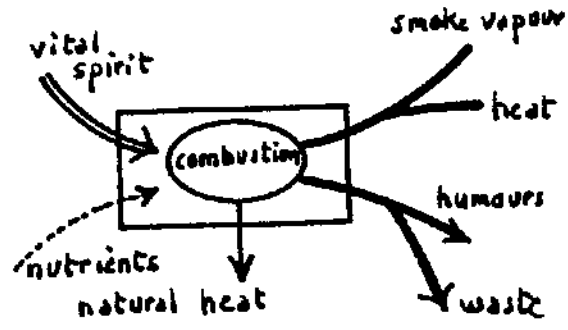
(a) the progressive of food substance, from the first digestion up to final assimilation. This assimilation into the organs covers four stages:

"the first one is represented by the humour concentrated in the cavities of the small vessels which irrigate neighbouring organs; the second is a humour which spreads inside the primitive organ like dew, which remains available to replace food, if need be, or to humidity organs when they are dried out by an extensive activity or for other reasons, in the third stage, the newly constituted humour is a nutrient transformed into an organic substance through combination and assimilation. In the fourth stage, the humour is integrated in the primitive organ whose structures are those (determined by the primary genetic germ)."

(b) To that metabolism which evolves organic matter, correspond a desintegration and degradation which produces either secondary humours used in various biological functions or liquid and solid waste which are disposed of by various emonctories».

(these ideas are dealt with in detail in the Canon, under the chapter on humours).

(c) the introduction of the vital spirit provokes animal heat which is evidence of life. The spirit which undergoes a degradation in that operation provokes heat and smoke like in any combustion.



CONCLUSION

Inspite of the fact that theories expounded in the Canon of Medicine need further research, we can say that Ibnou Sina indeed represents the peak of medical knowledge on his time and for many centuries after him. He, therefore, stands at the cross roads between ancient medicine, especially Galen's - from whom he inherited both inspired discoveries and disappointing mistakes - and modern medicine which he sometimes heralded with surprising foresight.

We can, however, regret that Ibnou Sina did not go further into the logical and scientific way with which he explained the combined physiological phenomena of respiration and circulation, in order to get rid of the mistakes of his predecessors, as did later commentator Ibnou Nafis and in his wake the physicins of the Western Renaissance.

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6. Modern books on physiology

THE EARLIEST WORK ON ISLAMIC MEDICINE IN PERSIAN (ON CLINICAL MEDICINE)

Nazir Ahmad
Aligarh, India

The "Hidayat ul Mut'allimin" composed sometime after 350 A.H. is the earliest available medical work in Persian on clinical medicine. It has enjoyed some popularity even after the appearance of Ibn Sina's Qanun. However, from the last few centuries it has fallen into disuse. Laterly two very old MSS have been brought to light on the basis of which a critical edition has been prepared and published from Mashhad in 1965. Its author Abu Bakr Rafi b.Ahmad Akhwaini Bukhari was a pupil of Abul Qasim Muqanil, a pupil of Razi. Through this book, Akhwaini has carried forward the tradition of the Razi School.

In this study, an attempt has been made to examine briefly various aspects of the book: its author, its time, its popularity, its value as a medical work, its literary and linguistic value, its MSS and their orthographical and calligraphical value.

Iranian scholars had started writing books on Islamic medicine in Persian as early as the 4th century of the Hijra, and during the subsequent period of eight or nine centuries immense medical literature has been produced in this language. Some idea of the richness of the Islamic medical literature in Persian may be gathered from Fonahn's excellent[1] work: "Zur Qullenkunde der Persischen Medizin" published at Leipzig in 1910 in which 400 odd available Persian works, mostly in the manuscript form, have been listed. Of these the earliest is the "Hidayatul Mut'allimin fit Tibb" composed in the early part of the third quarter of the 4th century A.H. It was a popular work in its own time and had enjoyed considerable popularity even after the appearance of Ibn Sina's Qanun which was destined to surpass all the medical works in merit[2].

The author of the "Hidayatul Mutallimin" (henceforth' Hidaya') was Abu Baki[3] Rabi[4] b. Ahmad al--Akhwaini[5] al-Bukhari. Nothing is known about him except what he has casually mentioned in this work. He was from Bukhara[6] and a pupil of Abul Qasim[7] Tahir b. Mohammad b. Ibrahim al-Muqani'i al-Razi who was a pupil of the great physician and writer Muhammad b. Zakariyya al-Razi (d. 330/A.H.). From this, some scholars[8] have deduced that Akhwaini, the author of the "Hidaya" might have died around 373 A.H. allowing thirty years for him and another thirty years for his teacher. And keeping in view that the "Hidaya" was composed when its author was quite advanced in age, it may be supposed to have been composed sometime[9] after 350 A.H.

Another equally important and more wellknown medical work entitled «Kitabul Abnia»[10] on *materia medica,* was composed by Abu Mansur Muwaffaq b. 'Ali al-Harwi for a king stated in the introduction of the book as: حضرت عالي مولانا الأمير المسدد المنصور أدام علوه بس اورادیدم ملکي الخ

It was regarded by all the eastern and western scholars including the eminent Persian scholar Mirza Muhammad[12], to have been composed between 350 A.H.[13] and 365 A.H. on the ground that the Amir mentioned in the book is none but the Samanid ruler, Mansur b. Nuh who ruled from 350 A.H. to 365 A.H.[14]. But subsequently, Mirza Muhammad revised his[15] view by concluding that the composition of the "abnia" in al its likelihood, could have not been effected earlier than the middle of the fifth century A.H. He based arguments on these two points:

Firstly, the term 'al-Mansur' occuring in the above quoted phrase being an epithet rather than the proper name, should not be taken to refer to Amir Mansur b.Nuh. Secondly, Asadi, the eminent Persian poet who transcribed the Vienna MS in 447 A.H.[16] has appended the words حرسه الله with the name of the author wich signifies that the author was alive when the MS. was transcribed. Under these circumstances the "Hidaya" composed after 350 A.H. should rightly be regarded as the earliest work on Islamic medicine in Persian.

Abu Bakr Rabi 'Akhwaini', the author of the «Hidaya» was a competent physician and successful writer of medical works in his own time. He had practised medicine for over thirty[19] years and had grown into a mature and seasoned scientist. Besides the "Hidaya" he had written a treatise on anatomy[20] and another on pulse[21].He had also a design to write a pharmacopoeia[22]. However, no MS. of any of these is known to have survived.

Akhwaini had specialised in the treatment of patients suffering from Melancholy on which account he was often nicknamed as the physician of the lunatics[23].

Akhwaini was not a blind follower of the past masters. He had his own original ideas about the treatment of ailments. He has, no doubt, quoted the views of the earlier scientists such as Hippocrates[24], Galen[25], Hunain[26]. Ishaq Thabit b. Qurra[27], 'Isa b. Sahar Bakh[28], Yahya b. Masawai[29]. Muhammad b. Zakariyya[30] and others. But he would not use their prescriptions if he has not examined them personally and in cases he has not put them to trials he has indicated as such. Writing to his son he says.

'But I have place before you such prescriptions as I myself have experimented except when I say "such and such person says". In that case I have not put the prescription to my personal tests and have I indicated so as not to be mistaken'[31].

'I have most often treated such ailments and whatver is recorded here is that which has been personally experimented by me. However, I would refrain from recording what I have not examined and experimented personally'.[32]

Again in respect of Sham'un Rahib's prescripton[33] for leprosy and those of Muhammad b. Zakariyya[34] and others for tuberculosis, since Akhwaini had no personal experience, he would not favour their use.

While differing with Yuhanna b. Sarabiyu[35] regarding the dosage of Euphorbium (Farbiyun) and

Aloes (Sibr) in a particular prescription for dropsy, Akhwaini says[36].

'Euphorbium has much intensity at this place and should not be given more than one '*dang*' but Sarabiyun's son had prescribed one '*dirham*' and I do not know as to why he prescribes so.... In that case, he prescribes Aloes 16 '*dirham*' for three days but it is very difficult to use it and I could not understand as to why he prescribes such doses'.

In the treatment of rheumatism Akhwaini quotes three prescriptions, one from Hunain b. Ishaq[37], the other from his teacher Abul Qasim and the third from himself concluding[38] 'I prefer my prescription because it does not contain colchicum antummale (Suranjan) in excess which is harmful to stomach and weakens appetite, while the black Suranjan is deadly'.

Akhwaini disagrees in prescribing two 'dangs' saffron in a particular ailment saying this much saffron is very much in excess[39] Yahya b. Masawaih would prescribe only half 'dirham'. However, I have not personally put to trial; it would be fruitful if you put it to test'.

Akhwaini has quoted at least the kinds[40] of medicines for various ailments of his own preparation some of which have subsequently been reproduced in the «Mujiz-i-Kummi». After reproducing his master's formula of a tablet for rheumatism he quotes his own preparation concluding[41] :I have prescribed no other medicine except this for the last twenty years for those suffering from rheumatism. This is my own formula and has often been tested'.

During his course of long medical career he had quoted instances of his successful treatments and even of failures. In one of such cases, he quotes the case of a chronic patient - a princess - suffering from remittent fever, marvellously recovered by his treatment[42].

In short, Akhwaini was a competent physician and writer fully acquainted with the works of the earlier masters. However, he always gave weightage to his personal observations and experiments and has, in a way, carried forward the traditions of the Razi school and has on this account been ranked with outstanding physicians and writers of medical works.

The «Hidaya» which was composed about half a century earlier than Ibn Sina's Qanun destined to abrogate all the medical works, had fortunately maintained its reputation for many centuries. It was considered to be one of most standard works to be ranked with the "Zakhira" "Mansuri", "Kifaya" and "Aghraz". Kizami Aruzi Samarqandi in his «chahar Maqala» or "Majma'un Nawadir" composed about 551A.H. remarks[43].

'After the student has carefully read (these books) with a kind and congenial master, he should deligently study with a sympathetic teacher from amongst the "intermediate[44] works "to wit the Thesauras[45] ("Zakhira)[46] of Thabit b. Qurran or the "Mansuri"[47] of Muhammad b. Zakariyya ar-Razi, or the "Direction" (Hidaya) of Abu Bakr Akhwaini or the "Sufficiency" (Kifaya)[48] of Ahmad b. Faraj, or the "Aims" (Aghraz)[49] of Saiyyid Isma'il Jurjani".

Again during the 2nd half of the 7th and the beginning of the 8th century, a physician named Abu Talib 'Abdullah b. abi Zaid At-Tabib had made a special study of the "Hidaya" and had kept it under his constant use for thirty years. He had prepared a critical edition of the work by comparing the present

Bodleian MS. with some other MSS., as early as 682 A.H. which was subsequently given to his son as is evident by the following note in Persian appearing at the beginning of the aforesaid MS[50].

'The book: "Hidayatul Mut'allimin fit Tibb", (710 A.H.) composed by Abu Hakim Rabi b. Ahmad Al-Akhwaini al Bukhari (May Allah have mercy on him)'.

'This book called "Hidayat-i-Akhwain" or "Kunnash-i-Akhwain" was composed by Abu Hakim Rabi' b. Ahmad al-Akhwaini (May Allah have mercy on him), a pupil of Muhammad b. Zakariyya ar-Razi (May Allah have mercy on him). That respected (author) had collected it for his son so that it may serve him as a basic work and while practising medicine his judgement may not be incorrect. This humble had put his prescriptions to trials and found no prescription faulty. When my dear son, Husain started practising he was successful and his prescriptions were correct and received approbation by the nobles. And since this humble had banked on this book most of the time in the treatment of different ailments, inspite of so many medical books (he requested for it) and I conceded to his request, 710 A.H. in the handwriting of Abu Talib 'Abdullah b. Muhammad Tabib.

Another evidence for the popularity of the «Hidaya» is provided by the author of a small medical treatise in Persian called "Mujiz-i-Kummil"[51], who stated in a short preamble that feeling his memory weakened by age, he had compiled this short compendium from the most esteemed Arabic and Persian works and had given it the title of "Mujiz-i-Kummil" because its small size (48 Foll) would allow its being carried in sleeve (Kumm). The following works are mentioned as success:

"Hidayatul Ajwaini"[52]
"Kifaya of Ahmad-i-Faraj"
"Zakhira-i-Khwarazmshahi"
"Kitabul Aghraz" and "Khuffi-i'alai"

The author of the "Mujiz" had ranked Akhwaini among the most outstanding Muslim physicians by calling him أستاذ فاضل أبو بكر اخويني and had copied the latter's prescriptions for rheumatism and gout and his preparation of suppository[55] for dysentery.

The «Hidaya» consists of three sections. Section I deals with anatomical and physiological study, comprising 51 chapters. Section II deals with various ailments and their treatment from head to foot under 131 chapters starting with the fox's disease (Da'ath-Thalab). Section III treats of various types of fever, and hygienic precepts, and closes on pulse study in 10 chapters.

The "Hidaya" is a medical manual basically on clinical medicine. And though the first 51 chapters covering one fourth of book which deal with anotomy and physiology, have nothing to offer to modern medical student, its importance lies on its clinical aspect. Its characteristics may be summed up as follows:

1. Being one of the oldest works on Islamic medicine and the oldest in Persian, its study would reveal the scope and nature of the medicine in its early stages. It has thus played an important role in the evolution of medicine as practised in the lands of Islam. It would, therefore, be reckoned as an important source for the history of Islamic medicine.

2. Its study would lead us to some authors and their works hitherto unknown.

3. Being the earliest work on clinical medicine in Persian and one of the earliest in any language, it incorporates hundreds of oiginal prescriptions hitherto not put into practice.

4. The book embodies personal observations, experiences and experiments of a seasoned physician who had practised medicine for over thirty years. There are several cases in which the originality of the author is fully reflected.

5. This manual contains the names of several herbs and drugs with their properties which may provide a basis for research in the branch of Islamic medicine called the "Ilm-ul-Adviya" (materia medica). Only a glance over the long list of herbs and drugs appearing at the end of the printed edition would at one show the depth in which the subject has been treated.

6. It embodies a number of medicinal compounds in the form of malt, tablet, pill, ointment, powder, decoction, digestive stomach, wine, syrup, aperient medicine etc. Some of these compounds are based on Akhwaini's own formulae. A perusal of various varieties of wine exceeding eighty and of 'Gawarish' about 36 in number which were used by the physician in his practice would show his profoundness in despensing with compounds *vis-a-vis* the importance of the manual both historically and clinically. Its value is enhanced when it is kept in mind that the "Hidaya" was composed about half a century earlier than Ibn Sina's Qanun.

7. The names of the diseases are mostly in Arabic while those of the drugs and herbs are in Persian, and this last factor would account for the influence of Persian on Islamic medicine as practised in the vast region from Turkey to the Indian sub-continent.

8. Lastly, the «Hidaya» would provide useful material for undertaking research in various branches of Islamic medicine.

This medical work has its own importance from literary, linguistic, lexical, orthographical and calligraphical points of view but the time would not allow me to discuss these points. However, it may be noted that seven or eight Persian[55] works of the 4th century A. H. have survived and as such it is a very valuable addition to this small stock and in the historical sequence it occupies the third or the fourth place. Its style is simple but it is full of archaic words and phrases which would require the scholars' accomplishments for their decipherment. And obviously this aspect of the book would put an obstacle in the extensive use of this significant manual.

The "Hidaya" provides useful and interesting material for linguistic and lexical study and the most elaborate field work has been accomplished by Professor Jalal Matini of the Mashad University in the editor's introduction and the second appendix in his scholarly edition of the book published by the Mashhad University in 1965.

The Bodleian MS. of the «Hidaya» transcribed in 478 A.H. is the third oldest Mss. available in Persian. And its orthographical analysis provides a very useful material for the study of the intricate problem of Persian orthography and its evolution. Similarly the early Persian MSS. and transcripts available in Arabic script provide rich material for the history of Arabic and Persian calligraphy. And it i interesting

that the eminent scholar, Professor Habibi has noticed[57] the importance of the Bodleian[58] MS. of the «Hidaya» alongwith two other 5th century and one 6th century[59] persian MSS. in the development of the Naskh calligraphy. To this list, may be added the Fateh Istanbul MS.[60] of the «Hidaya» in a Naskh hand.

The scholarly edition of the "Hidaya" in 986 pages of which the editor's valuable introduction and the indexes cover 184 pages, has retained the minute orthographical peculiarities with dia-critical points of the Bodleian MS. in a type printing. Unfortunately it has limited the scope of its utilisation in the sense that each word needs the acumen of a researcher for its correct interpretation and I find no justification in wasting so much time and labour in getting such a text printed. Another problem with which the reader is confronted is to interpret the archaic names of drugs, herbs and even of diseases[61]. But its positive gain is that the text of the MS. having been transcribed within a century of the death of the author, is free from interpolation and corruption, a defect from which almost all the medical texts in Arabic, Persian and other Eastern languages generally suffer resulting in wrong prescription and failure in curement of diseases. It is, therefore, essential that the book should be printed with the current orthographical rules with an exhaustive glossary of all the technical and literary words and phrases. The present edition has a literary bias; the next edition shoud have a medical bia. And for its wider scipe, careful translations both in Arabic and English should be undertaken.

This is a brief introduction of an early medical text which has lately been brought to light, and though it had enjoyed its reputation for several centuries, it had fallen into disuse in the subsequent periods. This paper aims at highlighting its importance both historically and clinically.

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2. NIZAMI ARUZI SAMARQANDI, "Chahar Maqala", M.Mo'in ed., Tehran, 1955-57; Professor Browned remarks: "Its enclopaedic nature, its philosophic plan, perhaps even its dogmatism, co bined witth the immencse reputation of its author in other fields, raised it to a unique position in the medical literature of the Muslim world so that the earlier works of ar-Razi and al-Majusi, inspite of their undoubted merit were practically abrogated by it". ("Arabian Med" P.62).
3. ABU TALIB 'ABDULLAH TABIB in his notes on the first page of the Bodleian MS. gives two times the author's *Kunya* as Abu Hakim. But both the Bodleian and Fateh Istanbul MSS. have Abu Bakr.
4. ABU BAKR RABI' AL-AKHWAINI, "Hidayat-ul-Mut'allimin" Matini ed., Mashhad 1965, P.204n.
5. It has variations such as 'Akhwain', Abu Talib's notes in the Bod. MS., 'Mujiz-i-Kummi', British Mus. MS., Add 23560, ff. 280b, 273b, 'Chahar Maqala' P. LLOn; 'Akhwai' "Chahar M." P.LLOn; Ajwaini, "Mujiz", f. 264b, "Chahar M." P. 110n.
6. ABU TALIB's notes, Fateh MS. f.lb. The author mentions a few words of the Bukhari dialect, "Hidaya" PP.65, 249, 527 and 604. See also P.160 where a stream of Bukhara called Sapid Masha is mentioned.
7. "Hidaya" PP. 303, 264n, 290n. But Abu Talib calls the author a pupil of Razi which is untenable.
8. M. MINAVI, "Yaghma", Vol. III pt. 12, Chahar M., 'Tali'qat' P.381.
9. DR. M. MO'IN fixes 370A.H., Chahar M.P. 383
10. It exists in a single complete MS. transcribed in 447 A.H. by Asadi Tusi (d. 465), preserved in Vienna (Flugel A.F. 340). It was produced at Vienna by F.R. Seligmann in 1859 in a most beautiful and artistic edition ("Arabian Med". P. 93, "A Lit. His. of Persia" I.P. 478). It has been reedited by Husain Mehbubi Ardkani, Bunyad--i-Farhang, Tehran, 1346/1967-68. Another defective MS. introduced by Danish Pizhuh, 'Rahnumai Kitab', 1345/1967, has been used in the present edition. See also, Nazir Ahmad's article Kitabul Abnia, Society Magazine, A.K. Tibbia College, Muslim University, Aligarh, 1972-73 PP. 11-27.

11. Such as Flugel in the Vienna Cat., Seligmann in the introduction to «Abnia», Browne, «Arabian Med»., and «A Literary History of Persia», Vol. I PP. 477-78.
12. «Bist Maqala-i-Qazwini», Tehran, 1954, pt. I, PP. 62-70 under the title:
13. But in the «Arabian Med.», P. 93, the date is 950 (=338 - 39 A.H.) which is incorrect.
14. AMIR MANSUR had died on Shawwal 11, 365A.H. Gardezi, "Zainul akhbar" Tehran, 1968, P.164
15. «Bist Maq», pt. 11, PP. 264-67. See also M. Minavi's introduction, Facsimile ed. of «Abnia», Tehran, 1967; «Chahar Maq». (Ta'liqat), PP. 381-82.
16. It is the earliest MS. in Persian. وكتاب الابنية عن حقائق الأدوية تأليف أبو منصور موفق بن علي حوسه
17. The concluding lines are الله »
18. Even if it is proved that «Abnia» was completed between 350 and 365 A.H., it would be a contemporaneous work. But since "abnia" is on *materia medica*, the claim of the «Hidaya» as the earliest work in Persian on clinical medicine stands.
19. «Hidaya», P. 246n.
20. *Ibid.*, P. 327
21. *Ibid.*, P. 797
22. PP. 246, 247, 505n.
23. P. 246n.
24. Arabic Buqrat, born about 460 B.C. and died about 277 B.C. was the author of about sixty works on medicine. His "Fusul-i-Buqrat" is mentioned in the "Chahar Maqala" (PP. 109-10). It was translated into Arabic by Hunain b. Ishaq and published in Calcutta, 1932, Hamarneh; Introduction.. Al Biruni's "Kitab-us-Saidana", Karachi, 1973, P. 118.
25. Arabic Jalinus, born about A.D. 129 and died about A.D. 200, was a prolific writer. Most of his medical works were translated into Arabic whereby he exerted great influence on medical teaching and practice throughout the lands of Islam. His "Sitta 'Asha" is mentioned in the "Chahar Maq" (P.110)., *Ibd.*, P.115.
26. A Christian of Hira, Hunain b. Ishaq (194-200 A.D.) was a great translator of Greek and Syriac medical text into Arabic. Of his independent works on medicine the "Masa'il fit Bibb" covers all the aspects of medicine and therapeutics. *Ibid.*, P. 119, "Arabian Med". PP.24126.
27. THABIT (836-964 A.D.) was from Harran but settled at Baghdad and served the Caliph, Al-Mu'tamid (d. 902). He is the author of several works on science and medicine. *Ibid,* P.135, also Dehkhoda, "Lughatnama" under Thabit b. Qurra.
28. He was a 9th century Christian physician and natural scientist from Jundishapur. He was the author of several works of which his book on *materia medica* is mentioned by Akhwaini and Al-Biruni, *Ibid.*, P. 131.
29. Yahya b. Masawaih seems identical with Yuhanna b. Masawaih (776-857 A.D.)., who is stated to have authored 40 treatises mostly on Medicine *(Ibid.*, P. 125). But Akhwaini's variation of the name remains unaccounted for.
30. For the career and achievements of Muhammad b. Zakariyya see the "Arabian Med". PP.44-47.
31. "Hidaya", P.587
32. *Ibid,* PP. 302-303
33. *Ibid.*, PP. 585-86
34. PP. 671-72
35. Akhwaini always calls him Sarabiyun's son without mentioning his proper name (PP. 264, 286, 315 etc.). Yuhanna, s/o Serapion (Sarabyun) was a 10th century Nastorian physician, the author of a Kunnash in Syriac which was popular in its abridged Arabic version. Akhwaini has frequently made use of this Kunnash. Ali b. Abbas Majusi was very critical of him («Arabian Medicine» P. 55).
36. "Hidaya" P.457
37. For his Kunnash see «Hidaya», PP. 315, 346, 353 etc...
38. *Ibid.*, P. 560
39. *Ibid.*, P. 580
40. Introduction, «Hidaya», PP. 14-15
41. "Hidaya", P.561
42. P. 710
43. P. 110
44. The words are كتب وسط then he mentions كتب سائط (extensive and comprehensive works).
45. E.G.Browne, Revised Translation of "Chahar Maqala", London 1921, P.78
46. Qifti is not certain about its authorship to Thabit; but it finds mention amongst the latter's works in "Uyunnnul Anba"; See, "Lughatnama-i-Dehkhoda" under 'Thabit' and "Tarikh-i-'Ulum-i-'Aqli", by Z.Safa P. 78
47. According to Mirza Muhammed, 'Chahar Maq". P. 377 it was written for Mansur b. Ahmad, the governor of Ray (290-296 AH) and not for the Samanic ruler Mansur b. Nuh (350-365 A.H.) as has been stated by Nizami 'Aruzi' and Ibn Khallikan. It exists in various MSS.

48. This work is mentioned in the "Mujiz-i-Kummi" the only MS. of which is available in the British Mus., MS No. Add. 23560.
49. It is a selection from the "Zakhira-i-Khwarazmshahi" and dedicated to Atsiz Khwarazmshah (521-551 AH). It exists in several MSS.
50. "Hidaya", editor's introduction, PP. 49-51
51. British Mus. MS. No. Add. 23560, Rieu's Cat. of Per. MSS, Vol. II P. 476
52. Obviously: Akhwaini
53. ff. 272b, 295b.
54. f.295b
55. f. 280b.
56. E.G. BROWNE in "A Literary His.. of Persia" Vol. I PP.477-78 and MUhammad Qazwini, "Bist Maq", Pt. I, PP.62 - 70 have mentioned three works, while Minavi, "Chahar Maq". P.379 has added to his list the Hududul Alam" on geography written in 372A.H. two astronomical treatises by Muhammad b. Ayyub Tabari and "Muqaddima-i-Shahnama - i-Mansuri" compiled in 346, published by Muhammad Qazwini in the 22Bist Maqala", pt.II, PP.5 - 90. But Habibi, "Armughan-i-'Ilmi", Lahore 1955, PP.51 - 52 has added to this small List: "Kashful Mahjub of Abu Ishaq Sijzi, composed in 331A.H., edited and published by H. Corbin with an introduction in French, Tehran, 1949, 22Kitabul Bari" on astronomical tables by Abu Nasr Hasan b. 'Ali Qummi, MS. available in the National Library, Paris, and the "Kitabul Buldan" by Abul Musiyid existing in a revised MS. However he has mentioned only one treatise by Muhammad Tabari.
57. "A short Hist. of Calligraphy and Epigraphy in' Afghanistan" Kabur, 1971, P. 91
58. For the description of this MS. see the introduction to "Hidaya", PP. 45-58, "Yaghma" Vol. III, pt. 12, "Chahar Maq", PP. 378-383.
59. The "Abnia", Vienna MS. dated 447 AH in the hand of Asadi Tusi in a Naskh style inclined to kufic, "Sharh - -i-Ta'ruf», Peshawar MS. dated 473 A.H. in Naskh, and the "Tarjumanul Balagha". Istanbul MQS. dated 507 A.H. in a hand quite similar to the "Abnia" MS.M.Minavi regards the style of the "Abnia", "Hidaya" and "Tar juman", a particular style of calligraphy deduced from the Ma'qali hand. Introduction to "Hidaya", P. 46 & "Chahar Maq» P. 382.
60. See Introduction to the "Hidaya", PP. 58-60
61. An idea about the seriousness of the problem may be had from a dictionary in Persian of the drugs of the "Kitabul Abnia»
in 514 pages, by Menuchehr Amiri and published by Bunyad-i-Farhang, Tehran (No. 171). This work may be fruitfully utilised in preparing a glossary of drugs and herbs of the 'Hidaya",

THE FOLLOWING RULES HAVE BEEN ADOPTED IN TRANSLITERATING ARABIC AND PERSIAN WORDS:

(a) CONSONANTS

همزة	=	'	ف	=	f
أ	=	a	ق	=	q
ب	=	b	ك	=	k
ب	=	p	ك	=	g
ت	=	t	ل	=	l
ث	=	*th*	م	=	m
ج	=	j	ن	=	n
ج	=	*ch*	و	=	w (v)
ح	=	ḥ	ء	=	h
خ	=	*kh*	ي	=	y
د	=	d			
ذ	=	Z			
ر	=	r			
ز	=	Z			
ژ	=	*zh*			
س	=	ṣ			
ش	=	*sh*			
ص	=	s			
ض	=	ẓ			
ط	=	t			
ظ	=	z			
ع	=	'			
غ	=	*gh*			

(b) VOWELS (long)

آ	=	a
و	=	u
ي	=	i

VOWELS (Short)

ـَ	=	a
ـُ و	=	u
ـِ	=	i

DIPHTHONGS

ي	=	ai
و	=	au

Note:

(1) هاي غير ملفوظ has been dropped

(2) Arabic اضافت has been denoted by 'ul'; but 'l' has been dropped when preceded by any of the حرف شمسي

(3) The Arabic sign 'al' has been retained when prefixed to a 'nisbat' as al-Bukhar, but 'l' is changed into حرف شمسي when preceded by it as ar-Razi.

CHAPTER TWO

Some selected papers - Not presented

1. THE FORMULARY OF THE HOSPITALS OF IBN L-BAYAN
   Dr. Carmen Pena Munoz and Dr. Jose Luis Valverde
2. WAQF, MARISTAN AND THE CLINICAL OBSERVATION OF DISEASE.
   Dr. W.R. Jones.
3. WEALTH OF MEDICAL KNOWLEDGE IN HYDERABAD.
   Hakeem S.A. Hussain.

THE FORMULARY OF THE HOSPITALS OF IBN ABI L-BAYAN (XIII CENTURY)

Carmen Pena Munoz and Jose Luis Valverde.
Granada (Spain)

Our work consists of the translation into Spanish and of a critical study of the "Formulary of the hospitals, a work of the Arabic physician Ibn Abi l-Bayan (XIII century), edited by Paul Sbath in Cairo in 1932.

The formulary is divided into twelve chapters and has to do with medicines used in the pharmacies of the hospitals of Egypt, Syria and Iraq.

The book is a Methodical treatise of all pharmaceutical forms used in the period of the Ayyubian sultans.

One of the oldest forms of Arabic Formularies is the medical pharmaceutical formulary called Aqrabadin. In this type of treatises there is usually a compilation of formulae to be used for different illness although their main characteristic is that the therapeutic indication is of summary type and only gives the composition of the different formulae and the practical way of preparing the pharmaceutical forms. There are frequent voids in these formulae which have been studied by several authors[1]. Within the most important antecedents of this formulary one can consider that of al-Kindi (d.850),[2] one of the oldest written in Arabic; it was originally well organized according to the pharmaceutical form, but now a days appears in a different order.

Yahya (Yuhanna) ibn Sarabiyyunde Bayarma (Arabia) IX C., translated to Arabic "al-Kunnas"[3] a long work in Syriac from Misa ibn Ibrahim al-Haditi Ibn Bahlul. Part of it is an Aqrabadin; a Latin version is known, called "Practica therapeuticae" printed in Basilea in 1543. These formularies written in Latin have the generic name of "Antidotarium". It contains chapters on theriacs, conconctions, hieras[4], cathartics, pills, tablets, electuaries, syrups, decoctions and infusions, garglins, oils, enemas, poultices, unguents, epythems, plasters, powders, sneezers, tooth pastes, eyedrops, marmalades, etc.

Another type of medical formulary is the abreviated, such as that written by Sahlan ibn Kaysan (d. 990), called "*Mujtasar fi l-adwiya al-murakkaba al musta*^{c} *mala fi aktar al-amrad*" ("Compendium on medical compounds used on the majority of illness"). This book includes chapters about the way of preparing myrobalans, electuaries, pills, purgatives, tablets, powders, syrups, grape syrups, garglins, collyriums, suppositories, pessaries, poultices, oils and lotions, medicines for the mouth, tooth pastes and unguents[5]

Mesue the young, as is known, or Masawayh al Mardini (d. 1015), became an authority of pharmacology and was called "Pharmacopeorum evangelista" in the Western countries. His book *De medicinis universalibus et particularibus*[6], contains a section called "*Antidotarium sive Grabbadin Medicaminum Compositorium*", with twelve chapters on electuaries, opiates, purgatives, marmalades, syrups, grape syrups, decoctions, pills, tablets, nasal medicines, powders, unguents, plaster and oils.

For a better comparison with the formulary studied here, there is another similar medical formulary written by al-Samarqandi (d. 1222). Its chapters include the following medicines: syrups, grape syrups, concoctions for the stomach, electuaries, pills, purgatives, emetics, tablets, powders, dressings, bandages, poultices, balsams, collyriums, aromatic powders, tooth pastes, garglins and concoctions, inhalers, sneezers, aromatic baths and medicines for the hair[7].

Abu l-Muna ibn Nasr al-Kuhin al-ᶜAttar al-Israili[8] wrote his *Kitab Minhay al-dukkan* in 1260; it is as extensive as the *Aqrabadin* of al-Qalanisi; there are many manuscripts and several editions of his book printed in Cairo and other places[9]. The book has twenty five chapters where the medicines appear according with the different groups, starting with potions. Al-Kuhin often indicates some prescriptions prepared and tested for cases of special illness. However, most of the prescriptions come from other sources and in such cases al-Kuhin carefully indicates the references and sources of information. Among them in first place appears *al-Dustur al-bimaristani* from Ibn Abi l-Bayan, the *K. al-Irsad* from Ibn *Yumay*ᶜ and *al-Kitab al-Malaki* from al-Majusi. Sabur Ibn Sahl, the *Aqrabadin* of Razi, the *Minhay* of Ibn Jazla, the *Aqrabadin* of Ibn al-Tilmid, the *Kunnas* from Ibn al-Mudawwar, Abu l-ᶜAla'Zuhr, Musà ibn Maymun and many other authors are also cited. This is the reason why the *Minhay al-dukkan* is a very important source for the old pharmaceutical literature[10].

Before getting into the study of our formulary, it may be interesting to mention some other prescription books written in al-Andalus, some of which are or have been the subject of Spanish translations and editions.

The first of these may be the *Kitab al-Dukkan* ("Book of the pharmacy store") by Saᶜid ibn ᶜAdd Rabbi-hi (d. 953)[11].

According to Hamarneh[12], this was the first treatise of its type written in the Mussulman Spain, almost three quarters of a century after the appearance of the Aqrabadin de Sabur ibn Sahl (d. 869).

In respect to the contents of *Kitab-al-Dukkan,* it is a formulary divided in seventeen chapters, where one can find described several pharmaceutical forms, preparations and techniques used, as well as formulae for syrups, electuaries and tablets, marmalades, ointments, powders, etc.[13].

Other formularies are the *Kitab al-Wisad* of ibn Wafid (1008 - 1974)[14] and the *Kitab al Yamiᶜ fi l-asriba wa-l-ma* ᶜayin[15], written as a complement to the *Kitab al-Taysir* of Avenzoar[16].

A well known example of a formulary, very much influenced by Ibn Kaysan is *al-Dustur al--bimaristani fi l-adwiya al-murakkaba* of Abu l-Fadl Dawud ibn Abi l-Bayan al Isra'ili, Jewish doctor born in Cairo in 1611 and died in 1240[17] . His book is called "the formulary of compound medicines of the hospitals"[18] . Ibn Abi-l-Bayan was a doctor in the al-Nasiri hospital of Cairo and very probably a friend

and teacher of Ibn Abi Usaybi'a, who in his famous History of the doctors has written his biography in the following terms: «Al-sayj al-Sadid ibn Abi-l-Bayan Sadid al-Din Abu l-Fadl Dawud ibn Abi-l-Bayan al-Isra'ili, karaite Jewish, born in Cairo in 556/1161, was characterized by his high erudition and experience on simple and compound remedies; he became one of the most important doctors of his century and was considered as the man who best knew the composition of medicaments, their doses and properties (...) I was, at the same time with him, in charge of a service in the al-Nasiri hospital. I have had the chance to appreciate his exactness to follow the precepts of Galen, the certainty of his diagnostic and the ability of his treatment. He had Hibat Allah Ibn Yumay' and Abu l-Fad'll ibn al Naqid as teachers and was the doctor of the sultan Malik al '-Adil Abu Bakr ibn Ayyub. He lived for more than eighty years, although his sight became weak at the end of his life. He left a formulary in twelve chapters related to the medicines used in pharmacies and hospitals of Egypt, Syria and Irak (...) I read this formulary in front of him and he told me the corrections to be made and he also left notes about the book on the causes and symptoms of Galen".

Ibn Abi Usaybi'a, who made the best praise of our treatise places it within the most valuable works[19].

The *Dustur al-bimaristani,* or "Formulary of the hospitals" contains twelve chapters on the following subjects:

1. Electuaries and *Itrifulat*
2. Concoctions
3. Pills, purgatives and decoctions
4. Tablets and powders
5. Syrups, marmalades, la 'uqat and honey syrups
6. Garglins and inhalers.
7. Collyriums in powder and paste form
8. Enemas, Suppositories and pessaries
9. Ointments and Plasters
10. Oils and lotions
11. Mouth medicines and dentifrices
12. Balsams and medicines for fistulas and abcesses

This is a very complete formulary where one can find a large number of recipes for many different illness. However, there are not concepts about anatomy, physiology, surgery, diets, etc., as compared with other known formularies such as the yami. It has a chapter with formulae for the sexuality of women, aspect which is not treated in other formularies, at least in a direct way.

It is basically a practical formulary, for exclusive use of hospitals, where all kind of people are treated. The number of diseases compiled is 230 and the number of corresponding drugs and products is 607.

For a better study of the different illness we have classified them in the large groups following a conventional system:

1° Mental problems; 2° Head and Neck; 3° Organs of the senses; 4° Respiratory system; 5° Heart and vases; 6° Digestive system; 7° Urinary associated organs; 8° Locomotive system; 9° Skin; 10° Others, such as cold, cysts, rabies, ulcers, etc.

There are 8 illnesses cited of the first group, the number of the corresponding drugs being 15.

2nd	group	...	16 illnesses	Drugs used	....	45
3rd	group	...	24 illnesses	Drugs used	....	99
4th	group	...	12 illnesses	Drugs used	....	24
5th	group	...	14 illnesses	Drugs used	....	33
6th	group	...	55 illnesses	Drugs used	....	148
7th	group	...	9 illnesses	Drugs used	....	14
8th	group	...	7 illnesses	Drugs used	....	21
9th	group	...	33 illnesses	Drugs used	....	84
10th	group	...	52 illnesses	Drugs used	....	124

The medical language of the author has been respected in our translation since we have taken into account the date in which was written; the terminology of the work could not possibly be coincident with the actual one and this would lead to uncorrect interpretation, and consequently, to attribute to Ibn Abi l-Bayan concepts or terms that he did not intend to write.

The work is basically intended to try to cure illness through the use of remedies made basically from plants, and also from minerals and animals.

The work has 175 recipes, most of them prepared in form of syrups, electuaries, unguents, pills, powders, etc. 62% of the compounds are made from vegetal elements, the 36% are mixed of minerals and vegetal elements and only 1% of them are made exclusively from ingredients of animal origin.

When plants are used in the formulae, all their parts are cited; in many occasions there are many references to the roots; in other cases the seeds, the fruits, the leaves, etc. Some other times is the juice or the pulp.

Although the number of described plants is very abundant, some examples of those more commonly used and the repetition frequency in the text can be:

Saffron (*Crocus sativus* L.) repetition frequency number 37; Rose *(Rosa gallica* L.) repetition frequency number 30; Spikenard *(Nardus stricta* L.) repetition frequency number 20; Chabulic myrobalan *(Terminalia chebula Retz.)* repetition frequency number 19; Common ginger *(Zingiber officinale* Rosc) repetition frequency number 17; Common cinnamon *(Cinnamomun Zeylanicum* Nees.) repetition frequency number 16; Clove *(Caryophyllus aromaticus* L.) repetition frequency number 15; Myrtle *(Myrtus communis* L.) repetition frequency number 15; Marsh-mallow *(Althaea officinalis* L.) repetition frequency number 13; Violet *(Viola odorata* L.) repetition frequency number 12.

As it can be seen although the sample is very reduced there is a clear frequency of use of traditional drugs with a special influence of drugs from Indian and China, such as the myrobalans, common ginger, common cinnamon, clove, etc.

There are some references to wine: "vinegar of acid wine", something which is not usual in most of the Arabic formularies. In the yami there is one reference to the syrup of verjuice or vinegar of green grape, probably used as sustitutive. It is not surprising that wine be mentioned (something not frequent in Mussulman authors) by this author since he was Jewish. This may be the reason why the text has not any religious invocation of Mussulman type.

The order used for the description of each compound is as follows: there is first one indication about the utility and virtues of medicine; next, all the components, and amounts of each one to be used and finally, the adequate dose in each case and the administration form.

The weights and measures used are those normaly found in Arabic formularies: *daniq, dirham, habba, kaff, mitqal, qabda, ratl yuqiyya.* There are two types of *ratl* appart from the normal one, the Bagdadi and the Egyptian.

The selection of the medicines to be used, the doses and the administration form correstpond to a rational medicine, and consequently there are not empiric aspects.

The author makes some refernces to Galen, Rufus and Ibn Ridwan attributing some of the compounds to them.

To clarify some doubts about the terminology used by the author, we have used glossaries of technical terms, especially of al-Mansuri of Razi, since its authors Ibn al-Hassa, was Oriental and belonging to the same time than Ibn Abi l-Bayan (siglo XIII).

It is noteworthy that some of the compounds mentioned in the work have remained in some Spanish formularies such as "Palestra Pharmaceutica" of Félix Palacios; his formulary, in the form of several editions of the XVII century, was frequently found in the pharmacies. Some of the formulae of most frequent use are the unguents Basilicum and that of the Apostles.

In summary, this work is one of the most important contributions of the eastern medicine to the western medicine.

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2. M. LEVEY, *The Medical Formulary or Aqrabadhin of Al-Kindi.* Madison, 1966.
3. MS. 3724. Aya Sofya. Istanbul.
4. The word *iyaray* Pl. *Iyarayat* from the Greek *iera* means «sacred remedy». There are many of different types. Cf. M. ULLMANN, *Die Medizin im Islam,* Leiden 1970, P. 296; M. LEVEY, *Early Arabic Pharmacology and introduction based on Ancient Medieval Sources.* Leiden, 1973. P. 72, n.2. M. LEVEY, and N. AL-KHALEDY, *The Medical Formulary of al-Samarqandi and the Relation of Early simples to Those Found in the Indigenous Medicine of the Near East and India,* Philadelphia 1967. P. 60; F. PALACIOS *Palestra Pharmaceutice chymico--galénica,* Madrid, 1792, P. 311.
5. This work has been studied by P. SBATH and C.D. AVIERINOS, "*Deux Traités Médicaux*" Cairo, 1953.
6. Translated to latin and published in Venice, 1471.
7. The book has been translated and edited by M. LEVEY, and N. al-KHALEDY, *The Medical Formulary of al--Samarqandi...*
8. Cf. M. STEINSCHNEIDER, *Die arabische Literatur der Juden. Ein Beitrag zur Literaturgeschichte der Araber, grossenteils ans handschriftlichen Quellen.* Frankfurt a, M. 1902, Nachdruck Hildesheim 1964, P 237. M. MEY-

ERHOF, *Sarh asma'al-ᶜuqqar (L'Explication des noms de drogues). Un glossaire de matière médicale composé par Maimonides.* Le Caire 1940, P. XXIII.

9. Cf. S. HAMARNEH, *Medical Education and Practice in Medieval Islam.* U.C.L.A. "Forum in Medical Sciences", (12 (1970) n. 88; ULLMANN, op. cit. P. 310.
10 The work *Kitab Minhay al-dukkan,* is being translated to Spanish by us in colaboration with Dr. Amador Diaz.
11 This book is being translated and will be edited by us according to the manuscripts of the Zahiriyya Library of Damascus and the National Library of Algiers.
12 Cf. S. HAMARNEH, *Index of manuscripts on Medicine, pharmacy and allied sciences in the Zahiriyah library.* Damascus, 1968, P. 17.
13 Cf. J.L. VALVERDE, C. ALVAREZ y J.M. SUNE: *El primer «Libre de botica» escrito en la Espana musulmana.* In «Bol. de la Soc. Esp. Hist. Farm»., 86 (1971) PP. 49-53.
14 Cf. C. ALVAREZ DE MORALES, «EL "*Libro de la almohada" de Ibn Wafid de Toledo.* Toledo 1980.
15 Cf. F. GIRON IRUESTE, *La medicina practica en la Espana arabe del siglo XII: El «Kitab al-Yami fi l-asriba wa-l-maᶜayin de Abu Marwan Abd al-Malik ibn Zuhr (Avenzoar). Edicion, Traduccion y comentarios.* (Resumen de Tesis Doctoral). Universidad de Granada 1978. We thank Dr. Giron for the use of his unpublished text.
16 Cf. C. PENA MUNOZ. *Capitulos de conservacion de la salud y enfermedades del torax y abdomen en el Kitab al-Taysir de Avenzoar. Edicion, traduccion, notas y comentarios.* (Resumen de Tesis Doctoral), in "Bol. de la Soc. Esp. Hist. Farm". Madrid 1980.
17 Cf. IBN ABI USAYBIᶜA *ᶜUyun al-anba fi tabaqat al-atibba li-Muwaffaq ad-Din a. l-Abbas Ahmad b. al. Qasim al-ma ruf bi-b.a. Usaibica,* Bd. I. II, ed. August Muller, Kairo-Konigsbeg 1882-1884, II P. 118-119; STEINSCHNEIDER, op. cit. P. 195; J. VERNET, E I, III P. 683. S.U. Ibn Abi l-Bayan; L. LECLERC, *Histoire de la médecine arabe,* Paris 1876, II, PP. 218-219.
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19 Cf. IBN ABI USAYBIcA, op. cit. II P. 118-119.
20 Compund medicines or electuary in which myrobalans are present. Cf. J.L. VALVERDE Y C. PENA MUNOZ, *Ibn al-Hassa Glosario sobre el Mansuri de Razi* in "Ars Pharmaceutica". Granada 1980, nr. 56 (In press); R. DOZY, *Supplément aux dictionnaires arabes* Leyde-Paris 1967, I, P. 28. M. LEVEY and N al-KHALEDY, *The Medical Formulary of al-Samarqandi* P. 184, nr. 04.
21 This is a pectoral composition with a consistency in within that of syrups and electuaries. Cf. PALACIOS, op. cit. P. 236; DOZY, op. cit. II, P. 536.

WAQF, MARISTAN AND THE CLINICAL OBSERVATION OF DISEASE

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In medieval Islam the clinic (maristan) differed from its counterparts, the late Roman and Byzantine xenodocheion and the European hospitale, in providing an institutional setting for the combination and interaction of medical practice and medical education. The purpose and organization of the maristan, which was supported by a system of pious endowments (waqf), exemplified the humanitarian, life-oriented thrust of Islam as contrasted with the hospital in the Greek East and Latin West, which arose as ecclesiastical institutions, the principal motive for the founding and operation of which was the spiritual consolation of patients and the commemoration of founders and patrons. Most significant, however, the association in the maristan of health care and medical instruction, an association which did not occur in Europe until the eighteenth century, encouraged the development of diagnostic and classificatory techniques among Islamic physician-scholars as shown by the clinical observations of al-Razi.

Although the institution of the clinic, the "teaching hospital", which combined health care with medical education, was the invention of eastern Christians of the late antiquity, it attained its greatest importance, distribution, and success in the premodern period within the context of medieval Islamic civilization. From its earliest appearance in the first century or so of Islamic history, the *maristan* spread widely throughout the Islamic world. Founded and maintained by means of income provided by the pious endowment of the *waqf*, the *maristan* exemplified both the moralistic, humanitarian, and life-oriented bent of Islam as well as the close connection of medical theory and practice in its culture. With respect to its origin, role, and function, the *maristan* contracted sharply with the medieval European and Byzantine hospital, which arose in association with the Christian church.

Ancient Greece ad Rome offered no prototype or model for the later hospital since the barracks set aside for sick or wounded soldiers and the temples of Asklepios, where worshippers awaited some sort of supernatural cure, were essentially hospices or resthomes providing little medical care[1]. From the fourth century AD forward eastern Christians appear to have established a number of foundations for the assistance of the poor or sick- but these early charitable institutions were relatively unspecialized, constituting little more than hostels for the needy or infirm. The first fully developed and specialized infirmary of which we have knowledge was the Basileias founded by St. Basil at Caesarea in the second half of the fourth century. Subsequently, hospitals *(xenodocheia* or *xenones)* were established throughout the

Roman East, where they were gradually specialized as distinct from homes for the aged *(gerocomeia)*, orphanages *(orphanotropheia)*, or multi-purpose hostels *(xenones)*[2].

The foundation of the first free public hospital is ascribed to the Caliph al-Walid in the year 88/707[3]. Subsequently, pious benefactors established such institutions in the principal cities of the Islamic world: Ibn Tulun built a hospital for the poor in Cairo in 291 A.H.; Salah al-Din maintained two in Egypt. In Damascus Ibn Jubair founded two hospitals, one of them was the great *maristan al-Nuri*, a part of which still survives; and by the early fourth century AH there were some eight public hospitals in Baghdad[4]. It was customary for hospitals to be founded in connection with the establishment of a *madrasa*, the teachers from which provided instruction to medical students. The larger hospitals were highly organized and specialized in function, with wards for different types of disease, surgical facilities, pharmacies, medical libraries and ambulance service. Resident physicians under an appointed medical director provided a wide range of specialised health care and therapeutic services; and eventually the clinical schools developed systems for examining novice doctors and certifying their professional competency through the granting of licenses or diplomas.

The public clinic in Islam was established and maintained by means of pious endowments in the form of the *waqf*, a permanent, non-charitable trust deriving income from farmlands or rural shops and residences which was applied to the perpetual support of a wide variety of charitable enterprises, including hospitals[5]. From its appearance in the first century or so of Islamic history, the *waqf*, which was employed to subsidize a great number of public charities-mosques, madrasas, waterworks, libraries, cemeteries, caravanseries, and poor-relief - manifested the "strongly marked impulse to charitable deeds which is characteristic of Islam", and represented the most popular means of complying with the duty of applying the divinely revealed ethical norms of the Qur'an and sacred law to human life[6]. Thus, its application to the pre-eminently humanitarian enterprise represented by the *maristan* coincided perfectly with the basic tenets of Islamic religion. The difference between the *maristan* and the medieval Christian hospital, particularly in Europe, and, more significantly, the fundamental normative differences between the two religious systems is revealed by the comparison of the historie of professional health care and medical education in the two cultures during the late middle ages.

In Latin Christendom as in Greek Orthodoxy the hospital arose as an ecclesiastical institution in close association with monasteries and churches and often restricting admission to members of the clergy[7]. The contrasting purposes and roles of *maristan* and Christian hospital are evident not only in their differing relationship to religious authority but also in the actual physical organization and architectural format of the two types of institution. Although the *maristan* usually made provision for an oratory for the recitation of prayers, this never occupied the central position of the chapel invariably constructed in the European hospital[8].

In medieval Europe the actual practice of medicine in monastic infirmaries and ecclesiastically controlled hospitals was divorced from medical education which centered in church schools, the universities, and the specialized medical academies at Salerno and Montpellier[9]. Although individual physicians who were graduates of these institutions went on to practice their profession throughout Europe there was no permanent institutional connecction between medical education and medical practice until the late seventeenth and the eighteenth centuries when university clinics and hospital lectureships were established at

Leiden, Edinburgh, Paris, and elsewhere[10]. This divorce of theory and practice in Europe and the Byzantine East contrasted sharply with the association and interaction of the two in the *maristan;* and, as Michel Foucault has argued in his history of the rise of the modern clinic, doubtlessly posed conceptual and perceptual barriers to the progress of medical science[11]. The advantage to be gained from their connection in the "teaching hospital" of medieval Islam is strongly implied in the work of the most illustrious of the medieval Islamic physician-scholars al-Razi who was widely known in the West as Rhazes.

Abu Bakr Muhammed Ibn Zakariyya al-Razi was doubtlessly medieval Islam's most productive medical writer. Although limited in its availability and use because of its sheer size, his great medical encyclopaedia, *Kitab-al-Hawi,* constituted a compendium of all the commentaries of Greek, Arabic, Persian and Indian authors on diseases familiar to inhabitants of the eastern Mediterranean. A version of this and his popular textbook, *Kitab at-Tibb al-Mansuri,* were translated into Latin and circulated in Europe during the late middle ages. As late as the seventeenth century Latin and vernacular printed editions of his medical treatises appeared in the West. Consistently Galenist in his interpretation of the causes and treatment of human diseases, nevertheless, he combined with Galen's theory of humors and the latter's dietary therapy a remarkably exact and empirical diagnostic technique perfected while he was a physician at the *maristan* of Ray and physician-in-chief at the great Muqtadiri hospital in Baghdad. Max Meyerhof has collected and translated over thirty of al-Razi's clinical observations which had been excerpted from the al-Hawi (lat. "Continens") and translated into Latin for circulation in sixteenth-century Europe[12]. In the first of these, probably a case o pyelitis, al-Razi applied a diagnostic method based on the correlation of possible cause with observed symptoms, enabling the examining physician to distinguish between the false signs of malarial fever and the actual cause, a kidney infection. More important (and scientifically valid) than the prescribed therapy was the diagnostic and prognostic technique which permitted him to locate the cause of illness in the patient's body and to predict the course of development of the disease. It was this talent, which Foucault has characterized as a perfected "gaze", which enabled al-Razi to push beyond the limits of Greek medicine to distinguish two infectious diseases with which the ancients had been unfamiliar, smallpox and measles. His treatise on these, *Kitab al--Jadari wa'l Hasba,* obviously drew upon his clinical skill and knowledge to differentiate the two diseases[13].

In short, the diagnostic method, sharpened by clinical observations conducted in the teaching hospitals of Rayy and Baghdad, permitted al-Razi to make a significant contribution to the classification of diseases.

It was not until the late seventeenth and the eighteenth centuries that European medicine, encouraged by the introduction of anatomical study into the medical curriculum, created a comparable institutional setting for the perfection of the technique of clinical observation-a technique which owed its success not to the reception of Galenic theory but rather to the exploitation of the scientific method employed in the maristan.

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Comments: The motive for Muslims to install maristans and schools is not to commemorate the founder. The Prophet Mohammed (ﷺ) has explained that after the death of the individual he can continue to gain mercy if he had left behind him a permanent trust for the benefit of people or a useful science. If he aims at commemoration and propaganda he will lose the mercy of God.

(Dr. I. Al-Sayyad)

WEALTH OF MEDICAL KNOWLEDGE IN HYDERABAD

S.A. Hussain

Hyderabad, India

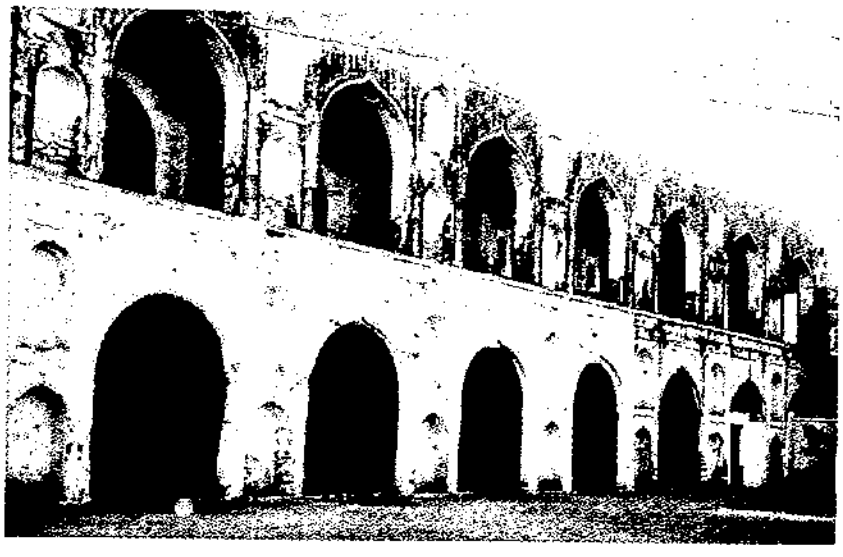
The city of Hyderabed in India was founded by a Muslim King Mohammed Quli Qutub Shah[1] whose keen interest made this city flourish. Since its inception, this city has always been famous for the progressive development of the science of Medicine. Thus when the foundations of this city were laid in the year 999 Hijri (1590-1 A.D.) first building to be constructed here was Shahi Mahal, Charminar, Mecca Masjid and a residential Hospital named "Darush-Shifa" (1004H/1595-6 AD)[2] . Although the construction of these buildings were not taken up simultaneously the completion of these were achieved in a short period of 5 to 10 years. More especially the construction of Darush-Shifa indicated the growth of medical science in this city.

Political revolutions in turn, brought about changes in the values and objectives. At one time a particular system of medicine was in vogue, at another time some other system took its place. At times this would go so far that one could feel its total absence. The glittering achievements in this medicine that had been made through the ceaseless and untiring efforts of Muslims had lost some of their brilliance during certain periods of history. By this system of medicine I mean the science that had been propounded by Hippocrates and is called the Unani system of medicine. This medical science had its own rise and fall in this city too. But it did not perish here, because of people's dedication to and enthusiasm shown in this medicine. Moreover, the wealth of this medicine had grown day by day. Even today Hyderabad can boast of possessing a great treasure of this medicine.

The *Unani* Islamic system of medicine was introduced in India with the advent of Muslims in India. But the practitioners of this system of medicine and the valuable books on this science were found mostly in such places where it enjoyed popularity. The city of Hyderabad has been proud of adopting this system since its foundation and establishment of Darush-Shifa Hospital.

Thus the books of Hipocrates and Galen translated into Arabic by Arab translators and the writings of Raazi and Ibn Sina, Haji Zainul Attar, Abul Qasim Zehravi have been spreading knowledge of medicine on this land. Hyderabad never lagged behind in publishing books. The scholars of Hyderabad have written and edited a number of books on this subjects. Nevertheless the brilliance and value of the works of Arab translators has never been diminished. Hakeem Gulam Hussain the author of Gulzar-e-Asafia writes in his book that Hakeem Shifai Khan had made him memorize the contents of "mojiz" and "nafeesl"[3].

Entrance of Darush Shifa of Hyderabad.



Inner Portion of Darush Shifa of Hyderabad.

Nizamia General Hospital (Unani) and Nizamia Tibbi College of Hyderabad.

During the reign of the Nizam VI an able Hakeem Ahmed Sayeed had written a book "Tohfatul Afazil" in Arabic, which contained a critical discussion on Ibn Sina's "Qanoon" and its commentaries [4]. In short, the extensive and invaluable works of these Arabic research scholars forms the basis of the medical acumen of our physician and scholars of medical science. It was with the intention of widening the doors of this medical science that the masters of this art diligently continued the work of translating these treasures of Unani medicine into different languages.

Then there had been royal patronage which helped to promote this system of medicine. This made the great physician move to this place with rare books on medicine. Thus during the reign of King Abdullah Qutub Shah, a Persian physician, Nizamuddin Ahmed Geelani arrived at Hyderabed. According to his own narration, he was in Daulatabad in 1039 A.H. the reign of Emperor Shahjehan. Due to certain unavaoidable circumstances he made up his mind to return to his native land, Iran. Thus resolving he reached Machili Bander where he received a royal invitation from King Abdullah Qutub Shah to come to Golconda and where he was accorded a grand reception by the King himself. He was then appointed as the Royal Physician. The high degree of his capacity and ability can be guessed from the following anecdote. One day, he was attending the court of King Abdullah Qutub Shah. In the course of conversation, the topic of the Bee had come up for discussion. Thereupon the King ordered Hakeem Geelani to prepare a treatise on "Honey" and present the same to him. In compliance with the royal command Hakeem Geelani undertook this task. With the permission of the King he stayed in a royal palace for one day and wrote not merely on the "Honey" but also on various animals. To the great surprise of the King, he submitted all his writings to the King the following day[5].

Abdullah Qutub Shah's great admiration for this physician made him adopt Hyderabad as his native land*. Even today one can see his grave on a hill near Golconda where he used to live. The search for manuscripts has led the research scholars to the discovery of a rare collection of his writings which is still in existence in Hyderabad in the shape of a manuscript, which contains the seventeen books of Galen translated by Hunain bin Ishaque[6].

In this way, the patronage of King Abdullah Qutub Shah, not only hosted the eminent Hakeem in Hyderabad but also acquired a number of books penned by this great physician on medicine. According to the historians, the Hakeem wrote more than a hundred books[7]. This kind of royal patronage attracted a number of eminent scholars who flocked to Hyderabad and whose fame extended beyond the boundaries of Hyderabad but also of India.

To mention a few instances, the grandson of the ruler Nawab of Arcot suffered from epilepsy in 1795 AD. The doctors and physicians who treated him met with no success in curing him. Thereupon, one able Hakeem Ahmadullah Khan was sent there from Hyderabad. He treated the grandson of Nawab and the patient fully recovered. It is, indeed, a great achievement to have cured the epileptic patient even 200 years ago[8].

The phenomenon of migration of Muslim scientists from one place to another is outstanding. They stay at long last in the place where they find it most suitable for production. Examples are numerous including Ibn Sina, Ibnul Nafis, Imam Al Shaf'ee and Imam Bukhari. Thanks to the deep feeling and awareness that Muslim land is the country of every Moslim they selected the best places. In fact, a Muslim is ordered to migrate from any place where he cannot fulfil the needs of his divine message on earth.

(Dr. I. A. Sayyad)

In this way, the physicians of Hyderabad gained popularity not only in India but also outside of it. Once a commission of European physicians visited Hyderabad in connection with their research on Leprosy. The members of the commission remarked:-

"We did not know that such authorities on Unani Medicine are still present in India"[9].

In the biographies of a number of these eminent physicians, it has been mentioned that hundreds of pupils flocked around them for guidance. While the patronage of the Kings and the nobles encouraged them to explore fresh fields of research and new books and treatises were written on the subject of Unani Medicine. Many of new books were written in Arabic and Persian. When urdu also gained prominence, books and treatises originally written in Arabic and Persian were translated into Urdu.

Although considerable progress was made in the science of Unani Medicine during the reign of Nizamul Mulk Asif Jah I, and although he brought a number of learned physicians from Delhi, very few books were found as monuments of his period. The only book that belongs to this period is Hakeem Abdus Salam Khan's "*Qarabadein-e-Salami*". As opposed to this, many books are found which belongs to the reign of the Nizam the second and third. Hakeem Ahmedullah Khan wrote many books and enriched the Unani Science at Hyderabad. Some of these works have been written in Arabic while the others are in Persian. Most of these have been translated into Urdu. The names of these books are given below:

"Tahqeequl Bohran", "Tafree-ul-Quloob", "Shifaul Majdoor" "Nuskhejate Mujarrabate Hakeem Ahmed-ullah Khan" and "Sullemud-Darejat". This system of medical science reached its zenith in the reign of the Nizam III, so much so that the Nizam III acquainted himself with this art. The medicines were prepared in the Government "Toshe Khana" (royal kitchen) and they were always available for immediate use. Thus, the Nizam had commanded one of the Royal physicians Hakeem Shaik Hyder Misri to edit his prescriptions in the form of a book. It was completed under the title of "Qarabadeen--e-Hindi"[11]. Another eminent Hakeem of the same era started to write another book in Arabic, but unfortunately he was unable to finish it due to his old age. He was then 90 years old and which made him physically unfit to execute his task. But all the same, his worthy son, Raza Ali Khan completed the book and translated it into Persian under the title "Yaadgar-e-Razaai" which was published subsequently [12]. There was another eminent physician, a worthy exponent of the famous art of Unani Medicine who lived in those days. His name was Motamadul Mulook Shifai Khan Mir Fazle Ali whose school was always crowded with students [13]. He also wrote the following books [14], thus adding to the treasure of Unani medicine at Hyderabad.

1. Shifai (in Persian)
2. Jame-usool-e-Tibbia
3. Resala Istemale - Chobe Chini (in Persian)
4. Resala-e-tibbe-shifai Khan (In Arabic)
5. Ilajul Atfal (in Persian)
6. Quwate-La-Yamout
7. Mujarrabat-wo-Bayane-Hummiyyat (in Persian)
8. Meezanu Mizaj

9. Moalijate-Chandu Lal I (in Persian)
10. Jame-ush, Shifala (in Persian)
11. Fawaed-e-Shifaia (in Persian)

During the reign of the Nizam IV and the Nizam V much attention was not paid to this art on account of the introduction of Allopathy which was gaining ground day by day in Hyderabad. Nevertheless, the city of Hyderabad was not entirely devoid of eminent exponents of the Unani school of medicine and, so also the study and teaching of this branch of medicine was continued as it had been before, and many books on Unani Medicine were written in these days.

Thus the eminent Hakeem Masihuz-Zaman Mohammed Khan wrote "Asrare Masiha" and "Mirquatud' Darejat" in these days only. Similarly, the famous Hekeem Ashraf Ali wrote "Sirajut-Tibb" and another eminent exponent of this era namely Mir Qasim wrote the book "Kitabul Fauaid" in those times. Some new books which were written on Allopathic medicine, have a sufficient knowledge of the old theories also. For example, "Safinatul Ilaj" and "Haft Gulzar" were written by Syed Mohammed Vazir Ali Baqari. An eminent physician, Hakeem Mohammed Vazir Ali wrote a book "Mujarrabat - Matabe Vaziri" during the same period.

Since the days of the Nizam VI, the Unani medicine had once again regained its glory and reached the giddy heights of distiction. The Unani physicians whose morale was at the nadir, stirred into activity was taken up once again, and the exponents of Unani School of Medicine, once again began to teach the principles and practice of their art to the students [16]. As a result of all this, some new books were written which further opened the doors of research and inquiry. Thus Iftekhar Ali Khan wrote 1 Fihi Shifaa - Linnas 2 Meddetual Hayat and 3 Guldastai Sihhat. Ashiq Hussain wrote "Farog-e-Atibba" and "Tiryakus Samoom".

Mohibbe Hussain Afsarul Atibba wrote "Mujarrabate Falsafi" and increased the wealth of Unani Medicine and Ahmed Sayeed who was an eminent Hakeem and physician of his day wrote the following books[18]:

1. Tashkhees-e-Kamil
2. Taskeemul Aufs Fee Tahqeeqe-zia betes (urdu)
3. Tabkatul Afzil (Arabic)
4. Tadkira-e-Sayeedia
5. Tahqeeq-e-Maraze-Jazam
6. Miyarul Atibba
7. Sharah, Asbab-wal-Alaamat

During the reign of the Nizam VII this branch of medical science made a remarkable progress. It requires a separate volume to deal with the medical researches and the valuable treatises and books written during his regime.

It was during his period that the Department of Unani Medicine was extensively developed. Unani Medical School was upgraded into a full fledged Medical College. A residential hospital was attached to the college to facilitate practical work. A dissection hall and a pathological laboratory were also attached

to the college.

A new department of translation was started. Hakeem Kabeeruddin was entrusted with the work of translation of books. From Arabic and English into Urdu. Many journals such as "Hakim-e-Dakan", "Tohfa" etc were being published in Hyderabad.

The State Central Library, Salarjung Library, Sayeedia Library, Oriental Manuscript Library, Osmania University Library and Abul Kalam Azaad Oriental Library in short, every library worth the name contains precious treasures of Unani medicine. The public and private dispensaries, the houses of private Unani physicians and the Libraries in Royal Palaces which are inaccessible to the public are other sources of these books.

It is necessary for me to refer to two other treasuries which are under the supervision of the Government. One of these is the Indian Institute of History of Medicines which contains not only a notable library but also a Microfilming unit which collects films of unique books and treatises and the other, is a museum in the Institute which can teach the students about the history of medicine with the help of photos, charts and models. In this connection, mention may be made to Dr. Subba Reddy who has founded this institution and collected much material for the scholars to refer. The second treasure which deserves to be mentioned is Nizamia Medical College.

This is the biggest college of *Unani Medicine in India.* Which is having a combined building of *Nizamia Tibbi College and Nizamia Sadar Shifa Khana.* It was constructed by H.E.H. the Nizam VII, Nawab Mir Osman Ali Khan during his regime. The purpose behind its establishment was to afford an opportunity to the old schools of Unani Medicine of acquainting themselves with the new trends in the field of medicine.

The same point was stressed by the ex-president of India, Late Dr. Fakhruddin Ali Ahmed, while addressing the All India Unani Tibbi Conference at Simla, he said that it was necessary that the students of the old and new schools of medicine should be taught the history of medicine so that they may get acquainted themselves with their glorious past "[19]. He added that we should neither cling blindly to the erroneous theories of the past without minding the useful things that are available in the present and future, nor should we be so deeply involved in the present and that we might forget our past achievements. He further added that it would lead to better results if we make use of the new knowledge in medicine alongwith the ancient knowledge which has proved itself efficient for the last thousands of years.

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30. Hakim SHIFA-I-KHAN - Ilajul Atfal - manuscript preserved in the Institute of History of Medicine, Hyderabad.
31. Hakeem MEHMOOD SAMDANI - Tedhkira-e-Taoon printed by Mehmood press in 1329.
32. Hakeem MOHAMMED FAROZUDDIN - Ramoozul Atibba Vol. I. Puboished by Rafeeq-ul-Atibba of Lahore printed in 1913 A.D.
33. Hakeem ABDUL RAHEEM JAMEEL - Rumooz-e-Hikmat printed and published by Iqbal steam press.
34. NIZAMUDDIN AHMED as Saedi Ash Sheerazi. Headeeqetus Salateen (Qutub Shahi) edited by Syed Ali Bilgrami printed by Metba-e-Siddiqui in 1350 Hijri.
35. MOAHMED FAZIL - Jasn-e-Osmani Yadgar silver jubilee
36. Ahd-e-Osmani main tibb-ka-Ahya - Hakim-e-Deccan, monthly magazine Amerdad 134 F.
37. GULUM SAMDANI KHAN GAOHER - Tuzeke. Mehboobia (Urdu) compiled in 1329 Hijri.
38. "College Ka Iftitah" Hakim-e-Deccan June & Dec. 1939.
39. Prof. HIBBATULLAH - Tibb-e-Qadeem ki Haqeeqet aur Paigam-e-Amal, Hakim-e-Deccan - Behman 1347 F.

PART FOUR

ACHIEVEMENTS OF ISLAMIC MEDICINE

Part four: Achievements of Islamic Medicine

CHAPTER ONE

(Papers Presented)

1. REPORT ON THE SECOND SESSION.
   Editors.
2. THE HISTORY OF THE LEGACY OF ISLAMIC MEDICINE IN MOROCCO.
   Dr. Abdul Aziz b-Abdullah.
3. MEDICAL EDUCATION IN ISLAMIC AGES.
   Dr. Kamal Samarale.
4. RUFIDA AL-ASALMIA.
   Dr. Suad Hussain.
5. INVENTORY OF MEDICINAL PLANTS USED IN THE TRADITIONAL ARABIC MEDICINE.
   Dr. C. Pena Munoz and T.L. Valverde.
6. THE ROLE OF MEDIAEVAL MOSLEM SCHOLARS IN THE HISTORY OF CUTANEOUS LEISHMANIASIS.
   Dr. A.H. Helmy Mohammed and Dr. Muna Al-Taqi.
7. SURGICAL TECHNIQUES, OF ABUL QUASIM AL-ZAHRAWI
   Dr. Fariduddin Baqual.
8. COMMENTS AND DISCUSSIONS.

REPORT ON SECOND SESSION

This session was conducted from 11.00 a.m. to 1.00 p.m., under the Chairmanship of Dr. Mohammed Saliha with Mr. Mohammed Mofdi Abdul Latif as moderator.

Six scholars presented their papers on "The Achievements of Islamic Medicine in Different Branches." At the end comments and discussion were allowed.

Editors.

THE HISTORY OF THE LEGACY OF ISLAMIC MEDICINE IN MOROCCO

Abdul Aziz b. Abdullah
Morocco

The fourth century A.H. (tenth century A.D.) may be considered as one of the most brilliant eras of Arab Spain whether from the standpoint of artistic achievements or from the standpoint of learned institutions and scientific discoveries. In this century Ibn Jaljal emerged as the greatest physician of his age in that he translated into Arabic the terminology of Dioscorides[1] and added to the translation a compilation of the drugs known to the Arabs, of which Dioscorides had been unaware. Ibn Jaljal also wrote a history of the physicians and learned men who had preceded him in Andalusia.

Al-Walid al-Madhagi arrived in Arab Spain with Abdul Rahman b.Mu'awiya, as his physician. Both his son Ibrahim and Ishaq b. Umran studied under him. He first introduced (the new) medicine into Morocco. Likewise, Ibn al-Jazar (395 A.H./1004 AD) whose full name was Ahmad b. Ibrahim b.Khaled, authored *Zad al-Musafir* ("Sustenance for the Traveller") and *Qut Alhadir* ("Nourishment for Him who has Arrived")[2].

Another instance illustrating the eminence of the medical men of Arab-Spain in the fourth century A.H. was Mohammad b.Abdun al-Qurtabi, who journeyed to Egypt and Basra where he practiced medicine. He set up a hospital in Egypt before finally returning to Spain in 360 A.H. Sa'id mentions that "he was skilled in the medical profession and had masterfully traced many of its original principles. No one in Cordova excelled him in medicine nor was he rivalled by any in the precision, excellence of practice, and mastery of the more recondite aspects of the science". *(Al-Nafah,* Vol. 1, P. 444).

The most outstanding Arab Medical scholar to appear in Arab-Spain in the fourth century was Abul Qasim Khalaf b.Abbas al-Zahrawi, author of a work entitled *'Al-Tasrif li-man Ajaza an al-Ta'lif.* A certain Western scholar of medicine commented "There is no doubt that al-Zahrawi was the greatest physician in Arab surgery. All writers on surgery in the middle ages relied on and drew from his research. His book is considered to be a cornerstone in this skill. He was the first to apply tourniquets to arteries. He described an operation of crushing a gall stone and removing it surgically. He treated paralysis. He was the first to use silk threads in surgery."

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(1) Two copies of Dioscorides' *Book of Herbs* are to be found in Intanbul. In the first of these is a copy of the Greek composition. Another copy of this type is referred to by Boushthal Wokorez as having been transcribed in Baghdad in 637 A.H. (Louis Massignon, *Melanges,* vol. 2, P. 93)

(2) The first part of this manuscript is in the National Library at Ribat. In the same library, there is *An Abridgement of the Book of Reliance for Medicine Defined* (Kitab al 'I'timad fi'l Adwiya al Mufrada") of Ibn Jazzar arranged alphabetically by an unknown author).

Leclere mentions that al-Zahrawi was the greatest representative of surgery in the Arab School. (Vol. 1, P.334)[1].

As for Morocco, it is difficult to prove with certainty when the blossoming of medicine began. Dr. Leclere states, however, that medicine flourished only ephemerally in those regions in the fourth century A.D.) or (the tenth century A.D.). Elsewhere, he remarks that Morocco is the most advanced of all the Islamic countries with regard to scientific learning (vol. 1, P. 407).

Also, al-Qifti relates that highly skilled physicians accompanied him from North Africa to Egypt in the fourth century. *(Akhbar* al-Ulama' *min Akhbar* al-Hukama).

In the fourth century A.H, Constantine the Tunisian achieved renown as a physician and translated dozens of books into Latin.

Since the remote past, the Berbers had known about the vaccination of small pox germs and were using them to produce immunity. (Codar, *Wasf* al-Maghrib *wa Tarikhuhu,* vol. 1 P. 239 "Description and History of Morocco".)

In the manuscript, *Schahirat Al-Maghrib,* "Celebrated Events of Morocco", Alkanunu quotes from *The Art of Dentistry.* "In Fez, during the fourth century, there was a medical school when Morocco was under the sway of the Ummayads".

Actually medicine did not reach its apogee until the fifth century A.H.; while the fifth and sixth centuries were the most productive centuries with regard to science in Muslim Spain, in spite of the upheavals which swept the land upon the intrusion of the Murabitun and the Muwahhidun. This was, thanks to the attention and care which the caliphs showed, for science and scholars. It may be said, as Dr. Leclere affirms (op.cit., vol. II, P.72) that the intellect had never before been liberated as it was in this age. The genius of the age attests to this in scholars such as Ibn Tufail, Ibn Bajja, Ibn Rushd - the greatest philosopher of Andalusia - and Ibn Zuhr who had inherited three centuries of medical learning. Ibn Marwan Abdul Malik is one of the chief luminaries and is regarded by some historians as the finest physician to graduate from the Arab school. In addition, mention should be made of Alghafigi and Abu AlSalt Umayya b.Abdul Aziz who wrote about the history of medicine.

AlGhafigi, Abu Ja'far Ahmed b.Mohammad, to cite his full name, is not to be confused with Mohammad b. Qassum al Ghafigi, author of "A Guide to Ophthalmology" *al murshid fi Tibb al-Uyun.* In addition, Alghafigi's "Book of Herbs" *Kitab al A'shaab* to be found at Dar al Athar al Arabiya, contains 380 coloured drawings of plants, drugs and animals.

Al Sabti al Sharif al'Idrisi is referred to in *Rasa il al Bushra* as having gained renown in the arts of geography, philosophy, medicine, the heavenly bodies and prosody. He travelled Egypt, Asia Minor, Constantinople, Andalusia, France and England and described the flora of each country he visited (Al Murakshi, Al A'lam, vol. 3, P. 34).

Thanks to this upsurgery of Arab cultural activity, Europe began to rouse herself from her lethargy. Christians began flocking to Toledo to draw from the well springs of science there. Bishop Raymond of

Toledo resorted to Arab scholars to remedy the impoverishment of Latin learning. Translation of Arabic scientific works was begun. Then Gerard de Cremon arrived in Toledo where he was to spend nearly half a century during which he translated into Latin seventy-six books from Arabic originals or Arabic translation from the Greek.

In the age when Spain was under Moorish authority, as documented by Leclere in his work of Arab medicine (vol. II, P. 240), a group of physicians was formed which gathered in the courts of the Murabitun and the Muwahhidun Kings. Most of them followed these rulers to Morocco where they spent the rest of their lives practising and teaching medicine, a great boon in fact to Morocco resulting from the reversals in the Andalus.

Dr. Renault affirms that, generally speaking, Morocco did not perform any significant role in the age when medicine and the other sciences shone in the full brilliance in Syria, Iraq and Egypt or even in neighbouring Spain. However, by the end of the eleventh century A.D. and especially in the twelfth century, scientific progress in Muslim Spain had extended into Morocco under the banners of the Murabitun and the Muwahhidun. In the words of Renault, "How then can we separate the study of medicine in Spain and the scientists nurtured in Andalusia and formed in the Moorish Kings from Seville and Cordova to Fez and Marakesh"? "Morocco is, therefore, entirely justified in claiming Ibn Bajja, Ibn Tufail, Ibn Rushd and others who adopted Morocco as their home." *Ancient Medicine in Morocco,* Institute of Higher Studies, vol. 1, P. 72.

Abul 'Ala Zuhr b. Zuhr, it seems was the first physician from Arab Andalusia to arrive in the Maghreb after the conquest of Spain by the Murabitun. He was the private physician of Yusuf b. Tashifin, after having been the physician of AlMu'tamid b. Ibad in Seville.

Al Murakshi mentions in *al Mujib* that al-Mutamid summoned Abul 'Ala to cure his queen Rumaikiya, when he was a prisoner in Ighmat. The father of Abul Ala was Abu Marwan Abdul Malik b.Abi Bakr Mohammad b. Marwan b. Zuhr., who was the dean of medicine in Baghdad, then in Cairo and later in Qairuwan. (AlNafah, vol. 1 P. 445). He held some distorted views on medicine. For example, he forbade bathing in the supposition that it would cause putrifaction to the human body and would corrupt the disposition of the humors ("Wells of Information in Annals of Physicians", *Uyun al Anba fi Tabagat al Atibba,* by Ibn Abi Usaiba, vol. 2, P. 64-66.)

From his practice of medicine Abul'Ala produced in Morocco a book called *Al Tadhkara* which ws translated into French and published by Colin in Paris in 1911. This work is a collection of his observations which he recorded for his son Ibn Zuhr to acquaint him with common diseases in Morocco and their appropriate cures.

After Abul 'Ala died, Ali b. Yusef commanded his other medical observations to be collected which Abul 'Ala had recorded. This collection entitled *al Mujarrabat* ("Experimentations") was compiled in Marrakesh in 526 A.H. and exists as a manuscript in the Escorial (No. 884).

Jean de Cabot translated al-Tadhkara from Hebrew into Latin, a version of which is to be found at the college of Medicine in Paris. Thereafter other translations followed from 280 AD and ten publications between 1490 and 1554.

A copy of this work printed in 1531 is kept at the library of l'Ecole des Langues Orientales in Paris. Also included is the *Kulliyat* (Universalia) of Ibn Rushd.

There exists *A Treatise on Diseases of the Kidneys* written by Abul 'Ala for Ali b.Yusuf. Only its Latin translation published in 1497 has survived. There is also a manuscript by Abul Ala on *Characteristics,* in the Paris Library, from which Ibn al-Baytar has derived *characteristics of the meat of animals* ("Khawass Luhum al Hayawanat").

Abul Ala authored a commentary on a treatise of Yaqub b. Ishaq al-Kindi, The Composition of Medicines ("Tarkib al-'Adwiya"). There exists a copy of Abul Alas compendium of Medical Secrets (Jami Asrar alTibb), at the National Library of Ribat, containing 185 pages.

His son, Abu Marwan Abdul Malik b.Zuhr, served the Murabiton as his father had done. He authored a book entitled *Economy* (al Iktisad) for Ibrahim b.Yusef, the brother of Ali, of which a manuscript exists in Paris (No. 2959). Furthermore, there is a copy in the Escorial which, Renault reports, was edited in Arabic written in Hebrew letters. He compiled this work in 515 A.H. which consists of a recapitulation on medicine which he had read. The author addresses those of the medical profession, not the layman. He explains in it the difference between leprosy and the phenomenon of contagion. Ibn Zuhr was regarded as greater than Ibn Sina and equalled only by al Razi in the East.

In this work Ibn Zuhr speaks about the physicians of his age. He mentions their differences with regard to the care of patients. He remarks that, in general, people are ignorant of medicine because the doctor they consult hurries to prescribe a medicine without diagnosing all the particular symptoms. He relates how one day he was summoned by the Murabit Prince of Morocco. There he met a group of physicians, young and old, whom he had not previously met. He was impressed by their experience and practice. Their consultation centered on the Murabit Prince's disorder. Whereupon the physicians proceeded, each one of them to prescribe his own medicine. Yet only one of them succeeded in the diagnosis according to Ibn Zuhr and even he did not convince him as to the cause of the illness. Ibn Zuhr was distinguished from other physicians of his age by the practice of phlebotomy for the elderly over seventy years of age and for children even as young as three years. In cases of kidney disease, he prescribed a kind of stew called "dalah" in North Africa; he also examined patients' pulse and urine specimens.

Abu Hakam b. Ghalando of Seville, also a poet, studied under Ibn Marwan in 535 A.H. using Economy in the prison at Marrakesh, where Ibn Zuhr remained for approximately ten years. Al-Mansour brought him again to Marrakesh where Ibn Zuhr died in the following year.

Abul Mumin had already appointed him to his own service and relied on him in medical matters. For him Ibn Zuhr authored *Antidote of the Seventies* ("al Taryaq al Sabini"). He grew grapes which he used as a laxative because of Abdul Mu'min's dislike of taking laxatives. For him he also wrote the *Book of Nutrition* (Ibn Abi Usaybia, vol. 2, P 66).

Abu Marwan b. Zuhr wrote a book called *The Facilitation* (al Taysir) as a supplement to Ibn Rushd's *compendium* ("al Kulliyat"). Ibn Zuhr mentioned at the end of the book that the person appointed to supervise the writing of the book, was not satisfied with it, because it disagreed with the teachings pre-

viously given him and because it was difficult for any one to understand who was not well-versed in medicine. For this reason appended "al Jamie" at the end of the book. It would appear from Lecler's analysis of Ibn Rushd's *Compendum* ("Kulliyat" in its Latin translation that Ibn Rushd quoted from Ibn Zuhr's *Taysir.*

Ibn Abdul Malik confirmed in *Appendix and Supplement* ("Al Dhayl wa-l Takmila") that Ibn Rushd preferred Ibn Zuhr over any of his contemporaries.

In the treatise he appended to Ibn Hazm's *Treatise on the Merits of Andalusian Scientists,* Ibn Said objected to Abdul Malik b. Abil'Ala b. Zuhr that al-Taysir was famous among the people of Morocco and was also known for its excellence in the East. (al Nafh, vol. 2, P. 778).

In the bibliotheque Nationale at Paris, there is a collection (No. 2960) containing Ibn Zuhr's *Nutrition* and *Facilitation,* Abul Ala's *Al Tadhkara* and a treatise on *medicines.*

In his book *Facilitation* ("al Taysir"), Ibn Zuhr set forth a new technique "Logical wisdom" ("*al*-Hikma Al Kayasiya"). He adopted a new technique of "el-Hikma al-Keyassia" using mental clarification to obtain the best results. According to what he said in his book "el-Taysir", he was the physician of experiment and scientific thorough examination, unlike those craftsmen. In practice, Ibn Zuhr detested to perform big surgeries by himself because wounds caused some feeling of weakness in him which might lead to fainting. However, he could prepare drugs without using the wine, following his father Abo el--Alaa, even if it was advised by "Galen" thereby he was unlike "el-Razi".

He discussed the manual works in medicine, and noticed that such handy works as phlebotomy, cauterization, etc.. should be assigned to assistants. The physician should be responsible for advising on diets for the patient and prescribing drugs. He said that his father did not try such handworks in all his life and in case he would have tried, he might have had failed because of his unfamiliarity with such works. As for him, he mentioned that he was enthusiastic at such handworks of pharmacy and drugs to assess their proportions and their components.

Through his medical assessment and his personal experience, ha was able to discover new diseases, which ere previously unknown. He was interested in lung diseases and had been operated upon his trachea. Afterwards, he was able to dissect the trachea of a patient with angina pectoris and the patient had been recovered.

Ibn Zuhr specialized in the diseases of the digestive system. He used a hollow tin pipe to feed patients who are unable to swallow, also he used nutritive injections. He discovered the parasites of scabies and called them "Saabet el-Jarab". He simplified the old methods of treatment and declared that we might consider the curative effect of nature in many diseases. (Arab Civilization, by Gustav Le Bon, P. 530; from the French edition).

Abo-Marwan dedicated himself for treating his patients and this was the secret of his geniousness. If he met with a complicated case he would have never spared any means in its treatment. Therefore, physicians of the Middle Ages were eagerly occupied with studying his book "el-Taiseer" which was translated into Hebrew by anonymous person (a manuscript at Leide Library, then translated into Italian

in 1260 A.D.

In his book "el-Taiseer" Ibn Zuhr discussed "Hippocrates' oath" which was a prerequisite for studying his works. Ibn Zuhr related that he gave the oath to his father when he started his medical studies. According to Hippocrates' principles, it happened that one of the revolutionaries asked him for a poisonous material but he refused; afterwards when this man had fallen ill, he treated him.

Kodar fancied, as he had claimed in his book about "The History of Morocco" P. 452, that Abo--Marwan was a jew. He confirmed that Ibn Zuhr replaced the experimental and logical method instead of initiation in medical practice. Thanks to his geniousness that the three branches of pharmacy, surgery and general medicine evolved and he tried to unite them.

The grandson, Abo Bakr Ben Abo Marwan was a physician, a poet and was strictly religious. He worked for el Lamtonia and el-Mowahidia (Abdel Mouamen, Joseph, Jacob and el-Nasser). He died in Morakesh in 596 H. He wrote "The Fifty Antidote" to Jacob el-Mansour. Yogan, el-Mansour's Minister poisoned him and his sister's daughter. The sister and her daughter were medical scientists, particularly gynaecology and they were visiting el-Mansour's women (Ibn Abi Osibaie, P. 67). Abo-Bakr memorized "El Bokhary" and its acriptions (al-Annis al-Motreb, vol. 2, P. 180). He was unequalled in his mastery of the Arabic language and he had memorized the poetry of "Zi el-Rima" which represented one third of the Arabic language (al-Motreb, by Ibn Dahia).

His son, Abdallah ben el Hafid worked for el-Nasser Ibn el-Mansour. He was poisoned and died at Rabat el-Fatah in 602 H where he had been burried. He was 25 years old. (Ibn Abi Osibaie P. 74).

El-Marini and el-Witasi ages extended for three centuries (from 637 H to 961 H) during which Morocco testified various stages of flourishment and decadence. Binomrein came into throne in the year in which the great famine ended, as it had continued from 619 H to 637 H. However, el-Mansour el--Marini, according to Tairas, was the strong king in the Islamic Morocco (The History of Morocco, vol. 2, P. 28). Nevertheless, the authority of Abi el-Hassan extended from "Keshtalah" to Sudan and Egypt (Vol. 2, P. 61).

The students, at the days of "Abi-Enan", were the most dignified, greater in number and of higher income (The Nile, P. 260).

Abo-Youssef el Marini had established the maristans (mental clinics) in the South of Morocco for strangers and insane and spent on them for all their needs of food and fruits. He ordered the physicians to follow them up for their benefit. (Al Zakhira Al Saniah, P. 100). There was a maristan in every city (Description of Africa, Paris 1667 A.D., vol. 2, P. 24).

In Africa, as it was in Morocco, medicine prevailed among a great number of scientists and literary men. For example, el-Imam el Senousi, who interpreted "el-Boukhary" had an interpretation about the medicine of "Avicenna" and had a large commentary on "el-Houfia" about divine precepts. He wrote about arithmetic when he was 19 years old. (The Nile, P. 353).

As to "Fez", "Ali Ben Maymoun" in one of his works, wrote about "Fez" that he had never seen its like and never met with such scientists who were memorizing all sciences such as arithmetic, logic,

theology, rhetoric, medicine and all logical sciences (Salwat el Anfas, vol. 1 P. 74). Nevertheless, Ibn Khaldoun confirmed that he had never met with scientific masters in "Fez" in 800 H and this was due to lack in education there. (Nashr El Mathana, V. 2, P. 97).

However, in the year 620 H., "el-Morakeshi" the author of (el-Moagab) related that after a few years from the appearance of "el-Maryneen" in 613 H., Fez was the heart of Morocco and the centre of science at it gathered the sciences from Kairwan and Cordoba as scientists came to live in "Fez". It had been mentioned that "Fez" in Morocco resembled "Baghdad in Iraq" (P. 320)[1].

Le Claire mentioned that since the disappearance of the Masters of learning in Cordoba and "Kairwan", there was no accepted system of education in "Fez" and the other cities of Morocco (Vol. 1, P. 275).

Rino confirmed that the study of medicine at the University of "al-Karawayeen" depended on the Arabicized books of "Hippocrates", "Galens" and "Deginos". However, some books of "al--Karawayeen" Library disappeared by the Spanish in 1161 A.D. and the official study of medicine stopped except some lessons by some physicians at the mosques of the capital, where they were commenting on the Arab medical works, either the manuscripts or the published ones, which remained in Morocco and this was for the sake of maintaining their knowledge of practical medicine.

In Morocco, the circumstances became more complicated after the catastrophe of "Abi al-Hassan" in Africa and "Tarif" in Andalusia. In this age, many economical crises took place and epidemics prevailed all over the world. As a result of all this, the Moroccans suffered many difficulties and poverty and diseases prevailed. Destruction was everywhere, scientists were wrecked and the abodes of knowledge were about to disappear. It was true, according to "el Nasseri", that bythe end of the eighth century, the circumstances in Morocco had been changed and those in the East as well. People's traditions faded away, according to "Ibn-Khaldoun", and this was a result of the destruction in the East and the West in 850 A.D. in terms of the horrible plague which took place and ruined the whole generation. The plague had broken down most features of civilization and erased them. It fell upon countries, ruined them,

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(1) Levi Brovinsal confirmed that the advance was common in all Islamic capitals in the 14th century A.D., and in Fez as well.

Badia Lillbish, who was called "Ali El Abassi" considered "Fez" in Africa like "Athens" which was known as the capital of the Greek culture. Also, Dalfan, in his book about "El Karawayeen" said that the university of Fez was the first school in the world. (P. 12).

Dr. Rino mentioned that the city of "Fez" was the cradle of civilization. Scientists and students visited it as it was considered, in the Islamic world, like Athens. In "Fez", all sciences, arts and literature were being educated.

Dokambo said that the University of "Al-Karaweyeen", in the Middle Ages, had been the gathering point of foreigners from different nationalities and different religions. (Contemporary Morocco, a declining Kingdom, Paris, 1886, P. 12).

Kabriel Sharmes indicated in his book "Embassy to Morocco" (P. 245) to the age of glory when Morocco was the confluence of all sciences and arts, and which transferred to Europe from there. He mentioned that "Fez" was considered, by the majority of the African Moslems, the second holy city after Mecca, in terms of its noble origin and the great role it played in the Islamic history.

Fez had been the glowing center of the Arab world. However, Morakesh was the political capital of Morocco, but Fez had been considered for a long time the capital of Islamic thinking with regard to thinking and literary aspects because its schools were the first in the world (P. 297). In this city, the western civilization was born and sparkled Spain, thereby all corners of the primitive Europe. (P. 298).

demolished prosperity and populousness of the countries. It wrecked activity flourishing and overturned inhabitants and buildings. The ruin in the East was the same as in Morocco (Al Asteksag, v.3. P. 144).

According to "Rino" the study of "Ibn el Khatib's" age is useful for the physician as it is the age of the great black plague which caused the death of one-third of the world. Some Moroccan physician wrote about the causes and the treatment of this disease (The Old Medicine in Morocco, P. 47).

This disturbance led gradually to the fall of the strategic points into the hands of Portugal which occupied Morocco for more than three centuries. It was a reaction of the three centuries during which Andalusia continued to be under the control of Morocco.

In the East, the age of scientific decadence started in the eighth century and the outset of the ninth century, after the torrents by "Jankeys Khan" and "Timorlank" which crushed the features of civilization. However, "Ibn-Battouta" related about "el-Madrasah el-Nizamiah" which was still there but its staff and students disappeared. In this period, "Le Claire" gave mention of forty unfamous scientists, half of them from Andalusia, 'because of lack of originality and only existence of compilation and writing".

"Rino" confirmed in his book (The Old Medicine in Morocco) that after the age of "Beni Merin" chaos prevailed. Fez went down in the age of "El-Saadyeen" and there was no mention of any Moroccan physician in the classical works of this period of the history of Morocco till the end of the 18th century when "Mohamed Ben Azouz" the Morakeshan physician noticed the book of (Zehab el-Kesouf) and from it he quoted the section on "Tib el-Oyoun" (Ophthalmology) from "el-Kahal Ali Ben Eissa". (The Old Medicine in Morocco, P. 75).

But "Rino" reaffirmed in his address to the Fifth International Conference on the History of Medicine (Geneva ed., 1926, P. 3), that the chaos was a result of wars of the last kings of "Beni-Merin". However, el-Shorafa's kings restored the unity of the country "Levi Brovinsal" talked, in his book (El Shorafa's Historians), about the literary renaissance in Morocco; he said, "it was strange that we did not find such progress in medical sciences".

In this age, two figures skilled in medicine. They were "Abdel Rahman Sekin el-Kasry" and "el--Fasi El-Mohadith" who shared in literature, sufism and medicine; he died in 956 H. (The Nile, P. 153). Also, Abo el-Kassem, Minister from Ghassan, wrote some articles in medicine alongwith an interpretation on the Fevers by Ibn Azroun and a book on the herbs (Al-Dorah, P 466).

In spite of Rino's revelation that the official education of medicine and science had disappeared from el-Karawyeen university at the end of the past century (The Old Medicine of Morocco, P. 27), however, Dalfan indicated, in his book about Fez and its University (*PUBLISHED* 1889) that the students took care of some medical books such as "el-Kamel" by el-Razi, "el-Qanoun Wa el-Manzouma" by Avicenna, "Zibdat el-Tib" by el-Gergani, "el-Tazkara" by el Sewidi, "el- Antaki's Tazkara", "el-Koliat" by Ibn Rushd, "el-Mufradat" by Ibn el-Bitar, and "Kashf el Remouz" by el Gazaeri.

Rino mentioned that some Moroccan physicians had specialized in pains, others in ophthalmology and some in fevers. In Rino's opinion, the dentists were practicing this art very skilfully (P. 122).

Smallpox was appearing every seven years approximately. Some people were using vaccination

against smallpox by injection of microbes from pustules and abcesses affecting calf or camel. Others were using sulphur, salt and rest in a dark place.

In the last century, some physicians appeared like Mawlai Abdel Salam el-Alami who studied medicine in Cairo, He wrote his book "Diaael-Nibras" in which he put the names of his Moslem and foreign professors at the Great Hospital of el-Kasr el-Aini which Dr. Klout(Klout Bay) had established in 1827 by an order from Khedivi Mohamed Ali (Rino's address, P. 6). The Moroccan physician wrote in his book "el-Nibras" that while he was a student in Egypt in 1291 H. (el Diaa, P. 59) he thought about writing a book providing keys of symbols in translated books to explain the technical terms of the contemporary sciences introduced into Arabic. However, he had been temporarily occupied with writing a review "Diaa el-Nibras Fi Hal Mufradat el Antaki Bi Loghat Fez" which explained Daoud el-Antaki's "Tazkara", and it was published in Fez in 1318 H. Rino commented on this book saying that the author was giving Barbarian terms which were synonyms of the Arabic medical terms.

In my opinion, this book is strong in its analysis and is considered an important transitional point in the Moroccon history of medicine. In this book, the author tried to explain the months, signs of the zodiac, drugs and kinds of plants in the East, the West and in Morocco. Sometimes, he corrected his predecessor's faults. He considered the published medical works, the medical lectures in Egypt, the traditional medicine of physicians and pharmacists in Morocco, and the new medicine and new chemistry in Europe and America. Sometimes, he provided names of the Arab drugs and their different tongues, then the Latin and foreign names; also, he connected them with the general modern terms such as evapration and distillation. He brought from Egypt many kinds of plants and drugs. He related the experiments of his professors at Kasr el-Aini and his personal participation in these experiments. He said that he had seen a conserved giraffe, at Kasr el-Aini, while reading Zology (al-Diaa P. 57). He shared some preparations at the Chemical Laboratory in Egypt (P. 72).

Rino related that in an interview held on the 8th of Shawal 1310 H. where a committee of four scientists from Fez investigated a Moroccan physician. The committee testified his mastery in medicine, the medical principles and its practice and drugs' components. Also, he knew classification of arteries, their function and their number. He showed knowledge of the bones and how to differentiate between the nerves and the muscles in a body. He got knowledge about the plants and the flowers. He knew the medical herbs, their characteristics, their names, methods of dissolving them at the proper time and the suitable time for their prescription for the patients. After the discussion, the committee granted him the medical license (P. 121).

Thus, this short review clarifies that Morocco played a great role in establishing the principles of the art of medicine at the age of "el-Morabiteen" and "el-Mowahideen". Nevertheless this art, like all other sciences and philosophy, started to diminish at the age of "el-Merineen", then "el-Shorafaa", as a result of the disturbances and the consequent crises, and particularly in terms of the decadence which affected the Arab civilization in general and the Moroccan one in particular. But this will not lessen the value of this precious Moroccan heritage which is considered an essential brick for human civilization.

MEDICAL EDUCATION IN ISLAMIC AGES

Kamal Samaraie
Iraq

A proper study of the history of medicine is never complete without referring to the history of its teaching. Our sources of the study of medicine teaching in Islamic ages are very few. The only available sources are casual references to the compassion exercised by Moslem physicians, or to their scientific works. Their books dealing with the techniques of medicine teaching are still considered lost, except for a pamphlet from "el-Nafe Fi Talim el-Tibb" (The Useful Source on Medicine Teaching) by Ibn Radwan el-Masri. In this book, there is reference of a 'Sheikh' (an old master), well-experienced in the practice, who reads medical texts to his students, explains their contents, and adds his own comments, whether approving or disapproving. This method of theoretical teaching was almost the same in all Moslem countries, of all ages; except for some very few alterations gained by the passage of time and the acquisition of experience.

The first 'medical schools' were held in physicians' homes in the form of a 'majlis' (council)attended by scholars and students, equally. Later on, some of these schools were held in private or public mosques, where the teacher could lean his back against the wall (so as to be comfortable) with students encircling him listening to his explanations of the contents of a certain book that he holds in his hands. Such 'academic rings' cannot be considered proper schools, since they lacked the requirements of teaching medicine as an applied science. Then, some hospitals were founded, and teachers were able to make use of them for purposes of application. Presumably, the first medical school in Islam was established in Antakya (Turkey), where Abdel-Malek el-Kanani worked, by order of Caliph Omar Ibn Abdel-Aziz.

Historically speaking, the foundation of Baghdad is considered to be the cause of the decline and fall of the school of Jundisapur. This is because the practitioners of this school had left their country for Baghdad (the Capital of the Abbasid Caliphate); which soon became replete with such old master. As these masters spoke Greek, the books they brought to Baghdad had to be translated into Arabic. These books soon became part of the educational curricula of the schools and councils of Baghdad.

The first such school in Baghdad was set up in Haroun Al-Rashid's Hospital. It was also at that time that 'Bayt el-Hekmah' ('The House of Wisdom') was established. This was a new type of school, resembling our modern universities, in as much as it dealt with the various branches of theoretical and applied knowledge. The directorship of this 'university' was handed over from one master to another; the

first of whom was John Ibn Masuweh, and the most famous one was Hunayn Ibn Ishaq el-Ebadi. Another similar university, carrying the same name ('Bayt El-Hekmah') was also founded in Tunis during the reign of Ziyadat Allah al-Aghlabi; some of its masters were Ishaq Ibn-Umran el-Baghdadi and Ibn el-Jazzar al-Qairawani, besides others.

Although education was introduced into hospitals, the students of Medicine still frequented the physician's councils. Most of these students joined the educational councils at an early age; Ibn Sina was under twenty, Abu Bakr al-Razi was a little over thirty.

In order to qualify as a medical student, one had to come from a good family (belong to reputable ancestry), to be physically fit to be of good manners, to be patient, intelligent and religiously pious. He should be able to keep the Hippocratic oath. The theoretical study consisted mainly of reading text books and explaining its contents in order to illustrate the physiological and anatomical relationship between the form of a disease and its symptoms. The dominant factor in these educational councils was the method of raising questions and eliciting comments; that is, the students were teaching themselves, not being taught. Moreover, such councils were not only attended by students, but also attended by practising physicians, who came to the academic circles seeking to benefit from the experience of the old master.

This mixture of scholars attended the clinical meetings in hospitals and private clinics, as well as the house councils. It was common practice for students to study one text book with a certain master, then to go to a second master to study another text book. Thus, they would be instructed by a good number of masters, before their graduation.

At the beginning of their study, physicians were more interested in learning about the disease--symptoms than in learning about its causes or its theoretical implications. They did not care much about the physiology and anatomy of the body. That is why they paid more attention to the clinical sciences than to the basic sciences. This tendency lasted till the third century of Hijra, when physicians started to exercise some control on the theories and applications of Medicine. In the fifth century of Hijra, anatomy remained neglected for some time, until the chief physicians of that age became aware of it. It was then that Ibn Jami' el-Masri begged his patron Sultan Salah el-Deen el-Ayyubi to ask all instructors of Medicine to teach anatomy as a major subject, and to pay more attention to practical training in hospitals than to theoretical lessons. Students of Medicine were also asked not to resort to the brief medical notebooks that became popular at that time.

The clinical educational approach, employed by Abu Bakr al-Razi is regarded as a good representative of the approach generally employed at that time in all Islamic countries. The students used to stand in rows (headed by their senior colleagues), facing the patient's bed. They would start questioning and examining the patient. If they failed in making the correct diagnosis, the master would step in, in order to make clear what they did not grasp.

During the reign of Egyptian Mamluks, clinical education reached its zenith, almost resembling our contemporary practice.

Naturally, surgical sciences were very rarely taught, for lack of enough surgical operations. It is

highly probable, however, that the students used to accompany the army physicians to battle-fields to benefit from the surgical treatment of wounds. Such wars and battles never stopped all through the Islamic ages.

One of the traditional requirements for learning Medicine was to be knowledgeable in philosophy. Al-Razi asked junior physicians to study astronomy and figures. Al-Masri went to extremes by saying that a physician who did not study philosophy is a fake. Other great physicians, however, opposed the idea of mixing the two disciplines together, claiming that Medicine should be studied separately, as an applied (not theoretical) science.

The period of study might be long or short, depending on the temperament of the student and/or his instructor. In most cases, however, it did not exceed three years. Following this period, the student submitted a thesis in which he explained, and commented on one of the well-known text books.

As part of the Islamic heritage, there are some books dealing with physicians' exams. The oldest of these books is written by John Ibn Masuweh. Al-Razi, in another book (entitled "The Physician's Test"), emphasizes the importance of making anatomy one of the essential subjects of the exam; besides other subjects such as the history of ancient medicine, and the different schools of thought of the old physicians.

The chief physician, also, had the right to examine the prospective medical practitioners personally, when the need arose. The first ruler to stipulate that chemists should pass an examination was Caliph al-Ma'mum; the first to make the same stipulation for physicians was Caliph al-Muktader Bi-Allah.

We only have to add here that the method of learning Medicine through raising questions and eliciting explanations and comments is a useful academic one. We also like to refer to the fact that the rank of 'instructor' was a Muslim invention, as was the idea of a 'thesis'. We sincerely hope that some of these traditions would be revived.

RUFIDA AL-ASALMIA

(First Nurse in Islam)

Suad Hussein,
Kuwait

Saad al-Aslamy was such a prominent healer among his people of Yethreb in Arabia. He was the healer, the priest and the aphorism sayer and his fame reached all the peninsula. His daughter Rufida worked as his assistant. She helped him and learned all his methods in healing and nursing. Rufida was a very tender girl and her kindness and patience helped in soothing her patients' pain and suffering. Her soul was reaching for noble inspirations.

As soon as Rufida heard about the great prophet in Mecca preaching a new religion to worship one God, Creator of earth and heavens, the way to happiness on this earth and in the after world, after listening to some verses from the Holy Quran, she went to the prophet's messenger in Yathreb and became a Moslem.

Islam and its teachings made Rufida more kind and more tender. She worked very hard in nursing and treating moslems. She organized a team of moslem women and young girls to train and teach them the art of nursing the wounded and the weak. She encouraged girls and women to learn and by this she was following the prophet's instructions concerning proper education and care of girls.

Rufida established the first Arabic Nursing School in Islam.

When Jihad (Holy War) started, Rufida asked the Prophet's permission to join the army with a team of trained nurses. She organized the first aid equipment and they carried together with them drinking water and other services.

They participated in the Battle of Badr and played a great role in nursing the wounded and distributing drinking water among them. Rufida returned to Yathreb, i.e. al-Madina with the victorious army and fixed a huge tent which became the first clinic in Islam. She spent all her time working very hard, devoting her knowledge, time and life experience for public service. She succeeded in destroying supersitions.

During the Battle of "Uhod", she organized and distributed duties among her colleagues such as, umme Emara, Umima, Umme Aymen, Safia, Umme Saleem, Hind and many other volunteers. During the battle their work was planned and organized and their duty fulfilled.

Rufida participated as well in the Battle of al-Ahzab. She spotted "Saad bin Muaz" the leader of al-Ansar with an arrow in his chest. She hurried to him but the bleeding was too profuse, so she kept the arrow in its place for fear of aggravating bleeding. She stayed with him till the victorious battle came to an end, then she took the wounded hero, upon his request, to join the prophet in his prayer at Beni--Quriza, meanwhile soothing him kindly till he died in peace.

Rufida returned to al-Madina working hard in her tent near the Mosque. She devoted the rest of her life to the development and improvement of nursing. She succeeded in laying new rules and traditions as the basis of Better Nursing. Rufida refused any payment, on the contrary, she used to help patients in need.

Rufida bint Saad al-Alamy was the first nurse and the founder of the first Nursing School and Clinic in Islam.

She laid down the first code of Nursing Rules and ethics in the world. This was 14 centuries ago and she is still a symbol of noble deeds and self-denial.

Twelve centuries later came Florence Nightingale who followed her footsteps.

INVENTORY OF MEDICINAL PLANTS USED IN THE TRADITIONAL ARABIC MEDICINE

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We propose with this work to make a catalogue of the medicinal plants which appear in Arabic text paring the therapeutic indications of each one of them mentioned by the various authors, classifying the drugs according to their characteristics and medicinal use.

Afterwards there will be made a study on the permanence and transmission of the mentioned drugs and its survival throughout the time in the various European pharmacopoeias.

With this work we propose to make a catalogue of the medicinal plants which appear in Arabic texts of different authors, classifying the drugs according to its properties and medicinal use; afterwards we will verify its survival in European pharmacopoeias.

There exist many writings on the subject of traditional Arabic drugs, however, to make a study which would verify the most employed drugs, it would be necessary to publish and translate all pharmacopoeias and treatises on lateria medica preserved at the present time. Until now only a small part of these works have been published and translated, although the immense majority are at present in manuscripts, thus unedited.

This is a work which has been carried through by the Department of History of Pharmacy of Granada, and at the moment they are translating works such as: the *Minhāŷ al-dukkān* of Kūhīn al-ᶜAttār; *Kitāb al-Dukkān* of Ibn ᶜAbd l-Rab bi-hi[1]; *Glossary on the Mansūrī of Rāzī* of Ibn al-Hassa[2]; *Index of medicinal substances mentioned in Kitāb al-Kulliyyāt of* Averooes[3], etc.

For our labour we have used five writings: *al-Dustūr al-bīmāristānī fi l-adwiya al-murakkaba* of Ibn Abi al-Bayān; *Kitāb al-ŷamīᶜ fī l-ašriba wa-l-ma ᶜāŷīn* of Avenzoar; *Šarh asmā' al-ᶜUqqār* of Maimonides; *Tuhfat al-ahbāb* and *Kitāb al-agdiya al-mufrada* of Ibn al-Baytār.

Al-Dustur al-bīmāristānī or Formulary of the Hospitals[4], is a work of Ibn *Abi l-Bayan*, a Jewish physician born at Cairo in 1161 and died in 1240[5].

This treatise contains twelve chapters, and referring to its contents we can say that it is a very complete formulary, in which appear great number of recipes for many diseases. It is a practical for-

mulary, exclusively designed for general hospitals. The number of included diseases is two hundred and thirty, and the number of drugs and adjuvant products is six hundred and seven.

The writing is basically meant to cure diseases, by means of using remedies mostly original from the vegetal kingdom, al-though from the mineral and animal kingdoms, too.

It includes one hundred and seventy-five recipes, being most of them confected under the forms of syrups, electuaries, ointments, pills, powders, etc.

In the employment of the medicinal plants, in many occasions he has mentioned all its parts. He frequently has mentioned its root, and in other occasions, its seed, fruits, leaves, etc. Sometimes he also mentions its juice or its pulp.

The followed arrangement for the description of each compound is as follows: In the first place he indicates the usefulness and virtues of the medicine; afterwards he enumerates the several components and quantities to be used; and finally, the appropiate dose for each case and the way of administration.

Kitab al-ŷāmiᶜ fi l-asriba wa-l-ma ᶜāŷin [6], a work which was written up by way of complement to the *Kitāb al-Taysīr*[7] of Avenzoar[8], Sevillian physician born between 1091 and 1094 and died in the same city between 1161 and 1162.

The *Kitāb al-ŷāmiᶜ* is a theorical-practical medical pharmacopoeia; it contains a total of two hundred and thirty different medicaments. Eleven of them proceed from the mineral Kingdom, five are of animal origin and the rest are vegetal materials.

The author arranges the different Simples which are going to form part of each Compound, according to the quantities to be used of each one of them. In the first place appear those simples of which there are to be used three *ūqiyyas*, afterwards all of which there are to be used two of them, etc., always following a decreasing order.

We remark that one and the same drug can be used, employing its several parts root, seed, fruit, leaves, etc. The confection of each compound, i.e. syrup, electuary, pill, etc., has been minutely described, because as per the author, the physician has to know perfectly the preparation of medicines, in order to be able to elaborate them personally, when necessary [9].

The medicinal forms employed by the author are the following ones: syrups, electuaries, pills, theriacas, plasters, pomades, ointments, etc.

Šarh asmā' al-ᶜUqqār or Explanation of the Names of Drugs[10], a work of Maimonides, physician from Cordoba, born in 1135 and died at Cairo in 1204.

It is an alphabetically arranged glossary of Synonyms of medicinal drugs. The purpose of the author when he wrote this book, was not to describe the simple remedies, nor to discuss its employment, but to give the synonyms. For this reason he excluded from his list the better-known drugs and of course, those which only had one name.

Just like in other works on Synonyms, the four hundred and five items of Maimonides glossary of

drugs, are of changeable length; some of them only include three lines, whereas others occupy fifteen. The author generally gives as title of the item, the best-known name of a drug and the synonyms in Arabic, old Greek, Syriac, Persian, Berber and Spanish.

Tuhfat al-ahbāb or Glossary of Moroccan materia medical[11], an anonymous work of unknown date. Referring to the contents of this work, it is an alphabetical glossary of synonyms of medicinal plants and it consists of four hundred and sixty-two items of unequal length. It offers the synonyms in Berber and Spanish. The followed order in the alphabet is the Maghrebi. Generally it is a synonymous vocabulary probably extracted from a general treatise of Medicine; most of the mentioned plants, according to Renaud, are still sold to-day in many Moroccan bazars. He often quotes Dioscorides, but he does not mention the therapeutical usefulness of the drugs.

Kitāb al-ŷāmiᶜ li-mufradāt al-adwiya wa-l-agdiya or Compendium of Medicine and simple food--stuffs 12, a work of Ibn al-Baytar, physician from Malaga, born in 1197 and died at Damascus in 1248.

It is the best-known work of the Arabic Pharmacology, it offers an enormous collection of extracts, in which Ibn al-Baytār described more than 260 sources, and only in some occasions he uses his own words.

His approach is generally based on the fact that he indicates the synonyms of the several drugs and that he rectifies mistakes of his predecessors. Sometimes, Ibn al-Baytar was called a non-original compiler, although this judgement is not completely justified. The *Kitāb al-ŷāmiᶜ li-mufradāt al adwiya* at least has been realised with excellent professional knowledge. Among the mentioned works, the one which occupies the first place is Dioscorides Materia medica; it seems that he entirely transmits this work, although with some variations, as Ibn al-Baytār mentions the drugs by alphabetical order.

The collation of these five works has lead us to select in a first approximation, fifty drugs of vegetal origin which concur in these consulted glossaries and which we will offer at the end of our work. Of these drugs we will mention the common name, the scientific and the Arabic name. Although the number of coincident plants is superior to the one we offer, we have had to limit us to a determined number of them, due to the extent of our work. This fact has permitted us to know all drugs used by the Arabs and to know which were the best known in the Orient, Spain and North-Africa.

A very interesting point to study is to verify the frequency of repetition of the drugs, in order to see which are the most used ones. Of these five consulted repertories, we only have been able to do it in two of them, the *Kitāb al-ŷāmiᶜ* of Avenzoar and *al-Dustūr al-bīmaristānī* of Ibn Abī l-Bayān, since the others are glossaries as we have been able to see when we discussed them.

Having verified this section, we have come to the conclusion that Occident as much as Orient nearly always coincide in the number of frequency of repetition of each drug.

We have checked the used form of the several parts of each plant which appeared in the studied works, although the study has been exhaustive for each one of them, and we are obliged to offer some examples, only.

Fennel, used parts: seed, Juice

Pomegranate, used parts: flower, Juice, seed
Water-melon, used parts: seed, rind
Myrtle, used parts: flower, leaves
Violet, used parts: seed, flower
Cyperus, used parts: root, flower
Tamarisk, used parts: root, rind
Liquorice plant, used parts: stem, Juice, root
Caper bush, used parts: root, rind
Citron, used parts: rind
Stoechas, used parts: flower
Wild chamomile, used parts: flower
Water nymph, used parts: flower, seed
Scarlet mallow, used parts: rind, seed
Rose, used parts: flower, seed
Lily, used parts: flower, seed
Roman laurel, used parts: seed, leaves
Clover dodder, used parts: seed

Finally we have checked the survival of these drugs in Spanish pharmacopoeia, such as "Pharmacopeia Matritensis"[13], Pharmacopoea Hispana[14] and the "Farmacopea Espanola"[15], as reflected in the outline we offer. We are also preparing the review of other European pharmacopoeias.

The work we offer here logically is an advance of our further investigation.

This study has been oriented according to the accepted basis at the 31 world Assembly of Health, held in May 1978, tendentious to make an inventory of medicinal plants used in the traditional Medicines. Likewise there exists a hope to cover in a second phase, the available scientific data about the efficiency of the medicinal plats used in the classical Arabic Medicine and its derived products in the treatment of affections and concrete diseases.

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Account Of Selected Drugs And Its Survival In European pharmacopoeias

Common Name	Scientific Name	Arabic Name	Ph.M.	Ph.H.	F.E.
Pomegranate	Fruit of Punica granatum L.	رمّان		●	●
Saffron	sativus L.	زعفران	X	X	X
Cyperus	Cyperus longus L.	سعد		X	X
Aloe	Aloe vera L.	صبر			X
Tamarisk	Tamarix gallica L.	طرفاء			X
Jujube	Fruit of Zizyphus sativa Gaer.	عنّاب			X
Agrimony	Agrimonia Eupatoria L.	غافت	X	X	X
Venus's hair	Adiantum capillus-Veneris L.	كزبرة البئر	X	X	X
Rose	Rosa gallica L.	ورد		X	X
Fenugreek	Trigonella Foenum-graecum L.	حلبة			X
Long pepper	Piper longum L.	دار فلفل	X		X
Common ginger	Zingiber officinale Rosc.	زنجبيل		X	X
Common cinnamon	Cinnamomum Zeylanicum Nees.	سليخة		X	X
Spikenard	Nardus stricta L.	سنبل		X	X
Liquorice plant	Glycyrrhiza glabra L.	سوس		X	X
Lily	Lilium candidum L.	سوسن		X	X
Jasmine of poetry	Jasminum officinale L.	ياسمين		X	X
Common barley	Hordeum vulgare L.	شعير	X	X	X
Black cumin	Nigella sativa L.	شونيز	X		
Roman laurel	Laurus nobilis L.	غار		X	X
Pumpkin	Cucurbita pepo L.	قرع		X	X
Cubeb pepper	Piper cubeba L.	كباب	X		X
Caper bush	Capparis spinosa L.	كبر		X	X
Clover dodder	Cuscuta Epithymum Murr.	كشوث			X
Plantain	Plantago mayor L.	لسان الحمل	X		X
Sweet marjoram	Origanum Majorana L.	مرزنجوش	X	X	X
Myrtle	Myrtus communis L.	آس		X	X
Sabin	Juniperus sabina L.	أبهل	X		X
Citron	Citrus medica L.	أترج		X	X
Prune	Fruit of Prunus domestica L.	إجّاص			X
Assarabacca	Asarum europaeum L.	أسارون			X
Stoechas	Lavandula stoechas L.	أسطوخودس	X	X	X
Euphorbium gum-plant	Euphorbia officinarum L.	أفربيون	X	X	X
Absinthium	Artemisia absinthium L.	أفسنتين	X	X	X
Opium	Papaversomniferum L.	أفيون	X	X	X
Melilot	Melilotus officinalis Lam.	إكليل الملك	X	X	X
Anise	Pimpinella anisum L.	أنيسون		X	X
Chebulic myrobalan	Terminalia chebula Retz.	إهليلج كابلي	X		
Hara nut tree	Terminalia cetrina Roxb.	إهليلج أصفر	X		
Belleric myrobalan	Terminalia Bellerica Roxb.	إهليلج بليلج	X		
Wild chamomile	Matricaria chamomilla L.	بابونج	X	X	X
Venus's hair	Adiantum capillus-Veneris L.	برشاوشان	X	X	X
Melon	Cucumis Melo L.	بطيخ	X	X	X
Violet	Viola adorata L.	بنفسج		X	X
Tamarind	Fruit of Tamarindus indica L.	تمر هندي	X	X	X
Walnut	Fruit of Juglans regia L.	جوز			X
Wild mustard	Sinapis arvensis L.	خردل	X	X	X
Common cinnamon	Cinnamomum Zeylanicum Nees.	دار صيني		X	X
Fennel	Foeniculum vulgare Miller.	رازيانج	X	X	X
Water nymph	Nymphaea Lotus L.	نيلوفر	X		X

THE ROLE OF MEDIEVAL MOSLEM SCHOLARS IN THE HISTORY OF CUTANEOUS LEISHMANIASIS

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Leishmaniasis has been a subject of great interest to scientists in the past and at present. In addition to direct practical and medical aims, modern interest in *Leishmania* research arises from our eager and insistent quest to know more about host-parasite relationships in general and problems of cellular immunological reactions in particular.

In their recent 700-pages' bibliography of *Leishmania* and leishmanial diseases, Heynmann *et al.* (1980) have compiled about 12000 titles. The great and sincere efforts made to complete this huge compilation are quite obvious. Nevertheless, this monumental work has missed three works, in English, relevant to the historical approach of our present article'.

We found the papers by Elgood (1934) and Pringle (1957) particularly useful in our present discussion. We have done our best to see in the original the historical works to which these two authors had referred, but some of them have been so far quite inaccessible to us. Within these limitations we are presenting this analysis and discussion but we feel there is still much to be done. As a preliminary, we think it would be advisable to present the following very brief synopsis of the disease (Smyth, 1976, Al-Taqi, 1978 and Hommel, 1978).

SYNOPSIS OF THE DISEASE:

Leishmania is a genus of trypanosomatid haemoflagellates, a few species of which cause a number of diseases in man; some are cutaneous, some are muco-cutaneous, while others are visceral. We are here concerned with the cutaneous types, and only those caused by *L. tropica* in the Old World and commonly known as "Oriental sore". These cutaneous types are endemic or known in many regions in the wide geographical area extending from certain parts of India and China to South Eastern Russia, Asia Minor, and the southern regions of European contries in the Mediterranean Basin, as well as in Iran, Iraq, the Arabian Peninsula, the Gulf area, and various regions in Northern, Central and Western Africa.

Transmisssion is through a vector, some species of sandflies (genus *Phlebotomus),* or by various

direct-contact ways. In the site of inoculation, the parasites develop in reticulo-endothelial cells. After an incubation period of a few weeks or several months a nodule or papule appears that eventually develops into an ulcer of various shapes and sizes. This depends on many factors, the most important of which are the strain of parasite and dose of inoculum. The most important strains belong to two subspecies:

1. *L. tropica tropica (minor),* causing the 'urban' or 'dry' type.

2. *L. tropica major,* causing the 'rural' or 'wet' type.

At any case the ulcer eventually heals spontaneously within one year leaving a characteristic scar on a prominent part of the body: face, neck, hands, arms, legs, or feet. The ulcer, or scar, is often given a local name, such as 'Sore of Balkh', 'Sore of Baghdad', 'Sore of Sart', 'Sore of Aleppo', 'Armenian Sore', ... etc. Such features present to the historian of medicine an umatched chance for following the unmistakable description of the sore in old writings.

IS 'ORIENTAL SORE' MENTIONED IN THE BIBLE AND THE KORAN?

Pringle (1957) believes that the most ancient document of cutaneous leishmaniasis is 'the Ebers Papyrus', which dates back to the Early Dynastic period in Egypt, prior to 2000 B.C. According to Maspero (1910), 'there is here mention of a skin disease under the term 'Nile Pimple' which is a possible reference to Oriental Sore'. This assumption does not seem to be better founded than Pringle's suggestion that this was the skin disease that befell Egypt's Pharaoh and his people before Exodus, as mentioned in the Bible (Exodus ix: 10, 11). Pringle (1957) also suggested that the disease mentioned in the Book of Deuteronomy as the 'Botch of Egypt' (Deut. XXVIII, 27), among the punishments which would befall disobedient Israelites, appeared 'to be the same disease'.

We believe Pringle was tempted to adopt these views because of the names 'Nile Pimple' and 'Botch of Egypt' as this reminds one with how cutaneous leishmaniasis was given several such local names. Though we do not think that Divine miracles, as striking extraordinary happenings, are liable to scientific analysis, there are several reasons to reject Pringle's suggestion. Firstly, the disease mentioned was apparantly air-borne, while Oriental sore is not. Secondly, cutaneous leishmaniasis may have small rodents as reservoir hosts but does not 'naturally' infect larger mammals except the dog; thus it is not a normal disease of 'beasts'. Thirdly, cutaneous leishmaniasis is slow in its spreading, slow in its development, and is mostly represented by a limited number of ulcers; the ulcers are mostly not extensive, and the disease, as a whole, is not fatal or dreadful, and thus does not appear to be a prohibitive punishment. As a matter of fact, Pringle was quite aware of the last objection and he was of the opinion that the Botch of Egypt 'was far more deadly and terrifying than Oriental Sore which, in endemic areas, is tolerated with philosophical calm'. It is also of special interest to notice that what Moses sprinkled was ashes of the furnace, a material which is usually almost completely sterile. Perhaps this hint stresses the miraculous nature of the whole matter. It should also be mentioned that Pringle, as detailed later, believes that Oriental sore in the Middle East appears 'to have originated from an ancient focus in Central Asia.....'.

In the Koran there is nothing mentioned that suggests Oriental sore among the calamities that befell

the enemies of Moses.

> AND THEY SAID: WHATEVER PORTENT THOU BRINGEST WHERE-WITH TO BEWITCH US, WE SHALL NOT PUT FAITH IN THEE. SO WE SENT THEM THE FLOOD AND THE LOCUSTS AND THE VERMIN AND THE FROGS AND THE BLOOD - A SUCCESSION OF CLEAR SIGNS. BUT THEY WERE ARROGANT AND BECAME GUILTY'. (S.7:V, 132,133).

Only scabies was mentioned in some interpretations to be among the nine tokens given to Moses:

> AND VERILY WE GAVE UNTO MOSES NINE TOKENS, CLEAR PROOFS (OF ALLAH'S SOVEREIGNTY). DO BUT ASK THE CHILDREN OF ISRAEL HOW HE CAME UNTO THEM, THEN PHARAOH SAID UNTO HIM: LO! I DEEM THEE ONE BEWITCHED, O MOSES. (17: V.101).

Reading Pringle's suggestions one recalls what some early interpreters of the Koran (Ulamaa al--Tafseer) - and some modern ones, indeedthought about the way Abraha and his soldiers failed to conquer Mecca and destroy the Ka'bah, in the year of Prophet Mohammad's (ﷺ) birth . This Abyssinian ruler of al-Yaman took an elephant in his campaign to impress the Arabs and frighten them.

> 'HAST THOU NOT SEEN HOW THY LORD DEALT WITH THE OWNERS OF THE ELEPHANT? DID HE NOT BRING THEIR STRATEGEM TO NAUGHT, AND SEND AGAINST THEM SWARMS OF FLYING CREATURES, WHICH PELTED THEM WITH STONES OF BAKED CLAY, AND MADE THEM LIKE GREEN CROPS DEVOURED (BY CATTLE)?' (S. 105:VI-5).

Those interpreters of the Koran said that Abraha's soldiers retired in disorder because those 'flying creatures' infected them with smallpox and measles. Some suggest that those flying creatures were insects, and some still specify those insects as mosquitoes! However, such a far-fetched 'scientific' interpretation is rejected by many authors; many centuries ago, Ibn Al-Atheer strongly disapproved it in his famous book 'Al-Tareekh Al-Kamel' (='The Complete History'), stating that smallpox and measeles had ever been there in Mecca and had nothing to do with Abraha's campaign. (We may notice-in passing- that "chronic" confusion and mixing between smallpox and measles, a problem that was only settled by Abou Bakr al-Razi-Rhazes-in his well known book on the differential diagnosis of the two diseases).

ORIENTAL SORE IN WRITINGS OF MOSLEM SCHOLARS:

According to Elgood (1934) and Pringle (1957) nothing that can be recognized as Oriental Sore can be found in the legacy of ancient Mesopotamia, nor in later medical compilations made in the ancient teaching centres of Jundi Shapur and Baghdad. 'Al-Dakhirah', which was compiled by Thabit Ibn Qurrah as late as 1210 A.D., and which contains a very large section on skin diseases, includes no mention of this condition,.... (Pringle, 1957)[1] . This means that Oriental Sore was not endemic in Iraq and the Middle East in those days.

However, Elgood (1934) gave evidence that by that time Oriental Sore had become established further east. It was described from Balkh by Abu Mansur, Hassan bin Nuh al-Qamari al-Bukhari (died A.D. 991). Balkh was the centre of a province of ancient Khorrassan, nowadays a part of Russian Transcaspia that borders on Afghanistan. It was referred to as 'Balkh Sore'[2] by Abu Ali Ibn Sina (Avicenna) in his famous 'Qanun' of medicine. It was also recorded by the same name by Saiyid Ismail Ibn al-Hassan al-Jurjani from Balkh and Dihistan, near Jurjan. Al-Jurjani said that the people of Balkh named the lesion: 'Pasha-Gazidagi', that is 'mosquito-bite',[3] while the people of Dihistan called it 'Sakir', which Elgood (1934) thought was a copyist's error for 'Sakhik', "which means 'mosquito' or 'mosquito-bite"[4].

Oriental sore remained endemic in the same region in the early 15th century, whence it was referred to at that time by Mansur-bin-Mohammad bin Ahmed bin Yusef bin Faqih Ilyas. Shortly afterwards, there came the first reference to the disease in the Near East in 'Khulasat-al-Tajarib' written about A.D. 1500 by 'Baha-ud-Douleh bin Mir Oawam ad-Din Qasim Nurbaksh al-Razi' who stated that the disease was still endemic in Balkh and 'extremely common in Baghdad and for this reason some people call it the Baghdad Lozenge... It mostly attacks the poor... if the Sore remains untreated it will continue for one year'. (Elgood's translation). Elgood also stated that by this period, in mediaeval Iran, the Sore aquired another name: the 'Armenian Sore'. However the disease did not appear in towns of the central Iranian plateau until the 19th century; first appearing in Isphahan about 1830 and in Teheran about 1840.

EARLY RECORDS IN EUROPEAN WRITERS:

The history of a second important endemic centre, Aleppo and its neighbourhood, came in European writings in the 18th century. The first record (in English) was given by an English physician, Alex Russell (1756) who stated that Europeans used to call the disease 'Mal d'Aleppo' or 'Aleppo Evil', while the native called it 'Habat al-Sana' (=Botch of a Year). The natives differentiated between two types: a male type (more or less corresponding to the urban 'dry' form), and a female type (more or less corresponding to the rural 'wet' form), but they added a third type which they attributed to a bite of a 'millepede'. (We think this was more likely a chilopod centipede).

However, we are not going to follow the literature historically any further, as this brings us to the domain of the very extensive modern literature on the subject outside the scope and interest of the present work.

ORIENTAL SORE IN IBN SINA'S 'AL-QANUN':

Ibn Sina devoted his fourth 'book' of 'Al-Qanun' for 'diseases not related to a particular organ, and ornamentation'. This book falls into seven 'arts', each comprising several 'articles' consisting of a number of 'chapters'. What we think is Oriental Sore comes in the first chapter of the third article of the seventh art on 'ornamentation'[5]. This article deals with 'what affects the skin itself, and not its colour', while Oriental Sore is classified, in the first chapter of this article with certain skin diseases which Dr. M. Selim, the Chief Dermatologist in Kuwait, identified as various forms of eczematous dermatitis of different aetiologies. The disease is termed 'Al-Balhiya' in the copy of the Qanun available to us. For various reasons, we think this is a copyist's (or printer's) corruption of 'Al-Balkhiya'; the difference between the scripture of two words in Arabic is merely a single dot on one of the letters.

It is remarkable that Ibn Sina did not treat Oriental sore in various other apparently more proper sites of his book, such as the third 'art' on tumours and pustules, the third article of the fourth 'art' on ulcers and particularly in the chapter on difficulty healing ulcers, or in the fifth article on insects and spiders bites. It seems that Ibn Sina was not happy with including the group to which Oriental sore belongs in the art on 'Ornamentation', because he says as if he were apologizing that this was 'the tradition in most books'.

IBN-SINA AND THE AETIOLOGY OF THE DISEASE:

On describing the 'Balkhiya' Ibn Sina said that 'its cause is probably a bite like (that) of noxious mosquitoes....'. A critical review of the meaning of the Arabic word 'Ba'oud' (=mosquitoes)[6] in dictionaries and old relevant literary works, such as 'Hiat Al-Haya-wan Al-Kubra' (=The Greater Animal Life by al-Dameeri, and 'Aga-eb al-Makhluqat' (=Wonders of Creatures), indicates that the word may mean: small biting and flying insects, which is an appropriate general description for sandflies. Such conclusion is not, however, a far-fetched one, since the relation between the flies' bites, local itching and subsequent appearance of the papule in the same site, can be a matter of commonplace observation. The same idea was expressed in such names as 'Pasha-Gazidagi' and 'Sakir' or 'Sakhik' given to the disease by peoples of Balkh and Dihistan, as mentioned earlier. The exact incrimination of a particular vector, following stages of the parasite in it, and understanding its role in the transmission of the disease, are all something very different. The question was proved experimentally much later: in the third decade of the Twentieth Century and was firmly estalished only in 1942 (Smyth, 1976).

However, other false hypothesis about the aetiology of Oriental Sore were advanced by various people and at various times. Russell (1756) stated that the spreading of the disease in Aleppo, Antab, and the other villages on the banks of the rivers Sejour and Coick suggested its relation to water. Pococke (1765) was of the opinion that the water in Aleppo had 'a certain quality' which made 'strangers who drink from it, break out in blotches.....'. Buckingham (1827) stated that at Aleppo "this eruption or the worm which occasions it, is thought to be engendered by the water, and here (Orfah, north-east of Aleppo) it is conceived to be due to the air, vague means of accounting for what is imperfectly examined into, or unknown". Wenyon (1911) reported that people of Iraq made a relation between dates and the disease, and that it was thus also called the 'Date Mark', and they attributed it to eating dates or the prickles caused by the spiny tips of date leaves. Apparently the relation was only seasonal, involving the season of sandflies activities and other climate conditions favouring the transmission of the disease.

HISTORY OF THE GEOGRAPHICAL DISTRIBUTION OF THE DISEASE:

Views differ as to the evolution of the relation between Leishmania parasites, their original rodent hosts and insect vectors, and the gradual involvement of man in this cycle (Smyth, 1976 and Hommel, 1978), which is out of the scope of our present discussion, but we are going to point out briefly to one aspect of the problem. It is highly probable that Oriental Sore extended its distribution to the Middle East from an ancient focus in Central Asia, where the disease had been confined at first to its original rodent hosts and sandfly vector *Phlebotomus caucasicus.* Casual infections of man became later well-established when man of the steppes of Central Asia settled and congregated into towns, and that is how the foci of Jurjan and Balkh arose (Pringle, 1957).

Elgood (1934) was of the opinion that the disease was imported into Baghdad by the invading Mongol forces, who ravaged Khorrassan and Iran before proceeding to the sack of Baghdad. Pringle (1957), on the other hand, believes that the disease "may, as easily, have entered the district by a natural extension southwards from Anatolia, using succesive pockets of the disease as 'stepping-stones' ".

We only want to point out that venturing to present such alternative hypothesis for the history of the spreading of Oriental Sore would have been impossible if mediaeval moslem scholars had not kept for us such an authentic record for its regional distribution and other related remarks at times when scientific practice and writing was completely monopolized by them.

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1. We could not trace this book among works related to Ibn Qurrah (or his sons). Moreover, the date of Ibn Qurrah's death is usually given as 901 A.D., and not 1210 A.D., as mentioned by Pringle.
2. As will be mentioned later Ibn Sina called the lesion: "Al-Balhiya", or rather "Al-Balkhiya".
3. Dr. AMEEN ABD-AL-MAGEED BADAWI, former Professor of Persian Literature, Ain Shams University-Cairo, confirmed this interpretation, and added that nowadays people of Iran call the lesion: "Salak" and the person having such a lesion "Salaki". (Personal communication).
4. Dr. BADAWI could not trace either word in dictionaries of the Persian Langugage.
5. This peculiar term used by Ibn Sina can be well understood when we know that the articles of this «art» deal with hair, skin colour, skin diseases, general body weight, appendages and nails.
6. In old literary works such names are not used in their present technical "systematic" sense. Moreover, different usages in the various Arabic local dialects should also be considered.

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SURGICAL TECHNIQUES OF ABUL QUASIM AL-ZAHRAWI*

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Mr. Chairman, Your Excellencies, Distinguished Scholars, ladies and gentlemen,

First of all I take this opportunity to congratulate the organizers of the First International Congress on Islamic Medicine. I think this is a right step and a step in the direction of the demand of the time and simultaneously I take this oppurtunity to thank the organizers who provided me an opportunity to be here today.

In fact I am at a dead loss as where to start and where to end. Speaking on a man, a great surgeon, whom I would call the Father of surgery, by a small man like me in a short time of fifteen minutes, before a house of distinguished scholars, seems to be an impossible task. However, I will try my best to do justice.(Can I have the first slide.) First of all, this is the man about whom we are going to talk, Abul Qasim al-Zahravi, and this is about a thousand years back. I may make a confession here, that I have nothint to do with the history of medicine or surgery. I am a practical surgeon, I practise surgery and my interest to the history or the history of surgery of Muslims goes because I am a Muslim, and I thought it better to look at it when looking back at the history of surgery. Certain fantastic revelations came and now this paper is based on the part of the study which is being conducted in Karachi in collaboration with the Hamdard Foundation. This is a preliminary work it is not complete and certain portions of it have been included to form this paper.

The source of this knowledge and this paper is the book of Abul Qasim al-Zahravi, that is *al-Tasrif.* This book is written in 30 volumes and the last one of it deals with the surgery and this last volume that is the 30th volume is one fifth of the total work and this work is again divided into 3 portions. The first one deals with Cauterization and it has got 56 chapters. The second one deals with incisions, perforations, wounds and the healing of the wounds and it has got 93 chapters. And the last one deals with the bone-setting and the joints and that has got 36 chapters. The idea of doing this is that you can have some idea that how magnanimous the book should be in volumes and it took about 40 years to compile this work. I have given a list of all the chapters which have been dealt with by Abul Qasim al-Zahravi in my paper, and this is only to say that almost all the fields of surgery. I am just talking about surgery and not medicine. That almost all the fields of surgery have been covered up by this great man and if you take this list of the chapters hich have been described by him and try to convert them

*We are very sorry that it was not possible to get a copy of Dr. Baquai's paper. This is a transcript from the tape recorded at the conferece.

Editors

into the modern terminology, you will find that gynaecology, obstetrics, neurosurgery orthopaedics, urology and general surgery, all chapters have been covered. What I am trying to say, what the purpose of this paper is that we are taking up the works which were done by Abul Qasim al-Zahravi and simultaneously comparing them with the modern practice and coming to the conclusion, that what he said a thousand years ago is what we are talking of today. If they stand on the same standards, if we can prove them, the point will be proved that the foundation of surgery was laid by the great Arab Muslim Surgeon Abul Qasim al-Zahravi. This is the purpose of this paper.

Now, I take up the proper subject. First of all I would like to talk about the Anatomy. First of all I could like to take up the subject of Anatomy. Most of us here are doctors and we know that in modern days, the curriculum of the medical schools and colleges in the Ist year and 2nd year, the basic subject taught is anatomy. Even when we go for post-graduate education in surgery the foundation is laid by anatomy, and Abul Qasim al-Zahravi in his books on surgery starts from this very fact and he comes out catagorically that he who does not know anatomy, has no right to practise surgery. He said that very clearly. Then he goes to describe why he says. So, you should know how many limbs are there, how many joints are there and how the thigh joints are joined, where the tendons are rising from the arteries and the brain. He describes every thing and he lays down the principles of the surgery a thousand years ago that the anatomy should form the basis of surgery. And this is proved today. Whether you give it the name of modern surgery, whether you give it the name of Islamic medicine or whether you give it the name of teaching of Abul Qasim al-Zahravi, but the fact remains a fact. Second point which I will emphasize about Abul Qasim al-Zahravi is that he was a total surgeon. By total surgeon I mean that a surgeon who can deal with each and every kind of problem. Till recently in our part of the world at least in our Pakistan and even in England, I can say that the surgeon used to be a total surgeon, a surgeon who would be able to do an operation in throat, a surgeon would be able to perform neurosurgery, he would be able to deal with a fracture he would be able to deal with general surgery. The age of super specialization has only come recently. I think around 1950 the era has come that Ear-Nose-Throat surgeons have come up, the gyneocologists have come up, the pediatrics have developed so much that pediatric surgery has come up, but till the late fifties they were practising surgery of a total nature. We used to be total surgeons and Abul Qasim al-Zahravi in that respect was a total surgeon. As you would see from these books and the chapters which he has dealt with, if he can write and compile 36 chapters on bone and joints, I can very easily classify him as a total surgeon.

Now, after these true facts I check up as I said in the beginning the surgical techniques of Abul Qasim al-Zahravi. What I have done and what we are doing in that original thesis and research that we are carrying out that we have combined the modern surgical practice and, according to the chapters of Abul Qasim al-Zahravi, select certain operations, which are being performed and put them side by side, Abul Qasim al-Zahravi was performing surgery in this fashion and we are performing a particular operation in this fashion, to check how much is the similarity between them. Is the present-day operation being performed on the same principle as Abul Qasim or there is some change. I admit a fact that certain advancement has taken place because of advancement in anaesthesiology. The anaesthesia has improved surgery but basic principle remains the same. In this as I could not take up all the surgical procedures in one sitting I collected some of them and the selection has been based on the complicated ones. The one which one may not like to do today and one which perhaps will leave it for the specialists

and that I will like to describe with the help of some slides.

(Slide) - You see, this is an operation which has been performed in cur hospital it is called tracheostomy. This operation is performed wheree you open the wind pipe and the patient breathes through here, an artificial passage is made, now you will be interested to know that when I talked to certain of the people, even to my colleagues that this operation was performed by Abul Qasim al-Zahravi they would not believe. He also came to know of it in a sort of an accidental or incidental way. He went to see a girl, who had tried to commit suicide and cut her throat and he found that the air was coming from the passage and thinking that perhaps she would die, he just dressed the wound about the bleeding points and left. Two days later he came to know that the girl was still alive, and then he discovered that this was a vzry useful operation. He conducted this operation as an elective procedure in certain operations which are performed in the mouth and throat, and he mentioned that because of these operations the bleeding takes place and the blood goes into the trachea and lungs and the patient chokes to death. So, he said if we perform this operation as an elective procedure we would save myny lives in this pattern.

Now, again after his teachings, because the teachings did not reach, the operation was not taken up so well, except as an emergency measure. In my school days I was taught this operation to be performed as an emergency measure till 1960 when I read a paper on the Recent Advancement in Surgery. The paper was from Canada and the man said that this operation should be performed by an elective procedure for major operations; and this is really surprising that if a thing comes from some one from Western Society, he advocates it and we accept it whole-heartedly and instead of looking back and see what has already been done before. So much so for this operation of tracheostomy.

(Slide) - This is, these days a very good adjascent and aided operations in major surgery on the mouth and throat and sometime we do administer the anaesthesia through this tracheostomy.

(Slide) - Now I take up one invention of Abul Qasim al-Zahravi, which even the Western Society has accepted.

So, I was mentioning that I am going to take up some of the inventions ot Abul Qasim. In total they are 11 which have been accepted by the Western world as purely of Abul Qasim's and one of them is the syringe. Shown in this slide is the modern syringe, a plastic one, which is supplied to us as sterlized and packed.

(Slide) - This is the syringe which we use for bladder irrigation. This is again a syringe used for E.N.T. and bladder for syringing.

(Slide) - And now this is the one used by Abul Qasim al-Zahravi. You can see the shape of it, this picture has been taken from the Wellcome Foundation's Works by Pink and Lewis on the instruments of surgery of Abul Qasim al-Zahravi. The picture is by Huntington and this one of the same by Marsh and in this you will see the shape of the syringe.

He actually used it for the bladder irrigation. There is a beautiful chapter written by Abul Qasim al-Zahravi. (on the extraction of the stones from the bladder and the irrigation of the bladder, and you see in the middle a picture on which much attention has not been paid, but I have got yet another

slide in which we have a modern syringe in which this portion is of rubber and you squeeze the rubber to irrigate the bladder and Abul Qasim al-Zahravi here used the skin of a camel to make it. And this is the original syringe. The modern syringe is the evolution of Abul Qasim al-Zahravi's syringe.

Dealing with the making of the tools he has mentioned about steel, they were using, I imagine two types of steel one Indian and the other was Danish.

(Slide) - Now this is a photograph taken at our hospital of a man who has broken his fingers, and these have been bandaged in the style of Abul Qasim al-Zahravi. You see, in modern age there are lots of papers written on the treatment of the fractures of the fingers, people have invented splints, plaster are used, curved splints, straight splints all sorts of things. Abul Qasim al-Zahravi wrote on this that you put the hand in the position of rest what he used to do was to use cotton wool, put here in the hand, bring the hand by the breast and bandage it, and in the same way I have been treating my patients. This is the standard procedure, described in the modern books, without any mention of Abul Qasim al-Zahravi, but this is the procedure, this is the teaching of Abul Qasim al-Zahravi. We have been following it and this hand has been bandaged in the style of Abul Qasim al-Zahravi. Because of the shortage of time I could not put up another slide, these, I would have shown you how a very good result was obtained from it.

(Slide) - Now, I was talking that we could very easily call Abul Qasim as an orthopaedic surgeon, because of his writing and the things which he has written about the fractures and dislocations and he had dealt with the controversial subjects like recurrent dislocation of the shoulder joints. Recurrent dislocation of the shoulder joint has been a sort of controversial subject. So many operations for this have been described and he has dealt with this one as well, and this is his device, which he had been using to immobilize the shoulder joint. This is in a patient, the same thing as tying the (A-O) splint of the modern age. In A-O splint you have something like this and you go here and the bandage it. It is exactly the same as you can see, in the picture, this hand goes like this and this portion comes in the shoulder and one limb of it comes here and it is tied.

(Slide) - This has been taken to demonstrate the chapter of Abul Qasim al-Zahravi, on Cauterisation and about 56 chapters have been described on cauterisation and at that age he has tried to treat each and every patient with cauterization and this patient we treated on the techniques of Abul Qasim al--Zahravi. This is a patient who presented a case of coendyloma and I am sure if I would have treated this patient otherwise, what I mean, using the knife and tried to cut it, the patient would have had hell of bleeding, so I used the Cautery and I did not use the modern electric cautery, I used tha back-dated cautery which I will show you in a minute and with that cautery we got the best of results. I have the slide of thase results as well. (*Will you please show it?*) This is the same patient the slide shows the extent of it that how it goes and we tried to cut here, we would have got a lot of bleeding and perhaps some hazardous thing would have happened.

(Slide) - This is the first stage after the operation, you will see that it has been burnt with cautery the side has shrunk and in four sittings this thing disappeared completely.

(Slide) - Again the same slide to show how it was burnt and the size has been reducing and we had to make four sittings.

Now as I said that I have selected certain complicated surgical cases to demonstrate, that Abul Qasim al-Zahravi was aware of a lot of things. This is a child with an imperforate anus.

(Slide) - The subject itself demands a full time sutdy, the technique used, and the modern technique, how is it done? What diagnostic procedures we have today, and that man without any diagnostic aid how he treated these cases.

(Slide) - I was talking about the inventions and discoveries of Abul Quasim al-Zahravi, This is the modern form of gut supplied in these sterlized packings. Even the Western surgeons have accepted that Abul Qasim al-Zahravi was the first man to use the animal gut for suture purposes. I have not been able to find yet any picture of it in what form he was using it and I believe that he used to make the gut himself.

(Slide) - This is again an interesting illustration. As in the beginning I took the subject of gynaecology and obstetrics and surprisingly if you refer to his chapter on gynaecology you will find him as a gynaecologist practicising gynaecology in most modern form. This is the type of vaginal speculum which he used. These are the tools, here and they are threaded, they are the blades which go in the vagina and they were used to open out vigina for examination.

(Slide) - Now again this is another form of vaginal speculum which Abul Qasim al-Zahravi made but he did not use it much as he laid emphasis on the other one.

(Side) - These are the instruments which the gynaecologist of this age, (those who are present here would pardon me) would not like to use, in fact nobody would like to use them, but they had been very good as life saving medias. These are the instruments, which were used to crush the head of the foetus once it is dead in the uterus.

Slide: - On he same gynaecological aspect, these are some of the instuments which he used and they are the hooks to pull out the foetus.

Slide: - Now, they are to cut the head and parts of the featus in the case the featus is dead. If you give me two minutes I would like to mention that after Abul Qasim al-Zahravi's period till the period of Chamberlain these things went into disrepute. They were not in disrepute, people were scared of using them till Chamberlain came, he says that quite a number of deaths would have taken place because they were not prepared to sacrifice the life of a child, the mother would also be lost in the case of prolonged labour in case of distress. The time has come when you have in modern days lots of ways to do the ceascarion operations etc. but at that time he had to take a decision in this direction.

Slide: - This shows a sort of vaginal speculum

Slide:- Now, this is the basic form of cauterization., I want to tell you that here the probe is heated with a spirit lamp and this is used on bleeding pipe to cauterize. I am proud of saying that I still use it. I have definite indication of this in case of circumcision. There is a point you cannot stitch, there is a point you cannot do anything and we touch with this probe (that bleeding point) and the result is very satisfactory. He had many of these probes which he used as cautery.

(Slide)- These are the modern scissors.

(Slide)- Now again, same points to illustrate the complicated problems. One of the complicated problems is the hare-lip. I never thought that Abul Qasim al-Zahravi would be the man to deal with this problem because I dare not touch the case of hare-lip myself, but *by jove!* he has been doing these operations and he had his own techniques! He was using the surgical cautery. You see what he would do is he would take a fine probe cautery, cut it from here and cut it from there and let them heal by contraction and the result would be very satisfactory. The shape may be different may not be so cosmetic but at least the gap was filled.

(Slide): - Now, this slide is again about some other inventions of Abul Qasim al-Zahrawi One of the eleven which, I mentioned is the gelatine of for the tonsils. This the modern gelatine.

(Slide)- Showing the catgut.

Slide:- Now this the modern plasteer, plaster of paris which is used for fractures and again it has been accepted that the first person to use plaster was Abul Qasim al-Zahrawi He had his own formula, he would take a simple bandage and on that simple bandage he would pour the paste, which consisted of some opaque white powder.

(Slide)- Another slide showing the same.

This is the silk which we have supplied today and again he was using cotton threads for suturing and as is described in his chapter on abdominal wounds.

Al-right, I would close now. I have taken a lot of your time and in the end I would like to say only this that I tried my best to demonstrate with the help of slides and my own experiments that the foundations of the modern surgery were laid hundreds of years ago by this great Muslim Arab Surgeon Abul Qasim al-Zahravi.

COMMENTS

AND

DISCUSSIONS

Dr. Ahmed Shawky Al-Fangari.

I would like to talk in English, because I am talking to Dr. Farid about his very impressive lecture. There are things which were not known before to us and we got much benefit of it and I would like to gain from his presence here in Kuwait because when I tried to immitate the instruments whichwere made by and illustrated in the book of Zahravi; I took the pictures from the book and then we went to the College of Technology and we made the same instruments as they are illustrated in the books but we were unable to discover the functions of every instrument. Some of them were unknown to us, and we have been going to the Orthopaedic section and to other sections in order to know the functions, of the instruments. So, we hope that Dr. Farid would be of great help and since they are displayed here in our Exhibition. This is one point. Dr. Farid has talked only about Zahravi. I know that this quarter of an hour, 15 minutes only and he had to concentrate, but I hope that he could have mentioned some of the others Surgeons as well. Something else also is, that I read in The Qanun of Ibn-Sine about the surgery of the nerves, and he says that if the nerve is cut longitudinally, then you have to pack it. He was describing the surgery of the nerves, which nobody knows now that the Arabs and Muslims, have been dealing with the surgery of nerves, even in some cases in order to avoid amputations.Dr Farid said also about the extraction of the foetus and the distruction of the skull was the only way because the caesarian section was not known to the Muslim surgeons and I have pictures and we have them in the museum here about (Khalsaria), which was a Caesarian operation, done by muslim surgeons. Last thing about the History of Islamic Medicine and when it was recorded and when it started it was not in Abbasi times only but as I know that the Caliph Umar Bin Abdul Aziz had in his own library one translated book from Jalinoos. He brought the muslim doctors and asked them to benefit from this book and he donated it to the Islamic Library. I am very thankful to Dr. Farid for his nice lecture.

Dr. Farid ud din Baquai

Well on my part I can only say thatI have been veryoverwhelmed by the remarks of the Chairman and the kind speaker, and on my part I can offer anything which I can do in this cause. Regarding one point mentioned by the honourable speaker about the ceasarian section, since I was talking about the dead fetus and did not take this topic and infact, must say that they were so aware of the ceasarian section that on a dead fetus they would not like to perform the ceasarian. I am not a gynaecologist, but learned a little bit from this. In fact I came here to learn what the people are doing in the cause of Islam and Islamic Medicine and we thought that this is one thing in which we have to make a new history. Thank you very much.

Dr. Ata-ur-Rehman.

We have heard some very interesting lectures today about the great contributions made by various Muslim scientists, scholars, surgeons and they should inspire us to plan for the future. I said a little

bit of this yesterday and I am saying some more today again. If the great Ibn-Sina or Abul Quasim or Razi, if these great scholars were alive today and we asked them how shall we proceed; they would not want us to simply make monuments to the past. That Kuwait Center of Islamic Medicine, that you are planning here , appears to be really to be a monument to the past. A certain amount of money, of course must be spent on studying the History of Islamic Medicine and finding out what contributions have been made in the past but the main emphasis must be to plan for the future. The need of the hour is that we make the greatest laboratories, the greatest research institutes, the greatest libraries over here in the Islamic World. We, in the Arab countries are blessed by The Almighty Allah in, that we have money but money has conferred upon us not simply wealth, it has conferred upon us a great deal of responsibility. This oil will last you about thirty or forty years and then history will look back at this period, historians will look back at this period and ask what did they do? Did they really make full use of it? Did they simply invested by buying turnkey projects and setting up? Every thing; you just have to look around here, the floor we stand on, it comes from Europe, the lights come from Europe, the air we breath, the airconditioners we use are made in Europe. So, it is a state of total paralysis that prevails, and so money has with it as I said, a great degree of responsibility. Responsibility to the future and what I would plead with all due respect at this Conference, that before this Conference ends, the people in the Ministry of Kuwait here in collaboration with other Islamic countries should set up a body which would plan for the construction of research Institutes in the fields of pharmacology, in the fields of chemistry, in the fields of theoretical and applied physics and in the fields of electronics, in the whole vast area of sciences, so that these thirty or forty years that you are blessed with this commodity of oil and wealth is not just simply wasted in for running Western industries, but it is utilized in making us completely self-sufficient and self-relient for the future. I have said it with all due respect. There was no intention of causing any anguish or pain. I am most thankful that you have invited us here, but I really wish to emphasize the needs for proper constructive planning for the future and not simply just creating monuments to the past. Thank you.

Dr. Ali Akbar.

Again, I am one of the one-hundred millions from Indonesia. Our conditions are different from your conditions, because we have been ruled by Dutch. So, I had to learn Dutch, but now we try to learn English and also like to try to learn Arabic. Thus two languages we do not master yet. So, it is difficult for us to understand Arabic and English, but we shall try to do that. You see we are here for these two days and I tell you that in these two days my knowledge about the Islamic Medicine has increased very much because we don't have intellectual literature about the Islamic Medicine in our language. We only have Dutch literature. Some one said one word and I remember that when I was in my Junior School, he said that Mohammed is a king driver. This I cannot forget. But now the time has changed. We know about the progress made by the Muslim doctors in the past, but what we are looking for is the literature. We can beg this. We ask for your help. Again I appeal to you to help us in the East, Far East where hundreds of Muslims are waiting for this co-operation to set up there research in Islamic Medicine.

Part Four: *Achievements of Islamic Medicine.*

CHAPTER TWO

(Some selected papers - Not presented)

1. ISLAMIC LEGACY TO MODERN SURGERY
   Dr. Ahmad Abdul Hai and Mr. Syed Wasim Ahmed
2. THE LARYNX AND ITS DISEASES IN ISLAMIC MEDICINE.
   Dr. Moustafa Ahmed Shehata.
3. TRAUMATIC SURGERY OF THE BRAIN IN THE HISTORY OF ARABIC MEDICINE.
   Dr. Abdul Kader Abdul Jabbar.
4. IBN AL-HAYTHAM ON EYE AND BRAIN, VISION AND PERCEPTION.
   Dr. Charles G. Gross.
5. ISLAMIC DISCIPLES AND DOCTORS IN DERMATOLOGY.
   Dr. Leslie Marquis.

ISLAMIC LEGACY TO MODERN SURGERY

Ahmad Abdul Hai and Syed Wasim Ahmed

India

Islam has made a very glorious contribution to the art of healing. The paper which follows deals with the Islamic legacy to modern surgery and is broadly divided into three parts:

(1) The Inspiration
(2) The Sources
(3) The Impact

THE INSPIRATION

The basic impetus and the inspiration for this Islamic medidine came from the Holy Quran and the Tradition which took medicine away from the realm of superstitions and fantasy, and gave it a rational footing.

Among the various fields of study, medical science occupies a position of eminence.

> HE WHO HAS RESTORED LIFE TO ONE MAN, SHALL BE ACCOUNTED AS IF HE HAS RESTORED LIFE TO ENTIRE HUMANITY . (S 5: V35)

THE SOURCES

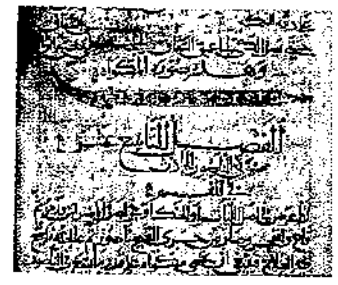
The glorious and phenomenal spread of Islam, since its inception in the early 7th century, has few parallels in human history. Within a short span of hundred years it flourished from the foot hills of the pyrenes at one end of the valley of the Indus on the other, encountering in its strides the greatest civilizations of that time.

The teaching of the ancient Greek thinkers, lay in darkness and decay. The Arabs not only preserved this treasure house of learning but translated it into their own language, making their own substantial and valuable contributions to it and transmitted this torch of knowledge to Europe which was gropping in the "dark ages". In the words of Sir William Oslar, "the medical profession reached among them (the Arabs), a position of dignity and importance, to which it is hard to find a parallel in history"[1].

The Greeks were by no means the sole contributors. Surgery in ancient India was greatly advanced in experimentation, rational consideration, innovation and utilization of instruments, a fact "that no doubt greatly influenced Arabic surgery"[2].

ABU BAKAR MOHAMMAD BIN ZAKARIA ar - RAZI
(856 - 925 AD)
(From "Medicine in Medivial India" By Jaggi O.P.)

ARAB SURGEONS STANDING NEAR FREDERICK II
OF HOHENSTAUFEN (1194 - 1250 AD)
(From "Studies in Arabic & Persian Medical Literature"
by Prof. (Dr.) M. Zubair Siddiqui)



CAUTERIZATION BY ISLAMIC SURGEONS
ON THE WRIST OF FREDERICK II.

ZAHRAVI EXAMINING A PATIENT IN A HOSPITAL AT CORDOVA.
(From "Studies in Arabic & Persian Medical Literature", by Prof. (Dr.)
M. Zubair Siddiqui)

(From "Al Hilal", Calcutta - India. 22 July, 1927)

The greatest medical minds of the time, from Persia, Iraq, Syria, Egypt, Spain and India, made their own marvelous contributions to this Islamic medicine giving it, a universal colour and establishing it from Cordova to Delhi.

The birth of Abu Bakr Mohammad Ibn Zakaria ar-Razi (856-925 A.D.) opened a new chapter in the history of Islamic medicine and surgery and heralded the onset of original Islamic thinking in this field. His book "Kitab Al-hawi fi-altibb"[3] is perhaps the "greatest medical work"[4], ever written by a medical scientist which deals with diseases from head to foot and also includes the basic sciences of physiology, anatomy and pharmacology.

For each disease ar-Razi cites the opinions of the ancient Greek, Persian, Indian and other authors and finally concludes with his own observations and experiences. Ar-Razi was, however, not a blind follower of his predecessors and his work, "Al-Shukook ala-Jalenoos" bear ample testimony to this fact. Al-Hawi and Al-Mansuri[5], were certainly the greatest medical and surgical works of their time.

Fifty years later another giant appeared in the scene in the person of Ali Ibnul Abbas Al-Majusi (D 994 A.D.). His work al-Maliki, remained the standard book on Islamic medicine for nearly a century. This book is in 20 volumes. The 2nd and 3rd volumes deal with Anatomy and 19th volume which is subdivided in 110 chapters deals with surgery[6].

By far the greatest surgeon of the Islamic world was Abul Qasim Ibn Abbas az-Zahrawi al-Undlusi (912-1013 A.D.). His monumental work "kitabet - Tasrif Lemen Ajza Anil Taleef"[7] was the standard text book of surgery not only in the Islamic world but also in Europe. It was translated into Latin in the 12th century and was "for some century, a standard, if not the standard authority on surgery in Europe" (Encyclopedia Britanica). According to Scott[8] Abul Casis was the originator of the modern surgery", while Guyde-Chauliac[9], the most celebrated surgeon of the 14th century, ranked Zahrawi with Hippocrate and Galen. Incidently, his book was the first illustrated text book of surgery ever published.

Sheikur Rais Abul Ali al-Hussain Ibn Abdullah Ibn Sina is another great name in Islamic medical history. The city of Bulkh (now in Afqhanistan) was the birth place (980 A.D.) of this most respectable medical scholar. His famous book Al-Qanoon Fi-Al-Tibb[10] even today reflects the genius of its author, who was not only a physician and a surgeon but also a master of philosophy, mathematics, logic, music and theology.. Its popularity and influence over the West can easily be judged by the fact that during the last 30 years of the 15th century, it was published sixteen times in Latin and Hebrew (Jaggi)[6],. Ibn Sina died in 1037 A.D. and with him Islamic Medicine and surgery reached its zenith. This continued till the 12th century and nearly 400 notable Islamic physicians and surgeons contributed to it, notable among them being Ibn Zuhr (1113-1162 A.D.) whose book, "at-Tayseer"[11] based essentially on observations and experimentation courageously differed from Galen and Ibn Sina. Ibn Zuhr was not only a theoretician but also a practising surgeon[12] and his teachings had a great impact not only in the East but also in Europe.

Ibn Rushd (1199-A.D.) who is known to the world today as a great philosopher was also a reputed physician and surgeon and a keen student of anatomy. The knowledge of human body according to him "demonstrated and strengthened faith in the greatness of the creator"[13].

The last great work on ancient Islamic Surgery was "Kitab ul Umda Fi Sinaat al Jarahah"[14], by Amin ud Dulla Abul Farj Ibn al Quff (1233 - 1286 A.D.). Besides being a noted surgeon Ibnul Quff was a renowned anatomist. His famous book consists of 20 Maqualas of which Maquala XVII is devoted entirely to traumatology and has 39 babs, while Maquala XIX spread over 34 babs, discusses the surgical problems and their treatment from head to foot.

THE IMPACT

How did this Islamic medicine reach the West? As early as 742 A.D. Haroon-al-Rashid sent a delegation to Charlemane, the Roman emperor, which besides other dignitories consisted of some renowned physicians of their time[17]. Contact between Europe and Islamic world was also established through trade, during the Crusades and the message was also carried to the west by the jews.

Every field of modern surgery today reflects its share of this glorious heritage of Islamic surgery.

1. General Surgery:

Bacteriology and wound infection.

Although, the full concept of bacteria as a cause of disease, was only established by the work of Pasteur and subsequently utilised by Lister, the ancient muslim scientists had some concepts in this regard. Ibn Khatima 15 as early as the beginning of 14th century, had made a mention of "minute bodies causing disease". About four centuries before him when the great ar-Razi was asked to select a site for a hospital at Baghdad, he carried out a very interesting experiment. Pieces of meat were hung at various sites of the city and when they were re-examined a few days later, the site where the meat showed the least putrifaction was selected for constructing the hospital building[16].

Control of haemorrhage

Haemorrage remains a basic problems of surgery even today. It is surprising that the modern methods have hardly added anything new to the techniques employed by the Muslim surgeons. The use of digital pressure, tourniquet, sponges, cauterisation, use of cold water (hypothermia), division of vessels when incompletely divided and ligation of the bleeding points by sutures of thread and other materials, have been mentioned in detail by Zahrawi. He also makes some reference of the disordered coagulation of blood and warns against the danger of tight bandaging.

Care of the wound

The suturing of wounds was being employed by many Islamic surgeons, Ibn Sina for the first time mentioned the use of dry dressing.

Drainage of abscess

"The Kitabu-at-Tasrif" mentions[7] in detail the drainage of abscess, the site and shape of incision, packing of wound, the excision of the skin edges, the significance of dependent and counter drainage and the use of slow gradual decompression of large cavities, especially during pregnancy and extremes of age.

2. Traumatology and Orthopaedics:

War surgery has been the most ancient training ground for surgeons and the Islamic surgeons were considered masters in this field. Nearly all of them mention in detail the penetrating war injuries and their management. The third book of "at-Tasrif"[7] completely covers bone and joint trauma and Maquala 17th of Ibnul Quff's "Kitabul Umda"[14] is entirely devoted to trauma of soft tissue, bones and injury caused by animals. The description and management of the wounds of the neck and tracheal injuries appears to be the original work of Zahrawi and finds no mention in the ancient literature.

In the field of Orthopaedic surgery, besides the usual problem of oesteomyelitis,amputation etc., Zahrawi discusses in detail the corrective osteotomies for mal-united fractures. According to Spink & Lewis, the orthopaedic instruments described by him, show a far greater varieties of saws, robes, osteotomes, respiratory, hammer, drill and scapper as compared to the ancients[17].

3. Urology

The Muslim surgeons greatly improved on the knowledge of genito urinary surgery handed over to them by the ancients. Although the mechanical pumps were known to the Greeks, it was used medically for the first time by Islamic surgeons, in the shape of syringes, especially for the irrigation of bladder.

Removal of massive bladder stones were a great surgical feat of those times. Zahrawi greatly solved the problem by introducing large forceps which could crush the stones and then removing the smaller pieces. He is thus the father of the modern lithotrites.

For impacted urethral stones, Zahrawi describes a novel and original method. A fine drill was introduced per urethra and when it came in contact with the stone it was rotated gently till the stone broke up into fine pieces and was washed out by the urine.

The use of bladder sound for locating vesical calculi, the problem of post operative haemorrhage and the importance of removal of clots from the bladder, have also been mentioned by Zahrawi.

4. Gastro-enterology:

Ibn Sina was perhaps the first to mention at great length the three varieties of icterus and is also credited for use of stomach tubes. Abdominal paracentesis for ascites and intra-peritoneal abscess, was also being practised by the Arab Moslem surgeons and they realised the danger associated with sudden abdominal decompression. Zahrawi when he speaks of ascites associated with hepato--splenomeqaly, is perhaps referring to advanced cases of portal hypertension, though his understanding of the problem is certainly different from our views of the problem today.

Tropical liver abscesses (Amoebic) are a problem with us even today. The use of trocar and cannula for their evacuation, has been mentioned by Zahrawi and the use of a heated cautery fo opening such an abscess, is certainly his original work.

The credit of first using the gut sutures, for the repair of intestine, goes to ar Razi[6]. While according to Harrison[18],, the first surgical use of catgut and cotton suture was done by Zahrawi himself, who also stressed the importance of sparate stitching of various layers for an abdominal wound.

The use of hot fomentation over the strangulated intestines, the problem of foecal fistulae and the bad prognosis associated with jejunal injuries were known to the Islamic surgeons.

Ibn Zuhr (1113-1162 A.D.) was the first to describe in detail the distinction between gastric ulcer and gastric malignancy. A large number of books were entirely devoted to the problem of colitis and its management by diet, drugs and enema. Ibn Sina's "Alqulanj Anwah - Wa Modawah"[19] is one such example.

5. Proctology:

Haemorrhoids were apparently a very major surgical problem of that time. A large number of books were devoted exclusively to this subject. Abu Imran Musa bin Maymun (1135-1204 A.D.), wrote a book on harmorrhoids "Fil Bawasir", which stresses the role of diet and the place of surgery in selective cases[19].

Md. Bin Mahmood Al-Qusum (C 1525 A.D.) wrote a book "Zad-al-Masir fil-elajul Bawasir", in the treatment of piles[19]. Ibnul Quff in his "Kutab-ul-Umda"[14] lays special stress on the complications of haemorrhoidectomy and post operative anal stricture. He also vaguely mentions portal pyaemia as one of the complications of the haemorrhoides.

Zahrawi who cautions against the late drainage of ischio rectal abscess is credited to be the originator of the cauterisation treatment of fistulae in ano. He also mentions its dangers including the danger of damaging intestine, bladder, major blood vessels, nerves and the internal sphincters leading to incontinence. The problem of recurrence following an incomplete excision, is also pointed out by him.

6. Plastic Surgery

The planning of surgical incisions, repair of the palate, ear, lip, nose and gynaecomastia, are mentioned by most Islamic surgeons. The cauterisation of warts, corns by heated metals and chemicals, have been in practice since ancient times. But the cauterisation treatment of hare-lip, with sharp edge of the cautery used for freshening the edges, and the subsequent cicatrization causing union of the two edges, was certainly a novel technique adopted for the first time by Zahrawi.

7. E.N.T. Surgery

The life-saving operation of tracheostomy was perhaps performed for the first time by Islamic surgeons. Tonsillectomy by the quillotine method is certainly Zahrawi's discovery - as is the special forceps and mouth gag for throat surgery, drawn exactly to size in al-Tasrif. The complications of tonsillectomy and tumours of the tonsills are also discussed. For nasal operation and polypectomy, Zahrawi describes special osteotomes and also mentions a funnel for installation of drugs. The first mention of a Marine-sponge with an attached string for removal of roreign bodies in the throat, is also

to his credit. Paracentesia of the ear and foreign bodies in the area are also discussed by him in detail. He also mentions the surgical removal of a ranula and there is also a description of a tumour massive recurrent naso-pharyngeal fibroma), successfully treated by repeated excisions and cauterisation.

The credit for establishing the relationship between a goitre and exophthalmos, goes to al-Jurjani (D 1136 A.D.)[20] . The doyan of American surgery, Halsted[21] has stated that the extirpation of the thyroid gland for goitre typifies "perhaps better than any operation, the supreme triumph of the surgeon's art". The first successful thyroidectomy on record was performed in 952 A.D. by Zahrawi the moorish city of Zahra[18].

8. Dentistry:

A large number of books have been produced by Muslim dental surgeons. The wiring of loose teeth, extraction of roots of broken teeth and pieces of mandible by special forceps, and artificial teeth from Ox's bone, had been practised by Zahrawi for the first time. The making of artificial teeth from bone has also been mentioned by Ibn-ul-Quff.

9. Ophthalmology:

Jurjani (5th century A.H.) also known as Zurrein Dust (the surgeon with the golden hand) was an accomplished ophthalmologist and his book "Nur-ul-Uyun"[22] is even today considered a masterpiece.

Zahrawi gives in detail the description of a large number of extra occular operations including some original instruments, like hooks, eye Speculum, conjunctival scissors for removal of panus which has also been dealt by Ali Ibn Issa Alkahal (C 350 A.H.) in his "Tazkeratul- Kahalein"[23].

The posterior displacement of the lens in cataract was known to the ancients, but Zahrawi describes newer techniques and instruments like perforators, depressing needles etc. Ar-Razi recommends the tearing of the capsule of the lens if it cannont be displaced, while Ibn-Sina describes the various types of needles for this purpose. Both ar-Razi and Zahrawi mention a procedure for operative decompression of the glaucoma which was being practised in Mesopotamia.

10 Obstetrics and Gynaecology:

"Kitabul Tadbir Alhabala" by al Baladi (C 380 A.H.)[24] is a complete discourse on midwifery, Zahrawi discusses normal and abnormal presentations and also describes the destructive operations along with the necessary instruments for the delivery of the dead foetus. His cephalotribe for crushing the massive head of a dead foetus and the various varieties of the vaginal speculum, deserve specific mentions.

11. Oncology:

Most Islamic surgeons have cautioned against the use of the knife for malignant growths. Both

Zahrawi and Ibn-Sina specifically mention that if a malignant tumour has to be removed it should be wide excisional surgery with a good margin of healthy tissue. The treatment of malignant tumours by drugs and cauterisation is also indicated.

12. Neuro surgery:

Both Zahrawi and Ibn-ul-Quff described in detail the various extra and intra cranial haemorrhages and head injuries inflicted by arrows. Although craniotomy is a very old operation, Zahrawi describes specific new instruments for this delicate procedure.

Unfortunately with time, surgery went into the hands of the uneducated who not only failed to sustain its growth but allowed it to decline and decay. Most Western medical historians also seem to have forgotton this splendid chapter of surgical heritage from Islamic medicine.

Let us hope, that Inshallah, the dawn of this 15th century A.H. will throw a new light on this glorious and universal legacy.

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THE LARYNX AND ITS DISEASES IN ISLAMIC MEDICINE

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The Larynx- a cartilaginous box- lying in front of the neck has an important role in respiration, speech and protection of the respiratory tract.

The early Islamic physicians shared greatly in the study of its anatomy and physiology and this facilitated the clinical examination and diagnosis of its diseases. Their named became related to many discoveries in the anatomy, functions and diseases of that organ. Hence the aim of this work is to reveal the great role played by Islamic medicine in the study of the larynx and its diseases.

INTRODUCTION

The larynx, attracted the attention of man since ancient times. Situated in the neck, moving in front of his eyes and being easily touched by the hands and well felt during respiration, swallowing and speech, made it an important organ for study through all the ages.

Its prominence in the upper part of the neck, made people correlate it with legends and mythologies, as they thought that when Adam-the father of all people-swallowed a piece of the apple in Paradise, it became impacted in his throat and appeared in front of his neck, and hence they called the laryngeal prominence "Adam's Apple". Strangely enough, this name is still mentioned in all text-books of anatomy up till the present date[1].

Because of the normal passage of air through the larynx and the sensation of suffocation occurring with obstruction and the interrupted short breath sounds (gasping) noted at the time of death, it is considerd the last stop in the exit of the out departing soul in a dying man. In the Quran, it is referred to

> WHEN THEY CAME AGAINST YOU, FROM ABOVE YOU, AND FROM BELOW YOU, AND WHEN YOUR SIGHT BECAME TROUBLED, AND YOUR HEARTS CAME EVEN TO YOUR LARYNGES FROM FEAR, AND YE IMAGINED OF God VARIOUS IMAGINATIONS[2] (S 33: V.10).

For its vital importance, it is the habit of man to strike it by the sword in fighting, or to grasp it forcibly when quarelling. Moreover in society, the sentence and penalty of death is affected by throttling or strangulation to end the life in a few seconds.

Medicine, during the Pharaonic period in Egypt was, to some degree, based on magic and myths, to the degree that they adopted a god of Medicine (Amhotep)[3]. This continued in Persian and Babylonian

medicine in the code of Hammurabi received from the Sun god[18]; and in the Greek medicine as Apollo - the god of cure[3]. All this definitely hindered the progressive movement of medicine towards reality and proper thinking.

Inspite of the old anatomical description of the larynx by Galen (130-201 A.D.), and Paulus Aegineta (625-690) A.D.)[3] Who were members in the old Alexandria school of medicine, it was completed by the moslem physicians. It was described in the 3rd century of Al-Hejra by Ibn Abi Thabet[4] and fully studied by Avicenna during the 4th century and then by Abulcasis and Avenzoar[6] in the 5th century of Al-Hejra and by many others. Moslem physicians considered human dissection a sinful act, but they perfected their anatomical knowledge by dissecting monkeys and goats and hence they corrected many anatomical mistakes of Galen and others.

With the advent of Islam, all rites and mythologies were forbidden, and an end put to all charlatanism in medicine. Mohammed ﷺ, the Apostle of God declared frankly

> "NO CORRUPTION BY ITSELF, NO PESSIMISM, NO BIRD OF DEATH CALLING FOR REVENGE FOR THE SLAIN, NO EVIL MONTHS AS SAFAR AND ADVISED FLEEING FROM THE LEPER AS FLEEING FROM THE LION" [7].

At the same time He called upon moslems to search for medication and cure saying

> "GOD LEFT NO BODY AILMENT WITHOUT PROVIDING ITS MEDICATION" 7.

Hence the Islamic medicine was freed from all restrictions and false ideas and flourished rapidly. This made (Nicholson) to say "Today's discoveries would be negligible as compared to what we owe to the Arab pioneers who were an enlighting guiding torch in the dark middle ages in Europe"[6]

ANATOMY AND FUNCTIONS OF THE LARYNX

Referring to the anatomical description of the larynx, written by Ibn Abi Thabet in his book entitled "Creation of Man"[4], one can find a good collection of scientific words and precise nomenclatures describing the structure of the mouth, nasopharynx, tongue, pharynx, larynx and oesophagus 4. All these terms were very beneficial to the Arabic translation of the foreign medical references. The descriptive anatomy of Avicenna was superior to all previous studies, where he gave the larynx, an accurate anatomical picture most similar to our recent knowledge. He described its cartilages, muscles and ligaments and at the same time mentioned the functions of every part during speech, respiration and deglutition, which is known nowadays as the science of physiology[5] (Fig.1).

Phonation as one of the important functions of the larynx received great attention by the moslem scientists. The Arabic linguist of Andalusia " Abo-el Hassan ben Ismail (Ibn Sidah)"[8], wrote detailed chapters on phonation of speech and singing. He described all their characters, degrees and types and gave excellent new classifications about voice rhythm, protracted intonation, humming, resonance, repetition, husky voice, melancholy voice and nice tones.

All these classifications are usually dealt with in the recent phonetic studies.

The studies written in the letters of "Safa Brothers"[9] about sounds, their degrees and characters,

can be considered the summit of purely scientific feat, as they defined the nature of sound, mechanism of its formations and propagation in air.

They also provided good studies of the singing tones and their degrees.

Al-Faraby, the great philosopher, who died in 339 of A.H.[10] ended his book "The Great Musician" by a detailed treatise on the sounds and their degrees, the spoken languages and their tones, which can be considered the basis of the modern science of phonetics and music.

EXAMINATION AND DIAGNOSIS:

Islamic medicine defined new specializations as the Internists, Surgeons, Dentists, Oculists, Physicians of Psychiatry, Orthopedists and Gynecologists[6] . No speciality for the Ear, Nose and Throat, as this appeared later on in Europe in the 19th century. So the moslem internists and surgeons were those caring for examination, diagnosis and treatment of laryngeal diseases.

They were very clever clinicians, with a high degree of accurate clinical observation, at a time where radiological, endoscopic and laboratory investigations were lacking. Moslem physicians as Rhases (850--1013), Tabari (770-850), Avicenna (980-1037) Abulcasis (936-1013) and Avinzoar (1092-1162) were all able to diagnose many diseases of the throat and larynx by mere clinical observation and by digital palpation. They used to pass the index finger into the mouth and pharynx, to palpate the laryngeal inlet and feel its structures and movements. By this method they were able to diagnose many troubles of these organs, even the rare diseases as paralysis of the vocal cords and the different types of tumours that may be found. This has been nicely described by Avinzoar in his book 'el Tayssir" [11] . A large treatise was specified by el-Tabari in his book "Fardouse el-Hekmah" [11] to describe diseases of the throat, larynx and chest. He wrote the clinical details of their diseases. Avicenna described diseases of the body organs and the larynx among them, in the third volume of his book "Al Canon". For the first time, he described stridor and its causes, and gave a detailed clinical account of its signs and symptoms beside the methods of treatment. He described the cough symptom, its origin and causes, and gave a detailed account of the sputum, sources and causes. All this constituted detailed medical knowledge which is still in use in medical teaching up till the present date [6].

TREATMENT OF LARYNGEAL DISEASES:

The moslem physicians discovered many drugs and described new preparations for the treatment of laryngeal diseases. All are derived from medicinal plants, mineral drugs and compound chemical preparations, which are still used up till now. In this respect they used drug inhalation, vapour humidification, gargles, paintings, poultices, hot and cold fomentations. Sometimes they used cauterisation, cupping and venesection in special conditions.

The most important drugs for laryngeal medication are best described in "el-Tassrif" by Abulcases, who specified the 18th treatise to describe the snuffs, drops, vapours and gargles, the 21st treatise for drugs of the mouth and throat and the 22nd treatise for cough and chest drugs [6].

SURGERY OF THE LARYNX

In the early Islamic period, physicians used to name surgery, the manual work and were not keen to perform it by themselves, but left it to the technicians who perform cautery, cupping and orthopaedics. With progress of Medicine, surgical performance also progressed and the famous physicians in Andalusia as Abulcasis and Avinzoar, during the 10th century, were able to practise surgery beside medicine. During that time, the Europeans were far away from that standard, and even after the propagation of sciences and experience from the East to the West, they were ignorant of surgical practice, to the degree that the School of Medicine at Montpelier in France, cancelled surgical studies and stopped its practice in the early 17th century [12]. During that time when the famous french doctor Lanveranque read "el-Tassrif Book" of Abulcasis, he was most surprised by his high experience and skill and declared that all french doctors are ignorant and no one is able to practice proper surgery [6].

To perform surgery, one should have some means to prevent the sensation of pain and in this respect the Moslem physicians discovered new agents for anaesthesia. They used opium, as an efficient narcotic and stopped the use of wine, which is prohibited by religion. They progressed a further step to discover new plants having general anaesthetic effect. They were the first to introduce to the world the general inhalation anaesthesia using the anaesthetic sponge. Avinzoar was able to prepare this type of anaesthesia by the use of some plants as Zoan, Opium, Mandraka and Hyoscyamus, dried and mixed with an aromatic material [3]. These are absorbed by a piece of sponge which is left to dry. At use the sponge is moistened and put on the patient's nose and mouth for inhalation. This was the first general inhalation anaesthesia, ever known to the world. It is so shameful that European doctors who picked out this method and later introduced the inhalation of anaesthetic gases as ether, chloroform and nitrous oxide referred that method to their doctors, Hickmann (1824), Long (1841) and Wells (1845) and celebrated their golden jubilee in 1896, and forgot completely to mention the Moslem pioneers and their role in discovery of inhalation general anaesthesia [13].

Before surgery, cleaning and sterilisation is essential. It is of great admiry that the Moslems discovered alcohol, and Rhases was the first to use it in wound cleaning and skin sterilization. The doctors who succeeded him, followed his technique and advice. The Moslem physicians used to heat their surgical instruments on fire, before any use, to assure its cleanliness and efficiency. By this, they were very close to discovery of the organisms [14], [15].

For tissue and wound suture, Rhases introduced for the first time the catgut, made of the intestine of sheep, which is in use all over the world up till now [6].

For performance of surgery, the moslem physicians devised and presented numerous instruments to suit all specialities. They wrote about all these instruments with diagrams and illustrations. Credit goes to Abulcasis and Avinzoar who devised many hundreds of these instruments, which were in use for many centuries after them [6].

Surgery of laryngeal obstruction (Stridor) was one of the greatest moslem peerformances. A serious fatal disease like this, took their utmost attention. Avicenna surprised the world of his invention of the metal endotracheal tube, which he used to make of gold or silver, introduced through the mouth, guided

by the index finger towards the larynx, through it into the trachea. By this method of intubation he was able to save suffocating patients and was the pioneer in this respect This method is still used with high success by the otolaryngologists to save suffocating patients and by the anaesthetists to facilitate inhalation of anaesthetic gases. The only modification added to this tube, is that it is now made of rubber or plastic instead of metal. Influenced by this miraculous invention, Profesor Sercer of Yugoslavia, a contemporary scientist said sincerely that Avicenna is one of the greatest physicians of all times, and that he, along with Abulcasis and Avinzoar, forms the great pyramid of Islamic medicine [16]. Strangely enough, the western doctors referred the performance of the first endotracheal intubation to their late physicians, Mac Ewen and Eisenmenger in 1847 [13].

Tracheostomy operation, which is the second alternative for the relief of laryngeal obstruction, and is one of the oldest known surgical operations performed by man in his fight against suffocation, was known for the first time by the ancient Egyptians [16], but it was later recorded by the Greek physician Asclepiades (124-56 B.C.). Aretaeus, who came later by a century (81-138 AD) wrote about the usefulness of this operation. Two more centuries were to pass before Antyllus (150 A.D.) gave a detailed account of the indications and technique of tracheostomy. As the operation was usually fatal, with serious post-operative complications it was considered a criminal act, and the physicians refrained from it.

Islam came and its culture began to assume its ascendancy. The moslem physicians took their proper place. Medical people set aside the text-books of Hippocrate, Galen and Paulus Aeginata, and took up the new high standard book of Abulcasis (El-Tassrif), in which he described in the 43rd chapter suffocation and its treatment by tracheostomy, with detailed accuracy 6. Avenzoar modified the technique and performance, as he used to practice it experimentally on goats and he proved for the first time that tracheal cartilages can heal perfectly after surgery. His book (El-Taysir) bacame the main reference for this operation. He is considered by all authors the nearest moslem physician to Hippocrate in his way of thinking and performance 6. After him the operation, took its proper place all over the world, by his technique and methods until the 18th century. Even after its modification, later on, it is still done nowadays on the same principles.

The medical history gave us a clear example for the efficiency of the moslem doctors, who were leaders in Medicine for more than five centuries, and propagated their culture and experience to Europe through their schools in Andalusia, Sicily and Palestine. The Americans who immigrated from Europe were less acquainted with the moslem culture and their medical experience, so when their first president George Washington suffered from laryngeal obstruction in December 14, 1799, the private doctor and those called urgently were unable to perform a tracheostomy operation or any other saving measure, and he died from asphyxia after 24 hours of his disease [17].

SUMMARY AND CONCLUSIONS:

The Islamic medicine is characterised by being based on personal experience and observation, away from charlatanism and legends. Hence it persisted up till now and formed the basis of many recent medical sciences.

Taking one organ of the human body, as the larynx, to show the participation of the moslem doctors

and their additions to the anatomy, functions, methods of examination and diagnosis of its diseases and their treatment, is a useful way to record the participation and additions of our ancestors to science, for the benefit of humanity.

If the other body organs were to receive the same amount of research and study, it can be expected to forward a large addition of knowledge, of the great role played by the Islamic medicine.

The new discoveries and additions of the moslem doctors concerning the larynx, its diseases and treatment are in need of great efforts and patience to collect and record them and to give the discoverers their due, and stop the assumption of the European doctors who deny the glory and fame of Islamic medicine.

Lastly, one can conclude by a word of truth, written by the European physician De Poure who declared that Medicine was absent till Hippocrate created, dead till Galen revived, dispersed till Rhases collected, deficient till Avicenna completed [6].

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TRAUMATIC SURGERY OF THE BRAIN IN THE HISTORY OF ARABIC MEDICINE

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Looking back in the books of Arabic History of Medicine, especially on the subject of trauma to the brain, one finds so many facts they achieved in those days that have become the basis of our knowledge of traumatic neurosurgery today.

They mentioned the fact that the fracture of the skull does not unite in the normal way like other bone fracture, but unite by fibrous tissue only and no callus is to be found. This is a fact holding until now. This proves that they must have dissected the human body after death to discover this fact. They also achieved to recognise oedema of the brain after exposure to trauma and its serious consequences that lead them to discover a way to deal with it, by producing a state of dehydration in the body by induction of diarrhoea, withholding fluid or venesecton if neccessary. They also described medical instruments to serve the surgery necessary to operate on the skull and the brain.

I will discuss in this paper some of the facts accummulated in the works of

Haly Abbas
Avicenna
Abul Casis
Bagdadi, and
Samarkandi

HALY ABBAS

Haly Abbas described several types of fractures. He mentioned the *simple* fracture where there was no displacement of the bone fragments, then described the *displaced* fracture where the fragments were displaced and then the *comminuted* fracture where the skull fractures in many places, also the *hair-line* fracture where there is fine disruption of the bone continuity. He mentioned that the danger of these fractures lie in the force which produced the injury as well as the amount of damage to the central nervous system.

He described the way to handle wounds of the skull after fracture, pointing out that a piece of cotton like gauze soaked in roses ointment applied gently on the wound and lightly bandaged to keep the gauze in place so as to avoid any further brain damage. He mentioned that the severity of swelling and oedema of soft tissue after fracture depended on the force of trauma and on the degree of bone fragments entering the brain material and its covering, as well as the way that the medical attendant handled the wound and fractures, he also mentioned that over-eating and exposure to cold could make the patients condition deteriorate.

AVICENNA

Avicenna noted the fact that fractures of the skull do not unite like other bones with callus formation but only with fibrous tissue.

a. He classified fractures of the skull into two types: *Closed fractures* where the fracture has not been accompanied by wounds and these types of fractures are serious because of oedema and haematoma inside the skull and these would lead to fever, rigor, loss of consciousness and in most cases need incision to drain the blood.

b. *Open fractures* where the skull fracture is accompanied by skin laceration and the seriousness of the case depends on the size of the wound and on the force of the injury, also on the signs and symptoms after the injury especially loss of speech and consciousness.

He also mentioned besides the open and closed fractures, the *hair-line fracture, simple fracture* and *displaced fracture.*

He described the treatment of skull fractures of all types especially the ones that require surgery for relieving pressure on the brain caused by haematoma or to remove pieces of bone that damage the brain or its membranes. For example he mentioned in detail an operation to remove pressure of bone fragments on the brain.

"If the skull bone is thin or weakened by fracture, remove it by bone chisel starting by the wide instrument first then the narrow ones, trying to be as gentle during hammering these chisels and if you find difficulty in doing so, start by drilling the skull by the non-penetrating drills that allow you to penetrate to only a slight depth".

He differed in the way that Gallen operated in that he used chisels that had a piece added to the end of the sharp edge, like a biconcave lense to protect the brain.

He described treatment of the local injury and wound as mentioned before then added to it the care and general condition of the patient, especially when oedema of the brain formed. So he prescribed to reduce the intake of food and in serious cases, venesection and giving laxatives to the patient if necessary.

ABUL CASIS

Abul Casis described in detail the signs and symptoms that resulted from the head injury and then

the way to explore the wound if necessary and pointed out the way that he could recognise the penetrating fracture from the non-penetrating ones by painting the fracture in black ink then rubbing the line produced, if it disappeared then no fracture, if it did not disappear, then there was a fracture.

He described in detail the operation necessary to deal with skull fractures, from the skin and hair, to minor details of instruments necessary for each step of the operation and in his book he drew a picture of each instrument.

BAGHDADI

Bagdadi described the classification of skull fractures and the importance of the treatment and prognosis. He also described the *hair-line, simple* and *comminuted* fractures and he also mentioned a type of skull fracture that occurs only in children, called the depressed fracture, when the bone becomes dented and sinks in with no apparent fracture due to bone softening like a silver or lead pot if it was hammered.

He described the condition of several patients after they recovered from surgery of the skull. Some patients had small fragments removed and some had large pieces, followed by a bulging meningocaele that would appear during squeezing or sneezing. In this way, he proved that surgery on the brain and skull was practised in his days contrary to the belief that the Arabs translated their surgery from the Greeks and never practiced it.

SAMARKANDI

Samarkandi describes the treatment of oedema of the brain after trauma to the skull, so he advised laxation to dehydrate the body, also venesection even using drastic methods as enema.

He describes the treatment of skull wounds to which he formulated an ointment that contained leaves of different trees and herbs, also the food for the patient after the fasting period i.e. the 3rd day, when the patient could start on chicken brain soup.

IBN AL-HAYTHAM ON EYE AND BRAIN, VISION AND PERCEPTION

Charles G. Gross

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Ibn Al-Haytham was the major figure in the study of optics and vision in the middle ages and his influence was pervasive for over 500 years. His original theory of vision is briefly outlined. Less wellknown are his insights into visual physiology and visual perception, some of which are described.

Ibn al-Haytham was the major figure in the science of optics and the study of vision between Classical civilization and the Renaissance. He was born in Basra in 965 and died in Cairo in 1040 and was later known in Europe as Alhazen[1]. His work represents the first major advance in optics after Euclid and Ptolemy of Alexandria and in visual physiology after Galen. We must wait until Kepler and Newton in the 17th and 18th Centuries for further fundamental understanding of the nature of light and until at least Helmholtz in the 19th Century for further advances in under-standing visual perception. For further progress on many of the perceptual and psychological questions considered by Ibn al-Haytham, we still have to wait. Like Leonardo, Ibn al-Haytham was a polymath, contributing to astronomy, mathematics, philosophy as well as a variety of other subjects. Unlike Leonardo, who had little or no impact on successive generations of scientists, Ibn al-Haytham's influence was pervasive and usually recognized well into the 19th and 18th Centuries. As a practising neurophysiologist and neuropsychologist of vision, I will concentrate on summarizing some of Ibn al-Haytham's major contributions to the physiology and psychology of vision. Before doing so, however, let me briefly describe the principal approaches to light and vision of the ancient world that provided the background for Ibn al-Haytham's work.

Euclid and Ptolemy held a extromission view of vision: vision was due to a stream of rays issuing from the eye and somehow apprehending objects.

Gelen had provided a very detailed description of the eye and the optic pathways that was hardly surpassed before Vesalius 2. Particularly crucial for Ibn al-Haytham's theory of vision, as we shall see, was Galen's view that the crystalline humor (our lens) was the sensitive or photoreceptive portion of the eye. Galen, however, had little interest in optics and accepted an intromission view.

In his great work *Kitab al Manazir* or Optics, Ibn al-Haytham carefully examined the extromission theories of his predecessors and systematically demolished each of them.

Against the extromission theory he writes, "The act of vision is not accomplished by means of rays

emitted from the visual organ".., rather, "vision is accomplished by rays coming from external objects and entering the visual organ[3]" . Essentially Ibn Al-Haytham took a new view of light, combined it with Ptolemian optics, Galenic anatomy and the results of his own extensive experiments and produced a plausible intromission view that lasted until Kepler.

As he put it, "from each point of every coloured body, illuminated by any light, issue light and colour along straight lines that can be drawn from that point[4] ". Following Galen, Ibn al-Haytham believed that the crystalline humor was the sensitive surface whose receipt of light was the first step of the visual processes[5] . But, if from every point of every object, light travelled to the crystalline humor, then those light rays would intermix and total confusion would result [6]. How could a point-to-point correspondence between the visual field and the crystalline humor, essential to Ibn al-Haytham's theory of vision, be maintained? Ibn al-Haytham postulated that only light rays orthogonal to the surface of the crystalline humor passed through it. The others were refracted and refracted rays were weaker and not perceived[7]. Thus, a topographically ordered point-to-point representation of the visual world entered the crystalline humor.

Ibn al-Haytham had used a camera obscura in his extensive optical experiments[8] and compared it to the eye[9]. (He seems to have been the first to do either). Thus, he realized that if the light rays orthogonal to the curved surface of the crystalline lens continued, they would project an inverted image on the back of the eye.

Since the notion of an inverted image was unacceptable, he postulated precisely the appropriate refraction at the interface between the crystalline humor and the vitreous humor so that the rays leaving the latter would be parallel. Thus, they would provide a right-side-up topographic representation of the visual world to the back of the eye (retina) which he viewed as an extention of the optic nerves [10] . Even after Kepler finally elucidated the formation of the retinal image, the problem of how an inverted image could yield vertical perception perplexed him and was not satisfactorily handled until Molyneux and Berkeley at the beginning of the 18th Century[11] .

Beyond the receipt of light by a sensitive surface (the crystalline humor for him), ibn al-Haytham realized that strictly optical consideraions were no longer required. He did stress, and correctly so, that the point-to-point representation had to be maintained and conveyed to the ultimum sensus in the anterior part of the brain[12] .

The importance of Ibn al-Haytham's idea of a point-to-point projection of the visual world into the brain cannot be over-emphasized. Indeed, it forms one of the bases of modern visual physiology[13].

Although the importance of Ibn al-Haytham's theory of vision and its pervasive influence for over half a millenium have been well recognized, there has been relatively little close examination of his original views on psychological processes in perception and their influence. Let me indicate some of his ideas in this area that deserve much more study and attention than they have yet received.

He was the first to recognize the crucial importance of eye movements for perception. It is only in recent years that it has been recognized that there is indeed no perception without eye movements and that eye movements are crucial to building up our consciousness of the visual world[14].

Ibn al-Haytham realized that the reception of light by the eye is only the very first step in perception. Beyond this passive process, active processes such as attention, comparison and memory are required before conscious visual experience occurs [15].

Partiuularly startling is his realization that a series of logical inferences must occur before sensation can be transformed by the brain into peception. He stressed that the speed of perception demands that these inferences themselves be imperceptible; that is, unconscious to the observer.

This is a clear adumbration of Helmholtz's theory of unconscious inference that played so major a role in the 19th Century and continues to pervade the modern study of vision [16]. It would be valuable to explore to what extent Helmholtz was aware of Ibn al-Haytham's ideas on the role of unconscious inference in perception. Helmholtz does cite Alhazen in other contexts, such as when reviewing previous explanations of the moon illusion [17]. Furthermore, Ibn al-Haytham's use of the time required for a perception has, in the last decade, become one of the principal methods for analyzing the "unconscious inferences" that underlie perception [18].

Among Ibn al-Haytham's other perceptual insignts was his understanding of the crucial role of visual contrast. For example, he realized the color of an object depends on the color of the surroundings [19] and that the brightness contrast provided an explanation of the invisibility of stars in the day time [20].

My main conclusion is that this remarkable man deserves much further study. Although Ibn al--Haytham's unique synthesis of physics, mathematics and physiology into a new theory of vision and its historical importance have been recognized, his insights into the psychology of perception and their influence remains an important and potentially fertile field of research.

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ISLAMIC DISCIPLES AND DOCTORS IN DERMATOLOGY

Leslie Marquis

India

INTRODUCTION

The skin is the outermost and largest organ of the body and has attracted man's attention since antiquity. The science of dermatology originated and developed as a speciality in Europe only from the 17th century. However, the art of healing is as old as man himself.

Many of our ancient physicians - disciples and doctors had no previous studies or instruments of diagnosis to help them and had to depend entirely on their powers of observations, intuition and experimentation; they meticulously described the morphological appearance of skin disorders.

In this presentation is emphasized the specific contributions and influence that scientists of Islam made particularly in the field of dermatology.

Chronological contributions of Islamic disciples and doctors in Dermatology:

Islamic medicine reached its Goldern Age from 750-850 A.D. and for five centuries Islamic Disciples and Doctors held aloft the torch of learning during the darkness and gloom of the Middle Ages when Europe was foundering in ignorance and barbarism[1].

The mytihical *jabir Ibn Hayyan* played a very influential if not conspicuous role as "*Father of Islamic Alchemy*". His books "Al Zibak al Sharki" - the oriental quick silver - "Al Kitab al Khalis" - the pure book and "Kitab al-Tadjammu" - the assembly book are famous. He is considered one of the first modern chemists for his discovery of acids - sulphuric acid, extraction of sodium carbons, potassium, arsenic and silver nitrates. He died in 815 AD.

Yuhanna ibn Masawayh (847) has written the earliest account of leprosy in his book *Kitab-fil-Judham*[2]. This work is apparently lost but it is frequently quoted by later Islamic workers[3]. Judham refers to lepromatous leprosy[4]. Baras was used to name Leprosy and appears to be equally old 3 - Baras means white or shiny and probably refers to leprosy in its early stages or in its tuberculoid form. Baras is the only disease specifically referred to in the Quran (Flugel ed. 3:43, 5:110) in these instances the Quran recounts Jesus cleansing of the lepers (Mathew 8:2-4, Luke 17:13-17) [5].

Ali Ibn Sahl Rabban At-Tabari (850) a student of Ibn Masawayh drew his medical ideas from his teacher as well as from the classical texts. At-Tabari's "Paradise of Wisdom" is one of the oldest surviving Islamic compendia of medicine[6]. Leprosy (Judham) was explained by at-Tabari as an excess of black bile that upset the body humors. It caused hair fall from the eyebrows and was called "the malady of the lion" da al-asad. Other symptoms included shrinking of the nails, absorption of the nose and deterioration of the fingers and toes. This appears clearly to be a description of lepromatous leprosy. At-Tabari stated that the disease affected the sperm and was invariably heriditary; it was also believed to be contagious like scabies and smallpox.

At-Tabari asserted that Leprosy was found mostly in the cold countries and resulted from corrupted air once contracted he scarcely recovered from the disease.

At-Tabari discussed Baras and a number of other skin disordered including scabies and eczema. He described the itch mite in the 7th chapter of his 10 vol, on Hippocratic treatise and describes and animacule that can be removed with the point of a needle. Though he seems to be describing the Acarus, he did not refer to it as the cause of scabies[7]. However, to St. Hildegard (1099-1179) is given the credit of this discovery. In her treatise "Physika" she labelled the itch mite as "snebelza"[8].

Al-Kindi (870) wrote a book entitled "The cause (disease) of Leprosy and its Remedies" according to Al-Nadim[9]; this treatise is apparently lost[10], but his medical formulary has survived and it recommends a number of treatments for leprosy[11]. He was the first to attempt an exact method of prescribing by geometrical progression.

Yuhanna Ibn Sarabiyun (Serapion) (873) wrote a text book on medicine[12]. He described the symptoms of lepromatous leprosy and attributed the disease to the liver which did not properly form the blood.

In the late 9th century *Thabit ibn Qurrah* (901) wrote on leprosy in his compendium of medicine[13] and devoted to it a separate chapter[14]. He advised people to abstain from intercourse with people who suffered from contagious diseases and heriditary diseases - leprosy was considered to be both. Chapter 23 of the compendium dealt with judham and white and black bahaq.

Al-Razi Abu Bakr Muhammad ibn Zakariya al Rai (865-926) Rhazes was the most original figure in Islamic medicine. The most esteemed of his works Al-Hawi[15] - 25 books was an encyclopedia of medicine - one section - the illustrative accounts of patients - case histories with their diagnosis - shows unmistakably the clinical acumen of the author. His most original work is his treatise on smallpox and measles. His description of the symptoms, findings and treatment of smallpox are similar to Osler.

Rhazes contributed the first known book on children's diseases. His treatise "A dissertation on the cause of coryza which occurs in the spring when the roses give forth their scent" is one of the earliest known descriptions of hay fever. Thus he initiated the concept of allergy as a cause of disease. He described guineaworm infestation which was prevalent at that time and stressed that the swellings were due to a parasite 16. He also described elphantiasis.

His book on "the art of Alchemy"[15] was discovered recently in Hyderabad. Today the works of

Rhazes generally are considered of somewhat greater significance than those of Avicenna because of Rhazes greater inventiveness and attention to observation.

Later in the 10th century, *Ibn Abil-Ash ath* (970) is reported to have written a treatise on baras and bahaq and their treatment but it has been lost[17]. The most important description of leprosy written in this period was that of *Al-Majusi Ali Ibn Al-Abbas* [18] known to Europe as *Haly Ben Abbas* (980) - in his *Kamil as-sina ah* at-tibbiyah[19] or Royal book. It was the first Islamic medical work translated into Latin and known as "Liber Regius" - translated in 1127. This book enjoyed great popularity in its day but its reputation was later dimmed by the appearance of Avicenna's Canon. His section on dermatology is of special interest. He described eczemas, scabies, miliaria rubra, miliaria alba, favus, pediculosis, seborrhoeic dermatifis, alopecia areata, lupus vlugaris, iliariasis, leprosy, smallpox, chickenpox, measles and erysipelas giving the differential diagnosis of each with appropriate treatment. This Royal Book of Haly Abbas represents for clarity of expression and originality of view point the best in Islamic medicine. In his book he gives an account of *Judham* with its causes and symptoms. Al-Majusi recommended the usual treatments and specified that lepers should be shelterd in places where the air is hot and moist. Richter allributes to al-Majusi a very precise knowledge of the disease[20].

Thus "The Royal Book" of Haly ben Abbas shows clearly that the knowledge of dermatology was well founded. Hence Haly ben Abbas may rightly be regarded as the "Father of Islamic Dermatology".

Abu Mansur Qumri a contemporary of Al-Majusi described leprosy in his *Kitab glina* wal-mana[21]. His pupil was the famous Ibn Sina. He was *"the Flower of Islamic Culture and Learning"*. Le Clere wrote - Avicenna is *"an intellectual phenomenon"* and Osler referred to him as *"one of the greatest names in the history of medicine"*.

His 100 odd books are overshadowed by his "Great Canon" (Al-Qanun) - the most famous medical text book ever written and was a virtual "medical Bible", for a longer period than any other work (Osler). 500 years after it was written the Canon was a required text book at the University of Vienna.

His description of leprosy in the Qanun fil-tibb is extensive and more detailed descriptions were given about skin disorders than Al-Majusi, however the causes, symptoms and treatments are very similar[22].

In his Canon of Medicine - 7th Feni is a meticulous consideration of cosmetics. His contributions on the study of cosmetics thus show that Avicenna may be regarded as the *"Father of Islamic Cosmetology"*.

In Cordoba, *Abul-Qasim az-Zahrawi* (1009) wrote an important text book Kitab at-tasrif which contained a lengthy discussion on leprosy[23]. He was known in Latin Europe as Abul-cases - *"the greatest surgeon of Islam"*. He made a significant contribution by describing, for the first time apparently, the neurological symptoms of leprosy.

In the medical literature of the Middle East the loss of sensation caused by leprosy was noticed by Ibn al-Quff (1286)[24] it is unclear whether this observation was taken from the work of az-Zahrawi or another medical text or his personal experience.

Ibn Abil-Ala Zuhr[25] (1162) Avenzoar was then the greatest clinician and eminent physician. His chief work *Theisir* was a treatise of clinical medicine. He states that experience and not speculation should guide the physician. He describes methods of preparing medicine and diets. He was long accorded with Hildegard the distinction of first describing the itch mite of scabies and naming it "soab". However, later investigations have shown that al-Tabari described the itch mite in the 10th century in his Hippocratic Treatise.

His student Ibn Rushd (1126-1195) *(Averroes)* was a physician - philosopher. In his medical work "Kitab al-Tibb" - "General rules of medicine" - he makes the interesting observation on smallpox that this disease attacks the patient only once. He was described as the Avicenna of the Western Caliphate.

Averroes famous pupil - Musa Ibn Maimun known to posterity as "Maimonides" (1135-1208) was more a philosopher. He was the court physician to Sultan Saladin (Cairo). He greatly influenced European Medicine, quakery, superstition and mysticism in the practice of medicine were severely condemned by him.

Najib-al-din al Samarquandi[26] (1222) wrote the wel known Kitab al-Asbab wal a lamat (causes and symptoms of diseases). According to Samarquandi, leucoderma is more of less incurable when it is chronic.

The oldest information concerning Leucoderma - vitiligo comes from what is written about Pharonoic medicine in the Ebers Papyrus [27] where two types of diseases affecting colour of skin are described.

The use of Ammi majus for the treatment of vitiligo in Egypt dates back to the days of Ibn El Bitar of the 13th century [28]. The plant was mentioned in his book "Mofradat al adwiya" under the name of Astrillal which is a Berberian word meaning bird foot. It is known in Egypt by the names "Regl el Ghorab", "Gazar el Shytan" and "El Khella el Shytani". It was called "Ammi» by Galen and in the times of Charles the Great was named "Ameum" [29]. This plant has white flowers and its fruits were used in the treatment of vitiligo. The usefulness of this drug was first known by a Berberian tribe named "Ben Shoeib" in North-Western Africa. This tribe used to sell the drug to vitiligo sufferers but kept its nature secret.

Ibn el-Bitar (1248) used the drug either alone or admixed with other plants. The mode of administration was as follows: one *derhum* (3-12 grams) of powdered seeds with one quarter of derhum of pellitory root mixed with honey and given as a linctus. The patient then sits in strong sunshine with the affected parts of the body exposed for 1-2 hours till sweating occurs. He mentioned that the diseased patches react, developing blisters, while the healthy skin remained unaffected. The blisters ruptures and healed and the diseased areas changed to normal colour, especially if the disease was on the fleshy areas which respond more easily than nonfleshy areas. Thus Ibn el-Bitar skilfully made the observation that vitiligo patches over bony prominences were more resistant to treatment. He added that he had successfully used the drug several times, but the effects varied in patients, some responded to the 1st and 2nd dose, others needed more than 2 doses. The patients had to continue the drug and expose to sunlight till he was cured.

Thus the modern treatment of photochemotherapy of vitiligo is essentially derived from the use of

these psoralens and sunlight which as early as the 13th century Ibn el-Bitar propounded.

DISCUSSION

These Islamic physicians took accurate, painstaking histories of patients, and laid great stress on examination. By their classic description they saw describably entities and differentiated them by logic and reasoning. They created for dermatology the basis of "physical diagnosis". Clinical medicine has advanced and still does advance by the meticulous study of the patient. It is easy to see their analytical mastery of detail.

Their knowledge of drugs was extensive far exceeding their European contemporaries and they added many more drugs and chemicals to the physicians armamentorium. In Islamic medicine it is often said that Rhazes was the peer clinician in history and Avicenna one of the universal genituses history has ever known, whose only rival was Leonardo-da-vinci.

CONCLUSION

The purpose of looking back chronologically on the achievement of the Islamic disciples and doctors in dermatology is mainly to[30-31]

1. memorialize human achievement and to remind us that the growing world is seen through human eyes and felt through human touch.
2. pay tributes to their mastery - the distinction of standing head and shoulders above, which in the hey-day of the average is still an inspiring picture.
3. this study brings out the process of building a medical speciality - particularly a speciality like dermatology.

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Part Four: *Achievements of Islamic Medicine*
— Some desciples of Islamic Medicine

CHAPTER THREE

(Some Selected papers— not presented)

1. CONTRIBUTION OF THE ISLAMIC-SPANISH SURGEON ABULCASIS TO NEUROSURGERY.
   Dr. J.M. Izquirdo, Dr. J.m. Coca
   Dr. Diaz de Tuesta, Dr.F. San Emeterio
   and Dr. J. Tejada.

2. AL-HAJJ PASHA JALAL AL-DIN HIDIR B. ALI
   Dr. Serafeddin Golcuk.

CONTRIBUTION OF THE ISLAMIC-SPANISH SURGEON ABULCASIS TO NEUROSURGERY

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INTRODUCTION

Abulcasis was, doubtless, one of the great Islamic surgeons and probably the most influential in the development of craniocerabral surgery during the whole of the Middle Ages. He was born probably about the year 936[1]. The date of his death is better known and has been fixed in the year 1013; he enjoyed then a long life as he probably lived more than seventy years.

All his experience and knowledge is compiled in his 'Treatise', which is composed of thirty books and divided into two main parts: medical and surgical. The latter is also divided into three sections, the last of which is devoted to neurosurgical pathology, particularly the head injuries, skull fractures and the use and functions of drills.

This Treatise was translated into several languages and hence its influence. About one and a half centuries after its first publication, Gerardo de Cremona translated it into Latin and one century later Sem Tob into Hebrew. After several years, it was also translated into Provenzal.

In the Renaissance the Latin editions appeared; first in Venice (1497 and 1519) and after that in Strasbourg (1532), Basle (1541) again Strasburg (1594)[2] and Oxford (1778)[3].

Its influence spread then all over Western Europe. Recent excellent studies about the Treatise and its author have been made by Leclere[4,5], Tabanelli[6,7] Gurlt[8], Cruz Hernandez[9], Samelli[10] and particularly by Schipperges[11-18] and Garcia Ballester[19].

In this paper, we shall try to analyze the contributions that affect just as much the concept and essence of Neurosurgery itself, as the technique and progress of this speciality.

ANALYSIS:

The contributions of Abulcasis to Neurosurgery can be classified in two main groups: general or scientific contributions and technical contributions.

I — Scientific General Contributions:

1) Abulcasis collects the neurosurgical knowledge anterior to him and basing himself on this know-

ledge he was able to build a new tupe of surgery, more scientific for being based on anatomy and more modern for being enriched with technical contribution.

For all these reasons, Abulcasis begain his Treatise explaining his intentions of clarifying and classifying all the previous knowledge and of renewing surgery itself.

2) Abulcasis is the first surgeon who laid the base of a scientific neurosurgery by feeling, teaching and spreading his belief that the surgeon must know perfectly the anatomy of the region he is going to operate on.

3) Abulcasis described masterfully the fractures of the skull and their prognosis and a particular type of depressed fracture called nowadays "ping-pong ball depressed fracture" realizing that this curious kind of injury happens more to children.

4) Another general and important contribution of Abulcasis is his conception of pain, understood not as an illness itself, but just as a symptom, and therefore he recommended the etiological treatment of pain, when possible.

5) His ideas about the treatment of wounds deserve special mention. For this he recommended cleanliness, much more wisely than most of his contemporaries who wrongly treated them with the most useless and sometimes harmful remedies.

II — Technical Contributions:

1) He described a device which prevents the accidental penetration of the drill inside the cranial cavity. It consists of a piece of metal, wider than the hole made by the drill, which acts as a stopper preventing the perforation of the dura and the brain.

2) He described and performed craniectomy in the same way as we do it nowadays, that is to say, through several burr-holes with a linking cut between them, allowing one to raise a part of the skull vault.

3) In the depressed fractures he recommended the removal of the fragments of bone, which is undoubtedly the best treatment and the one we use nowadays.

4) Very interesting and original is his advice about instruments. He recommended that the surgical instruments should always be ready to be used in emergencies.

We should also emphasize that Abulcases performed many of his operations under anaesthesia, by means of opium and mandragora.

DISCUSSION

According to a Professor of the University of Granada, Garcia Ballester, "Abulcasis was doubtless the greatest of the medieval muslim surgeons and the starting point of the authentic cranial surgery in Spain and in the Western European countries". There is no exaggeration in this affirmation, if we consider carefully the contributions of Abulcasis.

It is very probable that some of these contributions were not entirely invented by him, but the whole thing does not tarnish the deep originality of Abulcasis in all his scientific work and in most of his technical contributions, because though some of the latter had been previously described, Abulcasis studied, collected an analyzed them and what is more important, he performed them by himself, being able, therefore, to evaluate the surgical indications, the technical performances and the results.

The influence of the scientific thought and technical discoveries of Abulcasis was immense. Suffice it to say that his ideas about the necessity of knowing the anatomy of the region to be operated on constitute the base and the essence of modern surgery as well as of the teaching of this science.

This immense influence was possible because of the School of translators of Toledo, which spread Abulcasis' writings all over Europe. They were there translated into Latin and then made known and explained in the early European Universities such as Paris and Montpellier in France, Oxford and Cambridge in England, Bolonia and Padova in Italy, Salamanca and Valladolid in Spain and some others in wich the School of translators of Toledo had a great influence.

In the neurosurgical field, even nowadays we use the "nonpenetrating" drill, the removal of fragments of bone as the best treatment for comminuted skull fractures and the type of craniectomy described by Abulcasis. His advice about knowing anatomy, the cleanness of the wounds, the readiness of the instruments at any time, and the usefulness of anaesthesia do not need further comment. His contribution has been then decisive in the development of the Surgery in general and Neurosurgery in particular.

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AL-HAJJ PASHA JALAL AI-DIN HAIDER Bin ALI

Serafeddin Golcuk
Turkey

His life, His works, espacially the ones on Medicine-Kitab al-Shifa al-Askam, Kitab al-Taalim, Kitab al-Saada V'al-Iqbal.

LIFE

His real name is Haider bin Ali al-Hattab al-Ma'ruf bin Hajj Pasha also known as Gelal al-Din Haider bin Huaca Ali al-Konavi. Because of this last name, it is said that he is from Konya but in his book Kitab al-Shifa al-Askam which is his own manuscript, he uses the name Haidir bin Ali Aydini. So the fact that he is from Aydin is more possible. Haider bin Ali has become famous with the name 'Hajj Pasha'.

EDUCATION

Haider bin Ali went to Egypt for education. While he was studying theology there, he became ill and changed the subject of his study. He studied the science of religion and began to study medicine. He was appointed to Kalaun Hospital as the chief director in Egypt. Then he returned to his own country. He worked for Isa bin Mehmed, the ruler of Aydin. He had been in Birgi and Ayasuluk[1].

He had works as hajj Pasha. He died in Birgi in 820/1417. His grave is in Birgi. On his monument in Birgi it is written that he was a Turkish Physician and that his works were translated into European languages. On this monument it is also suggested that he was from Birgi.

HIS WORKS

The works of Hajj Pasha are divided into two parts:

A. Ones which are about commentary on the Quran, Sophism, Logic and discussion.

1. A commentary *(sharh)* on *Risala fi adab al-Bahs* of Shams Al Din Muhammad b. Ashraf al-Samarkandi.

2. A commentary (*sharh*) on *Tavali al-Anvar* an interpretation of Kadi Baydavi (685/1286) Selimaga Library.

3. A commentary *(sharh)* on *Al-Anvar al-Kulub,* a mystical work of Al-Jili (484/1100).

B. Ones on Medicine:

His most important work on medicine is Shifa al-Askam va dava al-alam which is written in honour of Isa b.Mehmed, the ruler of Aydin. He wrote this book in 782/1381. One manuscript of this book by himself is at III Ahmed Library of Topkapi Palace with the number 2070. Also there are its copies at Ibrahim Pasha Library, (number 933) and Konya Library, (number 6358). Moreover, there are its copies in Egypt and India[2].

I saw the copy of *Shifa al-Askam* at Topkapi Palace. Al-Hajj Pasha wrote this copy for the ruler Isa in Ayasuluk, Seljuk. He followed the way of Galenos and Ibn Sina but he added his own experiences and observations to his book. The clearness and definiteness of the knowledge it contains and refraining from the details forms the most evident property of this work.

Shifa al-Askam is formed of four articles. In the first article we find the general theoretical and practical knowledge. The definition of medicine, the organs of body, the definition of health, the types and parts, causes and symptoms of diseases, all studies in this article.

The second article contains vegetable and animal food and drink and the simple and compound medicine. All drugs are ordered alphabetically in this article.

The third article gives information about the organic diseases from head to foot and the causes, the symptoms and the treatment of these disease.

The fourth article deals with the diseases of the whole body. The causes, the symptoms, the medicine, the food and the drink of all these diseases discussed in this article[3].

Kitab al-Taalim

Another book of Hajj Pasha about medicine is *Kitab Al-Taalim.* At the beginning of the book, he mentions the names of Ibn Sina'Bukrat (Hippocrates), Galinos and Ala al-Din Ali Abi al-Hazn al-Kurashi, the author of the famous *Mujaz al-Kanun.* Moreover, he claims that he made use from Christian and Jewish physicians and others of the time.

Like Kitab al-Shifa, Kitab al-Taalim also has four parts. It is similar to Kitab al-Shifa because of its division and contents. At the end of Kitab al-Taalim there is a part called *vasiyya.* In this section Hajj Pasha discusses the order of the physicians costumes, their behavior with patients and the moral subjects that are necessary during the performance of their art.

Haider bin Ali summarised Kitab al-Taalim with the name Kitab al-Farida. This book is together with Kitab al-Taalim are manuscripts of Hajj Pascha[4].

Kitab al-Saada v'al-Iqbal

Kitab al-Saada v'al-Iqbal ala arbaa Akval of Hajj Pasha is in Arabic. I saw the copy of this book with the number 1786 in Manisa Library. Kitab al-Saada v'al-Ikbal is also written with the same method of Kitab al-Shifa & the Kitab al-Taalim. Same subjects are discussed with the same division. The book

was written in 800/1398. Another name of this book is Kummi Jalali. The copy in Manisa has the same name. In Arabic Kumm means cuff. Perhaps it means a little book that can be hidden in the cuff. But this explanation merely is a supposition. Some libraries, even have been unable to give any meaning to this word and introduced it into the chemical (Kimya) books with the name Kimya-i Jalali. Brockelman put a question mark before this word[5].

Kitab al-saada v'al-Iqbal also has four parts. It begins with the effect of cold, humidity and dryness to the health and discusses the properties of urine and pulse during the various diseases.

In the book, the properties of air, food and drinks and the general measures like cupping and taking blood are mentioned like in *Kitab al-*Shifa[6].

This book is translated into Turkish with the name *Muntahab Al-Shifa* by Hajj Pasha. In the initial part he said, "I wanted to compose a shorthand book that would claim the causes, the symptoms and medicine of diseases. I have the name Muntahab Al-Shifa so that the diagnosis and the treatment of diseases would be easier and many people could make benefit from..."[7]

Muntahab al-Shifa became famous with the name *Teshil* al-Shifa[8]. Teshil al-Shifa is a different translation of Kitab al-Saada v'al-Iqbal and is translated by Hajj Pasha.

The book named *Kitabu Tibbi Eflatun,* which was written by Suleyman the Magnificient's (953/1566) order, (University Library: 20 is a translation and summary of Kitab al-Saada. Here Eflatun (Plotin) is intended to be Ibn Sina[9].

The difference between Teshil al-Shifa and Muntahab al-Shifa is that in Teshil al-Shifa the theoretical and difficult parts are omitted. Its difference from its original Kitab al-Saada v'al Iqbal is being in Turkish.

The fact that, in his introduction to Teshil and in the initial section of Muntahad al-Shifa Hajj Pasha claims that he has written his work in Arabic at that time shows that the scientific language of the time was Arabic. It is also important that although he was not an Arab, a Turkish physician, he wrote his books on medicine in Arabic. In my opinion Hajj Pasha should be appreciated in this respect and research workers ought to keep in their minds that a physician born as a Turk was able to produce works on medicine in Arabic in the 7th century of Hijra.

Kitab al-Shifa, Kitab al-Taalim and Kitab al-Saada of Hajj Pasha are works in Arabic and they are worthy of their Islamic views and should be studied. With my little modest research, I aimed to contribute to the historical Islamic medicine and to introduce one of the representatives of it, Hajj Pasha Jalal Al-Din Haider bin Ali to you.

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PART FIVE

CLINICAL STUDIES OF THERAPEUTIC MEASURES MENTIONED IN ISLAMIC TRADITION

Part Five: Clinical Studies

CHAPTER ONE

(Papers Presented)

1. REPORT ON THE FIRST SCIENTIFIC SESSION.
   Editors.
2. MARRY FROM AFAR TO AVOID WEAK PROGENY.
   Dr. Omer S. Alfi.
3. ISLAMIC VALUES AND ETHICS IN PREVENTION AND TREATMENT OF EMOTIONAL DISORDERS.
   Dr. Basheer Ahmed.
4. SIWAK - AS AND ORAL HEALTH DEVICE PRELIMINARY CHEMICAL AND CLINICAL EVALUATION.
   Dr. M. Ragaii El-Mostehy, Dr. A.A. Al-Jassem, Dr. I.A. Al-Yassin, Dr. A.R. EL--Gindy and Mrs. E. Shoukry.
5. TRUFFLES IN EYE DISEASE.
   Dr. M. Al-Moataz AL-Marzooky.
6. HONEY REGIMEN IN GASTROINTESTINAL DISORDERS.
   Dr. S.N. Salem.
7. ANTIBACTERIAL ACTION OF HONEY.
   Dr. Ahmed Shawki Ibrahim.
8. THERAPEUTIC RESPONSE OF ARAB MEDICINES IN CASES OF LAQUWA.
   Hakeem Nazeer Ahmed Siddiqui and Hakeem Mohd. Zahoorul Hassan.
9. THE FETAL ALCOHOL SYNDROME
   Dr. Allie Mousa.
10. COMMENTS AND DISCUSSIONS.

REPORT ON THE FIRST SCIENTIFIC SESSION

This session was held from 8.30 to 10.30 a.m., under the Chairmanship of H.E. Hakeem Mohammed Said, Prof. Ekmeluddin Ihsan Oghlu was the Co-Chairman and Dr. Ahmed Al-Ansari the moderator.

The Chairman welcomed all the delegates and requested the speakers to present their papers within the stipulated time. Then eight scholars presented their scientific papers under the title of "Clinical Studies on Therapeutic measures mentioned in Islamic Tradition or used by Muslim Physicians". In the end comments and discussion were allowed.

Editors.

MARRY FROM AFAR TO AVOID WEAK PROGENY

Omar S. Alfi,

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In genetics, two important principles reflect this Islamic wisdom.

First: The superiority of heterozygous genotypes with respect to one or more characteristics in comparison with the corresponding homozygotes. This phenomenon is referred to as "Hybrid Vigor".

Second: Mating of heterozygotes for a mutant allele allows for the corresponding homozygous recessive disorders to appear in offspring. In man, this is more likely to occur in marriages among consanguineous than among far or non-related spouses.

The moslem world in general has a very high rate of consanguineous marriages. In studies carried out in Kuwait, consanguinity among parents resulted in:

1. *Lower mean birth weight of newborns 1.*
2. *Higher frequency of premature newborns 2.*
3. *Higher incidence of certain malformations (2,3).*

This Islamic wisdom contains very valuable advise that has been confirmed and supported by modern science. There are two basic principles in modern genetics that relate directly to that wisdom. Before I discuss these two principles, I would like to discuss briefly genetic disorders in humans. The embryo starts by the union of a male gamete (sperm) and a female gamete (ovum).. Each of these gametes contains 23 chromosomes and each chromosome has its own distinctive characteristics. Each of the 23 chromosomes carries a large number of genes, not shared by any other chromosome. The union of the two gametes results in a zygote with 23 pairs of chromosomes, half of which are derived from the father and the other half from the mother. This means that the zygote starts with a very large number of genes, one set of which is derived from the father and another set from the mother. A genetic disorder might occur if there is a damage to or mutation in one or more of the genes. If a disease occurs as a result of a mutation of one gene, the mode of transmission is called "dominant". If the disease does not occur unless the two genes that determine that characteristic are both abnormal, then the mode of transmission is termed "recessive". In recessive disorders, therefore, the fetus must inherit a mutant gene from the father and an identical mutant gene from the mother. The chance that both parents carry exactly the same type of mutation increases if both parents come from the same family.

Among brothers and sisters, half of the genes of each are shared in common. Between an individual and his uncles and aunts, one-fourth of the genes are common. Between an individual and his cousins,

one-eighth of the genes are common. It's obvious, therefore, that if a mutant gene is present in a grandparent, there is a high probability that the same gene would be present in a number of the grandchildren. If cousin marriages occur (cousins are the grandchildren to a common grandparent), then the chance of an autosomal recessive disorder appearing in the offspring tends to be relatively high.

We get now to the two principles in genetics:

First: A heterozygous genotype is superior with respect to one or more characteristics in comparison with the corresponding homozygote. This phenomenon is referred to as "hybrid vigor".

Second: Mating of heterozygotes for a mutant allele allows for the corresponding homozygous recessive disorders to appear in the offspring. In man this is more likely to occur in marriages among consanguineous than among far or non-related spouses.

Consanguinesous marriages occur in relatively high percentages of marriages in the Islamic countries. In several studies carried out in the State of Kuwait (1, 2 and 3), the following findings were noted:

First cousin marriages occur in over 25% of all marriages in the State of Kuwait.

Close consanguineous marriages (first cousin marriages, first cousins one removed, and second cousin marriages) occur in over 40% of all marriages in the State of Kuwait.

Premature deliveries have a higher frequency (9.89%) among consanguineous, than among far or non-consanguineous marriages (7.46%).

The mean birth weight of neonates born to consanguineous parents (3274 gm) was found to be lower than the mean birth weight for babies born to non-consanguinesous parents (3326 gm.)

The frequency of occurence of a number of genetic disorders was significantly higher among offspring of consanguineous, as compared to non-consanguineous marriages. The most significant of these was the occurence of Down Syndrome (Mongolism). Data on the factors associated with the occurence of Down Syndrome in Kuwait were evaluated to investigate the presence of a genetic control for nondisjunction in man. In the main obstetric hospital, 20 trisomic babies out of 11,614 singleton births were delivered over a 12 - month period. Chi square analysis indicated the occurence of Down syndrome to be linked to two independent factors: Consanguinity of parents, and maternal age. The relative risk is approximately 4 times greater for closely related than for non-related parents ($P < .005$); a possible explanation for this is the existence of a gene that induces mitotic nondisjunction in the homozygous fertilized ovum. An alternative explanation is the existence of an autosomal recessive gene which results in meiotic nondisjunction in the homozygous parents. Consanguinity is usually perpetuated in certain families or sections of the population, and parents in highly inbred families have a higher probablity to be homozygotes for that gene.

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ISLAMIC VALUES AND ETHICS IN PREVENTION AND TREATMENT OF EMOTIONAL DISORDERS

Basheer Ahmed,

U.S.A.

God says about Quran "It (Quran) is a guide and a healing to those who believe" (S. 41: V.44). Religion plays a significant role in satisfying our physical as well as spiritual needs: Islam teaches us a code of behavior and gives us a meaning for our existence. Unfortunately, in today's western society the religious, moral and ethical values have been declining. The families are falling apart, divorce rate is increasing sharply, substance abuse and excessive sexual indulgence are common in adolescents and young adults. These factors lead to conflicts, resentment, loss of self-respect, loneliness, depression, anxiety and a host of psychological symptoms. Despite progress in the behavioral sciences, there remains the question of whether current technique of treatment and prevention of emotional disturbances are effective in making a significant impact on psychiatric problems.

Psychotherapy is in reality a form of education which directs the patient to recognize his behavior, to conform with prevailing standards. It helps in motivating the patient to adopt the alternate ways of behavior. In our opinion, the Islamic principles which are based on Quran and Hadith are the best form of prevention and treatment of emotional disturbances. Muslims physicians and mental health professionals should incorporate the Islamic values and ethics in techniques of psychotherapy.

God says about Quran

IT (QURAN) IS A GUIDE AND A HEALING TO THOSE WHO BELIEVE

(S. 41: V. 44).

God says in Quran about psychological and social diseases and cures in several suras. In our opinion, Islamic principles which are based on Quran and Hadith are the best form of prevention and treatment for psychological and social disturbances.

In western society many psychiatrists and psychotherapists discourage the use of any religious concept in treatment of emotionally disordered. Of course, Freudian theories have a great deal of influence on western thinking. Freud's focus on sex as the driving force of human behavior and repression of sexual desires as a cause of neurosis, made a considerable impact on medical and social scientists. Individuals are encouraged to express freely aggressive and sexual desires, which further contribute in changing the sexual attitudes and lack of inhibition in the society at large. Freud[1] and his followers have tried to explain religion as the "universal obsessional neurosis". It is prejudiced, irrational statement and many psychoanalysts contradict Freud's statement. Erich Fromm[2] defines religion as "A sys-

tem of thought and actions by a group which gives the individual a frame of orientation and an object of devotion". Arieti[3] elaborates further the role of religion in human life. He states that religion gives people faith for survival of man and to achieve human ideals. Religion becomes an incentive to greatness of spirit. It offers new insight which opens up new dimensions of understanding and feeling. Higgins[4] further supporting the importance of religion states that modern psychiatry has not yet significantly tapped the fund of information about the human condition ranging from the inspirational writing about the aims of living to highly systematized doctrine about organization of behavior.

Our religion, Islam, plays a significant role in satisfying our physical as well as spiritual needs. Islam teaches us, a code of behavior, conservation of social values and gives us a meaning for our existence. It helps in toleration and developing adaptive capacities for stressful events of life. It gives us a sense of self-respect and teaches us about the virtues of family life and a cohesive society with a sense of brotherhood.

Shall Muslim psychiatrists and psychotherapists incorporate the Islamic values, ethics and code of behavior in techniques of psychotherapy?

In order to answer this, we should examine the causes of emotional disorders, effect of current principles of psychotherapies and explore the importance of incorporating Islamic values and ethics in psychotherapy. Mental health[5] can be defined as a state of emotional wellbeing in which a person is able to function comfortable within his society and in which his personal achievements and characteristics are satisfactory to him. Emotional disorders are defined as disturbance of behavior and affect which results in disturbance of a person's function in society. During the last few decades it is becoming more and more clear that biological, social and psychological factors influence the human behavior and that the health disturbing factors operate within the individual, within the group and within the social system in which he functions. In certain forms of emotional disorders we see predominent biological factors and in others psychosocial factors. In the interest of time, I will focus primarily on the psycho-social factors which contribute to emotional disorders and the use of psychotherapy to bring about the needed improvement.

Family is an important socio-cultural institution which makes a considerable impact on personality development and a potential factor in emotional disorders. Bowlby[6] confirms from his longitudinal studies, that the permanent loss of a parent during childhood may result in increase vulnerability to certain forms of psychopathology e.g., depression. The child can be sensitized by the loss of a loved one, and he breaks down in various ways in later life when faced with similar situations of loss or rejection. Similarly permanent loss of father was found in the history of delinquent children. Longitudinal observations have further confirmed that children reared in an atmosphere of love, care, consistency and firm limitations develop healthy personalities with trust and self confidence. Those reared in a hostile environment with rejection and humiliation may develop apathy, anxiety or aggressive behavior. Similarly, culture has also been described[7] as a causative factor for a host of mental disorders. Culture may produce and maintain a mental disorder by creating basic vulnerable personality, establish pathogenic child-rearing practices, fostering sanctions against selected behavior and by rewarding certain maladjusted deviants. Further emphasizing the role of family and culture on human development, Karen Horney[8] pointed out: Man is no longer an instinct ridden creature but being capable of choice and respon-

sibility. Hostility is no longer innate but reactive, egocentric and antisocial cravings like greed or the lust of power were not inevitable phases of man's development but the expressions of a neurotic process. By growing up under favourable conditions man would develop his inherent constructive forces and like any other living organism would want to realize his potentialities.

Unfortunately, today's western society, the religious, moral and ethical values have been declining. The society is plagued with moral decay. Families are disintegrated, divorce rate and number of unwed mothers have increased sharply. Drug abuse and excessive sexual indulgence are predominent in adolescents and young adults. These events lead to conflict, loneliness, guilt, loss of self-esteem which result in manifestation of a variety of pathological disorders. Many young persons are confused about self-identity, lose meaning in life and often turns toward pseudoreligious cults, drugs or suicide. Recent research studies[9] confirms that both sociocultural and personality aspects are responsible for high incidences of drug use in youth. In order to protect an Islamic society and culture from the abovementioned influences, the moral, social and inspirational forces of the Islamic religion are to be enforced.

Despite progress in the behavioral sciences there remains the question of whether current techniques of psychotherapy and preventive measures for emotional disturbances are effective in bringing about necessary changes in individual, family and society. Obviously the answer is no. In my opinion, one of the reasons for ineffectiveness is the predominent influence of Freudian theories on western medical and social scientists. Freud gives us a clear understanding of psychosexual development and unconscious motivation of behavior. He described unconscious innerself as if and conscious self as ego. Ego is regarded as active portion of personality adapting to forces of id, external reality and superego. Freud further postulated that the sexual urges of the child remain active from childhood and express in activities such as sucking and swallowing. He further explains that child's love for his parents is due to his sexual urges. The child develops a sexual attitude toward parents of the opposite sex and a simultaneous rivalry toward the other. Freud calls this is "oedipus complex". As a child grows the odipus complex resolves. This is the foundation of Freud's psychoanalytic theory.

Freud's focus on sex as the driving force of human behavior and sexual repression as a cause of neurosis is used as a basis of psychodynamic therapy. According to Freud, our higher activities like art, science and religion have no intrinsic worth. These activities are attempts of man to compensate for his unsatisfied sexual desires. Criticizing Freud's over-emphasis on sex, Rafi[10] outlined that Freud give a person three alternatives to choose as a desired behavior: He must follow the instruction of his sexual urges, becomes wicked and face the disgrace of society; repress his sexual desires to please society and expose himself to the danger of suffering from neurosis or renounce his instinctual desires and try to deviate himself by substitutes as art, religion and morality. Obviously, Freud portrays a miserable picture of human beings. The apparently distorted and disappointing view of Freud about the lot of man is necessitated by his hypothesis that the nature of our unconscious desire is sexual.

Freud's theory of sex as the driving force of human behavior and his theory of the universality of oedipus complex have been widely criticized. Even Freud's own followers, Adler and Jung, found it difficult to agree with Freud. Adler maintained that the unconscious urge is the impulse to power while Jung emphasized on collective unconscious. Karen Horney and Erich Fromm, the renouned psy-

choanalysts, also rejected Freud's ideas about sexuality as the basic force of life. Horney[11] stated that Freud's focus on sex as the driving force of human behavior was one-sided and led to other distortions. She emphasized on influence of family in development of personality and pointed out that oedipus complex occurs only in distorted parent-child relationship.

As an alternative to Freud's theory, Rafi[10] explains that the child loves his parents and feels an admiration for his parents and ascribes a perfection to them. Thus, superego which develops as an interaction between parent and child demands an ever-increasing perfection. Therefore, one can say that the individual is under powerful influence of a desire for the perfect and admirable throughout his life. In childhood his desire finds an outlet in the persons of the parents and teachers. As his knowledge increases he finds other and better objects and ideas worthy of love and devotion and he is naturally attracted to them, being compelled by the urge of his nature. It appears that the repression of the sexual urge is the cause of neurotic symptomatology but it can also be explained that the symptom may be due to obstruction of the urge of consciousness for perfection and conflict created by sexual urges. The fundamental cause of emotional trouble is the choice of the love of a wrong ideal. Therefore, the cause of cure may not lie so much in the discovery of conflict as in the changing or the raising of the ideal. Therefore, the focus of therapy should be toward achieving the ideal.

The Muslim psychiatrist and psychotherapist must have a clear understanding about the development of a healthy personality and ego ideal. Mother satisfies the need of the child since birth which gives him a sense of possession and omnipotence. Gradually the child realizes that he has to share mother's love and attention with siblings and father and he also learns that mother expects him to restrain his urge for immediate gratification. From this prohibition and discipline the conscious and superego develops. Discipline creates conflict but the child overcomes the conflict by introjecting mother and her authority and maintains the affectionate relationship. In a healthy mother-child relationship the child must believe "I am so strong in my mother's love that I can yield to her without feelong defeated"[12]. The same mechanism involved when a Muslim introjects the image of God as Qadeer, Raheem and Benevolent. The introjection of God's love and authority influences a Muslim's behavior incorporating ethical and moral values of Islam. Once you incorporate the image of God in innerself there is no conflict with external reality and superego. A child's religious orientation is influenced by the kind of family relationship that exists at home. Quran emphasizes again and again, about healthy parent-child relationship and parents' responsibility toward upbringing. In a home where parents play a role of strong loving and protective figures, with proper attention toward developing a sense of self-worth and dignity, the child develops trust, self-confidence and introjects the love and authority of parents and God. In a home where parental figures are unloving, show no respect toward each other, rejecting and punitive towards their children, then the conept of God is distorted.

Psychotherapy is in reality a form of education which directs the patient to recognize his behavior, to conform with prevailing standards and to help in improving the patient to adapt the alternate ways of behavior. Muslim psychiatrists and psychotherapists must have familiarity with Islamic religion and culture and must incorporate Islamic values, ethics and code of behavior in techniques of psychotherapy. Many patients suffering from emotional disorders have lost the ability to lead responsible lives. For them therapeutic guidance in an environment of care, respect, dignity and understanding is necessary. The

goal of therapy need not be happiness but acceptance of reality and strengthening the coping mechanisms. A trustful relationship with therapist, a clarification of problem and conflict, influences the positive outcome. Moral and ethical issues should not be avoided and problems should be clarified so that patient can judge for himself the quality of his behavior and his ideals.

> BUT HE GUIDETH TO HIMSELF THOSE WHO TURN TO HIM IN PATIENCE, THOSE WHO BELIEVE AND WHOSE HEARTS FIND PEACE AND SATISFACTION IN THE REMEMBRANCE OF GOD: FOR WITHOUT DOUBT IN THE REMEMBERANCE OF GOD DO HEARTS FIND SATISFACTION AND PEACE .
>
> *(Quran S.13: V.27-28)*

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SIWAK - AS AN ORAL HEALTH DEVICE (PRELIMINARY CHEMICAL AND CLINICAL EVALUATION)

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Kuwait

A variety of oral hygiene measures have been performed since the dawn of time. This has been verified by various excavations done all over the world, in which toothpicks, chewsticks, tree twigs, linen strips, birds' feathers, animal bones and porcupine quills were recovered 1.

Those that originated from plants are tasty twigs and although primitive they represented a transitional step towards the modern toothbrush. It has been stated that about seventeen plants could be enumerated as natural sources for several of these oral hygiene devices 2.

The most widely used tree twigs since early times is the "*Siwak*" or "*Miswak*" [3]. The stick is obtained from a plant called *Salvadore Persica* that grows around Mecca and the Middle East area in general 4. It is widely used among Moslems after Prophet Mohammed (ﷺ) realised its value as a device which should be used by Moslems to clean their teeth. In this respect our Prophet (ﷺ) is considered the first dental educator in proper oral hygiene.

Although there is no reference to the use of Siwak in Al-Quran, yet several quotations could be read in the compendium of the sayings of Mohammed (ﷺ) as to the benefits of Siwak in mouth cleanliness[5].

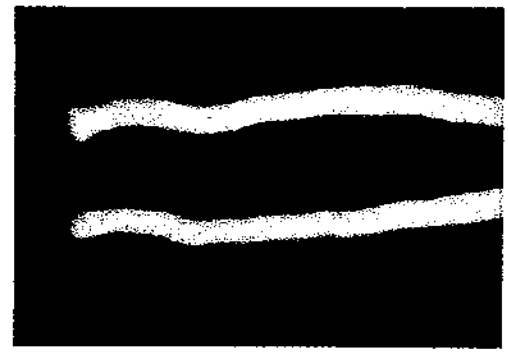
One saying reads as follows:

> "IF IT WERE NOT TOO MUCH A BURDEN ON THE BELIEVERS, I WOULD PRESCRIBE THAT THEY USE THE SIWAK BEFORE EACH PRAYER".

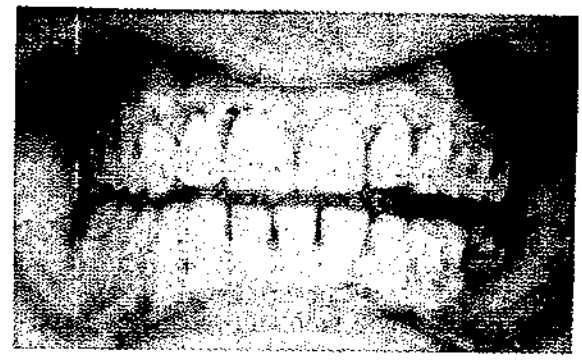
Several anecdotes[6], incidents, poems[7] and rules of ethics in using Siwak were mentioned in various references talking on the subject of cleanliness of the mouth.

Salvadora Persica is in fact a small tree or shrub with a crooked trunk, seldom more than one foot in diameter, bark scabrous and cracked, whitish with pendulous extrimities. The root bark is light brown and the inner surfaces are white, odour like cress and taste is warm and pungent. Chemically the air dried stem bark os S. Persica is extracted with 80% alcohol and then extracted with ether and run through exhaustive chemical procedures. This showed that it is composed of:

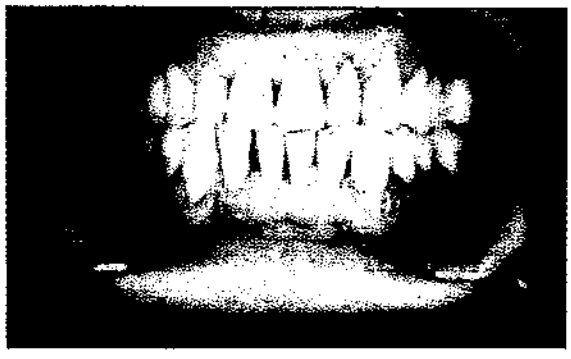
Salvadora Persica



Siwak



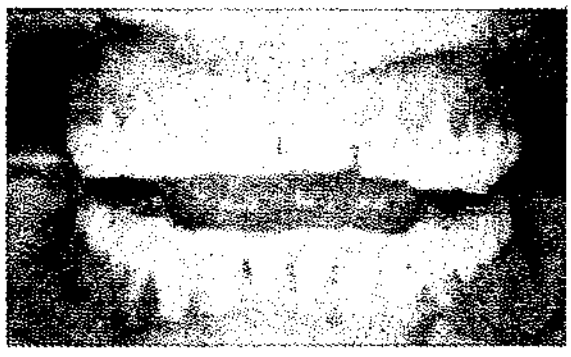
Pre start



5 weeks

Lingual sample

Commercial powder



Pre start

5 weeks

1. Trim ethyl amine
2. An alkaloid which may be salvadorine
3. Chlorides
4. High amounts of fluoride and silica
5. Sulphur
6. Vitamin C
7. Small amounts of Tannins, saponins, flavenoids & sterols

PURPOSE OF THE PRESENT INVESTIGATION:

Because of the great quality of oral cleanliness noticed in individuals who use Siwak as the sole device to brush their teeth and because of the low incidence of dental decay of those individuals this work was undertaken.

It is intended to study the following:

1. The mechanical ability of Siwak as a cleaning device to the mouth and its ability to rid the mouth of bacterial plaque (aggregates harmful to the gum)
2. If Siwak is powdered and used with a toothbrush, could it act as an efficient mouth cleaner?
3. As compared to other strongly abrasive toothpowders, could Siwak rank as highly efficient as to the used material?

SUBJECTS, MATERIAL AND METHODS:

Participants in this trial were 80 individuals (53 male and 27 females) attending the Periodontology Unit in the Dental Center, Kuwait for regular periodontol checkups. Their age varied from 25-55 years and were healthy as proven by their past and present medical histories.

At the first visit all participants received initial preparation of their mouths in the form of thorough scaling and polishing. The plaque percentage index* of each patient scored O after several check up visits (2-4 visits to some individuals).

They were divided into 4 groups (20 each)

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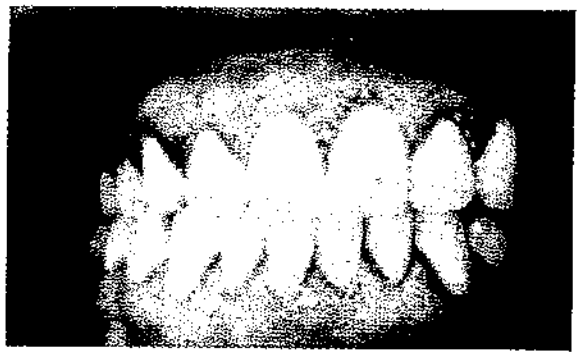
* (using a disclosing tablet which has an affinity to stain the dental plaque)
O = no plaque
1 = separate flecks of plaque at the necks of teeth
2 = thin continuous band of plaque (upto 1mm) at the necks of teeth
3 = band of plaque wider than 1mm but covering less than 1/e of tooth crown
4 = plaque covering at least 1/3 but less than 2/3 of crown of teeth
5 = Plaque covering 2/ or more of the crown of tooth
Plaque percentage score was obtained by divifing the total score by the No. of examined tooth surfaces and multiplied by 100.

Starch



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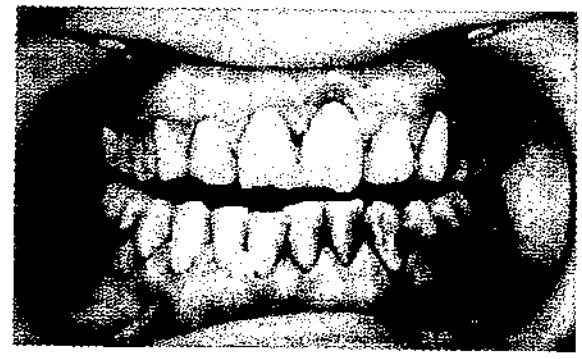
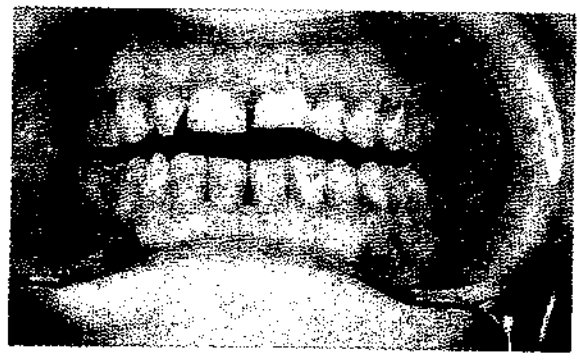
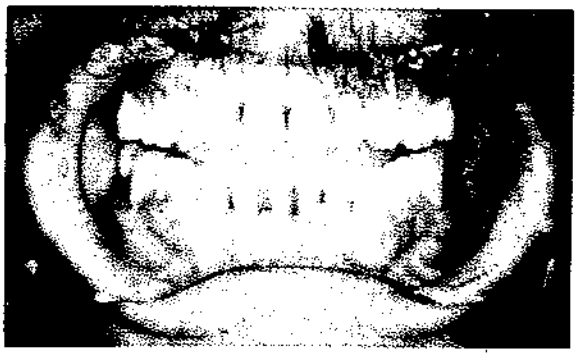


5 weeks

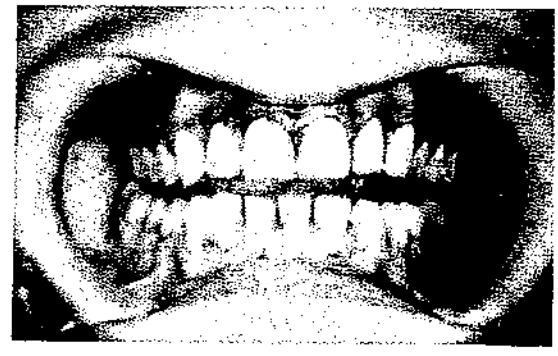


another case of a starch user.

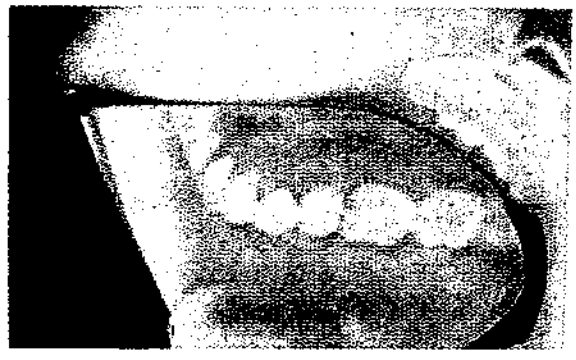
Powdered siwak



Pre start



5 weeks



Lingual sample

I The Siwak Group:

Individuals were instructed to use Siwak as is and in their own way as the majority were Siwak users (15 individuals)

II The powdered Siwak group:

Siwak was powdered, sieved and packed in 50 gms. boxes. Each individual received the powdered Siwak and a soft toothbrush and was instructed to use the intrasulcular technique as demonstrated to the individual by one examiner (M.R.E.). Participants ware reviewed prior to the experimental O date to detect the inaccuracy of the taught brushing technique.

III Starch group

Each individual in this group was given 50 gm of starch in a container and a soft toothbrush and was instructed to use the intrasulcular technique of toothbrushing as demonstrated by one examiner (M.R.E.)

IV Commercial tooth powder group:

Each individual in this group was given 50 gms. of a commercial toothpowder and a soft toothbrush and was instructed to use the intrasulcular technique of toothbrushing as demonstrated by one examiner (M.R.E.)

All participants were examined every week and the following parameters were recorded and entered in special charts:

1. Plaque percentage score (discussed before)
2. Gingival percentage score*
3. A clinical photograph for every individual at each visit after using a disclosing tablet that makes the adherent plaque on teeth visible (red-cote)

FINDINGS:

All participants were considered having a 0 plaque percentage score as a baseline. As regards the gingival percentage score it differed as to the readings recorded at the present level:

I The Siwak Group
II The Powdered Siwak Group *(SEE Table I and graphs).*
III The Starch Group
IV The Commercial Powder Group

TABLE I

PLAQUE PERCENTAGE

Material Used	1st week Mean S.D	2nd week Mean S.D	3rd week Mean S.D.	4th week Mean S.D.	5th week Mean S.D.
Siwak	41.7 ± 5.0	45.6 ± 6.2	43.3 ± 4.8	40.5 ± 5.0	38.2 ± 5.3
Powdered Siwak	27.6 ± 8.4	23.5 ± 7.9	19.6 ± 5.6	17.1 ± 5.0	16.4 ± 5.0
Starch	69.8 ± 8.2	73.6 ± 7.2	78.1 ± 6.4	80.4 ± 5.7	84.7 ± 4.6
Commercial Powder	9.2 ± 1.9	7.9 ± 1.9	6.9 ± 3.1	6.3 ± 3.0	5.3 ± 3.2

*0 = Normal gingiva

1 = Mild inflammation, slight colour changes, slight edema, no bleeding on probing

2 = Moderate inflammation, red, edema, glazed, bleeding on probing

3 = severe inflammation, marked redness & edema, ulceration, tendency to spontaneous bleeding.

Scores are totalled and divided by 4 to determine the gingival index for each tooth. Totalling of all indices, divided by the number of teeth in the mouth and multiplied by 100 will give the gingival percentage score for the individual.

Siwak group showed an increased plaque percentage in the first and second week but there was a decrease in this percentage by the end of the fifth week to give a difference between that of the first week of – 3.50%.

Powdered Siwak showed a greater amount in the difference between first and fifth week scores (– 11.20%) i.e. a greater ability of this substance when mechanically applied in a proper manner to rid the mouth of bacterial plaque.

Starch gave the worst scores of plaque percentage since the start of the first week. This score kept rising to give a difference in reading betwen first and fifth week of +14.90% i.e. a greater aggregation of plaque in the group using this material. Commercial powder gave a low score of plaque percentage from the start and kept dropping in a similar pattern given by powdered Siwak but the values differed in both cases.

TABLE II -

GINGIVITIS PERCENTAGE

Material Used	PRESTART Mean S.D.	1ST WEEK Mean S.D.	2ND WEEK Mean S.D.	3RD WEEK Mean S.D.	4TH WEEK Mean S.D.	5TH WEEK Mean S.D.
Siwak	16.8 ± 4.4	16.8 ± 4.4	12.3 ± 3.8	10.2 ± 2.8	7.5 ± 3.4	6.1 ± 2.2
Powdered Siwak	8.6 ± 2.9	8.6 ± 2.9	6.8 ± 2.1	5.1 ± 1.8	4.7 ± 1.5	3.9 ± 1.6
Starch	28.1 ± 4.6	48.6 ± 6.9	52.2 ± 6.5	59.1 ± 6.6	65.0 ± 7.7	70.5 ± 8.4
Commercial Powder	9.8 ± 3.8	9.8 ± 3.8	12.2 ± 3.4	18.0 ± 8.7	21.8 ± 11.5	24.6 ± 13.8

Gingivitis percentage scores were recorded lowest in the powdered Siwak group from the first wiik of the experimental period. All scores for the different materials used kept dropping except those of starch and commercial powder group, which indicates a deterioration of the gingival condition of both groups (differences between scores of first and fifth week are 42.40% and 14.80% respectively to the worse side).

PLAQUE PERCENTAGE GRAPH

As could be noted from this graph that the commercial powder gave the lowest readings in plaque percentage scores. The drop in the curve of the powdered Siwak group is greater than that of Siwak while starch group gave an even increasing pattern to reach highly at the end of the fifth week.

GINGIVITIS PERCENTAGE GRAPH

Powdered Siwak group showed in this graph the least amount of gingivitis resulting from its use. On the contrary this group originally showed mild gingivitis that kept dropping to the end of the experimental period indicating a possible therapeutic effect of powdered Siwak when properly used by a good mechanical device. The graph of the Siwak group gave a better decline than that of the commercial powder group although the later showed a better debriding effect of the mouth as indicated in the plaque percentage graph.

The starch users group gave the worst of peaks due to its nature as a material adherently sticking teeth.

There are other findings that are of noticeable importance in this investigation:

1. Some Siwak users found some difficulty to apply the device to the tongue side of both upper and lower teeth
2. Powdered Siwak users were not so happy as to the taste of the material in a powder form.

3. Starch users were met with several difficulties concerning the sticky nature of the powder.

4. Commercial powder users felt fine in the early phase of the experimental period, but nearing the end several complained of burning sensations in their mouths and 5 cases presented with actual peeling of their mucous membrane.

DISCUSSION

Oral hygiene and patient motivation towards a clean mouth owe their birth to the teachings of Mohammed (ﷺ). Due to the repeated use of Siwak during the day, the users showed an unusually high level of oral cleanliness. It is a well known fact that plaque formed immediately after meticulous toothbrushing. By the end of 24 hours the plaque is well on its way towards maturation and hence starts its deliterious effects on the gingiva[8].

Proper oral hygiene should be maintained through intensive instructions by the periodontist as well as by a great expenditure of time and dexterity on part of the patient. This item is self corrected in Moslems because Siwak users take Siwak as a device that should be used as part of their religious ritual regimen.

The results obtained in this investigation have proved that Siwak and other tree twigs[9] could act as an effective tool in removing soft oral deposits. It could be even used as an effective device in preventive dental programmes in mass populations. The indices used in this investigations were simple and adaquate as they discriminated between experimental stages as well as between experimental groups.

Using starch is not quite accurate but it was meant to evaluate the degree by which Siwak and powdered Siwak could rid teeth of deposits as compared to the best abrasive viz. commerical powder.

It is noticed that the difference between first and fifth week of the mean score of plaque percentage for powdered Siwak is the highest (-11.2%) of all readings. This indicates that powdered Siwak is used with a mechanically proper device i.e. tooth brush will give a great deal of oral cleanliness.

It has been reported that *Salvadora Persica* contains substances that possess antibacterial properties. Some other components are astringents, detergents and abrasives 8. Those properties encourage some toothpaste laboratories to incorporate powdered stems and/or root material of *Salvadora persica* in their products (Beckenham U.K. Sarakan Ltd.).

Although the commercial powder gave a high degree of efficiency in plaque removal yet its use over the experimental period gave a high score of gingivitis percentage within the group using the powder. It is time that plaque eradication is essential but this should not be on the expense of deletirious side effects on other tissues.

It could be concluded that Siwak and powdered Siwak are excellent tools for oral cleanliness. Because of its availability in this part of the world, being inexpensive and readily adopted by Moslems as part of their religious regimen, it is highly recommended in implementing a preventive dental health program in Islamic countries. Also recommendations should be directed to manufacturers of toothpastes to

include the powdered form of Siwak in a highly debriding sophisticated toothpaste.

ACKNOWLEDGEMENT

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Our due thanks to Dr. M. Salhieh, Associate Professor, Faculty of Art, Kuwait University, whose valuable help is greatly appreciated.

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TRUFFLES IN EYE DISEASE

M. Al-Moataz Al-Marzooky

Egypt

It is mentioned that truffles increased in the days of the Prophet (ﷺ) and people refrained from eating it stating that it is the smallpox of the earth. When the Prophet (ﷺ) heard about this He said

"TRUFFLES ARE LIKE MANNA (I.E. THEY GROW NATURALLY WITHOUT MAN'S CARE) AND THEIR WATER HEALS EYE DISEASES".

Ibn Sina mentioned that its water was boiled then cooled and used as Kohl (painting of the palpebral conjunctivae).

Truffles are a type of fungus that grow about 30 cms. below the surface of the ground, in groups of 10-20 lumps. Each lump is circular or oval, few centimetres in diameter with a smooth surface and soft consistency. Its colour ranges from brown to grey to black. It grows in Arabia, Syria, Jordan and Palestine. In Europe, it is grown mostly in France and Italy.

Truffles or Terfeziz Claveyi are a division of Ascomycetae, constituting numerous spore-containing scars. There are three types of Truffles growing in Kuwait, the classification of it carried out by the nature beduins according to the colour and size namely Zobaidy, Khollasy and Rajaye. Analyses carried out by El-Gendy and Alami in Kuwait showed no significant difference in the constitutions of the three types.

Arabs sometimes call it the plant of thunder because it grows after rainy seasons accompanied with thunder. Having no root, stem, leaves or flowers, it does not belong to the plant kingdom. It grows spontaneously without any effort of cultivation. Even trials to cultivate it has failed. This supports the Prophet's (ﷺ) saying that it is like *manna* i.e. gift from God to people.

MATERIAL AND METHOD

Truffles imported from Kuwait were carried to Odessa during our visit to the Soviet Union. The aqueous extract was prepared in Filatov Laboratory by the method of extraction named according to Filatov. The extract was dried in the Central Serogic Laboratories of the Ministry of public Health in Cairo. The powdered extract was kept to be dissolved in distilled water just before use. The resulting solution will be of the same concentration as that of natural truffles water. This water is brown in colour with a characteristic pungent smell.

The following trials were carried out using truffles water

A. Bacteriological Action:

Culture were prepared of different gram positive and gram negative bacteria. Truffles water was applied to the culture. It showed no bacteriostatic or bactericidal activities.

B. Trials with Truffles water in cases of cataract:

59 cases of cataract were selected. They included case of soft, hard and complicated cataract. Truffles water was used in the form of eyedrops five times daily for three years. The trial showed no effect of truffles on the course of cataract. Conjunctival congestion, occasionally severe, appeared in some cases.

C. Trials with truffles water in cases of trachoma

600 children in madrassas teaching the Holy Quran were examined. Trachoma in its three stages was diagnosed in 86 cases. These were treated for one month according to the following regimen.

First Clinical Trial

It included 30 children suffering from early first stage of trachoma where the lymphoid follicles can be detected in the conjunctival mucosa only by magnification. The cases were divided into two groups each comprising 15 children. The two groups were homogenous from the clinical point of view i.e. the distribution of the trachoma follicles on the conjunctivae was nearly equal in both groups.

1. The first sub group (experiment 1) was treated by chloramphenicol eye drops 5 times daily. Before bed time tetracycline ophthalmic ointment was applied.

2. The second sub group (experiment 2) was treated with chloramphenicol drops 5 times daily + tetracyline ointment before bed time + truffles water 5 times per day.

Second Clinical Trial

This comprised 40 children suffering from active trachoma where the lymphoid follicles could be detected by the naked eye. Among them were 12 cases suffering from corneal pterygium.

This group was further sub-divided into 4 sub-groups each comprising 10 cases (of which 3 had pterygium). Treatment was carried as follows:

1. First sub-group (Experiment 3) included 10 cases treated by chloramphenicol drops 5 times daily + tetracycline ointment before bed time.

2. Second sub-group (Experiment 4): ten cases treated as above + truffles water 5 times daily.

3. Third sub-group (Experiment 5): After extraction of the content of the lymphoid follicles they ware treated by chloramphenicol drops 5 times daily and tetracycline ointment at night.

4. Fourth sub-group (Experiment 6): Same as previous group (Experiment 5) + truffles water 5

times daily

Third Clinical Trial:

Included 16 cases suffering from active trachoma together with marked follicular conjunctivitis. They were further subdivided into two sub-groups:

1. First sub-group (Experiment 7) where 8 cases were treated with dexamethasone eye drops 5 times daily + steroid ophthalmic ointment before bed time.

2. Second sub-group (Experiment 8) where 8 cases were treated with the same regimen as experiment 7 together with truffles water 5 times daily.

RESULTS

From the table we can observe the results of combination of truffles water to the traditional treatment of trachoma in its various stages.

Microscopic examination of conjunctival scrapings was carried in 4 cases (2 from experiment 5 where antibiotics were used after follicular extraction) and (2 from experiment 6 where truffles water was added). Microscopy revealed marked lack of lymphocytes and scanty fibrous tissue in experiment 6 where truffles water was used. This was in contrast to experiment 5 where cases showed abundant lymphocytic infiltration and fibrous tissue formation.

DISCUSSION

Trachoma is a chronic contagious disease of the Mediterranian area and other parts of the world particularly Japan. Its complications were responsible for 25% of cases of blindness in endemic areas before the era of antibiotics. Trachoma is caused by a virus affecting the conjunctival cells lining the eye lids and covering the globe. In its early stages it causes conjunctival congestion, marked infiltration by lymphocytes that collect under the conjunctival lining to form small lymphoid follicles. Their size is 1-2 mm and can be seen by the hand lens. They may heal spontaneously, by the appearance of fibroblasts replacing these follicles, or the disease may progress to the second stage where lymphocytic infiltration increases forming large lymphoid follicles under the lining conjunctival layer-capillary changes appear around the follicles surrounding them together with fibroblasts. In the centre of the follicle may be one or more macrophages engulfing small lymphocytes. At that stage the follicle appears protruding with its yellowish colour on the conjunctival surface. At that stage, it can be extruded by a special forcep. The virus activity may continue leading to abnormal growth of conjunctival lining cells much more faster than the degree of vascularisation. This leads to atrophy of some superficial cells. Around these follicles the process of fibrosis starts. This marks the onset of the stage of regression which ends by contraction of the fibrous tissue leading to entropion and rubbing lashes. On the contrary the lymphocytic infiltration may spread reaching the cartilage which becomes weak; thus the eye lid loses the power to retract completely.

Other complications include corneal congestion, vascularisation and pterygium formation; or obs-

truction of the lacrimal duct. The friction of the rough conjunctiva with the cornea leads to corneal opacities that affect vision. Superadded secondary infection may complicate the condition or angular conjunctivitis may be superadded.

Treatment leads to fibrous tissue formation in place of damaged lymphocytes and conjunctival cells. The severity of complications depends on the extent of fibrosis.

The significant effect of truffles water in the abovementioned clinical trial is that it minimises the degree of fibrosis at the site of the injury.

CONCLUSION

From the above we can conclude that truffles water hinders the process of fibrosis in cases of trachoma. This is achieved by interference with fibrocyte formation. Such an effect may be ascribed to the neutralisation of the toxins liberated from the virus and interference with cellular infiltration. At the same time, it prevents the abnormal growth of conjunctival cells and increases their nutrition by promoting vascularisation.

Considering that most of the complications of trachoma are the result of fibrosis we can conclude that truffles water prevents most of the complications of trachoma. The therapeutic effect of truffles was mentioned by the Prophet (ﷺ) 14 centuries ago where no facilities for scientific investigation were available.

TABLE SHOWING RESULTS OF TREATMENT OF TRACHOMA BY TRADITIONAL TREATMENT WITH OR WITHOUT TRUFFLES WATER.

No. Of Experiment	No. of Cases	Treatment	Results
1	15	Chloramphenicol drops + tetracycline ointment	Cure of trachoma-fibrosis of conjunctiva in 8 cases
2	15	Chloramphenicol drops + tetracycline ointment + truffles water	Cure of trachoma - conjunctiva returned normal except one case of fibrosis
3	10	Chlorapmphenicol drops + tetracycline ointment	follicles showed no change
4	10	Chloramphenicol drops + tetracycline ointment + truffles water	follicles showed no change capillary growth in conjunctiva
5	10	Follicle extrusion + chloramphenicol + tetracycline	Conjunctiva healed with fibrosis in all cases. No definite pattern to conjunctival capillaries. Pterygium healed.
6	10	Follicle extrusion + chloramphenical + tetracycline + truffles water	Conjunctiva healed - capillary growth in conjunctiva in 7 cases, fibrosis in 3 cases, pterygium healed
7	8	Steroid drops and ointment	Cases cured. Healing with some fibrosis in conjunctiva
8	8	Steroid drops and ointment + truffles water	Cases cured, residual conjunctival congestion - no fibrosis

HONEY REGIMEN IN GASTROINTESTINAL DISORDERS

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Egypt.

INTRODUCTION

The first documented case report about honey treatment of gastro-intestinal disorders came in Bukhari and Moslem Hadith Books of our gracious prophet Mohammed (ﷺ) as follows:

> "A MAN CAME TO HIM ASKING HIS ADVICE TO TREAT HIS BROTHER WHO WAS SUFFERING FROM DIARRHEA. THE PROPHET ﷺ TOLD THAT MAN TO GIVE HIS BROTHER HONEY TO DRINK. THE MAN WENT BACK AND GAVE HIS SICK BROTHER HONEY BUT WITHOUT RESPONSE. HE ASKED THE PROPHET ﷺ AGAIN, WHO ADVISED HIM TO TRY HONEY AGAIN. FOR THE SECOND TIME, THE MAN DID NOT RESPOND AND HIS BROTHER RETURNED TO THE PROPHET ﷺ FOR A THIRD TIME. THE PROPHET ﷺ PRONOUNCED THAT GOD SAID THE TRUTH ABOUT HONEY, BUT YOUR ILL BROTHER'S ABDOMEN LIED. GO BACK AND LET HIM DRINK HONEY. THIS TIME THE ILL MAN RECOVERED".

Ever since Moslems and Arabs used honey to treat different types of illnesses[1]. However, many scientific approaches to document the efficiency of honey in diarrhea, abdominal colic, chest affection, skin diseases... etc. have been attempted. (2, 3.)

This paper is an attempt to verify the value of honey in the management of upper gastrointestinal dyspepsia including peptic ulceration.

PATIENTS AND METHODS

Forty-five consecutive patients suffering from dyspepsia were seen and followed-up at the gastroenterology research unit in Cairo for a six-month period, Nov. 78-April 80. Diagnosis of dyspepsia was carried out according to the following criteria:

"Clinical evaluation, laboratory investigation, radiological examination and upper gastrointestinal endoscopy".

These tests were carried at the start of the study and at its end. Every patient was aware of the different aspects of the trial. Two tablespoonfuls of honey (30 ml) were given before meals three times daily. Every patient chose his own honey. No drugs were given during the period of trial, but patients,

were put on bland diet. Every patient was seen every month during the follow-up period. Twenty matched patients were treated with placebo tablets and bland diet for three months after which for ethical reasons - they were treated by conventional medical treatment. However, the study is going on for further evaluation after one year.

RESULTS

Table I shows age and sex distribution of 45 patients included in this study, "26 males and 19 females", the majority of whom belonged to (20-40 yrs.) age groups. Upper abdominal pain, and dyspeptic symptoms "flatulence, indigestion, heartburn, eructation, nausea and vomiting" were dominating, whereas haematemesis occured in 12 patients (27 %) only. (Table 2). More than half of the patients were anaemic and occult blood in stools was found in 82% (Table 3). Table 4 shows evidence of peptic ulcers/duodenitis and gastritis in 75% and so were the endoscopic findings (Table 5). Finally, table 6 shows diffrent criteria of improvement. Clinically two-thirds of the patients recovered and another 7 were relieved. Barium meal and upper endoscopic evaluation showed marked improvement and 5 out of 7 manifested complete ulcer healing. Anaemia was corrected in more than half of the patients. Furthermore, no one showed hoemoglobin percentage below 50%. Occult blood persisted in 4 out of 37 patients.

COMMENTS AND CONCLUSIONS

The data, obtained from the present therapeutic trial, provided substantial evidence that honey has a place in the management of upper gastrointestinal disorders. Furthermore, we have tried honey enemata in cases of ulcerative proctitis with encouraging results, which will be described in a separate communication. It was observed that honey regimen is effective in organic lesions as ulcers and gastritis or duodenitis where the response is dramatic. But patients with functional disorders as cardiac or pyloric spasm responded poorly to honey regimen. Other successful therapeutic trials were employed in the management of heavy metal poisoning and in kidney and liver diseases[4] . Abdel Gaffar and colleagues found that honey regimen modified gastric juice constituents to the benefit of the individual by suppressing hypersecretion of hydrochloric acid and by so doing enhanced healing of peptic ulcers[5].

However, honey may produce favourable effects through the anti-bacterial property. Zawawy has shown the high efficiency of local application of honey in septic wounds and in long standing pyogenic skin ulcers[6]. Such effect might have been achieved because of the high content of dextrose in honey (25-40%) more than any other natural food. However, further work is needed for a better understanding of the mode of action of honey in health and disease.

We may conclude that honey regimen is a useful tool in physicians' hands for the treatment of gastrointestinal diseases. Honey regimen should be the first choice in such problems as it is of natural source, does not have the side effects of drugs, of high nutrient value and is cheapter than any other form of therapy.

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TABLE I:

Age and Sex in 45 Patients

Age in Years	Male	Female	Total
20-30	5	5	10
31-40	9	10	19
Over 40	12	4	16
TOTAL	26	19	45

TABLE II:

Clinical Presentation

Symptoms	Male	Female	Total	%
Pain	23	19	42	93%
Dyspepsia	22	19	41	90%
Vomiting	8	15	23	50%
Hoematemesis	5	7	12	27%

TABLE III:

Anaemia and Stool Occult Blood

Hoemoglobin %	Male	Female	Total	%
75-60	13	5	18	40%
60-50	5	8	13	28%
Below 50	4	6	10	22%
Stool occult blood +ve	20	17	37	82%
−ve	6	2	8	18%

TABLE IV:

Barium Meal Findings

	Male	Female	Total	%
Gastritis and/ or erosions	10	10	20	44%
Duodenitis	6	1	7	
Duodenal ulcer	5	2	7	31%
Normal	5	6	11	25%

TABLE V:

Endoscopic Findings in 45 Patients

Lesion	Male	Female	Total	%
Gastritis & Erosions	7	9	16	35%
Duodentis	8	—	8	34%
Duodenal ulcer	5	2	7	34%
Spasm: Cardiac/Pyloric	6	8	14	31%
Total	26	19	45	

TABLE VI:

Criteria of Response

1.	Clinical	Symptom-free	30	66%
		Mild-Moderate	7	16%
		No response	8	18%
2.	Endoscopy	Normal	28	62%
		Gastritis / Duodenitis	15	33%
		Ulcer	2 out of 7	
3.	Barium	Normal	32	71%
		Gastritis / Duodenitis	12	26%
		Ulcer	1 out of 7	
4.	Hoemoglobin%	75-60	15	33%
		60-50	7	16%
		Below 50	—	0
5.	Stool occult blood +ve		4 ut of 37	

ANTIBACTERIAL ACTION OF HONEY

Ahmed Shawki Ibrahim
Kuwait

The therapeutic action of honey was mentioned in various studies in traditional medicine. It was proved that local application of honey promoted healing of wounds. The antibacterial substances in honey are still unknown exactly and are called "inhibin".

The present study is an in vitro comparison of antibacterial action of honey in different dilutions, to the effect of a number of commonly used antibiotics on 9 types of pathogenic organisms in urine samples of 149 patients of urinary tract infection. It was found that the antibacterial action of honey in 50-30 % dilution, is superior to all antibiotics including gentamycin.

INTRODUCTION

The Holy Quran mentioned honey and attributed some therapeutic values to it. The therapeutic value of honey was underlined in various literature. It occupied a prominent place in traditional medicine. The use of honey has recently been reviewed. Local application of honey was found to promote healing of wounds in some patients. This unusual treatment was first brought to the medical attention by Prof. Scott-Russedl of Sheffield. This method was applied to several infected abdominal wounds in Sheffield and St. Louis. The results were sufficiently remarkable to consider further use of method in patients undergoing radical operation for vulval carcinomas. The wounds generally break down owing to impaired blood supply. Healing rarely occurs by primary intention and skin grafting may be necessary to assist wound closure 1. Undiluted honey was used in 12 patients who developed wound break down following a radical operation for carcinoma of vulva. The results were encouraging. The healing process was particularly enhanced. Culture from the wound was obtained at intervals. The time at which the wound became bacteria-free was 3-6 days in all cases. Also the time of complete wound healing was noted 2.

The improvement of the healing process was partly attributed to the antibacterial action. It is well established that natural unheated honey shows an antibacterial activity (Warnecke et al 1958) 3 and does not support the growth of pathogenic bacteria commonly encountered in septic wounds. Honey is non-irritant and so can promote the rapid growth of healthy granulation tissues.

The antibacterial effect was first demonstrated 4 bY Dold et al 1937 , who included honey in a study of materials with natural antibacterial action and described an assay procedure. The activity of diluted honey was shown against 17 bacteria. The activity was heat labile and somewhat light-sensitive. They related it to a similar antibacterial activities reported in another material of natural origin which they termed inhibin.

The presence in honey of various amounts of inhibin as described by Dold et al (1937) has been reported by several investigators. Ptacky (1944)[5] discussed the known constituents of honey that might be responsible for antibacterial action and concluded this was not due to sugar, acids, nitrogen compounds, enzymes, pH, vitamins or other known constituents. He noted that inhibin passes through a dialysis membrane and withstand vacuum concentration with no activity remaining in the solution. Schuler and Vogel (1956)[6] extracted undiluted honey in various solvents and reported that the inhibitory substance was ether-soluble.

Schade et al (1958)[7] showed that inhibin was more heat sensitive than honey amylase and that its level in a limited number of honeys by a modified Dold Assay did not correlate with amylase activity.

Warnecke et al (1958) assayed 600 honey samples of 131 types for inhibin by the Dold procedure. They concluded that inhibin activity and invertase activity ran parallel.

Stomfay-Stitz et al (1960)[8] stated that inhibin was active against both gram positive and negative bacteria and was of unknown constitution.

Gluconic acid was recently found to be the principal acid in honey (Stenson et al, 1960)[9]. The acid-producing enzyme in honey was a glucose oxidase producing gluconic acid (gluconolactone) and hydrogen peroxide from glucose[10] . The H_2O_2 was produced in honey by the action of a glucose oxidase on glucose. The enzymatic oxidation of glucose takes place very slowly in undiluted honey and at much higher rates as honey was diluted[10] .

The role of honey as a healer in certain types of wounds particularly septic burns notorious for their chronicity is worth investigation. An invitro investigation of the potency of honey was thought a necessary step before advice in the use of honey for application in the treatment of burns.

MATERIALS AND METHODS

The present study is based on the in vitro comparison of the sensitivity of certain pathogenic micro-organisms to the effect of a number of commonly used antibiotics and various dilutions of honey in distilled water. 5 dilutions starting from 50% - 10% were used. The bacteria were isolated from the urine of patients complaining of various U.T. troubles. The types of isolated bacteria in descending frequency were E Coli, Klebsiella, B Proteus, and Pseudomonas. A lower incidence of Strept cocci and Staph cocci was reported. The antibiotics tested were Cephaloridine (Cr), Penbritin (Amp), Gentamycin (Gn), Nitrofurantoin (Nit), Nalidixic acid (N) and Co-Sulfamethazol (SX1).

RESULTS AND DISCUSSION

Out of the 320 samples of urine cultured, 191 were found sterile and 149 were found to have bacteria, 100,000/cm. 9 types of pathogenic bacteria were identified in the urine samples. The most common type was E coli, found in 80 samples. The other types were markedly less common. Comparison between the bacterial activity of the various dilutions of honey and the commonly used antibiotics is shown in Table (1). Among the antibiotics, Gn proved to be the most potent. Nit, N and SX1 were the least effective.

The potency of honey 50% - 30% was found to be superior to all types of antibiotics including Gn. The effect of honey was not affected by dilutions up to 30%. The sensitivity to both 20% and 10% honey was less for Klebsiella, where sensitivity dropped particularly with the 10% dilution. Dilution of honey below 30% seems to lower the efficiency. This is in conformity with the reports of Cavanagh et al (1970). The overall picture confirms the finding of several other works about the efficiency of honey as an antibacterial agent recommended for infective complications of wounds. Also the application of honey to infected burns seem quite promising.

Sensitivity of various types of pathogenic bacteria to the same antibiotics and various concentrations of honey

		Antibiotics						Honey				
	No. of Cases	CR	Amp	Gn	Nit	N	SXI	50%	40%	30%	20%	10%
E Coli	80	3	4	80	42	44	44	80	80	80	80	80
B Proteus	20	3	2	20	—	—	3	20	20	20	10	10
Pseudomonas	10	1	—	10	1	1	—	10	10	10	10	10
Klebsiella	25	—	—	25	—	—	6	25	25	25	21	10
B.H. Strept.	4	4	4	—	—	—	—	4	4	4	4	4
Staph aureaus	3	3	3	—	—	—	2	3	3	3	3	3
Staph albus	1	1	—	—	—	—	—	1	1	1	1	1
H Strept.	5	5	4	—	—	—	4	4	4	4	4	4
Un H Strept.	1	1	1	—	—	—	—	1	1	1	1	1

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THERAPEUTIC RESPONSE OF ARAB MEDICINES IN CASES OF LAQUWA

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25 cases of Laquwa were treated during the Post Graduation studies at Hyderabad, India, in 1975-1976 by a simple polypharmaceutical recipe of (1) Hebbe-e-Mafasil Faliji (2), Ustukhuddoos (Lavandula Stoechas). The main ingredient of Habb-e-Mafassil Faliji is commiphora Mukul (Muquil or Gugulu) and having the ratio 2:1 in the formula. All the drugs in this specific formula are anti-inflammatory, resolvent and anti-suppurative. This Habb was supplemented by the decoction of Lavandula Stoechas, 6 grams in a glass of water. This complex treatment proved very effective as 76% cases got complete recovery in the maximum duration of 21-80 days.

INTRODUCTION

Laquwa is a name of an eagle (Uqaab). Abu Ubaidah presented his opinion that the name of 'Laquwa' has been assigned to this disease, as the patient, whenever his face is paralysed, has similar type of wider angles of his mouth, as the bird possesses. Others have suggested that Uqaab always keeps his head deviated to one side, therefore this resemblance is appropriate to name the disease so[19].

Sir Charles Bell (1774-1842) first published his idea of new anatomy of the brain in 1807. In 1823 he described the Bell's phenomenon, nearly always present in the patients of laquwa. His description and research was so complete that the disease has been named after him as Bell's palsy[11].

From A.H. Rabban Tabri[33] to Avicenna[1], every author had shown the phlegm or cold moist viscid serous humour, as one of the cause for producing the disease of laquwa. Avicenna[1] says (1) that some time laquwa was caused by the spasm which occured at one side of the face and this spasm was due to the Yaboosat or dryness. The translator of the book "Sharh-e-Asbab" confirmed his opinion (2). And some times the spasm was due to the cold and viscid humour coming from the brain and filling the nerves of a jaw, which caused the spasmodic side to drag the healthy (other) side towards itself. By this the fairness of the lips and eyes which could be closed evenly and properly was lost from the healthy side (3). Another factor was that the angle of the mouth drooped[18, 19, 28].

HK. Azam Khan[21] mentioned that the disease was caused by the spasm or paralysis of the muscles of the face and eye lashes. For this reason it has been named accordingly i.e. Laquwa-e-Isterkhai (Flaccid) and Laquwa-e-Tashannujee (spasmodic) or spastic Facial paralysis[29].

Galen ascertained that the disease was due to the indifference of the matter (morbid matter) and the infiltration of viscid matter; which caused spasmodic condition at one side, while the fluid matter produced flaccidity on the other side. Usually Laquwa-e-Tashannuji (Spasmodic) was predominent. The other type Isterkhai (flaccid) was rare [28-29] .

The pathogenesis of Bell's palsy is still not known. It is thought to be due to compression of the nerve fibres from acute inflammation and oedema of the collagenous and elastic tissues in and around the nerve. The nerve may later be reduced to only a fibrous cord [10-34] .

Bell's palsy is a paralysis of the muscles of one side of the face, sometimes preciptated by exposure; chill or trauma[24].

Although it is said that 'Laquwa' is due to cold and viscid phlegm and have the influence of cold climate and season and is a disease frequently met within cold countries, but a fairly good number of cases are found in India and had been treated in different ways from centuries.

The purpose for the selection of this topic at the postgraduation studies was that, no special attention has been paid in the medical field upon this oldest known yet most neglected disease upto this time. Hitherto the different types of single and compound drugs mentioned by the ancient authors are being used without keeping in view the definite criteria.

Though in many cases of 'Laquwa' complete recovery occurs after a month or so, but if at the end of 3 weeks from the onset, there is no return of any voluntary power in the face, the recovery is never complete and contracture usually develops later in the paralysed muscles.

The aim of the present study was to evaluate the benefits with drug therapy and to assess the efficacy of the selected specific medicines chosen for the trial on the patients of Laquwa.

MATERIAL AND METHODS

A Patients (25): cases of Laquwa were selected during the P.G. studies in 1975-76 at Hyderabad, India. No particular principle has been followed in selection of cases. Besides the aetiological factors, the response of drugs especially selected for the treatment of this disease was carefully noted. The cases were investigated and followed up.

B Medicines used: After intensive study of the ancient compound recipes, the following drugs were selected (1): -Habbe-e-Mafasil Faliji and (2) The decoction of "Ustukhuddoos" (Lavandula Stoechas).

The ingredients of "Habb-e-Mafasil Faliji" were as follow:

(1) Dar-e-filfil- (root) /Piper Longum
(2) Zanjabeel (root) /Zingiber officinalis
(3) Kababa (dried fruits) /Cubeba officinalis
(4) Zarambad /Curcuma Zerumbet
(5) Abhal (Berries) /Juniperis Fructus communis
(6) Filfilmoya /Piper longum Chavica roxburgil

(7) Kasni /Cichorium Intybus
(8) Podina /Mentha Arvensis
(9) Muqul /Balsamodendron Mukul or commiphora Mukul (Gugal) (Burseraceae) Hooker Stedor [15].
(10) Rooghan-e-Kunjad /Sesamum Indicum (Oil) for mixing the powder.

The ratio of 'Muqil' and all other drugs in the above selected formula was 2:1, so the main drug of this recipe was Muqil (Balsamondendron Mukul or Commiphora Mukul).

The ancient authors have described Mukul as Mohallil (Resolvent), Mushil-e-Balgham (Purgative of Phlegm) and have mentioned that it dries the Rutoobat also [22,29] . It is useful when used in phlegmatic disorders such as paralysis, facial paralysis etc[27]. It eliminates abnormal fluids and acts as anti-inflammatory [7, 15, 17, 20, 22] .

K.M. Nadkarni [26] has mentioned the C.Mukul's action as demulcent, aperient, carminative, anti-spasmodic and emmenagogue. He also mentions that "Gugul" is said to have marked antisupporative properties and it causes an increase of leucocytes in the blood and hence stimulates phagocytosis. Chopra [9] mentions that it is quite harmless and may be taken for a long time without any side effects.

Recent Researches i.e. pharmacological and clinical studies on the oleoresin portion of the plant have been done and found it to be a highly potent as anti-inflammatory agent as hydrocortisone[13]. The anti-arthritic and anti-inflammatory activities were also studied by some more scientists afterwards and found that oleoresin fraction possessed significantly active antiarthritic and antiinflammatory properties and the antiphlogistic effect was comparable to that of hydrocortisone acetate [4,16,31,32] .

The other drugs contained in this formula i.e. Filfil Moya (Root of piper longum), Abhal (J.F. Communis) Zarambad (Curcuma Zerumbet) and Kababa (Cubeba officinalis) are possessing the properties of antiinflammatory and antispasmodic and resolvent agents and Podina (Mentha Arvensis), Kasni (Cichorium Intybus) and Zanjbil (Zingiber officinalis) were carminatives, stimulants and digestives. Therefore most of the drugs were antiinflammatories, stimulants, resolvants, carminatives, antispasmodics, in action, while Abhal (J.F. Communis) was a vasodilator.

Another drug which was selected for the trial was Ustukhuddoos (Lavandula Stoechas). Its numerous actions were known to the ancient physicians, such as stimulant aromatic, carminative, anti-spasmodic, antiphologestic and resolvent and deobstruent [9, 20, 26] .

PREPARATION OF DRUG:

All the crude drugs of this recipe were taken and powdered separately except Mukul. As Mukul was sticky so first of all, it was mixed with sesame oil and then other ingredients of the formula were added. The semi-solid compound so formed was made into tablets of 2 gms and then given to the patients.

DOSAGE:

Generally Habb-e-Mafasil faliji was prescribed in divided doses according to age and sex. It was given from 4-6 grams in 24 hours.

ADMINISTRATION OF THE MEDICINES:

The main drug Habb-e-Mafasil Faliji was administered to the patients of Laquwa in the divided doses of 4-6 grams in 24 hours. The decoction of Ustukhuddoos (L. Stoechas) 6 grams in a glass of water was also used with it. Some of the patients were kept on Habb-e-Mafasil only without giving decoction, just to assess the efficacy of the main drug.

DISCUSSION ON TREATMENT

There is no specific treatment for facial paralysis in any system of medicine. The reason is that the aetiological factors are still unknown. In this series a polypharmaceutical recipe has been formulated and tried on the patients of laquwa on the basis of generalised concept of Greco-Arab system of medicine. The therapeutic response of this complex treatment was promising and was as follows:-

Cured - 76%, Relieved - 16% & Otherwise - 8%.

TABLE NO. (1) ; Showing the therapeutic response of drugs in cases of Laquwa

Result	No. of Patients	% of cases responded
Cured	19	76%
Relieved	4	16%
Otherwise	2	8%
Total No. of Patients	25	100%

The specific medicine known as Habb-e-Mafasil Faliji consisted of C. Mukul in combination with other drugs. This was supplemented by the decoction of Ustukhuddoos (L. Stoechas).

The above medicines have been used by Greco-Arab Physicians since centuries as they were aware of their actions, and our present experience has also confirmed the same. The results of the treatment were very satisfactory. The medicines might have a direct antiinflammatory effect on the tissues, thereby inhibiting cellular reaction, or they might exert the anti-inflammatory effect through the pituitary adrenal axis. Cortisone might be liberated and be directly responsible for minimising inflammation at the site. So it is also quite likely that these drugs might be stimulating the pituitary to activate the adrenal function.

The effects of the anti-inflamatory action of prednisone were tested in 40 cases by Fayez and Ragheb of the Cairo University in 1960. It was effective in the treatment only when given very early in the disease (i. e. in the first 24 hours[12]). It is usually customary to give ACTH as soon as possible after the palsy has occured (Fearnley etal 1966). Adrenal corticosteroids begun near the onset of illness and continued for 7 to 10 days may favour a more rapid and complete recovery[6].

K.K.Adour & J. Wingerd [3], 1974, determined that the oral prednisone is the treatment of choice for all patients with idiopathic facial palsy.

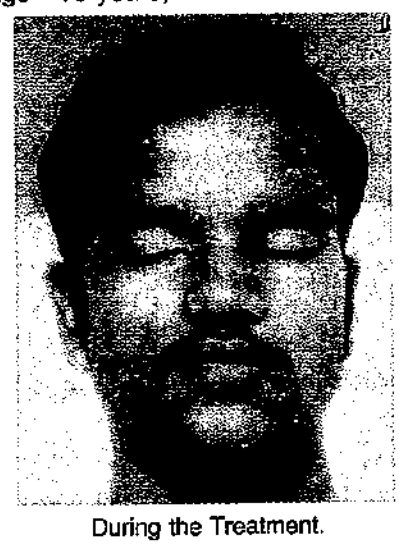
(Sex — Male, Age — 50 years, Duration of Treatment — 25 days.)

Left sided Laquwa.
At the time of admission.

After the Treatment.

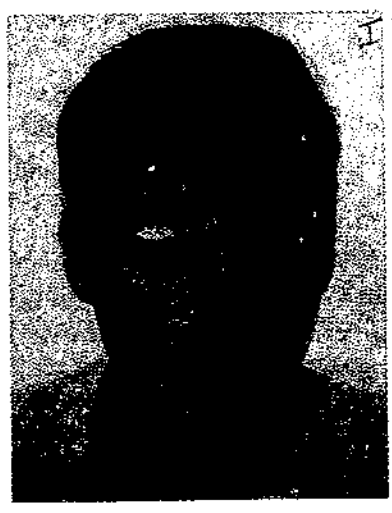
(Sex - Male, Age - 18 years, Duration of Treatment - 100 days.)

Right sided of Laquwa.
A few days after the admission.

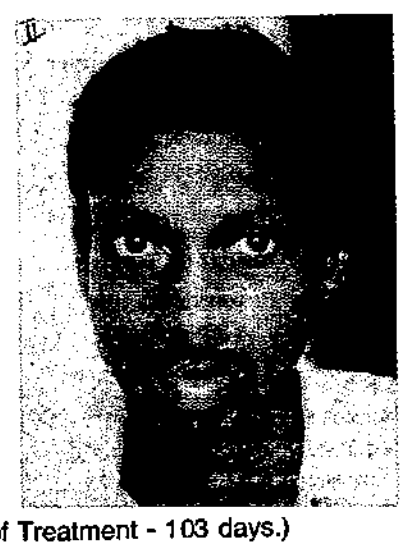


During the Treatment.

After the Treatment.



Right sided Laquwa.
Before the Treatment.



After the Treatment.

(Sex - Male, Age - 22 years, Luration of Treatment - 103 days.)

(Sex — Female, Age — 10 years, Duration of Treatment — 27 days.)

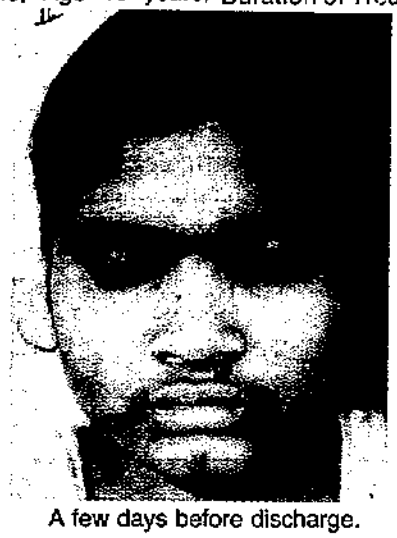
Left sided Laquwa.
At the time of starting the treatment.

During the Treatment.

After the Treatment.

(Sex — Female, Age 16 years, Duration of Treatment — 41 days.)

Left sided Laquwa.
A few days after the admission.



A few days before discharge.

After the Treatment.

Left sided Laquwa
A few days after the admission

A few days after the admission.

After the Treatment.

(Sex — Female, Age 60 years, Duration of Treatment — 84 days.)

The advantage of using the Mukul is its ability to penetrate any barrier in the system and to reach the site of action. Its action gets doubled when mixed together with various vehicles[27].

The 2nd drug lavandula stoechas (Ustukhuddoos) sweeps away all the phlegm impurities. (Kabir[20]) (Nadkarni [26]). The trial of this drug in the form of decoction proved beneficial and the therapeutic response of this drug was promising in a shorter period when given to the patients with the main drug.

Nowadays the corticosteroids having their pronounced anti-inflammatory and analgesic properties have found application in the treatment of rheumatic diseases, but the prolongation of steroid medication increases the frequency of side effects and therefore its un-interrupted administration over long periods is un-advisable [2,3] .

Keeping the hazards of prednisone in view, the efficacy of the complex treatment tried in our series is most beneficial, because no such complications developed in any of the cases and even if the drugs were used for a longer period.

TABLE NO. (II) Showing the duration of treatment and percentage of Recovery

Duration	Cured	Relieved	Otherwise	Total	%
0-20 days	—	—	1	1	4%
21-40 days	9	3	1	13	52%
41-60 days	5	—	—	5	20%
61-80 days	2	—	—	2	8%
81 above	3	1	—	4	16%
Total:	19	4	2	25	100%
%of result	76%	16%	8%		

From the above table it is clear that the maximum duration of 21 to 40 days was required for 52% cases & the next duration i.e. 41 to 60 days was required for 20% cases.

Out of 25 cases of Laquwa treated by the complex treatment 76% cured, 16% relieved and 8% otherwise. If the patients in the relieved groups would have continued the therapy for a longer period, they might have got complete recovery.

TABLE NO. III: Showing Laquwa recovery profile

SITE	Percent return of function				
	0 to 25%	25 to 50%	50 to 75%	75 to 100%	Total
Forehead	—	2	4	19	25
Eye	—	2	3	20	25
Mouth	—	3	4	18	25

in 80% patients, eye abnormalities recovered completely and in 76%, forehead wrinkles recovered completely and in 72% deviation of mouth recovered completely.

CONCLUSION

It is concluded that this complex treatment has proved very effective for cases of Laquwa because the method is simple, drugs are cheap, no complications developed even if the therapy was continued for a longer period and there was no recurrence in any case reported. The therapy was very effective as 76% recovered completely and 16% were relieved.

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THE FETAL ALCOHOL SYNDROME

Allie Mousa,
South Africa

THEY WILL ASK THEE CONCERNING WINE AND GAMES OF CHANCE. SAY: IN BOTH IS GREAT SIN, AND ADVANTAGE ALSO, TO MEN, BUT THE SIN IS GREATER THAN THE ADVANTAGE.

(Quran S2: V219)

O BELIEVER, SURELY WINE AND GAMES OF CHANCE AND STATUS AND THE DEVINE ARROWS ARE AN ABOMINATION OF SATAN'S WORK. AVOID THEM, THAT HE MAY PROSPER.

(Quran S5: V93)

INTRODUCTION

It is now exactly 1400 years ago that these Quranic injunctions were revealed, yet alcoholism today is still a major health and sociological hazard to mankind. Alcoholic cirrhosis, psychosis and peripheral neuropathy are everyday occurrences in most hospitals in the Western World. The last 7 years however, has seen the emergence of another major effect of alcohol which is far more serious and with far reaching implications. Alcohol has now been shown to be a teratogen of major significance and is probably one of the most frequent causes of mental deficiency in the Western World.

I report 4 cases of the fetal alcohol syndrome seen over 3 months in one neonatal unit and review the clinical features.

CASE REPORTS

Case I

A male baby was born to a gravida 2 woman by spontaneous vaginal delivery. The mother's VDRL was negative and she had an apparent uneventful antenatal course. The gestational age was 37.5 weeks, the birth weight 2240 grms. (just below the 10th percentile); head circumference 31 cm and length 45 cm were both below the 10th percentile, but were more affected than the weight.

The baby was noted to be very hairy, had very small palpebral fissures (measuring 1.5 cm), and a smooth upper lip with an underdeveloped philtrum. The infant was extremely jittery although serum levels of calcium, magnesium and glucose were repeatedly normal. He cried almost continuously, in an irritable high pitched voice. Chest X-ray revealed a narrow heart pedicle with an absent thymic shadow.

Initially, the mother denied excessive alcohol intake, but after visiting her baby in an intoxicated state, she admitted to the regular consumption of 2-3 bottles wine per day throughout pregnancy.

Case II

A full term female baby was born before arrival at the hospital to a 23 year old gravida 2 mother. The birth weight of 1730 grams, length 39 cm and head circumference of 28.5 cm. were all well below the 10th percentile. The baby was very jittery despite normal dextrostix. She had a smooth upper lip with an underdeveloped philtrum and very small eyes with palpebral fissures measuring 1.5 cm. She could not fully extend her knees and had aberrant palmar creases. Despite adequate feeds the infant cried excessively. The mother frequently visited her baby in an intoxicated state and admitted taking 2 bottles of wine per day.

Case III

A gravida 5 mother gave birth to a male infant by spontaneous vertex delivery while in an alcoholic stupor.

The baby's gestational age was scored at 37 weeks, his birth weight was 2190 grams and length 44 cm - both below the 10th percentile, but length more affected than weight. His head circumference measured 33 cm which is just above 10th percentile. He had small deep set eyes, but palpebral fissures measured 2.1 cm. The infant had a VSD murmur but no other abnormalities. The mother admitted excessive alcohol intake during pregnancy.

Case IV

A female baby was born by Caesarian section to a gravida 3 mother who had had 2 previous Caesarian sections. The gestational age was 40.5 weeks, the birth weight 2220 grams, length 45cm. and head circumference 30 cm were all below the 10th percentile. The baby had a smooth upper lip, underdeveloped philtrum and short palpebral fissures of 1.7 cm. The mother admitted taking 2-3 bottles of wine daily over week-ends throughout pregnancy.

DISCUSSION

The infants described all had prenatal growth retardation. They also had small eyes and/or short palpebral fissures. Three of the babies had a smooth upper lip with an underdeveloped philtrum, one had aberrant palmar creases and another a ventricular septal defect. They were all jittery and 2 of the infants cried excessively inspite of adequate feeds.

These features are all found in the fetal alcohol syndrome.

DEFINITION

Although for many years maternal alcoholism has been suspected to be detrimental to the fetus, it was only in 1973 that Jones et al[1] described the abnormalities encountered in the baby of an alcoholic woman as a recognisable syndrome.

Qazi and Masakawa[2] define the fetal alcohol syndrome as a pattern of abnormal growth and morphogenesis in infants born to chronic alcoholic women who continue heavy alcohol consumption throughout pregnancy.

Clinical Features

In their review of 245 patients Clarren and Smith[3] found the following features in more than 80% of patients: prenatal growth deficiency, postnatal growth deficiency, developmental delay and mental retardation with microcephaly; short palpebral fissures and hypoplastic philtrum and irritability in infancy. The prenatal growth retardation affects both birth length and weight to varying degrees. These infants all have postnatal growth deficiency despite adequate nutrition even in foster care and only reach 65% of expected length and 30% of normal weight gain. Loss of adipose tissue is a nearly constant feature. Exposure to alcohol during intra-uterine life therefore seems to have an irreversible effect on growth potential.

Most infants with the fetal alcohol syndrome are mentally retarded with I.Q.'s ranging from 50-83 (mean 63)[4]. Post mortem examination clearly showed abnormal brain development with aberration of neuronal migration[5]. Sheets of neuronal and glial cells were found on the outer surface of the cerebral hemispheres. Agenesis of the corpus callosum and incomplete development of the cerebral cortex resulting in enlarged ventricles is also described[4].

Infants who do not demonstrate the full blown physical features of the fetal alcohol syndrome or congenital abnormalities may also be at a greater risk of developmental retardation if their mothers drink excessively during pregnancy.

Short palpebral fissures are usually obvious on clinical examination and is very often associated with small eyes. Jones et al[1] measured the length of the palpebral fissures and found that it was below 1.9cm (normal for a full term infant) in all the babies with the fetal alcohol syndrome. Another fairly consistent feature is a smooth upper lip with an underdeveloped philtrum[3].

Other abnormal feature in the fetal alcohol syndrome have been well recorded [1-7] Craniofacial abnormalities may include microcephaly, maxillary hypoplasia, epicanthic folds, micrognathia, cleft palate, deficient upper helices and low set ears. Joint abnormalities (hip dislocation, inability to flex metacarpophalyngeal joints or to extend elbows completely) may occur in up to 75% of patients, and altered palmar creases which may be rudimentary, single or aberrant in alignment in up to 50% of patients. Other abnormalities which may be encountered include cardiac anomalies especially atrial and ventricular septal defects, abnormal external genitalia, hirsutism, capillary hemangiomata, and the Klippel-Feil anomaly[7].

A high percentage of the babies have a tremulousness in the newborn period which is unresponsive to alcohol or sedation, often associated with poor such as hyperacus is. This tremulousness may persist and later manifest as fine motor dysfunction.

Infants born to alcoholic mothers do not always present all the major features. If only mildly affected the diagnosis may easily be missed.

Incidence

The exact incidence of affected babies born to chronic alcoholic women must still be established but recent studies suggest a frequency of 1-2 / 1000 live births[3].

In a prospective study by Rosett et al[8] no baby with the full-blown fetal alcohol syndrome was found. However, there was a very high incidence of abnormal children (71%) born to women who continued heavy alcohol intake throughout pregnancy. Major congenital abnormalities were found in 12% and minor congenital abnormalities in 17%. The mothers who drank excessively during pregnancy also had a much higher incidence of growth retarded, jittery of hypotonic infants. The incidence of congenital anomalies as wel as these minor abnormalities were markedly decreased in moderate or occasional drinkers, but was still higher than expected for the normal population.

The conclusion drawn from these findings is that there does not seem to be a "safe" alcohol intake during pregnancy. Both animal[9] and human[8] studies clearly demonstrate a dose related effect on the fetus and excessive drinking just over weekends may be sufficient to produce the syndrome as is well illustrated by the 4th case.

Pathogenesis

The mechanism by which alcohol affects the fetus is still uncertain. A few hypotheses have been put forward. The detrimental effects may be due to the alcohol itself or one of its breakdown products. Alcohol crosses the placenta freely[10] and may thus reach as high levels in the fetus as in the mother, causing the baby to be born in "drunken stupor".

The breakdown of alcohol in tissues increases the NADH: NAD ratio and thereby influences many aspects of carbohydrate, fat and protein metabolism[11]. Other well recognised effects of alcohol are hypoglycemia, ketosis and lactacidemia and perhaps these may play role in the pathogenesis.

Alcoholics are often in a poor nutritional state but it seems unlikely that general malnourishment can cause the features of the fetal alcohol symdrome.

Chernoff[9] undertook a controlled study in female mice giving them a variety of diets each containing adequate calories, vitamins and other nutrients, but different amounts of ethanol. He clearly showed that day - 18 mouse foetuses had a pattern of malformation similar to the fetal alcohol symdrome including prenatal growth deficiency, neural and cardiac anomalies, skeletal dysmorpho - genesis and prenatal wastage. He also found a good dose response curve with high alcohol blood levels being embryolethal and lower levels causing brain malformations.

Smithels et al[12] made the suggestion that folate deficiency may cause neural tube defects. A well known side effect of alcoholism is folate deficiency and it is possible that foliate deficiency may cause the congenital abnormalities.

Pregnant women who overindulge in alcohol may also be addicted to other drugs and before a baby is labelled as a "fetal alcohol syndrome" the possibility that the abnormalities could be caused by other

drugs, should be excluded.

Not all mothers who drink heavily during pregnancy produce affected infants. Factors other than the amount of alcohol intake may therefore play role in the pathogenesis of this syndrome.

Two twin pregnancies[12,14] in alcoholic mothers have been reported. One of the dizygotic twins described by Christoffel and Salafsky[13] had gross features of the fetal alcohol symdrome, the other was only mildly affected and would not have been recognised if this twin had not been so severely affected. Palmer et al[14] reported twins with a single placenta showing different physical features of the syndrome, indicating the dysmorphogenesis was not genetic in origin.

Thus there appears to be a certain 'host-susceptibility"determining how severely a fetus will be affected. Qazi and Masakawa[2] noticed that there is a marked female predominance of the fetal alcohol syndrome and raised the question whether the male fetus may be more susceptible to alcohol and thus eliminated early by spontaneous abortion.

Management

There is no treatment beside supportive measures for the baby with the fetal alcohol syndrome. The growth retardation and intellectual impairment are permanent and this highlights the seriousness of the condition. Although we do not know what proportion of mothers who drink excessively during pregnancy produce infants with the full fetal alcohol syndrome, the risk of congenital maformations detected at birth is of the order of 30% and is likely to be higher if the infants are followed up longer.

Prevention, therefore, is of utmost importance and this means abstinence from alcohol at all times. The American National Institute of Alcohol Abuse and Alcoholism now advises, rather belatedly "that the safest and wisest course to follow in the interest of the best possible outcome" is abstinence.

CONCLUSION

Yet another major health hazard from alcohol has been added to the long list of those already well known. But unlike these others the effects of alcohol on the fetus hold serious implications for the development of our future generations.

If mental retardation occurs in more than 80% of these with the fetal alcohol syndrome and approximately 1-2/1000 live births suffer from this syndrome then the number of mentally retarded individuals that are produced is staggering. Yet this disaster, like the other effects of alcohol, are so easily preventable if only the simple Quranic injunction, quoted at the beginning of the paper, is followed. Even the Bible announces: "Behold, thou shall conceive, and bear a son; and now drink no wine or strong drink..." (Judges 13: 7).

SUMMARY

Four cases of the fetal alcohol syndrome are described, and the clinical features reviewed. The most consistent features found are pre - and post - natal growth retardation, short palpebral fissures, hypoplastic philtrum, mental deficiency, microcephaly and irritability in infancy.

Alcohol is a teratogen of major significance and is probably one of the most frequent causes of mental deficiency in the Western world. The Quran prohibits the intake of alcohol in whatever form and once more the wisdom of this injunction is borne out by the adverse effects of alcohol on the fetus.

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COMMENTS

AND

DISCUSSIONS

Chairman, (Hakim Mohammed Said):

We have only 8 1/2 minutes for discussions. May I invite some questions or comments.

Dr. Moataz Al-Marzooki:

Mr. Chairman, I just want to add something regarding my field of work, in relation to honey. I have been using honey in opthalmology, in the treatment of different microbial infections, particularly in corneal ulcers and I had got very good results. I used honey as a base in ointments of Atropine and Teramycine. I used honey generally and continuously as a base for ointments in Ophthalmic use. A very good result has been obtained. Thank you very much.

Dr. Ahmed El-Kadi:

I have very much enjoyed all the presentations of the session and I make one additional comment about the honey. I have used it in several obese patients in the abdominal wounds, before closure of the subcutaneous tissues to prevent wound infection and improve healing. There are several reports in *Lancet* in the late 60's about this effect. About additional remarks to the beautiful presentation of Prof. Dr Allie Mousa, about Alcohol Syndrome. During my readings about Alcohol, I came across an experimental study in animals which showed that the same Syndrome could also be found in children of drinking fathers. So, even the drinking male can transfer the same ill effects to their children. We have to wait for the human experiments. I have a question to Dr. Nazeer Ahmed Siddiqui about the Bell's palsy. I know that some have spontaneous recovery. Just for my own education I want to know how many are expected to have spontaneous recovery, that means without any treatment and how long should it take to reach the spontaneous recovery. Thank you.

Dr. Ahmed Shawki Fangari:

In this session we have heard very interesting talks about honey. The bactericidal effects of honey and effects of honey on the gastro-intestinal-tract and we have heard about the facial palsy, about mushroom and its effect, the almond and its effect on the eye. It shows that there are so many things that can be done in Islamic Medicine and that can be taught in medical schools all over the Islamic World. About honey, I think that more research works could be done because, as far as I know in most of the Islamic hospitals, there were fields of medicinal plants that were attached to them and there were bees that were fed. They used to feed the bees on the medicinal plants and from that they could get specific extracts which contained the parts taken from the flowers of these plants and they used them. So, they had different kinds of honey. Honey that was used for cough syrups, honey that was used for the treatment of gastro-intestinal tract and this was on the basis that it was of different colours ( ) and it was also proved. Now it means that there are different compositions in the honey. Also, in honey as we know that the bee produces two kinds of honey. Specific honey that could be given to the queen and the other type of honey that could be given to the labours and the honey itself would produce, either a queen or a labourer. And that means that the honey contains also a harmone. Thank you.

Chairman:

I think Mr. Siddiqui would like to reply to Dr. Ahmed El-Kadi's question.

Dr. Nazeer Ahmed Siddiqui:

Regarding the duration of treatment, I would like to say that in my study I observed that 20 - 45 days for acute and untreated cases, and for complicated cases and those who were having the treatment some where else or some complications, they took up to 80 days. During this study I could not collect data about spontaneous recovery.

Dr. Salem Najim Salem:

A comment and a warning to our physicians that during pregnancy we usually prescribe tonics and in the tonics, appetizers, at least 5% or more of the tonic is alcohol and I wonder if our Professor, who presented this paper has come across with those who are not alcoholic but administering or taking tonics during pregnancy.

Dr. M. Ragaie El-Mostehy:

Yes I would like to ask our colleague here talking about the Flat-upper-lip as related to the Alcohol--fetus-Syndrome. We know that the filtrum is derived from the front nasal process. There will be later on maxillary processes to produce this kind of filtrum. Could he elaborate on the way, that this, logically speaking, happens.

Dr. Ahmed Shawki Ibrahim:

Allah said in The Holy Quran يخرج من بطونها شرابٌ مختلف الوان But Quran did not use the word honey (عسل). It is not honey only. Quran did not indicate honey but the word Shrab (شراب) and what comes out of the bees, in not only honey but Shrab (شراب). We know now that it is honey, pollens, royal jelly and certain poisons from the bees. All of these ingredients are useful in certain diseases and the collection of all is a cure (فيه شفاءٌ للناس.) as said in the Holy Quran.

Chairman:

Dr. Allie Mousa, would you like to reply to Dr. Kadi and Dr. Ragaie?

Dr. Allie Mousa:

In reply to the first question about the presence of Alcohol in mixtures and syrups and so on, I think we are fully aware of this. In fact in the neonatal period we have recently had an experience where an infant had an un-explained Osmotic diuresis and it was found that this was due to the presence of excessive alcohol in a Phenobarb-elixir. The baby was receiving for his fits. So, we are fully aware of the presence of the alcohol in many of these mixtures and it is our responsibility as muslim physicians to bring this to the attention of our patients and to avoid the use of these particular mixtures, but more important than that is to be aware of the percentage of alcohol in these mixtures. We must find out why it is there? It is there, perhaps as a base or as a solvent and if surveyed, as muslim physicians, we should take the initiative in finding alternatives and Insha Allah, I think there is a possibility that we will be finding this alternative very soon.

In reply to the second question about how the smooth-and underdeveloped, filtrum in the upper lip is produced. All I can say on this point is that there is evidence that what happens is that, there is under-development of the dimaxilla. There is maxillary hypo-plasia and may be the underdevelopment of the filtrum in the upper lip, a direct result of maxillary hypo-plasia.

Chairman:

Last question from a friend from Indonesia. I am sorry it is the last question, as we have no time, although I am fully aware that this discussion is very useful.

Dr. Ali Akbar:

Talking about honey I do agree with my brother that not only bee honey but also the bee itself is full of medicines. Specially what you call Bee venom is good for arthritis. The larva itself can be used to make Larva milk, which is also very useful and then I would like to say that there are many kinds of bee honey. In Indonesia, for instance, we have coconut trees, coriander and several kinds of trees, from where the bees collect and make honey. I would like to know what kind of trees or flowers have been used for the treatment and then secondly is it genuine bee honey or pasturized bee honey? In Indonesia, as a muslim doctor, I also established a company which collects honey, all over Indonesia So, I want to know whether this was pasturized bee honey or genuine bee honey? Thank you.

Dr. Moataz El-Marzooki:

Regarding the last point, we found in the Pyramids that honey has been kept since four and five thousands of years without any change either chamically or bacteriologically. Thank you.

Dr. Salem Najim Salem:

First of all there is no indication for pasturization of honey, because its high content of glucose and fructose would prevent any putrefaction or any growth of bacteria as shown in the first paper presented by our colleague Dr. Ahmed Shawki Abrahim. Heating honey or exposure to light may diminish the inhibin effects which are the antibacterial effects. As far as we are concerned, the honey is given in its natural form preferably to be the fresh one, not exposed to light or not exposed to heat and there is no special type about giving honey in gastro-intestinal problems. We leave for every patient to choose his own honey. Thank you.

CHAPTER TWO

(Some selected papers— Not presented)

1. CASSIA IN ISLAMIC MEDICINE AND ITS MODERN USES.
   Dr. Arun Misra and Mr. Ram Kumar Sinha.
2. MEDICAL ASPECTS OF AZL IN ISLAMIC FIQH.
   Dr. Saeed Mahmoodian Awadhi.
3. MEDICAL REASONS FOR PROHIBITION CARDIAC CONSEQUENCES OF ALCOHOLISM
   Dr. S. Sultan Ahmad.
4. WHEN THE FEMALE INFANT BURRIED ALIVE IS QUESTIONED FOR WHAT CRIME WAS SHE KILLED-IN THE 20TH CENTURY
   Dr. Omer Alfi and Dr. Maher Hathout.
5. MUSLIM SLAUGHTER-IS IT A RITUAL METHOD
   Dr. M.M. Helmy, Mr. M.A. Al-Sanae, Mr. N.A. Alnesf and Mr. Y.Y. Al-Sultan.

CASSIA IN ISLAMIC MEDICINE AND ITS MODERN USES

Arun Misra and Ramkumar Sinha
India

The genus Cassia of the family Leguminosae is a famous medicinal plant, which has been in use in Islamic Medicine. The word 'senna' often used with Cassia is the Latin form of Arabic 'sena' or 'sana'. The plant is used since long for thee purgative properties of the leaves. Pulp is used against worms and cough. In case of sorethroat the seeds are used for gargle. A blood purifier drug SAFI (product of Hamdard Wakf. Labs., Delhi) centains concentrated aqueous extracts of Cassia anguistifolia (senna) and C. occidentalis (kasaunki) as ingredients.

Based on its Islamic medicinal back ground we have tried to analyse its properties with modern biochemical methods and have found antiviral principles in several of the species of this plant. These aspects have been discussed in further detail here.

INTRODUCTION:

The genus *Cassia* of the family Leguminosae (Caesalpinaceae) is a wellknown medicinal plant (Chopra et al-1956, Satyavati et al. 1976, Levis and Elvin-Lewis 1977), particularly in the Islamic system of medicine (Bhandari 1959, Misra and Sinha 1978). We have tried to evaluate whether the 8 species of the genus growing in this area (Sinha 1976) have antiviral properties. The therapeutic value of *Cassias* has been recognised in the several systems of medical practise. In Islamic system of treatment *C. angustifolia, C. fistula, C. occidentalis, C. sophera and C. Tora* have been recognised as medicinals (Anonymous 1959). Flowers and pulp of *C. fistula* are useful as purgative and in the case of cough. Pulp is also used against worms. In case of sore throat, seeds and pulp are used as gargle. Ash of fruit with common salt and honey cures cough. *C. occidentalis* and *C. sophera* are useful in snake poisoning. Root of the plant with *golmirch* (piper nigrum) is used successfully as antidote to cold. Leaves are also said to cure the inflammation of the heart. In case of toothache, a paste of fresh root in water is used. Herbaceous *C. tora* is useful as blood purifier whereas seeds are used to cure cough and asthma. In chronic skin diseases as ringworm, itching etc., a paste of seeds are used with lemon juice, both internally as well as externally. *C. angustifolia* is also mentioned as purgative.

A general blood-purifier drug, SAFI, a product of Hamdard (Wakf) Labs., Delhi contains concentrated aqueous extracts of *C. angustifolia* and *C. occidentalis* as ingredients.

All the aspects need many investigations over several years which is being tried. However, we discuss here the antiviral properties of the 8 *Cassia* species growing in our area.

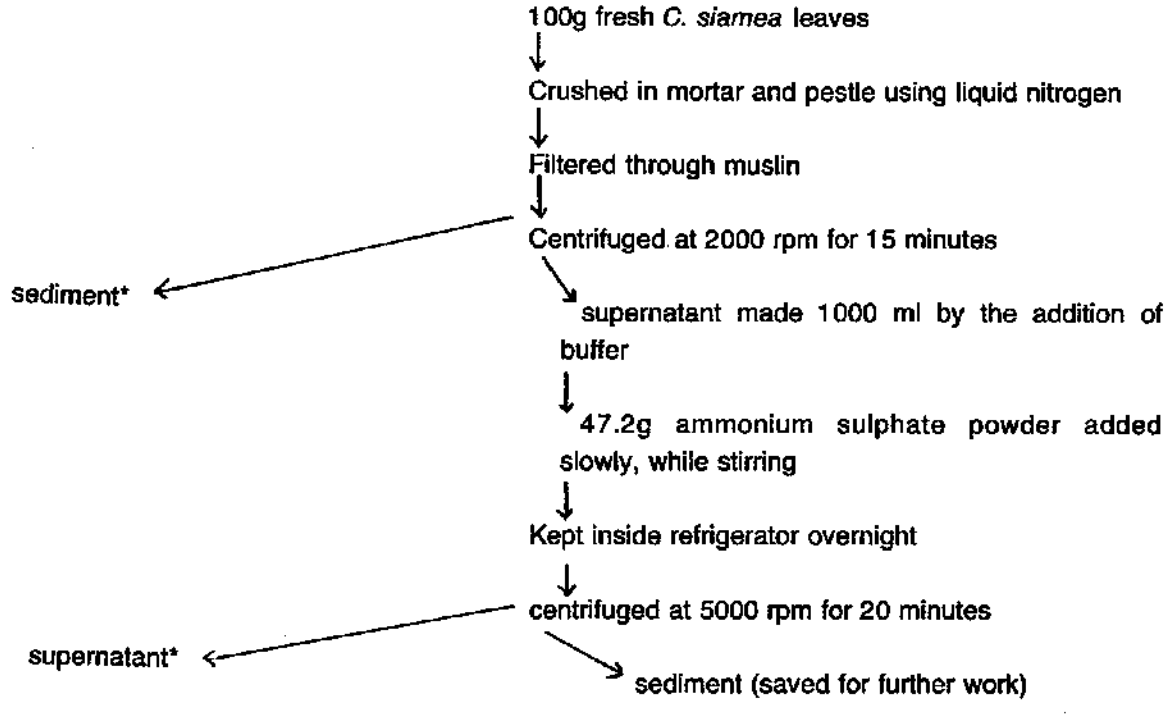
MATERIALS AND METHODS

The following species of *Cassia,* collected from the local area were examined. *C. fistula* Linn, *C. glauca* Lamn., *C. marqinata* Roxb, *C. nodosa* Buch. Ham., *C. occidentalis* Linn., *C. Siamea* Lamk., *C. sophera* Linn., and *C. tora* Linn. *C. glauca* is shrub, *C. occidentalis, C. sophera* and *C. tora* are herbs while the other four species: *C. fistula, C. marqinata, C. nodosa* and *C. siamea* are trees.

Aqueous and benzene extracts of the leaves of different species were prepared separately and mixed with the suspension of TMV (Tobacco mosaic virus) in varying concentrations. The mixture was applied to the surface of detached tobacco (Nicotiana tabacum var. Xanthi) leaves incubated in humid chambers for 48-64 hours. The intensity of virus activity was evaluated by counting the number of local lesions developed on the test leaves.

Control was maintained by using TMV suspension mixed with buffer solution, instead of *Cassia* extracts. In each case the first half of the leaf was brushed with test material (TMV + *Cassia* extract) and the other half with control solutions (TMV + buffer).

The virus-inhibiting property of *Cassia Siamea* was further investigated, as it proved to be most potent, as explained below (Misra 1977, Misra and Sinha 1978 and Misra and Sinha 1979).



*Discarded.

The sediment was the protein component which was again used for bio-test against TMV.

RESULTS.

The results have been indicated in the table provided. It is evident that *C. Siamea* had the maximum inhibiting capacity for TMV *C. fistula, C. glauca, C. occidentalis,* and *C. tora* had very little inhibiting capacity. *C. marginata* and *C. nodosa* had practically no effect. *C. sophera* was different from others and showed promotory effect on the viruses.

The benzene extract of different species of *Cassia* had almost the same activity, except that the performance of inhibition improved a little, in comparison to water extracts.

The protein precipitate extracted from *C. siamea* and used for bio-test against TMV, exhibited high degree of inhibition of local lesions, even up to 100% in some cases.

TABLE: Bio-test of water and benzene extracts of *Cassia* leaves, on Xanthi tobacco, against TMV (1:10)

SPECIES	WATER EXTRACT TEST / CONTROL		BENZENE EXTRACT TEST / CONTROL	
	No. of Local lesions	% Inhibition	No. of Local lesions	% Inhibition
fistula	142/185	23.245	123/172	27.348
glauca	98/130	24.615	107/147	27.210
marginata	146/148	1.351	142/144	1.388
nodosa	157/158	0.623	149/153	2.614
occidentalis	124/170	27.058	117/168	30.357
siamea	36/166	78.318	36/178	79.775
sophera*	128/153	19.431	171/140	22.222
tora	110/150	26.666	116/162	29.629

**C. sophera* had promotory effect instead of inhibition. A drop of benzene was added in controls.

DISCUSSION.

There have been many reports of anti-microbial activity of chemical compounds isolated from *Cassia* sps. (Mickell 1959, Gaind et al. 1966, Lillykutty and Santhakumari 1969). Fungicidal compounds have been known in *C. fistula* (Venkataraman and Radhakrishnan 1972) *C. tora* (Acharya and Chatterjee 1974). These substances were identified as flavonoidal glycosides, and chrysophanic acid-9-anthrone respectively. Chaksine an alkaloid isolated from *C. absus* has been found responsible against bacteria (Gupta and Chopra 1953). Insecticidal property of *Cassia* have also been reported by Rao (1957). Dhar et al. (1968) have mentioned the use of *C. auriculata, C. fistula* and *C. tora* against Ranikhet

and Vaccinia viruses. Other properties of *Cassia* as diuretic (Bhide and Seth 1957), analgesic (Patel et al 1965), cathartic (Iyengar et al 1966.), hypergalaemic (Shrotri et al. 1963, Dhar et al 1968) toxic (O'Hara and Pierce 1974) etc. have also been noted. The laxative principles (Van Os 1976) and the use of the genus *Cassia* in several types of skin diseases are wellknown since long (Chopra et at 1956, Sharma & Dash 1976).

Naturally occuring virus-inhibiting principles in plants have been known since long, in several types of plants (Mathews 1970). *Cassias* containing inhibitory principles against plant viruses has also now been established. It has further been proved that virus-inhibitor in *Cassia siamea* was proteinaceous in nature.

CONCLUSION..

The ancient claim of medicinal properties of *Cassia* plants in Islamic medicine has been corroborated by modern scientific data, that it contains anti-viral proteins. *C. siamea* is more potent than other 7 species growing in this area. Seeds of *Cassia occidentalis* are widely used as a substitute for coffee in Egypt (Hassan et al 1974). It is known as "Negro-Coffee", and has passed the organoleptic tests. Promotion of *Cassia* as coffee may be advanced further due to the facts that they are of medicinal value also.

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MEDICAL ASPECTS OF "AZL" IN ISLAMIC FIQH

Saeed Mahmoodian Awadhi

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In no other department of medical ethics have the claims of religion been pressed with greater consistency than in the field of reproduction and no faith other than Islam offers more precious insights and helpful value judgements in the areas of human concern touched upon in this paper, insights which can be of substantial enlightenment to a generation beset by confusion and reappraisal. This presentation reports our experience in support of Islamic perception of *Azl* and conception.

Azl or coitus interruptus is one of the most ancient and primitive methods of family limitation. The prevalence of this single method in the world the early Muslims were familiar with is suggested by several references in the Hadith and in the recipes of Islamic medical writers. Its early practice among the Hebrews is testified to by Genesis 38: 8-10, the story of Onan. Herodotus[1] reports that Pisistratus, the sixth-century B.C. tyrant of Athens "did not want to have children by his new wife and so had intercourse with her not according to custom". In the Old Testament[2], the first son of Juda was married to Tamar, but was slain by the Lord for an unspecified act of wickedness. Then Juda said unto Onan, "Go to your brother's wife and perform your duty as brother-in-law, and raise up seed for your brother". Onan knew that the descendants would not be his own, so whenever he had relations with his brother's wife, he let the seed be lost on the ground, in order not to raise up seed for his brother.

Duhamel in the "Catholic Church and Birth Control" argues that since death was not a punishment established for the violation of the levirate law, Onan was killed because of his contraceptive act.

When Islam appeared in Arabia diversity was most obvious in the structure of Arabian society. No doubt infanticide, abortion and other means of getting rid of unwanted children were prevalent in Arabia, as in other parts of the world, and Islam forbade them[3].

Though modern methods of birth control aim at the prevention of conception and do not amount to killing, the other vital issue is whether Islam would have approved the methods if such methods had been used in its beginning days.

> *According to Muslim, Jaber reported: a man came to Allah's messenger (ﷺ) and said: "I have a slave girl as a servant and have intercourse with her, but I do not want her to conceive and I practice Azl". The messenger (ﷺ) said: "What is decreed for her would come to her..."*

Its contraceptive permissability must have been noted because attention of Islamic medical writers

and physicians to contraceptive techniques and indications are extraordinary.

The Persian physician Abu Bakr Muhammad Ibn Zakariya al-Razi, was the greatest clinician of Islam, in fact the greatest physician of the Middle Ages[4]. In his book, "*Khulasat al Tajarib*", Chapter 24, on the organ of generation... and on the means or preventing conception[5] he states, "occasionally it is very important that the semen should not enter the womb, as for instance when there is danger to the woman in pregnancy". Al-Razi prescribes several ways, the first is that at the time of ejaculation the man withdraw from the woman so that the semen does not approach the os uteri.

Ibn Sina, in his famous book, Qanun[6], on the prevention of conception in a small woman to whom childbirth would be dangerous, recommends among the other means, quick separation of the two individuals. Isma'il al-Jurjani's *Dhakhira-i-Khwarazmshahi* completed about the year 1110, a century after Ibn Sina's *Qanun* contains the same advices.

An orthodox authority, a theologian, moralist and mystic, the great philosopher al-Ghazzali, at about the same time, expounded his ruling on *Azl* and conception in his famous work *Ihya-ul-ulum-al-Din*. Al-Ghazzali's opinion on permissibility of *Azl* depends on one's intention. He argues that since the child is not created from the male semen alone, *Azl* is unlike a capital crime of abortion or killing one's own child by burying it alive.

Azl seems to have been known in Arabia, as in other parts of the world, Muslim mentions that in the period when the Qur'an was coming down, they used to practise *Azl*, the Prophet (ﷺ) heard of that but did not prohibit it. Fear of people critic and censure for violating an old custom, was not the Prophet's (ﷺ) intention; nor was financial loss a motive if slave girl becomes *Umm al Walad* as hypothesized by Joseph Schacht's *Encyclopedia of Islam*. By not rejecting *Azl*, he mainly wanted to support the fatalism doctrine of Islam, for when God intends to create, nothing can prevent Him*.

Asceticism and self-denial are features of Stoicism of Christianity, and even more so of Hinduism. While sex outside marriage is regarded as abhorrent and among the worst of sins for which very strict legal punishments have been prescribed, within marriage, in Islam, the sex is considered natural, desirable, and enjoyable. Sex is intimately bound up with deep psychological gratification, a mechanism of tension reduction[7], the need for security, and the assurance of being loved and lovabe[8]. Qur'anic verses stress for those who contemplate a sign of God that

> HE HAS CREATED MATES TO SEEK IN EACH OTHER COMPANY, PEACE, AND TRANQUILITY AND HAS SET BETWEEN THEM MUTUAL LOVE AND MERCY"[9].
>
> (Quran: *(S.30: V.21)*

Because Islam described the coital act as the heterosexual relationship, mutual pleasure must be

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* Editor's comments. (Dr. AL-Sayyad): There is a well known Hadith in this respect: -

> "A MOSLEM SAID TO THE PROPHET (ﷺ): THE JEWS SAY THAT AZL IS A MINIATURE INFANTICIDE. THE PROPHET (ﷺ) SAID: NO, JEWS HAVE LIED. IF ALLAH WANTED TO CREATE SOMEONE, NOBODY COULD PREVENT HIM".
>
> *(TERMETHI, 1136)*

present in it, especially if we grant that the procreation is not the only purpose of coitus. According to this fundamental perception of sex in Islam, Omar the Second Caliph said that God's Messenger (ﷺ) prohibited *Azl* with a free woman unless she give permission[10]. In regard to birth control, since sperm-laden seminal fluid can escape prematurely, *Azl* is an uncertain method, in the sense that there is every possiblility of sperm finding its way into the womb. On account of this reason Omar Ibn al-Khattab, declared the child of a person as his legitimate child who practised *Azl* with a slave-women[11].

Not only *Azl's* high failure rate but extreme rare incidence of continuation of luteal phase pregnancy following dilation and curetage and sterilization tubal ligation are clear signs of the Prophet's wisdom. In confirmation of Bukhari and Muslim transmission of Allah's Messenger's (ﷺ) word:

> "EVERY SOUL THAT IS TO BE BORN UP TO THE DAY OF RESURRECTION WILL BE BORN"

We illustrate our own experience with a perplexing problem[12].

E.G., 28 year old, mother of 3 sons, had her minilap out-patient sterilization operation done on August 15, 1978, on the 21st day of her menstrual cycle. (Fig. 1-4). She had irregular periods with 21-42 days interval and a routine preoperative pregnancy test on August 14, 1978, was negative. As an occasional procedure, a thorough and complete dilation and currettage at the time of tubal ligation was performed for merit that it may reveal unsuspected intratuterine pathology. One week postoperative examination was normal and tissue reports by the pathologist were noticed to be in order. Examination of endometrial tissue showed it to be in the late secretory phase, with decidual changes and further tissue report indicated portions of two unremarkable uterine tubes. She returned to the office two months after sterilization still not having had a menstrual period and somewhat worried. An examination indicated that she was indeed pregnant, and the uterus was enlarged to about nine weeks gestational size. An ultrasound scanning, later on, provided and confirmed the accuracy of EDC to be around the end of April, 1979. Though one would expect the curretage to remove not only the likelihood of existing pregnancy but enough endometrial tissue to prevent nidation of a fertilized ovum, the patient nevertheless continued an uneventful prenatal course. She had spontaneous delivery, a healthy baby girl, weighing 3260 grams on April 21, 1979. As we opted to have her sterility be confirmed, four months later a hysterosalpingogram was performed which showed bilateral tubal occlusion.

SUMMARY AND CONCLUSIONS.

We have tried to understand Islamic attitudes toward contraception by expounding the triangular factors enclosing Muslim community: A doctrine, a culture and a history. Expressive sayings of Prophet Mohammad (ﷺ) about coitus interuptus and related divine tesxts have been presented. It is reasonable and judicious to presume that the Prophet of Islam (ﷺ) gave assent to the practice of Azl on specific circumstances for prevention of conception. Allah's Messenger's (ﷺ) intelect by declaring practice of coitus interruptus, perse, undesirable and the method ineffective has been documented.

ACKNOWLEDGEMENT

The author wishes to express his sincere appreciation and cordial thanks to the State of Kuwait

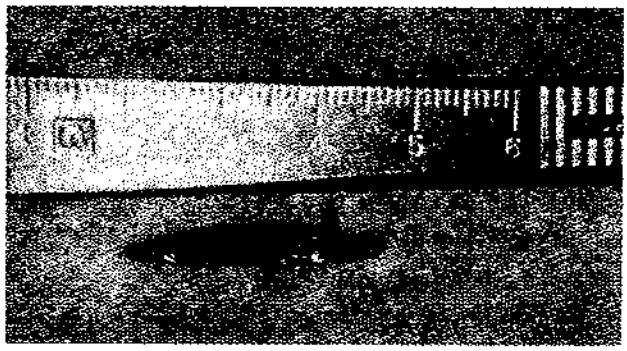

Figure 1.
About 3 cm., transverse suprapubic incision is made down through the skin, subcutaneous fat and fascia.

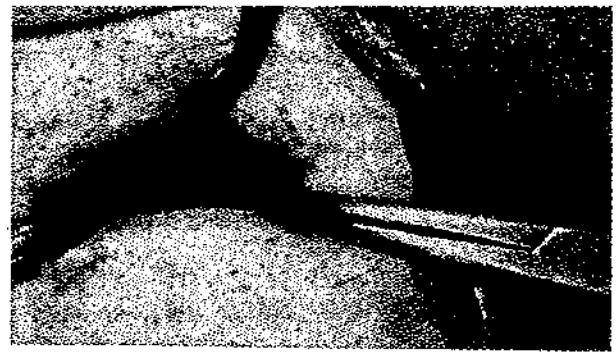

Figure 2.
The peritoneum is carefully opened.

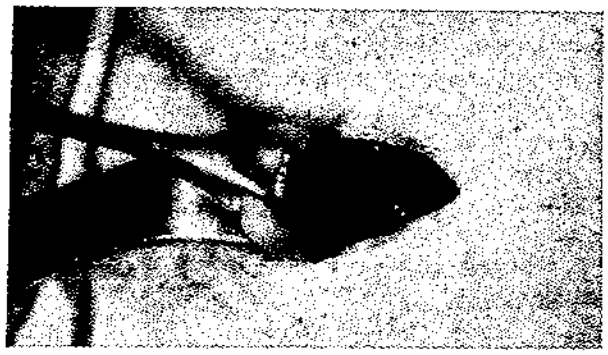

Figure 3.
The Fallopian tube is elevated with small Babcock clamp.

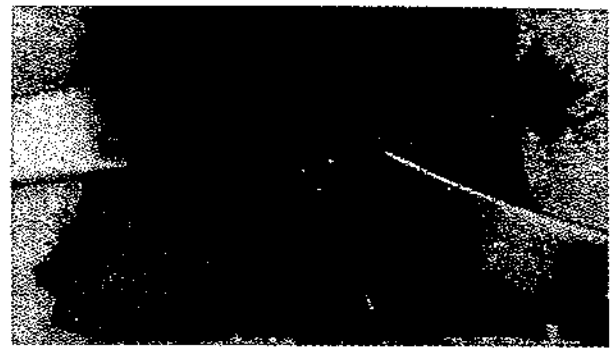

Figure 4.
The Knuckle of the tube is ligated and excised.

and in particular to the Kuwait Ministry of Public Health for sponsoring the Conference on "Islamic Medicine" to propagate the Truth of Islam.

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MEDICAL REASONS FOR PROHIBITION:- CARDIAC CONSEQUENCES OF ALCOHOLISM

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It behooves the faith that logic and "scientific evidence has demanded for divine laws. Prohibition is no exeptions. Despite the well recognised toxicity of alcohol use on the brain and liver function, alcohol ingestion for cosical and medicinal purposes has become quite common. It is argued that small amounts that do not intoxicate are neither prohibited nor injurious. This study was undertaken to assess the cardiotoxicity of non-intoxicating doses in normal man (non-invasively) and of chronic alcohol use in patients (invasively). Ingestion of 6 oz. of 43% alcohol by normal subjects aged 23-30 years over a two hours period (Group I, n.6) or a one hour period (Group 11, n.5) elicited significant left ventricular dysfunction. In Group I after 60 minutes at a blood alcohol of 74±3 mg%, the pre-ejection period (PEP) increased from 90±2 to 96±3.1 msec, isovolumic time (IVT) from 44±3.5 to 52±4 (P. 01) and PEP/LVET ratio from 0.299±0.009 to 0.323±0.01 (P 0.05). Further depression occured at two hours with blood alcohol at 111±6 mg%. Doubling ingestion rate (Group II) produced reduction of left ventricular performance at 30 min. at a blood alcohol level of 50±3 mg%. Feeding of isocaloric and isovolumic sucrose in five subjects (Group III) as a control produced a decrease in LVET, IVT and PEP/LVET. Thus alcohol in non-intoxicating doses elicited a depression of cardiovascular function in normal and unhabituated subjects. To assess the cardiac performance in chronic alcoholism three patient groups with a history of heavy alcohol consumption were compared with normal subjects. Despite substantial differences in cardiac symptoms and signs all exhibited significant decrease in left ventricular contractility and relaxation (dp/dt normalised for isometric pressures), most depressed in patients with enhanced diastolic volume. In 12 patients with no symptoms or cardiomegaly, left ventricular volumes and ejection fraction differed insignificantly from the normals. Eleven additional patients with no cardiomegaly differed in having expanded volumes and reduced ejection fraction. Eighteen patients with cardiomegaly all symptomatic were characterized by further significant depression of pump function with expanded volumes and further reduction in ejection fraction. Thus, chronic alcohol usage resulted in deterioration progressing from isolated impairment of muscle function to stages characterized successively by impaired pump performance, cardiomegaly, symtomatology and decom-

pensation. The experimental data of chronic use in beagle dogs is supportive. Seven fed alcohol as 20% of calories over an 18 month period exhibited significant depressions in left ventricular ejection fraction and muscle contractility. Ventricular hypertrophy, inflammation and coronary vascular changes were not present on autopsy. Myocardial potassium concentration was significantly reduced in animals consuming alcohol (64±2 vs 72.6±1.2 m Eq/g in control beagles). Thus alcohol use when consumed in any amount over any time period not only ails the faith but the heart in severely injurious way.

INTRODUCTION:

The Divine Commandment concerning the prohibition in Islam is categorical, undeniable and non-questionable[1]. The attitude of Islam toward the type and quantity of alcoholic beverages is, from the saying of Prophet (ﷺ) clear and unambiguous[2]. The non-believers and non-conformists alike have questioned the ethical and medical consequences of consuming small amounts of alcohol. It is argued that small amounts that do not intoxicate, are neither prohibited nor injurious. The fact that alcohol at least in moderate amounts has been used for medicinal purposes, lends credence to this notion.

It behooves the faith that logic and "scientific evidence" has to be presented to the non-conformist to convince him the value of practicing divine laws. Prohibition appears no exception. This study was undertaken to assess the cardiotoxicity of alcohol in non-intoxicating doses in normal man and of chronic use in moderate amounts in both man and experimental animal.

MATERIAL AND METHODS:

The effects of acute administration of alcohol were studied in nine normal volunteers, 23-30 years of age, who had a history of infrequent ingestion of alcohol. Six ounces of 43% alcohol in the form of diluted scotch whiskey was administered to six subjects over a two hours period (Group I). To evaluate the effects of rate of administration, five subjects were fed the alcohol over a one hour period (Group II). Two ounces were ingested during the first 15 minutes in both groups and the remaining four ounces during the next 105 minutes in Group I and during the next 45 minutes in Group II. To study the non-specific effects of elementation, five subjects (Group III) received an isothermic, isocaloric and isovolumic solution of sucrose administered over one hour. All subjects were fasting and supine. All studies were done between 8 and 11 a.m.

To preclude the necessity of left ventricular catherization in this group of normal volunteers, the systolic time intervals were used to provide information concerning the contractile state of the left ventricle. The technique of measuring the contractile state non-invasively has provided a valid index in patients in whom left ventricular function is not compromised by extra-myocardial hemodynamic abnormalities[3]. The systolic time intervals were measured using the method and instrumentations described by Weissler and his associates[4], from simultaneous electrocardiograms, phonocardiograms and carotid pulse tracings on an Electronics for Medicine osciloscopic recorder at a paper speed of 200 mm/sec with time markers at 0.02 sec. (Fig. 1) Rhe intervals were derived as reported earlier[3].

To assess the cummulative effects of long-term ingestion of ethanol, 41 patients with a history of heavy ethanol consumption and 23 normal subjects were studied by right and left heart cathererization in the basal, post-absorptive state under mild barbiturate sedation and local procaine analgesia. The 23 control subjects were studied because of heart murmur and/or cardiac symptoms. All were hemodynamically normal, none of them had an abnormal electrocardiogram or chest x-ray[5].

The 41 patients were hospitalised with a history of ethanolism and cardiovascular symptoms and signs, dysrythmias and findings of decompensation. Informed consent was obtained in each case prior to the study.

Catheters were placed in the main pulmonary artery, left ventricular apex and aortic root. Pressures were recorded simultaneaously from the left ventricle and aorta using Statham P23 Gb and Db gauges respectively and Electronics for Medicine osciloscopic recorder. The maximum rate of left ventricular pressure rise (dp/dt max) was obtained using the resistance-capicitance differentiating circuit.

Cardiac output was measured from Indocyanine green dilution curves sampled from the aortic root following pulmonary artery injection[6]. The left ventricular ejection fraction was measured by indicator dilution using Indocyanine green dye introduced into the left ventricle by rapid injection and sampling the blood in the aortic root at 2 cc/sec through a Gilford densitometer by means of a Harvard pump[7]. Validation of measuring pressures, ejection fraction and end-diastolic volume by this technique has been reported previously[7].

Left ventricular function and contractility were estimated in several ways. Contractility was assessed by an index expressing end-isometric force-velocity relationship normalized for initial fiber length[8]. A simple ratio of dp/dt max to simultaneous left ventricular pressure was also used in accord with Levine et al[9]. The isovolumic relaxation phase of the left ventricular myocardium was assessed by measuring negative dp/dt with or without correction for simultaneous pressure and/or volume[10].

To eliminate some of the variables, which may be operative in the production of cardiomyopathy in humans, a group of young adult male beagle dogs were maintained in a relatively normal nutritional state while receiving up to 20% of calories as ethanol, approximating the quantity reported in a population of human alcoholics[11]. Body weight, hematocrit, serum protein & electrolytes were monitored throughout. At the end of the study which lasted 18 months, these animals were anesthetized with morphine sulphate (3 mg/kg) and sodium pentobarbital (15-20 mg/kg) 18 hours after eating and placed in the right lateral position. After insertion of a cuffed endotracheal tube, respiration was regulated with a Harvard respiratory pump, to facilitate the maintenance of arterial pH, PO2 and PCO2 in the normal range[12].

The hemodynamic data including pressures, outputs and volumes were obtained with the chest intact as in humans. Information regarding the myocardial function both in terms of contractile and relexation properties was obtained as in the humans.

At the conclusion of these studies, the heart was rapidly arrested with iced Ringer's solution. Samples of the left ventricle, approximately 15 grams were taken form the peri-apical for analysis of cation and myocardial lipids as reported earlier[13].

Statistical analyses in each of the three experimental settings were performed using conventional methods for small samples and variations reported as standard error. The difference between the groups were evaluated by student's unpaired t test. The t test for paired samples was used to evaluate the response to the ingestion of alcohol or sucrose within the group.

RESULTS:

In acute alcohol ingestion in small amounts in normal volunteers, (Fig 2) over the two hours the subject's blood alcohol rose to 115 mg%. There was a progressive increase in pre-ejection period (PEP) and isovolumic contraction time (IVT). Left ventricular ejection time (LVET) did not change in these patients. But, because of thee prolongation of PEP, the PEP/LVET ratio also increased. In Group I of normal volunteers, at the mid-point of the study (one hour), when four ounces of alcohol had been consumed and mean blood alcohol was 74 mg% IVT was prolonged in all subjects and PEP in all but one, mean IVT and PEP / LEVT had risen significantly. At the end of this study (two hours), when six ounces of alcohol had been consumed and mean blood alcohol had increased to 111 mg%, there was a further rise in mean IVT, PEP /LEVT and PEP, all of which differed significantly from pre-alcohol values. There were no significant changes in heart rate, blood pressure, QS2 and LVET (Table 1, Fig 3).

In the normal volunteers of Group II in whom the ingestion rate was doubled, at both the mid-point when four ounces of alcohol had been consumed in 1/2 hour (mean blood alcohol 5 1/4 mg%), and the end point (6 ounces, one hour), the IVT, PEP/LVET were all significantly elevated above the control values. Again, there was no significant change in other systolic intervals or in heart rate or systolic pressure. (Table 1, Fig 3).

In contrast the drinking of isovolumic, isocaloric and isothermic sucrose solution in Group III did not affect the heart rate, blood pressure, or other systolic time intervals; a significant decrease was observed in mean IVT, PEP, and PEP/LVET. The abbreviation in systolic times and fall in ratio was observed in all subjects. (Table I, Fig 3).

The average age among the 41 patients with history of heavy alcohol consumption was 43 years. 28 black men, 6 black women and 7 white men comprised the patient population.

Symptoms in Groups I and II were limited to palpitations and angina and heart size was normal in chest x-ray. However, Group II had an enhanced left ventricular end-diastolic volume in contrast to Group I. Eighteen patients with a history of dyspnea had cardiomegaly on x-ray without evidence of mitral regurgitation (Group III). The 23 control subjects included in this study were found to be hemodynamically normal on cardiac catheterization and were similar in age. None had a history of congestive heart failure and had imbibed ethanol only on social occasions. The significant clinical, x-ray and electrocardiographic findings are shown in Table 11.

The auscultatory findings of S3, S4 or ejection nurmur were variable in the three groups. None amongst the Groups I and II had an abnormal heart size on x-ray. All 18 patients of Group III had evident cardiomegaly. Electrocardiographic abnormalities included left axis deviation in three and absence of normal septal Q in only one patient of Group I. In Group II one patient had right bundle branch block, another had left axis deviation. Septal Q waves were absent in six. All 18 patients of Group III had abnormal electrocardiograms ranging from ST-T changes or left axis deviation to conduction abnor-

malities. A septal Q was present in only 4/18 patients.

The hemodynamic data in these alcoholic subjects are presented in Table III and Figs. 4 and 5. There was a small difference of heart rate compared to the normal controls, Group I however exhibited a small but significant difference of aortic mean pressure versus cntrols. (Table III) The end-diastolic pressure was significantly higher than normal in Groups I and II, and was even higher in patients of Group sure was significantly higher than normal in Groups I and II, and was even higher in patients of Group III. The end-diastolic volume was significantly lower in Group I. By contrast, both Groups II and III had a higher volume than controls as well as Group I Calucalted end-diastolic tension was significantly higher in Group II, and more substantially elevated in patients of Group III. (Fig. 4). All patients exhibited a reduction in stroke volume without a significant difference between the patient groups. The index of contractility was substantially reduced in all three groups, the depression being significantly greater in Group III than in Group I. The calculated index of myocardial relaxation paralleled the findings of dP/dt max. Other systolic parameters exhibited progressive abnormality from Group I to Group III compared to the normal controls in terms of stroke work, mean rate of fiber shortening, ejection fraction, dP/dt and VCE. (Table III and Fig. 5).

The hemodynamic data in the alcoholic dogs is shown in Table IV. Whereas the body weight and heart rate were essentially similar to those of the control dogs, the aortic pressure was significantly higher in dogs consuming alcohol. In terms of end diastolic parameter both the pressures and volumes were essentially unchanged. The left ventricular ejection fraction as in the alcoholic subjects was significantly depressed. The contractile deficit in the left ventricular myocardium was again apparent in dogs consuming alcohol; both the VCE and the Cy Ix were significantly reduced in contrast to control dogs (Table IV). Ventricular hypertrophy, inflammation and coronary vascular changes were not present on autopsy. Analysis of the myocardial lipid and cation analysis revealed significantly reduced potassium in animals consuming alcohol. (Table V). There were no significant differences in the myocardial contents of sodium and lipid amongst the two animal groups.

DISCUSSION :

The toxic effects of chronic ehtanol abuse in terms of cerebral and hepatic functions have long been recognized. A role as an etiologic factor in heart disease has however been disputed over the years and attributed when present to co-existent malnutrition. The latter factor, however, had been dissociated from ethanol use in many patients with congestive cardiomyopathy[14].

As for the demonstration of acute hemodynamic responses to ingestion of ethanol it is apparent that it depends upon dose, duration of administration, variables measured and time of measurement as well as upon the prior alcohol usage and current hemodynamic state of the subject[15]. In the present study the increase in PEP, IVT and PEP/LVET, in the absence of systematic and significant changes in heart rate and afterload indicated reduction of contractile state of left ventricle. We conclude, therefore, that the changes shown in the present study indicate that non-intoxicating blood levels of ethanol, produced by the ingestion of six ounces of scotch over the two hour period, elicit definite myocardial depression in normal subjects not habituated to ethanol. This depression is not attributable to the effects of elementation since responses to the feeding of sucrose were opposite in direction to those observed with ethanol.

In the alcoholic subjects despite the substantial difference in physical findings, all three groups exhibited a significant increase in end-diastolic pressure. Major change in the contractile function of the left

ventricular myocardium as well as in the rate of relaxation, occured in Group I. In those with an enhanced diastolic volume, further moderate depression of these indices were observed.

The changes in the systolic parameters and muscle functions of the canine heart are simulate to those observed in alcoholic subjects. The decrease in systolic function is presumably due to a different process than that leading to the change in compliance in earlier stages of the disease. Progression to a stage of cardiac decompensation depends upon the intensification of these processes that are present in the early stages. The pathogenesis of altered contractility in both the human and the animal study is not clear. The alteration of cation composition as a basis for decreased contractility remain speculative. Inhibition of sodium-potassium ATP ase has been described in several organs as the result of chronic ethanol feeding[16]. An impairment of inward transport of calcium in association with an outward movement of sodium may limit the amount of calcium available to the contractile protein. Alternatively, if the orientation of the latter is distorted by interfibrillar water accumulation, a potential effect on contractility may be postulated.

CONCLUSION:

From the data obtained from these studies we conclude that alcohol when used even in non--intoxicating doses elicits a depression of cardiovascular function in normal and unhabituated subjects. The chronic alcohol usage results in the deterioration progressing from isolated impairment of muscle function to stages characterised successively by impaired pump performance, cardiomegaly, symtomatology and eventually decompensation. As observed in the canine study, the changes in myocardial cations, collagen accummulation and/or excess of calcium in the myofibrils may be the main pathogenetic mechanism responsible for cardiac dysfunction. Thus, alcohol use when consumed in any amount over any time period not only ails the faith but the heart in severely injurious way.

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LEGEND TO FIGURES

Fig. 1 Simultaneous recording of electrocardiogram (lead II), phonocardiogram and carotid pulse tracing at paper speed of 200 mm/sec with time markers at 0.02 sec. The variables measured directly are Q-S2, S1, S2, and LVET (abbreviations defined under Methods) as shown. From these, PEP, and IVT are obtained by calculation.

Fig. 2 Response of systolic time intervals to Scotch whiskey (six ounces in two hours) in a young normal adult.

Fig. 3 Comparison of the peak systolic-time responses to the control solution and to alcohol at the two dose rates. Values shown are the mean per cent changes from control values at the conclusion of the one or two hour study.

Fig. 4 Left ventricular end-diastolic pressure, volume, and tension in normals and alcoholic patients.

Fig. 5 Left ventricular systolic parameters, stroke volume, ejection fraction, contractility, and relaxation in alcoholics and normal subjects. A progressive decline is noted in the "indices" of left ventricular contraction. The ejection fraction is unchanged from the normal in Group I only. An increase in the end-diastolic volume in Group II normalizes the stroke output but the ejection fraction declines. Further increase in end-diastolic volume in Group III fails to increase the stroke volume, and the ejection fraction is further reduced. The key is in Fig. 4.

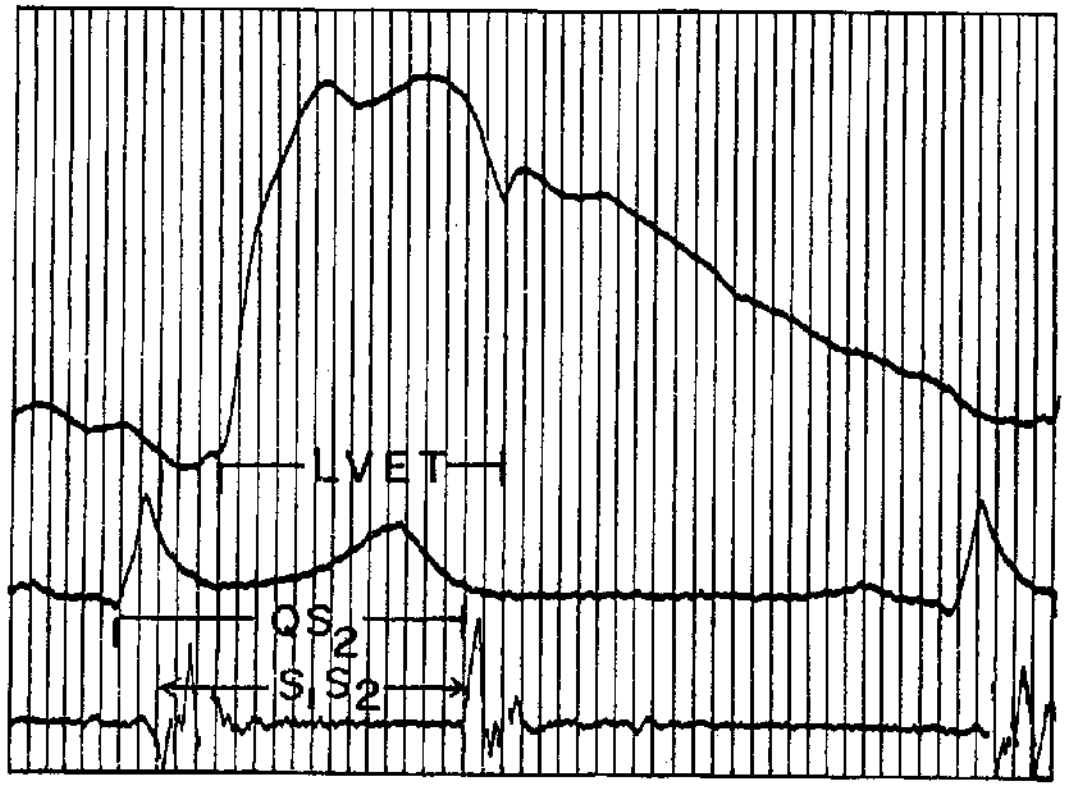
LVET
QS2
S1S2

Fig. 1

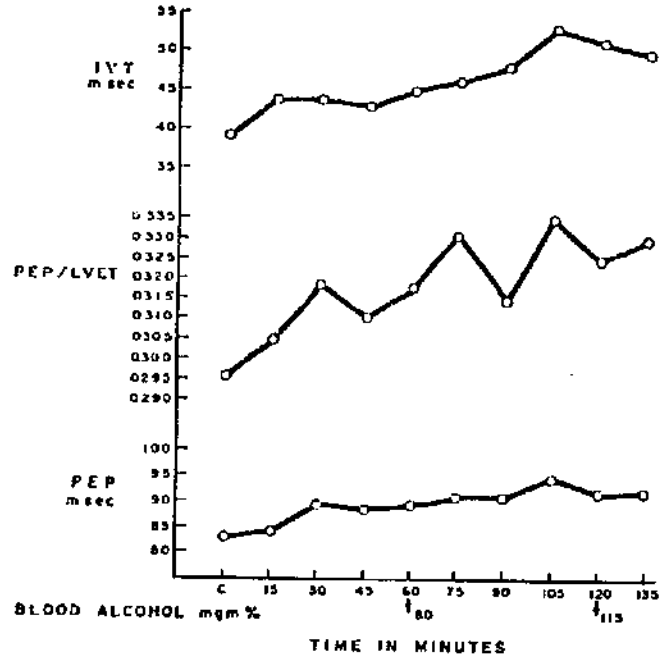
IVT
msec
PEP/LVET
PEP
msec
BLOOD ALCOHOL mgm %
TIME IN MINUTES

Fig. 2

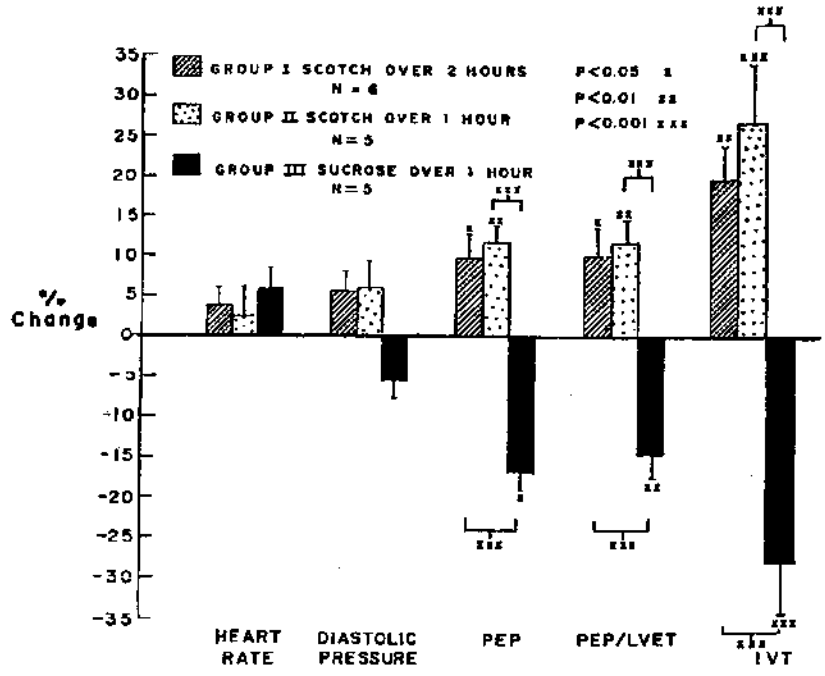
GROUP I SCOTCH OVER 2 HOURS N = 6
GROUP II SCOTCH OVER 1 HOUR N = 5
GROUP III SUCROSE OVER 1 HOUR N = 5
P<0.05 *
P<0.01 **
P<0.001 ***
% Change
HEART RATE
DIASTOLIC PRESSURE
PEP
PEP/LVET
LVT

Fig. 3

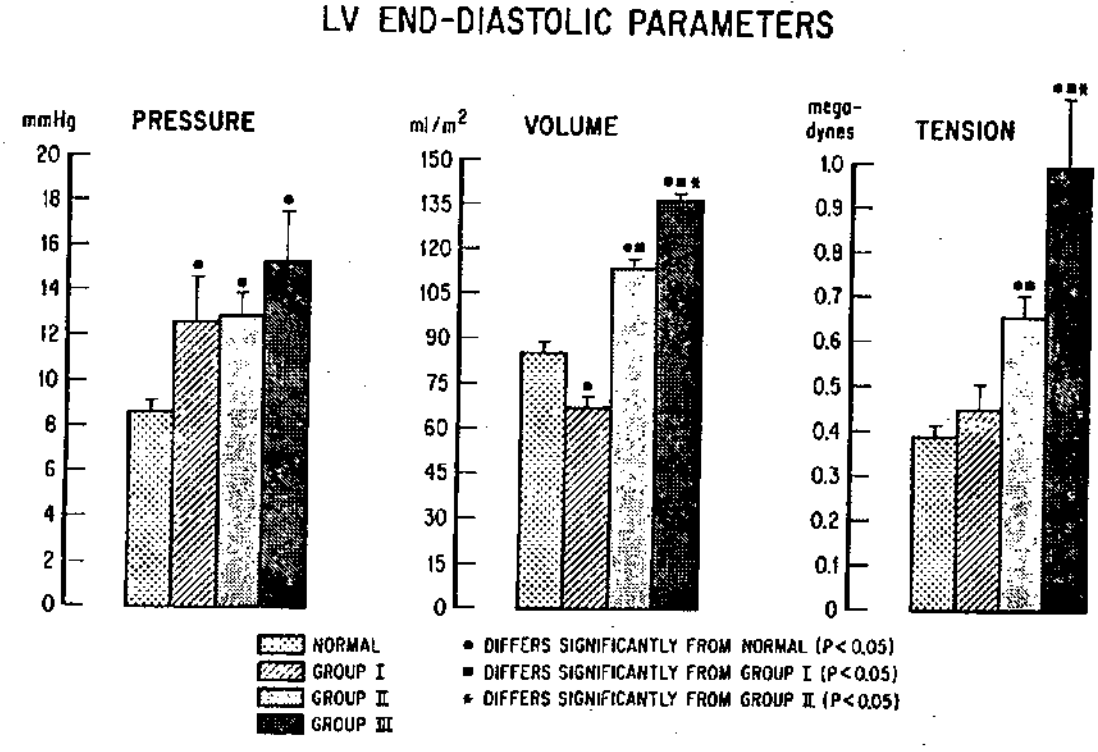
LV END-DIASTOLIC PARAMETERS
mmHg
PRESSURE
ml/m²
VOLUME
mega-dynes
TENSION
NORMAL
GROUP I
GROUP II
GROUP III
• DIFFERS SIGNIFICANTLY FROM NORMAL (P< 0.05)
■ DIFFERS SIGNIFICANTLY FROM GROUP I (P<0.05)
* DIFFERS SIGNIFICANTLY FROM GROUP II (P<0.05)

Fig. 4

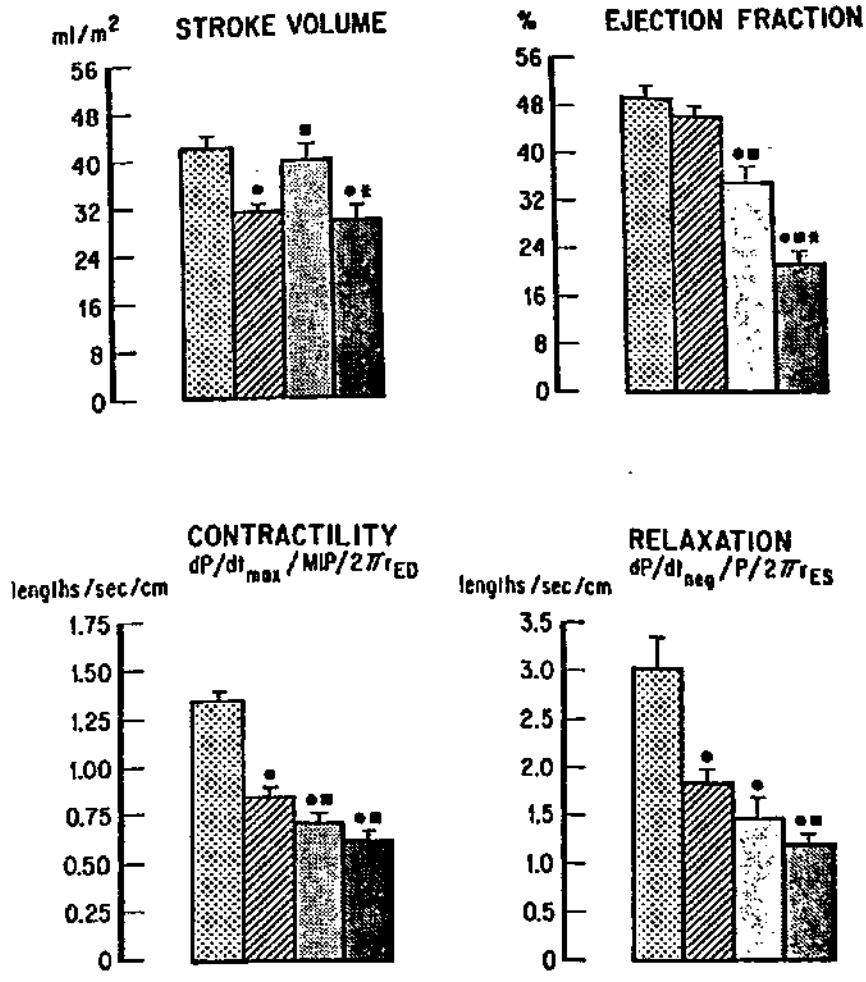
ml/m²
STROKE VOLUME
56
48
40
32
24
16
8
0
%
EJECTION FRACTION
56
48
40
32
24
16
8
0
CONTRACTILITY
dP/dt max / MIP/2πr ED
lengths /sec /cm
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0
RELAXATION
dP/dt neg / P/2πr ES
lengths /sec /cm
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0

Fig. 5

TABLE I

Results of Alcohol or Sucrose Ingestion in Normal Subjects

Group	Blood State	Alcohol mg%	Heart Rate	Blood Pressure S	Blood Pressure D	Q-S_2	LVET	PEP	PEP/LVET	S1-S2	IVT
I											
Mean	C		63.5	121	78	389	314	90	.299	343	44
SE			3	3.1	3.1	6.7	13.5	2.2	.009	8.5	3.5
Mean	M	74.4	66.1	116	78	392	296	96	.323	348	52
SE		3.0	4	3.1	3.1	7.2	4.8	3.1	.01	7.4	4
P value, M vs C		<0.001	NS	NS	NS	NS	NS	NS	<0.05	NS	<0.01
Mean	E	110.5	66	120	83	395	298	98	.328	352	55
SE		6	3.5	4	3	6.8	5.6	2.5	.009	7.5	4.3
P value, E vs C		<0.001	NS	NS	NS	NS	NS	<0.05	<0.05	NS	<0.01
II											
Mean	C		76.2	111	71	373	289	85	.296	319	30
SE			3.5	5.9	3.5	8.8	10.6	3.9	.022	9	3.6
Mean	M	50	78.8	116	77	375	285	90	.320	323	39
SE		2.5	3.9	8.6	4.8	9.8	11.1	3.3	.048	10.5	2.5
P value, M vs C		<0.001	NS	NS	<0.05	NS	NS	<0.05	<0.05	NS	<0.02
Mean	E	107	78.7	114	76	384	289	95	.331	330	41
SE		6.1	4.8	6.9	5.2	9.2	9.7	3.7	.019	9.7	2.7
P value, E vs C		<0.001	NS	NS	NS	NS	NS	<0.05	<0.05	NS	<0.02
III											
Mean	C	84 +	73.4	108	68	381	294	87	.300	332	38
SE		3.8	5.8	7.0	4.5	13.6	14.8	2.8	.023	11.4	4.3
Mean	M		73.1	108	67	385	302	83	.278	334	32
SE			5.5	5.8	5.1	12.6	13.9	2.7	.02	10.7	4.6
P value, M vs C			NS	NS	NS	NS	NS	<0.01	<0.001	NS	<0.01
Mean	E	98	78.1	109	66	368	288	78	.275	318	29
SE		5.7	6.4	6.8	5.6	14.3	16.2	3.6	.028	13.2	3.4
P value, E vs C		<0.05	NS	NS	NS	NS	NS	<0.01	<0.05	NS	<0.05

* C = control, M = midpoint of study, E = end of study, +blood sugar.
Units for the systolic time intervals are msec.

TABLE II

Clinical Features in Alcoholic Patients

Group		Age*	M/F	S_3	S_4	Apical Murmur	Abn Axis	NSR	Absent SeptalQ	LAH	LVH	Increased CTRatio
I												
(N = 12)		40.4	10/2	2	1	3	3	12	1	2	3	0
	±	2.4		(16)	(8)	(25)	(25)	(100)	(8)	(6)	(25)	(0)
II												
(N = 11)		44.2	9/2	0	3	2	2	11	6	2	2	0
	±	3.1		(0)	(27)	(18)	(18)	(100)	(55)	(18)	(18)	(0)
III												
(N = 18)		39.9	16/2	7	7	7	6	15	14	(13)	(14)	18
	±	2.01		(39)	(39)	(39)	(33)	(83)	(78)	(72)	(78)	(100)

* Age in years: ± = SEM; M/F = ratio of males to females; S_3, S_4 = third and fourth heart sounds; Abn Axis = abnormal axis, NSR = normal sinus rhythm; LAH, LVH = left atrial and left ventricular hypertrophy by ECG; CT = cardiothoracic ratio on chest x-ray; figures in parenthesis indicate percent of total numbers of each group.

TABLE III

Hemodynamics in Alcoholic Subjects

Group		HR	AOM	MST	SW	MRFS	dp/dt	Vce
Normals		85	96	3.94	56.5	16.0	2111	27.2
(N = 23)	±	4	2	0.23	3.3	0.7	87	0.8
I		80	107	4.23	45.6	13.0	1501	16.8
(N = 12)		4	4	0.33	3.1	0.8	106	3.8
P vs N	<	NS	0.009	NS	0.04	0.01	0.0001	0.001
II		72	99	6.36	54.3	10.8	1406	16.8
(N = 11)		3	6	0.53	4.3	1.0	91	1.0
P vs N	<	0.02	NS	0.0001	NS	0.001	0.001	0.001
I	<	NS	NS	0.002	NS	NS	NS	NS
III		88	95	6.06	36.9	6.1	1142	15.0
(N = 18)		3	4	0.35	3.6	2.0	83	1.1
P vs N	<	NS	NS	0.0001	0.0001	0.007	0.001	0.001
I	<	NS	0.04	0.001	NS	NS	0.01	NS
II	<	0.001	NS	0.002	0.005	NS	0.05	NS

HR = heart rate in beats / min; AMO = mean aortic pressure in mmHg; MST = mean systolic tension in megadynes. SW = stroke work g-M/m^2; MRFS = mean rate of fiber shortening in cm/sec; dp/dt = first derivative of LV pressure rise in mmHg/sec; Vce = velocity of contractile element at peak isometric stress in sec^{-1} ; ± = standard error of mean; P = probability using unpaired t test.

TABLE IV

Left Ventricular Function in the Normal and Alcoholic Dogs

	Body Wt Kg	HR	AoS	AoD	EDP	EDV	SV	EF	dp/dt	Vce	Cy Ix
					control dogs (n= 7)						
Mean	11.6	133	121	83	6.4	4.06	1.30	37	2355	30.0	2.18
SEM	1.4	13	4	5	0.8	0.61	0.20	2.8	88	2.5	0.30
					Dogs Consuming Alcohol (n = 7)						
Mean	12.4	146	143	109	7.3	3.47	1.23	27	1991	17.6	1.21
SEM	0.7	7	13	10	0.9	0.70	0.22	1.6	309	1.2	0.13
P (2 vs 1)	NS	NS	NS	<.005	NS	NS	NS	<.01	NS	<.005	<.003

AoD, AoS = aortic diastolic and systolic pressures (mmHg); Cy Ix = Frank-Levinson index of contractility (ML-/sec/cm); dp/dt = first derivative of left ventricular pressure (mmHg/sec); EDP = left ventricular end-diastolic pressure (mmHg); EDV = left ventricular end-diastolic volume (ml/Kg); EF = ejection fraction (percent); HR = heart rate (beats/min); NS = not significant; P = probability; SEM = standard error of the mean; SV = left ventricular stroke volume (ml/Kg); Vce = velocity of contractile element at peak dp/dt (ML/sec).

TABLE V

Myocardial Lipids and Cations in Dogs (mean ± standard error)

	Group		LV Wt	Trig	Chol	Na	K	H_2O
1.	control		4.4	2.3	5.41	45	72	79
		±	0.4	0.8	0.31	4	2	1
2.	Alcoholics		4.7	3.3	5.34	40	64	79
		±	0.4	0.7	0.15	3	2	1
	P vs 1		NS	NS	NS	NS	<.003	NS

Chol = cholesterol (μmol/g. wet weight); LV Wt = weight of left ventricle and septum (g/Kg); K = potassium (μEq/q wet weight); Na = sodium (μEq/q wet weight); Trig = triglycerides (μmol/g); H_2O = water (percent).

WHEN THE FEMALE INFANT, BURIED ALIVE, IS QUESTIONED FOR WHAT CRIME WAS SHE KILLED? - IN THE 20TH CENTURY

Omar Alfi, and Maher Hathout,
U.S.A.

Recent technological advances in genetics made it possible to examine and diagnose certain disorders in the fetus during the first few months of pregnancy. The rationale in these tests is based on the fact that the fetus sheds into the amniotic fluid large numbers of cells from its skin, respiratory tract, urinary system and others. If we obtain a small sample of the amniotic fluid (a process known as amniocentesis), we obtain a number of these fetal cells, and in fact they carry the same genetic information as the fetus. By examining these cells we may diagnose any chromosomal abnormality, many metabolic disorders, and a wide variety of malformations that might be affecting the fetus. A byproduct of these examinations is identifying sex of the baby even if we do not intend to do so.

These tests started in the US around 1970 and the demand grew rapidly. In 1980, over 25,000 tests were performed. Pregnant mothers request the test to find out if their baby is affected by a severe malformation or mental retardation, and if so, a therapeutic abortion is usually planned to get rid of the defective fetus.

Recently, a new trend appeared. Some parents started to request this test without a medical indication, but only to identify the sex of the fetus and accordingly to make their choice: Keeping the sex they want and aborting the undesired one. Genetic centers all over the United States have resisted this direction. However, as a result of increasing pressure by society, and the encouragement of this direction by a number of wellknown ethics leaders on the assumption that this is an expression of personal freedom and that parents are free to choose the sex of their future baby, the numbers of these tests started to increase noticeably.

The preliminary observations indicated clearly that in these cases in which the amniocentesis is done for sex choice, it is almost invariably the male that is retained and the female aborted.

From the Islamic point of view, Islam encourages us to explore the unknown and puts no limits or restrictions on scientific exploration, yet the application of scientific progress should fall within these Islamic teachings. Science, to the Moslem, is not just knowledge that could be applied in whatever way, good or bad, but knowledge that humans should use-by the will of God- to enrich life and humanity towards the ideal Islamic model. Accordingly, we look at this new scientific development from three angles.

First: The topic of ... and He knows what's in the womb . Some naives have used the topic of amniocentesis to deny the presence of God claiming that we can know the sex of the fetus, a privilege that was attributed to God only. This kind of argument reminds us of Gagarin's logic when he said that he went up to the sky in a rocket and did not see God. It also reminds us of the logic of Pharoah ordering Haman to build him a high tower so that he might climb up and look at the God of Moses. Our knowledge of "what is in the womb" is relatively trivial, while God's knowledge is all encompassing.

Second: The topic of abortion. It is not intended to dicuss the issue of abortion in this review, but only to mention briefly the Islamic point of view. Islamic scholars differ in the extent of the situations where an exception to the rule could be allowed but they all invariably agree that abortion involves the waste of a life that has been created by God, accordingly it is sinful unless there is a legitimate medical indication.

Third: The great similarity between this new practice of prenatal testing for sex choice and the "Wa'd" that was practised in the pre-Islamic "Era of Ignorance". Both are basically the same with minor superficial differences, mostly in time and in approach. Both, however, involve killing after knowing the sex of the baby. Both are based on preference of one sex over the other among what God has created. Both are in defiance of God's will Who created us as male and female. Both involve termination of the life of a female with out consideration of her rights, her will or her chances to grow and interact with society.

One may wonder what science has done and what religion has done in the life of humans. Science has dazzled our eyes and gained our admiration without enriching our values or humanitarian feelings. It only changed the approach and made it more sophisticated. From a theological point of view, this issue may be handled by the current Islamic thought in two different directions, or schools of thought. The first claims that religion made its impact along the centuries and that the current Islamic movement proceeds from where our ancestors have ended, in a sequential historic change and that the "Era of Ignorance" was only an historic era that ended by the appearance of Islam. The second school of thought says that the "Era of Ignorance" is not an historic stage, but a state of mind and that an individual could be living in the Era of Ignorance even though he was born in the 20th Century, and accordingly the Islamic movement should follow the same style of the early Islamic movement including the stage of "Darel--Arkam", to immigration, to "Jihad". We are not going to discuss any of these two schools of thought. We simply pose our topic today to the scholars of both schools to enrich the dialogue and to show an example of some kinds of issues and problems that will impose themselves on the current Islamic schools of thought and that will force the Islamic thought to take a stand, especially since we now see that Islam is back to being a "stranger as it started.... a stranger".

MUSLIM-SLAUGHTER - IS IT A RITUAL METHOD?

M.M. Helmy, M.A. Al-Sana'e, N.A. Al-Nisuf and Y.Y. Al-Sultan

Kuwait

The technique of Muslim slaughter was critically investigated. The basis of defense were studies prepared for the 21st World Veterinary Congress 'On the history of animal slaughtering methods'. The opposition view was derived from the Universities Federation for the Animal Welfare Publication "Humane Killing and Slaughter-house Techniques".

Comparative studies of the ancient-Egyptian method for animal preparation, slaughtering and dressing with Jewish Ritual Slaughter, Muslim technique, captive bolt pistol, electrical stunning followed by venesection and the use of CO_2 anaesthesia were carried out. The time intervals from incidence of bleeding and percent; survival time and occurrence of death, myoreflectory activities and animal consciousness served as criteria for evaluation of different slaughtering techniques on animals of the same species, age and physiological conditions. The basic anatomical principle in the Pharaonic method as similar to Shechita and Muslim (Zabh) methods is incision of major cervical vessels. Experimental evidence from EEG activity, heart rate, blood pressure and respiration. emphasize that the Muslim method appears satisfactory, humane and secures better exsaguination of the carcass.

INTRODUCTION

In the early days of domestication of animals for the provision of food, the methods of slaughter were primitive in the extreme and included strangulation and penetration of the brain by means of a heated spear[3]. As man's evolution progressed, however, he developed into the most efficient and ruthless predator the World had yet known and some authors[4] consider that he frequently sought self-justification under a cloak of religious symbolism thereby associating slaughter with ritual sacrifice; thus the Israelites killed their animals in the outer court of the temple, the Romans in the Forum and the Egyptians in their court.

No practice has been so unjustifiably reviled, misrepresented and misjudged as has the Muslim method of slaughtering animals for food[5]. Earlier reports on the defense of Muslim slaughter depended totally and wholly on mythological considerations. (6, 7, 8, 9, 10)

This could be considered the first article to deal with Muslim-slaughter in experimental approach and scientific way as a trial to exploit the humaneness, feasibility and healthfullness of the method.

MATERIALS AND METHODS

The application of laboratory-proved methods to field conditions is not always easy, so in our work we derived freely on results based upon field observations in slaughter houses on sheep, calves and cows. Moreover, due to lack of supplies, the captive bolt technique, electrical stunning followed by venesection and the use of CO_2 anaesthesia were not experimentally conducted. Results were quoted from literature sources on these methods. The differences of laboratory conditions and variation of animal species will contribute to slight deviation of results, but undoubtedly, will not affect the validity of the work, nor impair the significance of conclusions.

The time intervals for the incidence of death from the occurence of bleeding; period of animal consciousness were measured by stop-watch in abbatoirs on nearly 25 lambs aging between 12-18 months of the male sex.

Experimental data on 12 rabbits slaughtered by the Muslim technique were obtained. Animals weighed from 1200-1600 gms. and were apparently in normal physiological conditions. Electroencephalography was carried out following the method of Brownlee (1949)[11] Heart-rate and blood pressure were evaluated according to the methods of Rainke and de Jorge (1964)[12]. Statistical analysis of data was carried out according to the methods of Bailey (1959)[13].

RESULTS AND DISCUSSION

Due to the lack of time allowed for discussing our results, we thought it feasible to concentrate on those results relevant to the topics of your conference and criticise the data supplied in UFAW publication on Humane killing and slaughterhouse techniques.

Before going into details of subjective criticism, we have to mention that in the beforementioned conference Islam was represented by Mr. Khan G.M., an employee of Shah Jehan Mosque in Woking (London)[14]. His certificates and credentials (M.B., B.S., D.L.O.) prove that he is not a specialist in veterinary medicine or animal science. His speech point out to his limited knowledge in understanding Islamic jurisdiction and particularly lacking Arabic literature sources.

On the contrary, the Jews were presented by Dr. Bernard Homa, Chairman of Shechita Committee and he is M.R.C.S., L.R.C.P.

The results of our experiments and analysis of field observations showed that Muslim slaughter technique is the most humane, satisfactory and efficient method in animal slaughtering.

Following Islamic rules and regulations cited in Jurisdiction no cruelty or psycologic inflicts would be anticipated as Zakah (or the mention of God) will obscure the "killing" effect of the act. This must be stressed upon as some think that Zakah is necessary for the slaughtered animal's soul. This may be the case, but comparison with hunting and reviewing the Qur'an would clearly indicate what the slaughterer

is meant by.

Further, positioning of the animal would clearly prevent retraction of carotids and secure rapid onset of death and within 3-5 seconds animals lose consciousness.

The cutting of the trachea and/or oesophagus prevent the escape of ruminal contents to lungs where they flourish in the very suitable media of aerobic conditions.

The site of cutting or incision is clearly defined in Islamic rules where the trachea appears frontal to the oesophagus; this adds to the security of painless killing of the animal from loss of respiration before suffering incision of the digestive tract.

Exsaguination of the carcass was best of all in animals slaughtered by the Muslim technique. Removal of as much blood as possible from the carcass is a major requirement for desirable eating and keeping qualities in meat, since it can cause an unpleasant appearance and is an excellent medium for growth of micro-organisms.

Now the misjudgements in the UFAW symposium could be summarized in the following:

1. In Lawton's essay entitled "Methods of Handling and Slaughtering animals in Muncipal abbattoirs" it was mentioned that:

"It is generally accepted that animals to be slaughtered by the Mohammedan method may be stunned before being bled, providing the instrument to be used has not previously been in contact with a pig".

He pointed to the silliness of the pre-requisite and wondered how the Animals Act exempts this method.

In his conclusions a great bias is very clear and wonder on wondering that his reference is Thornton[15] who is a Jew and a non-specialistic pamphlet from Shah Jehan Mosque.

2. Baldwin from Cambridge delivered a speech on "Anatomical & physiological factors involved in slaughter by carotid section". This was prepared as a commentary on a film prepared by Dr. Linzell and Waites. They reached the conclusion that the Carotid artery does not solely carry blood to the brain in sheep and goat, but the vertebral artery can replace it in most cases. Thus animals can remain conscious for 30 seconds after cutting the carotids by gravity influences.

Baldwin summed up by: "These results led me to wonder about the sincerely held belief of the Jews and Moslems that unconsciousness supervenes instantaneously after the throat is cut". He further adds that "I am well used to working with sheep, cattle and goats and their reaction to pain. From what I have observed in life and on film of animal's behavior after the cut, I believe, that since, as we have seen, very little blood can maintain consciousness, in the head down position flow by gravity probably maintains consciousness for 30 seconds or even longer in slaughter by the Jewish or Moslem method. In my opinion this is far from instantaneous".

The misleading conclusion Baldwin reached to was based on incomplete knowledge about Islamic

regulations for slaughtering, where animals must be positioned in proper way and incision drawn in a particular manner.

Further incrimination of the method followed by Muslims in animal-slaughtering seems irrelevant and does not deserve mentioning. The results of our experimental studies proves the fallacy of these conclusions and bias in result analysis of reported accusations.

CONCLUSIONS

Non-Islamic investigators have pointed out some aspects of attack against Muslim-slaughter either from scientific bias or ignorance of Islam and its jurisdiction.

The main points raised at UFAW symposium were:

1. Cutting the neck, even with sharp knife, causes severe pain.
2. EEG recording proved that the period of consciousness in animals lasted at least for 30 seconds.
3. Dispute about sensory nerve distribution in the neck region, particularly the role played by the vagus nerve.
4. Complete exsaguination was never recorded.
5. Retraction of carotids may ensue and retain animal consciousness.

The results of our limited investigations and scientific analysis showed that:

1. No proof of animal suffering could be obtained from films or observations, or at least could not be conducted comparatively yet.
2. EEG recording proved that the period of consciousness was less than 30 seconds if animals are properly positioned.
3. Studies on the autonomic nervous system in animals[16] showed that the method of slaughter whether Zabh or Nahr (in camels) wonderfully fits with the sensory distribution of nerve ending in the skin. The position of the cut may be explained by the fact that oesophagus at this site is retrotracheal, so to start with stopping respiration and then optionally the digestive tract.
4. Maximum exsaguination is secured through carotid incision and animal complete consciousness.
5. Retraction of carotids was never observed with the head positioned properly up.

Finally, further comprehensive studies seem urgently needed by Muslim scientists to defend their religion, belief and rights.

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PART SIX

PHARMACOLOGICAL EVALUATION OF THERAPEUTIC PROCEDURES USED BY MOSLEM PHYSICIANS

Part six: Pharmacological Evaluation

CHAPTER ONE

(Papers presented)

1. REPORT ON THE SECOND SCIENTIFIC SESSION
   Editors
2. PHARMACOLOGICAL EVALUTION OF ANTI-HEPARIN AND ANTI-TRACHOMA ACTIONS OF BERBERIS ARISTATA.
   Dr. M. Sabir.
3. AJMALINE IN THE MANAGEMENT OF CARDIAC ARRHYTMIAS
   Dr. Mohammad Ilyas.
4. A PHARMACOLOGICAL STUDY ON UDESALEEB (PAEONIA EMODI LINN): A UNANI ANTI-CONVULSANT DRUG.
   Dr. M. Ahmad, Dr M. Tariq, Mr. S.H. Afaq and Mr. M. Asif.
5. PROTECTIVE EFFECT OF GUL-E-TEESU (BUTEA MONOSPERMA, LAM, FLOWERS) IN EXPERIMENTAL LIVER INJURY.
   Mr. S.K. Nazimuddin, Dr. S. Qameruddin, Mrs. S.S. Tahera, Dr.M.Ashfaquddin, Ms. A. Rehana and Hkm. M. Iqbal Ali.
6. TREATMENT OF BARS (VITILIGO) WITH ARAB MEDICINE
   Hkm. M. Iqbal Ali, Hkm. M.M. Ali Khan, Hkm. Bahauddin and Hkm. Mastan Ali.
7. PRELIMINARY CHEMICAL AND PHARMACOLOGICAL STUDY OF ASTRAGALUS SPINOSUS (Musche) GROWN IN KUWAIT.
   Dr. M. Th. Ghoneim, Dr. A.R. El-Gindy, Dr.R. Alami, Mrs.E. Shoukry and Dr. R. Fattouh.
8. PHARMACOLOGICAL STUDIES ON EMBLICA OFFICINALIS
   Dr. H. Hussain Siddique.
9. COMMENTS AND DISCUSSIONS.

REPORT ON SECOND SCIENTIFIC SESSION

This session was held from 11.00 a.m. to 1.00 p.m. under the Chairmanship or Dr. Abdul Razzak Al-Udwany, with Dr. Abdullah Al-Khars as Co-Chairman and Dr. Tharwat Ghoneim as moderator. It started with the opening remarsk of the Chairman: I have only few words to say. The whole conference in my opinion, is not aimed for doctors to go back thousands years ago, to practice what was medicine, that was practiced at that time. The whole thing is to throw light on what the Arab and Islamic civilization contributed to the progress of sciences including the medical science. When we look at the studies done on that area, we find that there is a veil that clouds that area of the Arab Islamic civilization's work. They concenterated on literature and other subjects. They have to do something or mention something about architect because they cannot avoid that, but when it comes to sciences we find a complete wall blocking the contribution of the Arabic, Islamic civilization to the medical sciences. they showed us, as the only people who transferred the Unani or the Greek or the Roman's to the Western science without contributing anything to it, which puts us in a very important (position) but not as important as ti should be. This Conference would throw the light on the contributions, that the Arab doctors, Arab Islamic doctors did to this particular field of science. No science is built on nothing. The Islamic Arab contribution to science is built on the previous one. The present medical science is built on the one others before us and so on. This is a cumulative fact, what is good, stays and what is bad, is discarded. This is the point that is important and ought to be brought out and I hope this Conference is a step towards establishing what the Arab Islamic civilization contributed to the medicine at that time.

Seven scientific papers were presented in this session on "pharmacological Evaluation of Therapeutic procedures used by muslim physicians". Then comments and discussion were invited.

Editors.

PHARMACOLOGICAL EVALUATION OF ANTIHEPARIN AND ANTI-TRACHOMA ACTIONS OF BERBERIS ARISTATA

M. Sabir,
India

The plant Berberis aristata has been claimed to be effective in bleeding disorders and in eye diseases. Experiments were, therefore, planned to study the anitheparin and antirachoma actions of berberine - an alkaloid which is abundantly present in this plant.

It was observed that, in the dose range of 1-3 mg. berberine neutralized, in vitro, *the anticoagulant action of 50 I.U. heparin per ml of blood and had no effect on blood samples rendered incoagulable by potassium oxalate, sodium citrate and EDTA. Parodoxically, large dose (10mg/ml) of berberine itself produced anticoagulant effect. These effects resembled those produced by protamine sulphate and toluidine blue.*

Berberine protected 50 - 75 per cent chick embryos from the lethal effect of trachoma organisms inoculated into the yolk sac. It also completely inhibited development of the elementary bodies on the yold sac membrane. In control experiments, 1 mg. per egg dose of sulphadiazine produced similar effect. Further, berberine was found encouragingly effective in controlling experimentally - induced trachoma in monkey eyes.

These actions of berberine strongly support the clinical efficacy of Berberis aristata in bleeding disorders and in eye diseases as claimed by Bu-Ali-Sina[1] and Nafisi[2].

INTRODUCTION:

The compilation[3] of the works and writings of Arab Physicians indicates that the plant *Berberis aristata* (Arabic-Ambarbaris; Aargis) has been extensively used in Unani Medicine as emmenagogue, blood purifier, antispasmodic, stomachic, choleretic, sedative, refrigerent, counterirritant and as a depressant of uterine musculature. Its efficacy in bleeding disroders and in eye diseases has been mentioned by Bu-Ali-Sina[1] and Nafisi[2]. The value and popularity of this plant have persisted upto the twentieth century since several formulations developed for menstrual disorders and eye diseases contain its extract as one of their important ingredients.

Berberine ($C_{20}H_{19}O_5N$) is the chief alkaloid of *Berberis aristata.* Indeed, in its pure form, berberine was clinically tried in patients of chronic trachoma by Varma[4] who found its intra-conjunctival injections highly effective. Incidentally, however, no experimental work has been reported to scientifically vindicate the claim of its usefulness as styptic or in eye diseases. The present work was, therefore, planned to study the antiheparin and antitrachoma actions of the pure alkaloid berberine.

MATERIAL AND METHODS

Experiments on in vitro antiheparin action

Blood samples (5 - 15 ml) collected from the saphenous vein of dogs, jugular vain of goats and bull-calves and cubital vein of human volunteers were quickly distributed, in 1 ml volumes, into a series of dry test tubes (corning, 1.3 x 10.0 cm) containing heparin (50 I.U) or EDTA (2 - 4 mg) or potassium oxalate (3 mg) or sodium citrate (4-10 mg). Berberine sulphate (unichem Laboratories, Bombay) in doses of 0.3, 1.0, 3.0 and 10.0 mg. was added within 10 minutes to the tubes of individual blood samples. For detection of coagulation time, the test tubes were kept at 37°C and gently tilted every minute for the first 10 minutes. During the next 30 minutes, they were observed at 5 minutes intervals. In most of the experiments, the tubes were kept for occasional observation for about 24 hours.

Corresponding studies using similar doses of standard antiheparin agents - protamine sulphate (Biological Evans, Hyderabad) & toluidine blue (Merck, Bombay) were also conducted. The effect of certain other alkaloids (each in 3 mg doses), namely atropine sulphate, morphine sulphate, physostigmine sulphate, strychnine hydrochloride, quinidine sulphate and quinine sulphate was also studied to ascertain whether the heparin neutralizing action is exhibited by alkaloids in general or is specific to berberine.

The direct effect of different doses of berberine sulphate, toluidine blue and protamine sulphate on the normal blood clotting time was also investigated.

Experiments on antitrachoma action in chick embryo:

Embryonated eggs from the WLH hen maintained on antibiotic free diet were incubated at 37°C in a humidified incubator. The eggs were manually rotated, twice a day, to ensure uniform development of embryo. On day 6 of incubation, the eggs were checked over a 'candling box' for the development of embryo and those showing actively moving embryo with prominently shining blood vessels were used for inoculation, on day 7, by the technique described by Lennettee[5].

The aqueous stock solution of berberine sulphate was autoclaved at 15 lb. pressure per square inch for 15 minutes and stored at about 4°C. The concentration of berberine was so adjusted that the required dose for each egg was present in 0.2 ml volume; this was diluted with an equal volume of autoclaved sucrose potassium glutamate (SPG) medium[6]. Different doses (0.05, 0.2, 0.4, 0.5, 0.6 and 1.0 mg) of berberine were inoculated to study its direct effect on chick embryos.

The isolates "strain TRIC/India/A.I.I.M.S. - 160/0" and "strain TRIC/India/A.I.I.M.S. - 285/0") of trachoma organisms were obtained from trachoma patients and maintained by repeated passages through the embryonated eggs. For preparing the stock suspension of these organisms, heavily infected yolk sac membrane was triturated with about 3-4 ml of SPG medium in a mortar and pestle and stored at-70°C. The suspension was thawed before use and its serial dilutions (10^{-1}, 10^{-2}, 10^{-3}, 10^{-4}, 10^{-5}) were made in SPG medium. Doses of 0.2 ml of undiluted suspension and each of its dilutions were further mixed with 0.2 ml SPG medium and inoculated into 7 day old eggs to study their direct effect on the chick embryo.

For studying the effect of berberine on trachoma organisms, highest tolerated dose (0.5 mg/egg) or lower doses of berberine and the lethal doses of trachoma organisms (0.2 ml undiluted suspension and its $10\beta^{1}$ dilution) were mixed, *in vitro*, and incubated for 30 minutes in an ice container prior to inoculation. For positive control, a known antitrachoma drug - sulphadiazine (1 mg/egg) was used[7]. For every egg, the final inoculation volume was 0.4 ml and each dose combination was inoculated into 4 eggs.

The inoculated eggs were incubated at 45°C and candled each day. Death of embryos within 2 days after inoculation was considered non-specific. Subsequent deaths were recorded and analysed. The embryos which survived for 11 days post-inoculation were deshelled on day 12. The yolk sac membranes of the dead or deshelled embryos were dissected, their smears made, stained with Gimenez stain and the presence of elementary bodies studies microscopically (X 100).

Studies on experimentally-induced trachoma in monkey eyes

Four healthy adult monkeys free from eye diseases were used for the study. The suspension of trachoma organisms was gently and thoroughly rubbed on the conjunctiva of both eyes of all the 4 monkeys with cotton swab wicks. If required, another application was made after 72 hours. After the conjunctivitis was clinically discernible (which took 2-3 days), berberine sulphate (0.2%) was instilled in both eyes three times a day in two monkeys; 20% sulphacetamide was used in the third monkey. The remaining plain distilled water and served as control. Drug instillations were continued till the eyes became normal after which the animals were observed for a period of 30 days to study the chance of relapse.

RESULTS

Experiments on in vitro antiheparin action

Normally, blood samples were found to coagulate in 1 to 4 minutes. Berberine in the doses of 0.3-3 mg/ml of blood (6 samples each) had no effect on the blood coagulating time. However, at 10 mg/ml dose, it exerted a direct anticoagulant action in that, it rendered 4 of the 6 samples incoagulable for 24 hours; fifth sample remained partially coagulated and the sixth showed normal coagulation. At this dose, protamine and toluidine blue also impaired blood coagulation.

50 I.U. heparin completely prevented coagulation of 1 ml blood or of its plasma over 24 hour observation period. In a dose of 0.3 mg berberine coagulated of the heparinized blood samples of dog, 1 mg coagulated 9 out of 12 samples and 3 mg dose coagulated all the 29 samples. The period between addition of berberine and formation of complete clot was inversely dependent on the dose of berberine; thus, 1 mg dose of berberine produced coagulation in an average time of 5 minutes and 3 mg took about 3 minutes. On the other hand, 10 mg dose of berberine (which itself exerted anticoagulant action) did not coagulate any of the 5 heparinized samples. The heparinized blood samples of man, goat and cattle (6 samples each) were coagulated equally effectively by 3 mg dose of berberine.

In 0.3 and 1 mg doses, protamine coagulated 5 out of 8 and 2 out of 6 heparinized samples respectively. Three and 10 mg. doses of protamine failed to coagulate the heparinized blood. Toluidine blue did

not clot any of the 8 samples at 0.3 mg dose but 1 and 3 mg doses coagulated 5 out of 7 and 5 out of 8 samples respectively; 10 mg dose (6 samples) failed to coagulate 4, induced partial coagulation in 1 and coagulated the remaining 1 sample.

Atropine, morphine, physostigmine, strychnine, quinidine and quinine failed to coagulate the heparinized dog blood samples over 22 hours, if 3 mg berberine was added to those samples after 22 hours, there was prompt and complete coagulation.

Berberine, protamine & toluidine blue, upto a dose of 10 mg. failed to coagulate the dog blood or plasma samples rendered incoagulable by Na_2 EDTA, potassium oxalate or sodium citrate.

Experiments on antitrachoma action in chick embryo

The control eggs inoculated only with 0.4 ml of SPG medium survived the entire 12 day period. Berberine in the dogs range of 0.06 to 0.5 mg/egg did not affect the development of embryos; however, 0.6 and 1.0 mg/egg doses of berberine produced 50 and 100 per cent mortality respectively.

In a dose of 0.2 ml/eggs, the undiluted suspension of trachoma organisms killed 75-100% embryos and their 10^{-1} concentration produced 50-75 % mortality. Lower concentrations of the suspension (10^{-2} to 10^{-5}) generally produced lesser mortality and took longer time to kill the embryos. Apparently, the two isolates of the trachoma organisms exerted more or less equal lethal effect. Irrespective of the dilution of the inoculum and incidence of mortality, yolk membrane of every inoculated embryo showed abundant trachoma elementary bodies.

The highest tolerated dose of berberine (0.5 mg/egg) was used for studying its antitrachoma action. This dose of berberine as also of sulphadiazine (1 mg/egg) definitely reduced the embryo mortality induced by the highly lethal doses of trachoma organisms suspension (Table 1). An equally interesting fact associated with the use of these 2 drugs was that the yolk sac membrane of protected & even unprotected embryos did not show elementary bodies (Table 1).

Studies on antitrachoma action in monkey eyes

Monkeys infected with trachoma organisms developed severe conjunctivities within 96 hours. Instillation of the 0.2% solution of berberine caused the revovery within 15-18 days; 20% sulphacetamide cured it in 20 days. Hyperaemia of the eyes disappeared earlier in monkeys receiving berberine while disappearance of follicles was quicker in sulpha-treated monkey. No apparent sign of irritation of the eyes was observed in the monkeys receiving berberine or sulphacetamide. In none of the animals receiving these drugs, relapse of trachoma was observed even after 30 days of recovery. However, the control monkey developed a typical trachomatous picture comprising of follicles at the upper tarsal conjunctivea, the scrapings from which showed inclusion bodies. The follicles remained visible even after 50 days of infection.

DISCUSSION:

Antiheparin action

In *in vitro* experiments, the effects and potency of berberine remarkably resembled those of the two

TABLE 1 - EFFECT OF BERBERINE ON CHICK EMBRYOS INFECTED WITH TRACHOMA ORGANISMS (ISOLATE "TRIC/India/A.I.I.M.S. - 285/0)"**

Inocula	*Dose/* Egg	No.of Eggs Used	*No. of embryos found alive (or dead) on* Days Post-inoculation											
			1	2	3	4	5	6	7	8	9	10	11	12
Organisms (undiluted)	0.2 ml	4	4	4	4	1 (3)	1 +++	0 (1)	+++					
Organisms (undiluted)	0.2 ml	4	4	4	4	4	4	4	3 (1) −ve	3	3	3	3	3 −ve
+ Berberine	+ 0.5mg													
Organisms (diluted, 10^{-1})	0.2 ml	4	4	4	4	4	4	4	4	3 (1) +++	3	2 (1) +++	2	2 +++
Organisms (diluted, 10^{-1})	0.2 ml	4	4	4	3 (1) −ve	3	3	3	3	3	3	3	3	3 −ve
+ Berberin	+ 0.5mg													
Organisms (diluted, 10^{-1})	0.2 ml	4	4	4	4	4	4	4	3 (1) −ve	3	3	3	2 (1) −ve	2 −ve
+ Sulphadiazine	+ 1.0mg													

standard antiheparin durgs protamine sulphate and toluidine blue. These agents neutralize the anticoagulant effect of heparin in smaller doses; in larger doses, they act as anticoagulants. The mechanism(s) of direct anticoagulant effect of these compounds is (are) not yet known.

Heparin molecule is the strongest organic acid occuring within the body and its anticoagulant effect is partly due to this acidity[8]. Molecule of protamine is rich in unmasked electric charges and toluidine blue has three sites which potentially capable of bearing a positive charge and both of which, therefore, can neutralize charges on heparin[9, 10]. However, this phenomenon cannot explain the *in vitro* antiheparin action of berberine because berberine molecule, does not possess any strong free electric charges[11] since it has only one possible site for a positive charge in the tautomeric form. Even this may be masked when berberine is dissolved in water. Furthermore, the site is vicinal to the double bond. Therefore, it is theoretically unlikely that berberine and heparin are forming electrostic complex. Further,

** Almost similar were the effects on Isolate "TRIC/INDIA/A.I.I.MS. 160/0".
+++ indicates the presence of elementary bodies and re-indicates their absence.

the antiheparin action of berberine is not due to its alkaloidal nature since other alkaloids failed to coagulate the heparinized blood. Like protamine and toluidine blue, berberine did not coagulate the blood & plasma samples containing EDTA, potassium oxalate and sodium citrate. This suggests that their antiheparin action is not nonspecific.

Like protamine, berberine may be used for the *in vitro* assay of circulating heparin. However, further work is required to explore such a possibility.

Toluidine blue, unlike protamine, can be given orally in clinical practice and it has been claimed to benefit some cases of bleeding disorders including hypermenorrhoea[12,13]. It is interesting to note, in this context, that crude preparations of plants containing berberine have been traditionally used in India[14] for conditions characterized by bleeding including hypermenorrhoea. On the other hand, there are conflicting clinical[14] and experimental[10] reports which indicate that these preparations may aggravate bleeding particularly at the site of application. It is possible that the antiheparin and direct anticoagulant actions of berberine at low and higher doses respectively might explain the conflicting reports.

Altogether, it is difficult to comment on the therapeutic role of berberine in the treatment of diverse bleeding disorders. The clinical evaluation of such drugs is neither easy nor a quick task. Nevertheless, a systematic clinical and experimental work needs to be carried out and till adequate studies are conducted, it would be wise not to disregard a tradition which is ancient persistent and wide-spread.

Antitrachoma action

The present study indicates that 0.5 mg dose of berberine is as effective as 1 mg of sulphadiazine in reducing the mortality and infectivity of trachoma organisms. The 0.4 mg/egg dose of berberin causes reduction or even disappearance of elementary bodies from the yolk sac membrane but does not produce any gross teratogenic or lethal effect upto a dose of 0.5 mg/egg; which indicates that this dose is apparently nontoxic for developing embryos.

The antitrachoma activity of berberine is not due to the effect of its pH which is about 6.8 - 7.2 after autoclaving. This pH is quite optimal for the growth of trachoma organisms[7]. The possibility of berberine interfering with protein and nucleic acid synthesis by the trachoma organisms needs to be explored. Berberine is known to form a complex with DNA[15] and to inhibit the RNA and protein synthesis by micro-organisms[16,17] .

The present findings of the experimental studies on berberine confirm its clinical efficacy in trachoma patients observed earlier[4]. Also, the observations on a limited number of monkeys indicate that berberine is effective in the form of aqueous eye drops and cures the trachoma by simple instillation. It also appears that, on weight basis, berberine is about 100 times more effective than sulphacetamide in monkeys. Berberine, therefore, may prove a practical remedy for large-scale use in trachoma patients, However, the encouraging results, both on chick embryos and on monkey eyes, should first be confirmed carefully in clinical trials. The issues like its prophylactic use, rate of cure at differnet stages, synergism with other drugs, rate of reinfection or relapse and duration of treatment will require cautious clinical attention of the opthalmologists.

Berberine has also been shown to possess antibacterial[16,18] antifungal, local anaesthetic, antihistamine[19] and anti-inflammatory[20] actions. It is likely that such complementary actions may further contribute to its clinical efficacy in eye diseases.

These actions of berberine strongly support the clinical efficacy of *Berberis aristata* in bleeding disorders and in eye diseases as claimed by Bu-Ali-Sina[1] and Nafisi[2].

SUMMARY AND CONCLUSIONS.

In 1-3 mg doses, berberine neutralized, *in vitro*, the anticoagulant action of 50 I.U. heparin per ml. of blood or its plasma. The antiheparin potency of berberine was comparable, or close, to those of protamine sulphate and toluidine blue. Neither berberine nor protamine or toluidine blue induced coagulation in the blood samples rendered incoagulable by EDTA, potassium oxalate or sodium citrate. Like protamine sulphate and toluidine blue, larger dose (10 mg/ml) of berberine exerted a direct anticoagulant effect. The mechanism of this paradoxical phenomenon is not known.

In a dose of 0.5 mg/egg, berberine protected 50-75% chick embryos from the lethal effect of trachoma organisms; also, it completely inhibited the development of infective elementary bodies in the yolk sac membrane. One mg/egg dose of sulphadiazine was equally effective. Although 0.4 mg/egg dose of berberine failed to protect the embryo, it considerably reduced, or completely inhibited the number of elementary bodies.

Daily instillation of 0.2% aqueous solution of berberine clinically cured the experimentally - induced trachoma in monkey eyes within 15-18 days. Sulphacetamide (20%) treatment was equally effective.

As this work supports the early clinical observations of Bu-Ali-Sina[1] and Nafisi[2] about the usefulness of berberine containing plant *Berberis aristata* in bleeding disorders and in eye diseases, adequate clinical trials are required to assess the utility of berberine in such affections.

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AJMALINE IN THE MANAGEMENT OF CARDIAC ARRHYTHMIAS

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INTRODUCTION

Ajmaline* a tertiary indolin base was first isolated, from the Indian plant, rauwolfia serpentina by Dr. Salimuzzaman Siddiqui[1], and named after Hakim Ajmal Khan, a pioneer of Tib in India, who had extensively used products of rauwolfia as anti-hypertensive and cardiac sedative. Ajmaline is a member of a second group of rauwolfia derivatives which have no sedative, hypnotic or hypotensive effects. It has been found to have potent anti-arrhythmic properties 2,10 and is extremely successful in the treatment of arrhythmias associated with Wolff-Parkinson-White syndrome 11 - 15.

This paper presents our ongoing experience with the drug and summarises the world literature.

MATERIALS AND METHODS

First Study:

Our first study was carried out in England[8]. Ajmaline was administered intravenously (50 mg. slowly) and was effective in termination of ectopic tachycardia in 50% of cases. It also proved to be an effective prophylactic agent orally. In one case cardiac failure was aggravated after the intravenous injection.

Current study:

Since ajmaline is still not available in Pakistan, the present study is being carried in a restricted manner. In the present ongoing study in 8 cases, 12 episodes of ectopic tachycardia have been studied. The series includes 9 males and 3 females, age range 32-65 years (mean 46 years). 7/9 (77%) episodes of supraventricular tachycardia (4/4 episodes of nodal tachycardia) and two out of three episodes (66%) of ventricular tachycardia were sinoverted with ajmaline 50 mg. intravenously within 10-15 minutes after the injection. In one case transient asystole, responding to external message was recorded. Some of these cases had received intravenous digoxin and pindolol.

DISCUSSION:

Experimentally in dogs, electrophysiologic studies of ajmaline produced A-V interval and QRS prolongation, beneficial effects on digoxin toxicity, no significant effects on ventricular automaticity and

* Gilurytmal (R)

decreased arrhythmias associated with ischemia[16]. Hemodynamically, ajmaline slows down pulse rate, atrial pressure and stroke volume in increasing doses. Ajmaline had a positive chronotropic effects on sinus node automaticity in conscious dogs, in contrast by no effect on ventricular automaticity[16]. This difference is explained by the fact that phase IV depolarisation in these two areas may be due to different electrophysiologic mechanisms[17].

Ajmaline significantly depresses intraventricular conduction as the main mechanism of action of antiarrhythmic effect. Ajmaline injection leads to decrease in QRS amplitude in healthy subjects and patients[18]. Ajmaline leads to widening of R wave, prolongation of p-Q interval, QRS complex and Q-T interval[19]. Ajmaline has some sympatholytic activity[20], a negative ionotropic effect[21]. Electronic microscopy with therapeutic ajmaline revealed signs of cellular stimulation in the heart muscle of guinea pigs[23].

Intravenous ajmaline (0.14 mg/kg body) in healthy persons produced alteration of the electric conductivity, decrease of stroke volume and cardiac output. Ajmaline also leads to decrease of pyruvate and lactate of venous blood[24] and should be used in cautious dosage in patients with liver damage[25]. Ajmaline is used, as a diagnostic tool, in blocking ventriculo-atrial conduction, without simultaeneous effect on A-V conduction, in cases of ventricular tachycardia with retrograde conduction, of atria[26]. Toxic effects include hypotension, decreased cardiac output and atrioventricular block. Ajmaline is contradicted in atrial flutter and severe conduction disorders.

Quinidine, ajmaline and beta blockers are effective in eliminating atrial and ventricular ectopics which often initiate paroxysmal tachycardia in W-P-W symdrome. In a haemodynamic study of ajmaline, no significan haemodynamic effect was observed after 50mg injection: QRS widened in all cases, bundle branch block occured in 3/11 cases who were also taking digoxin. This drug should be used with caution in digotalised patients[18]. Ajmaline increased refractory period of the accessory pathway, with temporary complete block, lengthening of H-V interval and prevented initiation of tachycardia[14].

Ajmaline is an effective antiarrhythmic agent[11]; in experimental atrial fibrillation in dogs mortality was lowered to about 40-50% by propranolol, ajmaline and bretylium[27]. Kliensorge et al.[28] introduced this as an antiarrhythmic agent in Europe. Antiarrhythmic effects of ajmaline are due to prolongation of the refractory period of the heart, and due to a less pronounced slowing of conduction in atrial and the ventricular conduction system[29]. In an intraindividual comparative study in 15 patients with chronic stable ventricular extrasystoles of various origins, in the order of effectiveness were ajmaline, propafen and lidocaine and suppression of extrasystoles was most marked after ajmaline[10]. In our first stydy[8] and the current study antiarrhythmic qualities of this drug have been confirmed.

In a series of 66 cases of paroxysmal supraventricular tachycardia sinoversion was obtained in 58 cases (88%)[33]. In 4 patients with 87 episodes of tachycardia, 85 episodes (96%) were sinoverted; 17/27 cases of atrial fibrillation and 4/7 cases of atrial flutter were also sinoverted. Ajmaline was ineffective in chronic atrial fibrillation, it abolished W-P-W syndrome in 17/27 cases. Serious side effects in this series were observed in 2/66 (3%) cases. In one case with bundle branch block a short asystole occured and in the other transient ventricular flutter was observed[30]. Ajmaline has been recommended as a safe drug for management of arrhythmias in children intravenously and orally[31,32] . Ajmaline has been effective in

post-infarction tachycardia and should not be used in arrhythmias associated with halothane anesthesia[7,29].

Ajmaline is found to shorten the action potential duration and refractory period in normal Purkinjee fibres. It has been postulated that ajmaline blocks anomalous bundle, but not conduction in the normal heart[34]. Ajmaline in 24 cases of pre-excitation syndrome lengthened P-R interval in (85%), delta-wave disappeared in (64%) and changes in QRS time in 58%[35]. In this study, effect of the drug on intraventricular and A-V conduction produced significant delays, requiring cautious use in cases with bundle branch block. In 35 cases of W-P-W syndrome, ajmaline intravenously caused temporary interruption of pre-excitation in 60% of cases[36]. It is recommended that athletes with W-P-W can compete in games, excepting those who also have paroxysmal tachycardia.

In another series of W-P-W syndrome ajmaline produced P-R interval prolongation, and most striking influence was H-V prolongation, appearing with 30-60 seconds of administration and lasting for 15-60 minutes[15]. In this series rapid atrial and ventricular pacing following ajmaline confirmed complete blockade of anomalous pathways.

Rarely ajmaline has been used suicidally by over-dosage[37,38]. A method has been reported for identification and quantification of ajmaline in autopsy material in cases of suspected suicidal attempts by ajmaline[39].

CONCLUSION

Ajmaline has now been effectively used for half a century. The major work emanates from the German centres and most of the literature is in the German language. It is an effective antiarrhythmic agent and is particularly effective in arrhythmias associated with Wolff-Parkinson-White syndrome.

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A PHARMACOLOGICAL STUDY ON UDESALEEB (PAEONIA EMODI LINN.): A UNANI ANTICONVULSANT DRUG

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The present study was undertaken to evaluate the anti-convulsant and central nervous system depressant activity of aqueous and alcolholic extracts of Paeonia emodi Linn. Male albino rats weighing 100-150 gm were subjected to supramaximal electroshock & pentylenetetrazol induced convulsions. The pretreatment of rats with the aqueous and alcoholic extracts of Paeonia emodi Linn. in the dose of 1 gm/100 gm of body weight two hours before the chemically induced seizures showed 17% and 83% protection respectively. Both the aqueous and alcoholic extracts increased the flexion phase in supramaximal electroshock seizures whereas extension phase was reduced by aqueous extract and abolished by alcoholic extract. The results suggest that the alcoholic extract of Paeonia emodi Linn. is more poten anticonvulsant as compared to aqueous extract. The extract significantly decreased motor activity of rats suggesting central nervous system depression.

INTRODUCTION

Udesaleeb, a wellknown Arab drug, is the tuber of *Paeonia emodi* Linn[1,2] . It was reported as brain and nerve tonic by Avicenna[3], Lateef[4] and Hussain[5], as the remedy for epilepsy by Avicenna[3], Baitar[6], Antaki[7], Kazrooni[8] and Hussain[5], and as tranquillizer by Avicenna[3] and Hussain[5]. However, no scientific data is available to supplement these ancient reports. Hence, the present study has been made to evaluate the anti-convulsant and central nervous system depressant activity of the aqueous and alcohol extract of *Paeonia emodi* Linn.

MATERIAL AND METHODS

Male albino rats, weighing 100-150 gm, were subjected to supramaximal electroshock and pentylenetetrazol induced seizures. Aqueous and alcoholic extracts in the dose of 1 gm/100 gm of body weight were administered orally, one, two and three hours before exposing the animals to electrical shocks (1 m. sec. duration, 100/sec, frequency, 140 V amplitude and for total duration of 0.3 sec. only) after the method of Toman *et al*[9]. Duration of clinic and tonic phases of seizures were recorded. The phenobarbitone sodium in the dose of 6 mg/100 gm of body weight was used as the standard drug. Chemical induced convulsions were produced in rats by injecting pentylenetetrazol in the dose of 10 mg/kg of body weight subcutaneously after the method of Toman *et al.*[10] The aqueous and alcoholic extracts of the drug were given two hours before the pentylenetetrazol injection. The number of animals showing seizures and death within two hours were recorded. The phenobarbitone sodium in the dose of 3 mg/100 gm of body weight was used as the standard drug. The study on the effect of aqueous extract in the dose of 500 mg/ 100 gm of body weight orally on motor activity (spontaneous movements and dis-

tance travelled by the animal) of rats was done using an activity cage after the method of Csanji *et al*[11]. The movements were recorded for 30 minutes one hour after the treatment with drugs. Chlorodiazipoxide in the dose of 2.5 mg/100 gm. of body weight orally was used as standard drug. Effect of aqueous and alcolholic extract in the dose of 1 gm/100 gm of body weight on body temperature was also studied. The rectal temperature of the rats was recorded at 0, 30, 60, 90 and 120 minutes of the administration of extracts.

RESULTS AND DISCUSSION.

The effect of aqueous and alcoholic extract of *Paeonia emodi* Linn. In flexion and extension phases of electrically induced convulsions are shown in Table I. The results suggest that *Paeonia emodi* Linn. Significantly reduces the extension phase and increases the flexion phase of electrically induced seizures and the peak effect is seen after two hours of treatment with the drug. The phenobarbitone sodium also increases the flexion phase and reduces the extension phase of electrically induced conclusions. Similar pattern was observed in chemically induced shock where both the extracts of *Paeonia emodi* Linn. reduce the incidence of convulsions and death as compared to the untreated group. The aqueous extract showed 17% protection from convulsions and 50% protection from death while the alcoholic extract showed 83% protection from both seizure and death. The phenobarbitone sodium showed 83% protection from convulsions and 100% protection from death. The alcoholic extract is more potent than the aqueous extract in these studies. Our studies on motor activity showed significantly less activity in the rats. The spontaneous movements reduced from 266.38 ± 26.83 (control group) to 118.75 ± 20.11 (P - .01) and the distance travelled by the test drug treated animal in 30 minutes was reduced to 25.75 ± 4.33 (P - .001) against the normal value of 68.63 ± 6.02 feet in control group. The values in the standard group pre-treated with chlorodiazipoxide were spontaneous movements 138.25 ± 22.10 (P /.01) and distance travelled by the animal 43.25 ± 7.07 feet (P - .05). Both the aqueous and alcoholic extracts reduce the body temperature within two hours after the drug administration (Table II). These findings suggest that *Paeonia emodi* Linn. has both anticonvulsant and C.N.S. depressant activity. The results are qualitatively similar to those of phenobarbitone sodium. However, the crude extract is 100-300 times (dose to dose) less potent as compared to phenobarbitone sodium. A separate study was conducted to study the effect of *Paeonia emodi* Linn. On neurotransmitter levels in brain. However, we fail to get any consistent data on the effect of *Paeonia emodi* Linn. on noradrenaline, dopamine and 5-hydronythptamine levels in brain. Further studies are required to ascertain the mechanism of action of *Paeonia emodi* Linn.

TABLE I

Effect of aqueous and alcoholic extract of *Paeonia emodi* Linn. of flexion and extension phases of electrically induced convulsions in rats

Time of drug administration	AQUEOUS EXTRACT		ALCOHOLIC EXTRACT		PHENOBARBITONE SOD.	
	Flexion Sec.	Extension Sec.	Flexion Sec.	Extension Sec.	Flexion Sec.	Extension Sec.
0 hour	3.50 ± 0.84	11.0 ± 1.41	3.80 ± 0.75	11.0 ± 1.35	3.50 ± 0.83	11.0 ± 1.40
1 hour	4.66 ± 2.30	5.0* ± 1.31	7.0** ± 0.26	0.00*** ± 0.00	11.25* ± 4.57	0.00*** ± 0.00
2 hour	8.50* ± 1.40	2.17* ± 1.28	7.0** ± 0.26	0.00*** ± 0.00	11.30* ± 4.75	0.00*** ± 0.00
3 hour	8.67* ± 1.99	2.50** ± 1.59	6.66* ± 0.91	1.50*** ± 1.02	5.6* ± 0.83	1.33*** ± 1.33

*P - 0.5, **P / 0.01, ***P / 0.001,

TABLE II

Effect of aqueous and alcoholic extract of *Paeonia emodi* Linn. on body temperature in rats

GROUP	Rectal temperature (in centigrade)				
	O min.	30 min	60 min	90 min	120 min
Control	35.31 ± 0.33	35.31 ± 0.26	35.81 ± 0.38	36.31 ± 0.34	36.31 ± 0.26
Aqueous Extract	35.25 ± 0.67	33.50* ± 0.37	33.50* ± 0.84	32.62* ± 0.78	32.62* ± 0.82
Alcoholic Extract	37.38 ± 0.22	36.06*** ± 0.44	35.38*** ± 0.35	34.88*** ± 0.28	34.38*** ± 0.26

NOTE: P is calculated in comparision to the temperature before administration of the drug. *P / 0.5, ***P / .001,

SUMMARY

A shudy mn the anhi-convulsant and C.N.S. depressant activity of aqueous and alcoholic extract of *Paeonia emodi* Linn. in rats reveals that both the extracts increase the flexion phase and significantly reduce the extension phase in electrically induced convulsions reduce the incidence of convulsions and death in chemically induced shock, reduce the body temperature and significantly reduce the motor potent than the aqueous extract. These findings suggest that *Paeonia emodl* Linn. has both anti-convulsant and C.N.S. depressant activity.

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PROTECTIVE EFFECT OF GUL-E-TEESU (BUTEA MONOSPERMA (LAM) FLOWERS) IN EXPERIMENTAL LIVER INJURY

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An Aqueous extract of Gul-e-teesu (flowers of Butea monosperma (B.M.) offered protection against experimentally induced liver injury by CCl_4 in albino rats as shown by biochemical and histopathological studies. In Pentobarbitone sleeping time studies the extract showed improvement of the metabolic functions in these liver injured animals. In partial hepatectomised rats it showed significant increase in rate of liver regeneration.

INTRODUCTION

When Arab medicine was introduced in India they incorporated known and new Indian drugs and added to the materia medica of Islamic system of medicine. Gul-e-Teesu (Butea monosperma Syn.B.Frondosa) belonging to the family Leguminaecea was one of them[1]. The flowers are claimed to be tonic, aphrodiasiac, diuretic and yield yellow dye[2,3,4]. It was also claimed to be a blood purifier, anti-inflammatory, corrective of humours namely bile, phelgm and black bile[5], antihelminthic, antipyretic, appetiser and used in spleenomegally[6] and viral hepatitis[7].

A crystalline fraction composed of the glycosides butrin and plasitirin isolated from the alcoholic extract of the petals reduced the number of implants in the mated rats[8]. A good deal of controversy exists regarding the antioestrogenic effect of the alcoholic extract of the petals of the flowers. But the present study communicates the experimental investigations conducted to evaluate the effects of Gul-e-teesu (B.M.) on carbon tetrachloride induced liver injury and on partial hepatectomised experimental animals.

MATERIAL AND METHODS

Flowers of B.M. were collected and an aqueous extract was prepared by keeping the flowers (2 gms) in boiled distilled water (24 ml) and the supernatant was decanted after 16 hours and used for the experiments. Albino rats of either sex weighing 130 to 150 gms. were divided into 4 groups of six animals each. Group I served as control was given distilled water (2 ml/100 gm) for all the 8 days. To group II animals was given carbon tetrachloride at the dose level of 0.2 ml/100 gm S.C. for 3 con-

secutive days. Group III animals were protected for 5 days with the drug BM (Dose 333 mg/150 gm) orally and given along with CCl_4 for next 3 days. Group IV animals were treated with B.M. for all the 8 days.

Effect on Pentobarbitone Sleeping Time: On the 8th day, liver functions and the extent of liver damage were assessed by estimating the pentobarbitone sleeping time in all the animals according to the method of N.K. Bhide[9].

Biochemical Studies: On the 9th day blood samples were collected in sterile test tubes for biochemical estimation of serum bilirubin[10] Serum Alkaline Phosphatase[11], SGPT[12], total protein (Folin Lowrey Method[13], albumin and globulin and A/G ratio[14].

Histopathological Studies: On the 9th day, all the groups of animals were sacrificed and the liver lobes were removed from identical site of each lobe and preserved in 10% formal saline for 24 hours. Paraffin sections (5 micron thick), were prepared and stained with haemotoxyline and eosin and studied at 100x and 225x magnifications. The criteria used for histological assessment of liver injury were:

(1) Extent of hydrophic degeneration
(2) Extent of fatty changes
(3) Extent of inflammatory / leucocytic infiltration
(4) Hepatic cellular Necrosis
(5) Over all assessment.

Effect on Liver Regeneration on Partial Hepatectomised Rats

This was studied in 70 male wistar albino rats ranging from 150 to 220 gms. and divided into 10 groups of 7 animals each. Partial hepatectomy was done in all animals according to the method of Brues et al[13]. The drug B.M. was administered orally (Dose 333 mg/100 gm (in the test group daily and distilled water (2 ml) for the control group. The animals were sacrificed after the first (24 hours), 2nd, 3rd, 5th and 7th day and the livers were removed, dried between two filter papers and weighed. The liver body weight index was calculated and the effects on treated and untreated animals were compared as reported by Lalitha Kameswaran and S.K. Nazimuddin[15].

RESULTS

Effect on Pentobarbitone Sleepint Time: In group II, treated with CCl_4 alone, the pentobarbitone sleeping time was considerably more than the controls due to the extensive liver damage and the inability of the injured liver to metabolise pentobarbitone. In group III, (CCl_4 + B.M.) the pentobarbitone sleeping time was almost comparable to that of normal control, showing the improved liver function. Group IV, (B.M. alone) did not have any significant effect in pentobarbitone sleeping time. The results are presented in table No. 1.

Biochemical Changes:

Plasma Proteins: Estimation of plasma proteins in the various groups of animals revealed the fol-

lowing. It was observed that there was no significant change in the total proteins between all the four groups. While the A/G ration in the normal control rats was found to be 1: 0.69 in animals treated with CCl_4 alone (Group II) the A/G ratio was found to be 1: 2.12 thereby showing a significant reversal ($P < 0.001$), while there was no change in the A/G ratio of animal treated with B.M. alone (Group IV). There was a definite indication of inhibition of A/G ratio reversal in animals treated with CCl_4 and B.M. (Group III). Administration of B.M. definitely appears to have an inhibitory activity in the reversal of albumin globulin ratio induced by CCl_4 ($p < 0.01$). The results are presented in table No. II

Serum Bilirubin: It can be seen from table II that there was no significant change in the levels of serum bilirubin between the normal control (Group I) and B.M. treated animals (Group IV). However, in animals treated with CCl_4 alone (Group II) there was a steep increase in the levels of serum bilirubin ($P < 0.001$) and administration of B.M. to animals treated with CCl_4 (Group III) appear to inhibit the elevation of serum bilirubin which was found significant ($P < 0.01$).

Serum Alkaline Phosphatase: Here again, it can be seen from table II that there was no significant difference in the serum alkaline phosphatase activity from the normal control (Group I) and B.M. treated animals (Group IV) while there was a significant elevation in the alkaline phosphatase activity in the CCl_4 treated animals (Group II) compared to Group III animals ($P < 0.001$). It was observed that B.M. has a definite role in preventing the increase of alkaline phosphatase activity induced by CCl_4.

SGPT: There was no difference between group I and Group IV animals. However, in animals treated with CCl_4 along (Group II) the SGPT values show a tremendous increase ($P < 0.001$) and in animals treated with CCl_4 + B.M. (Group III) such a significant increase was not observed. The results are presented in table II.

TABLE 1

Group	P.B. Sleeping Time In Minutes			
	Sleeping Time			P. Value
	M	+	SD	
I Control	65.5	±	8.5	—
II CCl_4	150	±	15.5	< 0.001
III CCl_4 + BM	80.5	±	10.5	N.S.*
IV B.M.	70.5	±	8.0	N.S.*

*N.S. = Not significant with respect to controls

TABLE II

Groups	Total Protein G% M + SD	Albumin G% M + SD	Globulin G% M + SD	AG Ratio G% M + SD	S. Bilirubin G% M + SD	S.Alk. PO 4 K+A Unit M + SD	SGPT i.u. M + SD
I	6.72 ± 0.16	3.83 ± 0.20	2.66 ± 0.39	1 : 0.69	0.27 ± 0.02	3.47 ± 0.41	5.17 ± 0.30
II	6.28* ± 0.20	1.98*** ± 0.34	4.19*** ± 0.34	1 : 2.12***	0.95*** ± 0.04	133*** ± 4.08	46.83*** ± 3.13
III	6.43* ± 0.27	3.31+ ± 0.12	3.12* ± 0.23	1 : 0.94**	0.53** ± 0.04	55.26** ± 3.44	17.0+ ± 2.83
IV	6.66* ± 0.24	3.90* ± 0.20	2.20 ± 0.25	1 : 0.56*	0.32+ ± 0.02	4.05* ± 0.50	6.55* ± 0.40

*P = N.S. (not significant)
**P < 0.01
***P < 0.001
+ P < 0.05

TABLE III

Day	Body Wt.	Control		B.M.				
		Expected Liv. Wt	Actual Liv. Wt	Liv. Reg %	Body Wt.	Expected Liv. Wt.	Actual Liv. Wt	Liv. Reg. %
1.	165.83	5.86	6.08	103.75	154	5.50	6.83	124.18*
2.	156.33	5.58	6.48	116.13	151	5.43	10.23	188.4*
3.	176.85	6.19	8.13	131.34	160	5.69	10.76	189.1*
4.	211.25	7.72	8.29	114.82	163	5.78	10.53	182.18*
5.	172.14	5.41	8.74	161.55	165	5.41	11.24	207.76*

*P < 0.01

Histopathological Studies:

In CCl_4 treated animals (Group II) a swelling and hydrophic degeneration of the centralobular hepatic cells developed. These changes progressed to a diffuse fatty degeneration and midzonal necrosis followed by the leucocytic infiltration. The necrosis in some cases was also focal. The intermediary zone presented a number of baloon cells. But in CCl_4 and B.M. treated animals (Group III) hepatic cell walls were normal. Hepatic cells did not show fatty infiltration / degeneration in almost all lobules and there were no nuclea changes in liver cells. There was no bile stagnation seen in the billary cannaliculi and the normal architecture was well preserved. Only a mild infiltration of round cells were seen in portal tract. They did not have any deliterious effect on the liver. The difference between the sections of the control group (Group I) and B.M. treated (Group III) were minimal characterised by absence of nuclear pathology, inflammatory infiltration, pigmented disturbance and fibrosis. Thus the drug appears to have a definite protective effect by way of preventing the deleterious effect of CCl_4 on liver.

Effect On Partially Hepatectomised Rats

It can be seen from the Table III that the liver regeneration in B.M. treated animals is much more higher than the controls and statistically significant. While the regeneration of liver in the control animals was 103.75%, 24 hours after partial hepatectomy and only 161.55% after 7 days. In animals treated with B.M. the percentage regeneration of liver in the 24 hours study and 7th day study it was respectively 124.18% and 207.76% which have been found to be significant ($P < 0.01$).

The results of the present study reveal that the aqueous extract of the flowers of B.M. has a definite protective effect against the deleterious effect of CCl_4 upon the structure and function of liver as estimated by various parameters. The pentobarbitone sleeping time measurement which is an important parameter in assessing the liver function clearly shows that in animals treated concurrently with CCl_4 and B.M. the duration of sleeping time is almost similar to that of normal control groups, thereby confirming the ability of aqueous extract of B.M. in improving the metabolic function of the liver. The biochemical studies also seems to support the beneficial effect of the B.M. in antoganizing the toxic effect of CCl_4 on liver. While there is no significant change in the levels of total proteins, A/G ratio, serum bilirubin, serum alkaline phosphatase and S.G.P.T. between the normal controls and the animals treated with B.M. alone, the CCl_4 treated animals show a significant reversal in A/G ratio and a sharp increase in the levels of serum bilirubin, serum alkaline phosphatase and SGPT. The above CCl_4 induced biochemical changes are effectively antogonised by concurrent administration of B.M. which again confirms the protective ability of B.M. against the hepatotoxic effect of CCl_4.

Apart from this the histopathological studies also confirm the beneficial role of the B.M. in antagonising the deleterious effect of CCl_4 on the histology of the liver. While the CCl_4 treated animals show extensive histological changes, the animals treated with CCl_4 and B.M. concurrently show only a mild to moderate histopathological changes. Effect on partially hepatectomised rats also indicate that B.M. is able to accelerate the process of regeneration of liver and this is one positive indication of the beneficial effect of B.M. Further studies are being carried out to determine the effect of B.M. on mitotic index in partially hepatectomised rats which would give a clear picture as to the effect of the test drug on proliferations of hepatic cells after partial hepatectomy.

Since, the exact mechanism of CCl_4 induced hepatoxicity is not known[17], it is not possible at present to postulate any precise mode of action by which B.M. confers protection against CCl_4 induced hepatitis. The findings of the present study strongly support the claims of Unani Physicians regarding the use of these flowers in the treatment of hepatic disorders. Further, studies are required to identify the active principles in the aqueous extract of Butea monosperma and also to elucidate the precise mechanism by which the extract is able to protect the liver from the toxic effect of CCl_4 and accelerate the regeneration of hepatic cells.

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TREATMENT OF BARS (VITILIGO) WITH ARAB MEDICINE

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Two Arab drugs, 'Safoof & Zamad' were tried in 1745 cases, orally and topically, in separate groups. In 445 cases, only zamad was used and in 1,300 cases safoof & zamad were tried. The results were found to be satisfactory in both the groups. Zamad alone yielded 75.74% response whereas safoof and zamad, combined yielded 84.15% response. This study has shown that Safoof and Zamad are very effective in the management of cases of Bars.

INTRODUCTION.

Bars is an Arabic term used for Vitiligo, an idiopathic variety of leucoderma. This achromia of the skin may be limited to few patches or it may be extensive and wide-spread. When extensive it is often bilateral and adopts symmetry in distribution. It can appear on any part of the body but the common sites are the face, dorsal portions of fingers, hands, waist, legs, toes and feet. Mucous membranes may also be affected. (Rabban Tabri[1], al-Razi[2], Ibn Sina[3], Azam Khan[4], Lerner[5,6] , Behl[7], Savil[8] and Macky[9].

Bars was known even in the period of "Aushooryan" in 2200 B.C. (Mahmood[10]. The description of Bars is found in Atherveda (1400 B.C.). Al-Razi[2], gave a comprehensive description of Bars. He attributed it to excess of Khilth-e-Balgam, a humoral disturbance, and Zufe-Hazm (weakness of digestion) and coldness of blood. Ibn Sina, Tabri, Masihi, Gilani and other eminent Hakims agree with this view (Ibn Sina[3], al-Razi[2], Rabban Tabri[1] and Azam Khan[4]. Buqrat and Jalinoos were also of the same opinion about its causation. Ibn Sina in his 'al-Qanoon' said that Bars is hereditary, and it is due to failure of the power which gives shape to tissues (Ibn Sina)[1].

Exact cause of Bars is unknown however, various causes from heredity to viral infection have been attributed to this disease. (Anderson[11], Behl[7].). Metabolic errors and dietary deficiences are held responsible. (Ibn Sina[3], al-Razi[2], Behl[7].). Gastrointestinal disorders - e.g. intestinal worms, chronic amoebiasis, giardiasis and chronic dyspepsia may be counted as precipitating factors. Mental stress and frequent use of broad-spectrum antibiotics have also been noted as predisposing factors in some cases (Behl[7]). Endocrine disorders and auto-immunity are also accused. Trauma and constant pressure may cause depigmentation in susceptible persons. Use of incompatible food articles such as simultaneous use of milk and fish, is also described as its cause by ancient Hakims. Excess use of sour things, oranges,

lemons and tamarind, and food touched by rats, cats and certain other animals are also held responsible as its cause (Ibn Sina[3], al-Razi[2], Rabban Tabri[1], Azam Khan[4]. Drinking or bathing in water - warmed by direct exposure to sun rays has been described as one of the causes (al-Hadith).

Intense research has been carried out on vitiligo in different parts of the world. Much has been explored still its etiology remained obscure and the treatment discouraging. "The repigmentation is rare in vitiligo, total response is seen in 10 to 15 p.c. of the cases". (Marcus A - Krupp[12],)

It has been a social scourge since time immemorial and now its incidence is increasing. The subjects suffering from vitiligo develop inferiority complex and avoid societies. They are psychologically disturbed.

The study was taken up considering the un-yielding nature of the disease and social importance of its treatment with an object to find out its effective treatment. In this paper the results on therapy of Bars using two Arab formulae studied at Central Research Institute for Unani Medicine, Hyderabad, A.P. India are presented.

MATERIALS & METHODS

MATERIAL:

1) 1,745 patients of Bars attended the Institute.

2) Drugs Used: a) SF (Safoof) - for oral use powder of Babchi seeds (psoralea Corylifolia Linn) treated in vinegar الخل for seven days, dried, powdered and preserved for use. b) Z_1 (Zamad) - for external application on Bars lesions.

Zamad - (Ingredients):

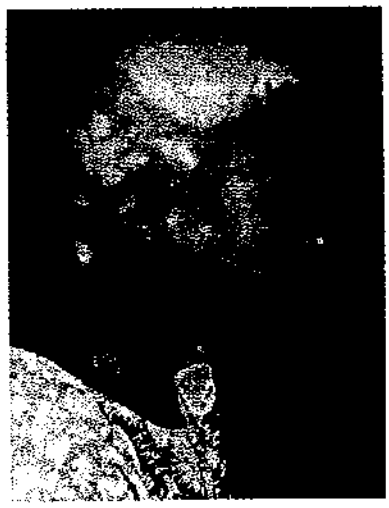
i) Babchi seeds (psoralea corylifolia Linn).
ii) Geru (Red-ochre)
iii) Gandak Amlasar (Sulphur)
iv) Gulnar (Punica granatum Linn)

All the 4 ingredients were powdered separately and mixed in equal quantities to be used as a zamad. The powder of zamad in a required quantity (according to extension of lesions) was mixed with water and a fine paste prepared.

METHODS:

On 445 patients only zamad was tried as an external application and on 1300 patients safoof and zamad both, safoof orally and zamad externally. The criteria for selection of patients was to exclude them from all other systemic diseases specially infectious skin diseases which produce achromic patches on the skin and to select pure Bars cases.

Dosage: Safoof: 6 gms. daily. 3 gms. of safoof was given in morning and evening, 15 minutes before meals.

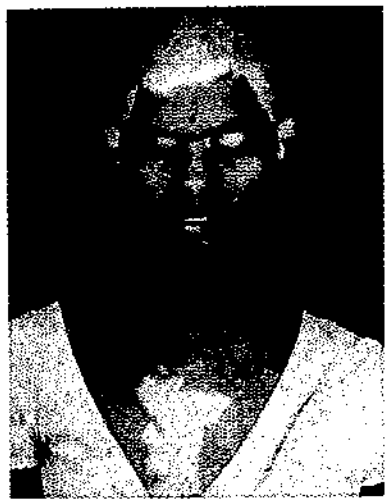


Before Treatment 10.3.78

After Treatment 26.7.78

Before Treatment 27.7.76

After Treatment 17.1.78



Before Treatment 28.5.77

After Treatment 23.5.78

Zamad: The zamad powder in a required quantity mixed and grounded well in water (1 × 5 W × v) to be applied on Bars lesions. After application of zamad the lesions were exposed to sun from 2 to 10 minutes according to individual tolerance. Exposure to sun was avoided if patients showed intolerance.

The duration of treatment was 3 to 18 months.

The response was judged clinically and also by taking photographs before and after treatment.

Trials with Zamad:

Zamad was tried as an external application (without any other oral or topical medicine), in 445 Bars patients irrespective of patients age, sex and chronicity of the disease or extension of the lesions.

OBSERVATION AND RESULTS.

The duration of illness varied in these 445 cases from 1 month to 30 years and above shown in Table I.

It was noted that majority of these cases had a long duration of illness before they attended the Institute for treatment.

The duration of treatment with Zamad ranged from 3 to 12 months and above, shown in Table II.

Response to the treatment with zamad:

Out of 445 Bars cases, 337 responded to the given treatment with Zamad and the rest (108) did not show any response, i.e. 75.74% of the cases showed good response to the treatment. The results are shown in the Table III.

TABLE I

Showing the duration of illness in 445 Bars cases treated with ZAMAD

DURATION OF ILLNESS	NO. OF PATIEENTS
1 - 11 months	156
1 - 5 years	189
6 - 10 years	57
11 - 15 years	21
16 - 20 years	13
21 - 25 years	4
26 - 30 years	5
TOTAL	445

TABLE II

Showing the duration of treatment

DURATION OF TREATMENT	NO. OF PATIENTS
1 - 3 months	200
4 - 6 months	133
7 - 9 months	39
10 - 12 months	29
Above 1 year	44
TOTAL	445

TABLE III

Showing the response to the treatment with Zamad

100% Cure	91-99% Cure	71-90% Cure	51-70% Cure	41-50% Cure	Below 40%	No Response	Total Cases
31	14	45	37	41	169	108	445

Trials with safoof and zamad:

The safoof and zamad formula was tried on 1300 Bars cases, irrespective of patient's age, sex, chronicity of the disease or extension of the lesions.

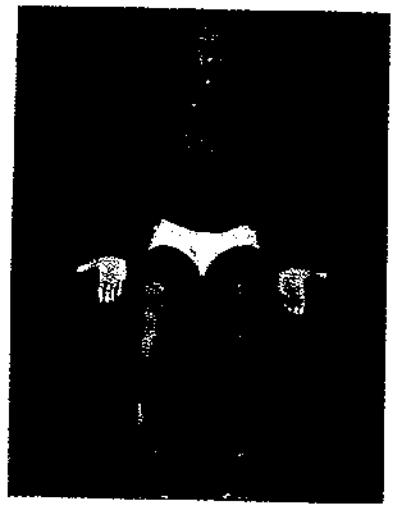
OBSERVATIONS AND RESULTS:

The duration of illness ranged in these 1300 cases from 1 month to 30 years and above. Details shown in Table IV.

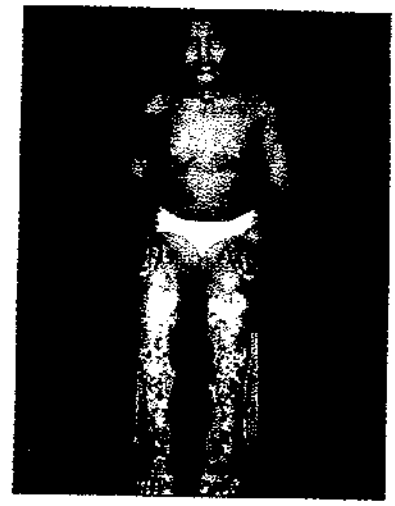
TABLE IV

Showing the duration of illness in 1300 patients treated with Safoof and Zamad

DURATION OF ILLNESS	NO. OF PATIENTS
1 - 11 months	280
1 - 5 years	578
6 - 10 years	261
11 - 15 years	97
16 - 20 years	58
21 - 25 years	8
26 - 30 years & above	18
TOTAL	1,300

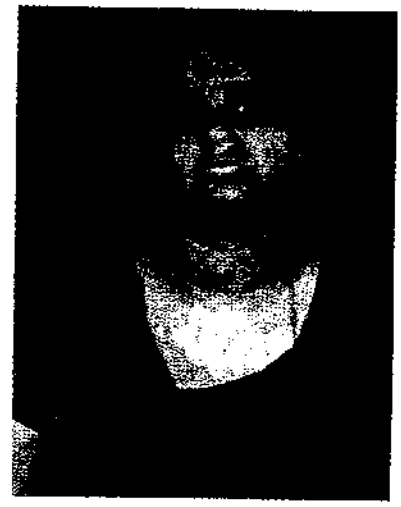


After Treatment 20.3.79



Before Treatment 28.12.77

After Treatment 11.1.78



Before Treatment 14.6.77

After Treatment 11.1.78

Before Treatment 14.6.77

It was noted that in majority of the cases the duration of illness was quite long, when they attended the Institute.

The duration of treatment with safoof and zamad was from 3 to 12 months and above. Details are shown in Table V.

TABLE V

Showing the duration of treatment with safoof and zamad in 1,300 patients

DURATION OF TREATMENT	NO. OF PATIENTS
1 - 3 months	290
4 - 6 months	374
7 - 9 months	181
10 - 12 months	187
Above 1 year	268
TOTAL	1,300

The majority of these cases received treatment for 9 to 12 months.

Response to the treatment with Safoof and Zamad:

Out of 1300 cases, 1094 (84.15%) responded to the given treatment and in 206 cases (14.85%) there was no response. The results are shown in Table VI.

TABLE VI

Showing the response to the treatment with Safoof & Zamad

100% Cure	91-99% Cure	71-90% Cure	51-70% Cure	41-50% Cure	Below 40%	No Response	Total Cases
31	44	157	135	147	580	206	1,300

DISCUSSION

In majority of cases the depigmented patches turned red after 2 or 3 application of zamad and when continued repigmentation started within 2 to 8 weeks. Bars patches found on chest, arms, face, forehead, scalp, back, neck and legs responded well to the treatment given. The patches found on back of the hands, feet and above the iliac crest showed slow response to the treatment.

Safoof and zamad therapy was found more effective compared to zamad alone, and was well tolerated by majority of patients who gave maximum response to the treatment within 9 to 12 months. No particular toxicity was noted within the use of these two drugs. However, mild to severe - erythema and blister formation was seen in small percentage of cases (below 10%) with zamad therapy. Those who showed absolute intolerance to application of zamad were put on oral safoof therapy. In others it was tried in less concentration with a gap of 3 days, week or a fortnight between two applications, with good results.

In some cases, taking safoof orally, nausea, vomiting and gastric discomfort were reported which were controlled either by adding pure ghee الخالص السمن in diet or discontinuing the drug for few days. Urticarial rash was also seen in some cases. These side effects were not much severe and were controlled by adjusting the dosage and rarely with anti-allergic drugs.

The follow-up study of the patients was done for 1 to 2 years. Recurrences were noted in negligible number of cases. Recurrences were less in cases of complete cure and more in incompletely recovered. It can be thus - concluded that safoof and zamad therapy is quite effective in the treatment of Bars (Vitiligo), comparing the results obtained by other disciplines. These two drugs, safoof and zamad, are taken as standard reference, drugs for double blind clinical trials with new coded drugs for Bars which are being conducted in the CRIUM, Hyderabad.

Some of the photographs of the patients having Bars lesions on different parts of the body taken before and after treatment are presented to show the cure and the duration of treatment.

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PRELIMINARY CHEMICAL AND PHARMACOLOGICAL STUDY OF ASTRAGALUS SPINOSUS (Muschl) GROWN IN KUWAIT

M.Th. Ghoneim, A.R.AlGindy, R.Alami, E.Shoukry and R. Fattouh

Kuwait

Some preliminary pharmacological studies were carried out on the active ingredients and extracts obtained from Astragalus spinosus (Muschl). The glycoside was shown to possess positive inotropic properties as demonstrated from its effect on the isolated mammalian heart and rabbit atria. The alkaloidal fraction was found to produce a spasmolytic effect mostly probably through a direct action. The alkaloidal fraction showed moderate histamine and serotonin antagonizing effects. The alcoholic and chloroform extracts of the plant showed potent antispasmodic effect as shown from their effect on smooth muscles, this action is due to a direct effect on smooth muscle fibers. The alcoholic extract of the root showed some histamine and serotonin antagonizing effects.

The alcoholic extract of the shoots showed a similar effect to that produced by the glycoside. The chloroform extract of the shoots showed some antispasmodic effect in addition to some antihistaminic and antiserotonin effect.

INTRODUCTION

The herbal treatment is an old method used by the mankind to cure his ailments. There is no doubt that many of the important drugs of plant origin are still occupying its place in the medical treatment. The Islamic scientists were pioneers in such fields. Their prescriptions are still used up till now. So the field of herbal medicine is very important for further studies and research. *Astragalus Spinosus* (Muschl) is a plant commonly used by the beduins in Kuwait and is known as Shedad الشداد for treatment of renal colic and bronchial asthma.

There are many species of Astragalus all over the world. The toxicity caused[1] by its ingestion by the live stock is divided into three groups (a) due to high percentage of selenium accumulated by the plant, (b) aliphatic nitro compounds, (c) chronic true "loco" symptoms appearing particularly in horses. *Astragalus Spinosus* (muschl) grows in Egypt and Kuwait. Khaphaga et al[2] found that it contains glycoside but nothing mentioned about its pharmacological action.

So the aim of this work is:

To study its chemical compositions and to screen it pharmacologically.

EXPERIMENTAL

Materials and Methods:

A For chemical Study: *Astragalus spinosus* (muschl) were collected during April. The shoots of the

plants were dried in shade, powdered and packed in a continuous extraction apparatus. The powder was defatted, dried, extracted with chloroform and then with alcohol 95 percent. From the chloroform extract a crystalline material "A" was isolated and an alkaloidal residue was obtained which on examination by TLC showed a single alkaloidal spot. But its quantity was scarce and trials to get more and study of its chemical properties will be dealt with later on. From the alcoholic extract a crystalline material "B" was obtained.

Isolation and Identification of material "A"

The chloroform extract was concentrated and left in refrigerator. The material obtained was purified by silica gel column. Gradient elution was carried out, the ether fraction on concentration gave long needle shaped crystals and recrystallized from chloroform - light petroleum. It is insoluble in light petroleum, soluble in ether, chloroform, alcohol and water. It melts at 79% The IR and NMR indicates that the material is acetamide.

Isolation and Identification of Material "B"

The alcoholic extract was concentrated and left at room temperature, white clusters of crystals were deposited. Recrystallization from pyridine water was done. The crystals were found to be organic in nature, m.p. 290-291° with decomposition. It is insoluble in water, chloroform, and ether. Soluble in pyridine, sparingly soluble in ethanel and methanol. Molecular wt 588 from UV, IR, MS and TLC the material was found to be aliphatic glycoside with arbinose as a sugar moity. The details of the chemical study is not dealt here to avoid a lengthy text and due to the limited time for its presentation.

B. The fractions were isolated from the plant according to the method described El Gendi *et al*[3]
The plant fractions include the following:

1. A glycoside
2. An alkaloidal fraction
3. the alcoholic extract of the shoots (AES)
4. the chloroform extract of the shoots (CES)
5. the alcoholic extract of the root (AER)
6. The chloroform extract of the root (CER)

C. The animals used in this study included rabbits, albinorats, guinea pigs, toads and cats of either sex. The animals were kept under the same conditions, allowed water *ad libitum.* The animals were kept fasting 12 hours before sacrifice.

D. Methods of screening:

1. Isolated rabbit's duodenum & jejunum (modified[4] Magnus technique, 1904)
2. Isolated guinea pig ileum (Burn 1952 a[5])
3. Isolated skeletal muscle of the toad "rectus abdominis muscle" (Burn, 1952b[6].)
4. Isolated perfused rabbit's heart (Langendorff, 1895[7])

Fig. 1

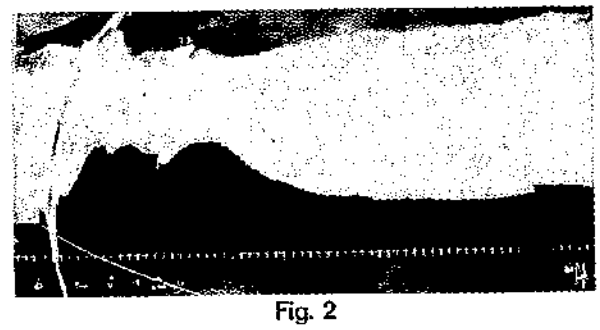

Fig. 2

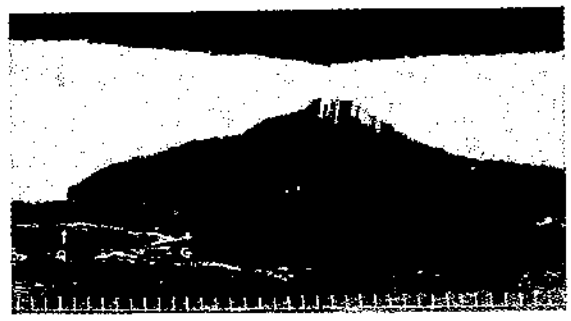

Fig. 3

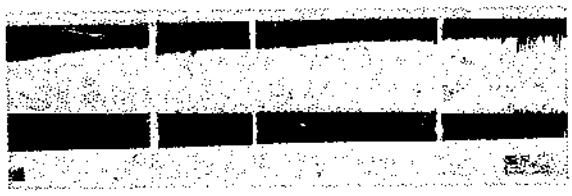

Fig. 4

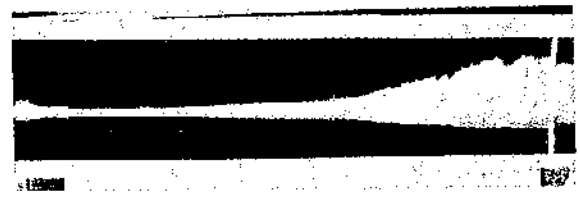

Fig. 5

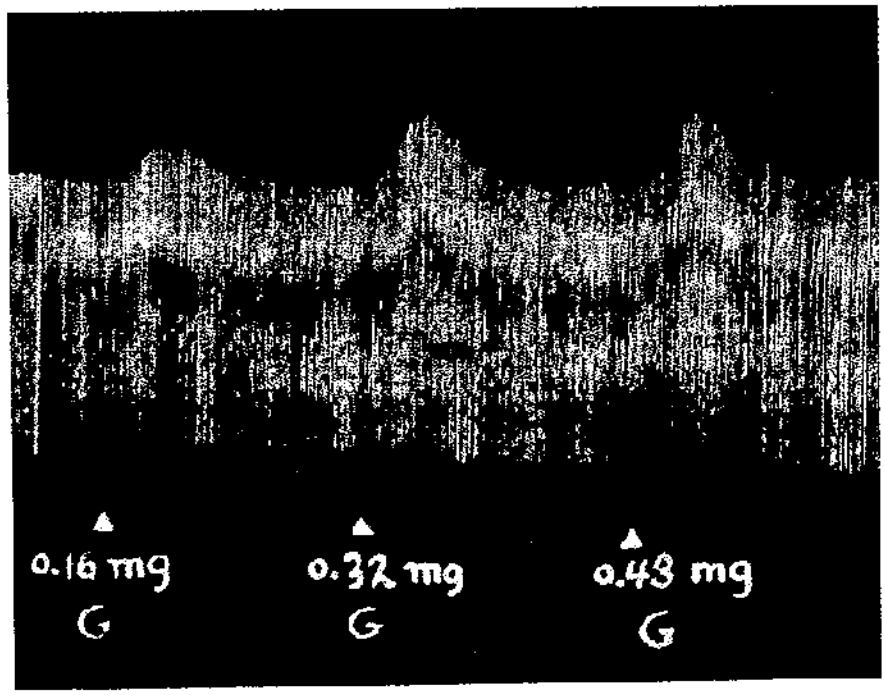

Fig. 6

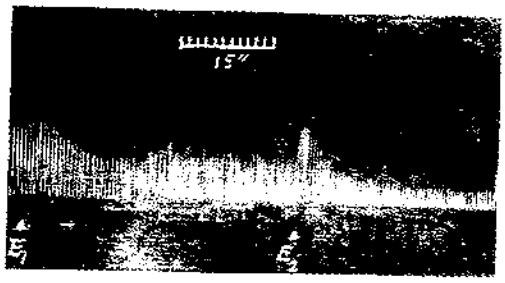

Fig. 7

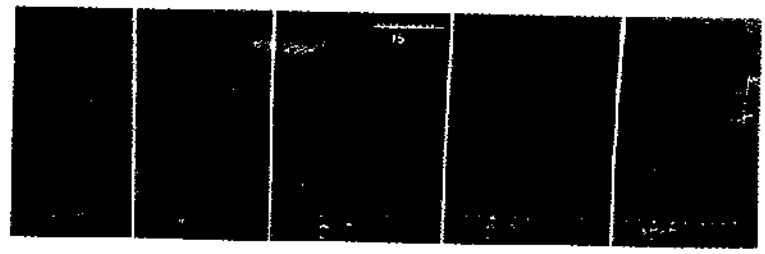

Fig. 8

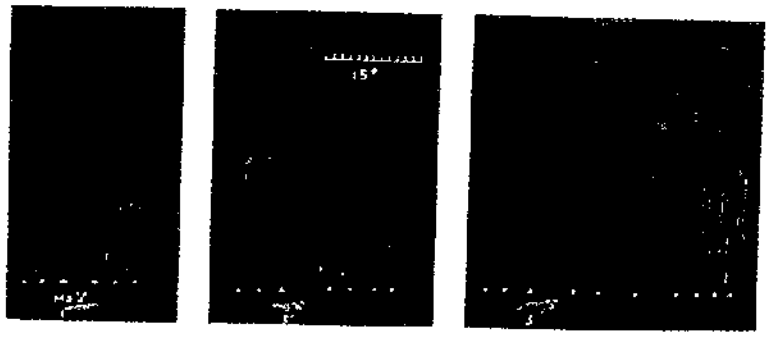

Fig. 9

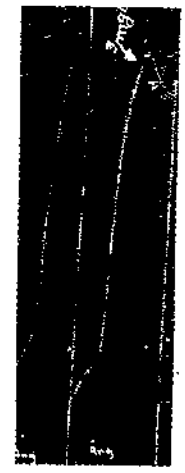

Fig 12

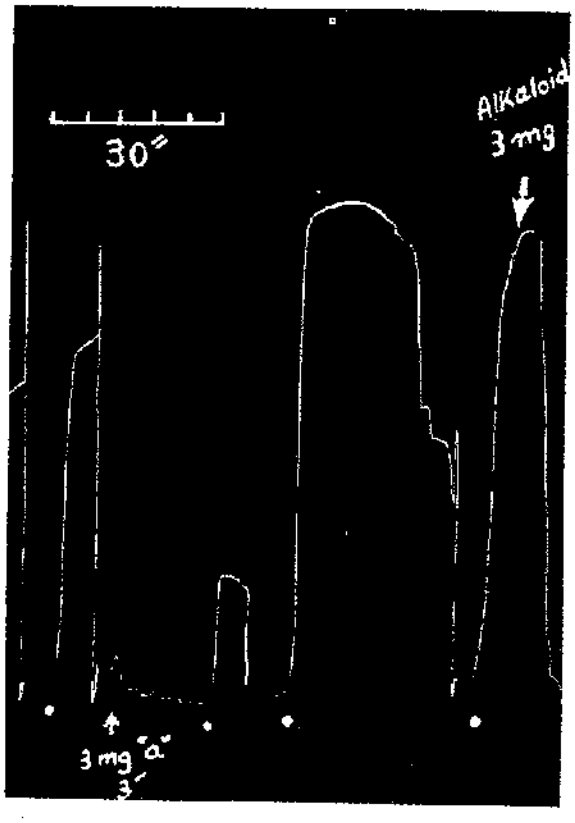

Fig. 10

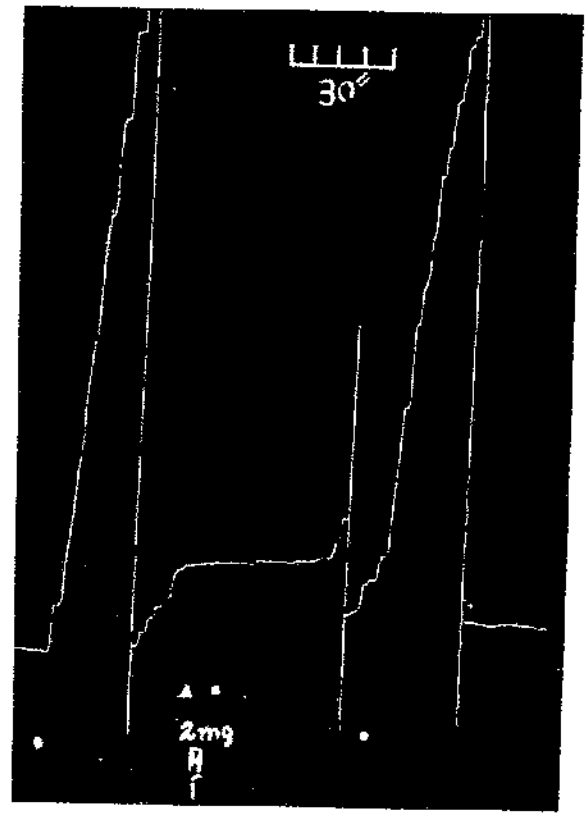

Fig. 11

5. Isolated perfused toad's heart (Burn 1952 c[8])
6. Isolated rabbit's atria (Burn, 1952 d[9])
7. Isolated rat stomach fundus strip (vane, 1957[10])
8. Isolated rabbit aortic strip (Furchgott & Bhadrakom, 1953[11])
9. Isolated guinea pig tracheal strip (Chosch, 1971[12])
10. Isolated non-pregnant rat uterus (de Jalon, 1945[13])
11. Spinal cat blood pressure (Burn, 1952 e[8].)

RESULTS

The glycoside produced only a slight inhibitory effect on the smooth muscles, no significant effect on the skeletal muscle. On the isolated perfused mammalian heart, the glycoside in a small concentration produced a temporary depression followed by a gradual and slow stimulant effect mainly manifested on the amplitude of contraction. During the primary inhibitory phase, there was a slight decrease in the heart rate and coronary flow (Fig.1). With large doses, the primary inhibitory phase lasted for longer duration and was accompanied by a decrease in the heart rate which may be followed bycardiac arrhythmias and lastly cardiac standstill may occur. The stimulant effect of the glycoside was not abolished after Badrenergic receptors blockade with propranolol (Fig.2). Administration of the glycoside to hypodynamic heart (perfused with Ringer Licke containing 2.5-12 u.g. quinine Hel/ml) was found to decrease or prevent the induced hypodynamic state of the heart (Fig.3).On the isolated rabbit's atria, the glycoside produced a stimulant effect mainly on the amplitude of contraction. The effect was slow to start (Fig 4). The effect is not medicated through sympathetic stimulation (Fig. 5). On eh toad's heart, the glycoside produced a stimulant effect mainly in the amplitude of contraction (Fig. 6). No significant effect was observed on the bloodpressure of spinal cat. The alkaloidal fraction showed a mild inhibitory effect on rabbit jejunum (Fig. 7) It reduced the response of the guinea pig to the effect of histamine (Fig.8), serotonin (Fig.9) and angiotension (Fig.10) but not to the effect of acetylcholine. The alkaloidal fraction decreased the response of rat fundus stomach to serotonin (Fig. 11). The effect is dose-dependent. The response to angiotensin was also decreased but after a large concentration of the alkaloid, (Fig. 12), The response to acetylcholine was not affected. On guinea pig trachea, the alkaloidal fraction reduced the response to histamine (Fig. 13). The effect is dose-dependent. On the rat uterus, the alkaloid produced a potent inhibitory effect on the response of the muscle to angiotensin (Fig 14). No effect was observed on the skeletal muscle. On the mammalian heart, the alkaloidal fraction produced a stimulant effect mainly in the amplitude of contraction. The stimulation was not mediated through sympathetic stimulation (Fig 15). The alcoholic extract of the shoots showed similar effects to those produced by the glycoside. The chloroform extract of the shoot demonstrated effects more or less similar to those produced by the alkaloidal fraction. The alcoholic extract of the roots showed an inhibitory effect on the smooth muscles. The extract inhibited the tone and rhythmic activity of the rabbit duodenum and jejunum, the effect is dose-dependent (Fig. 16) and the muscles regained normal activity after washing of the drug. No significant effect was observed on the response of the muscle to acetyl choline, but hte

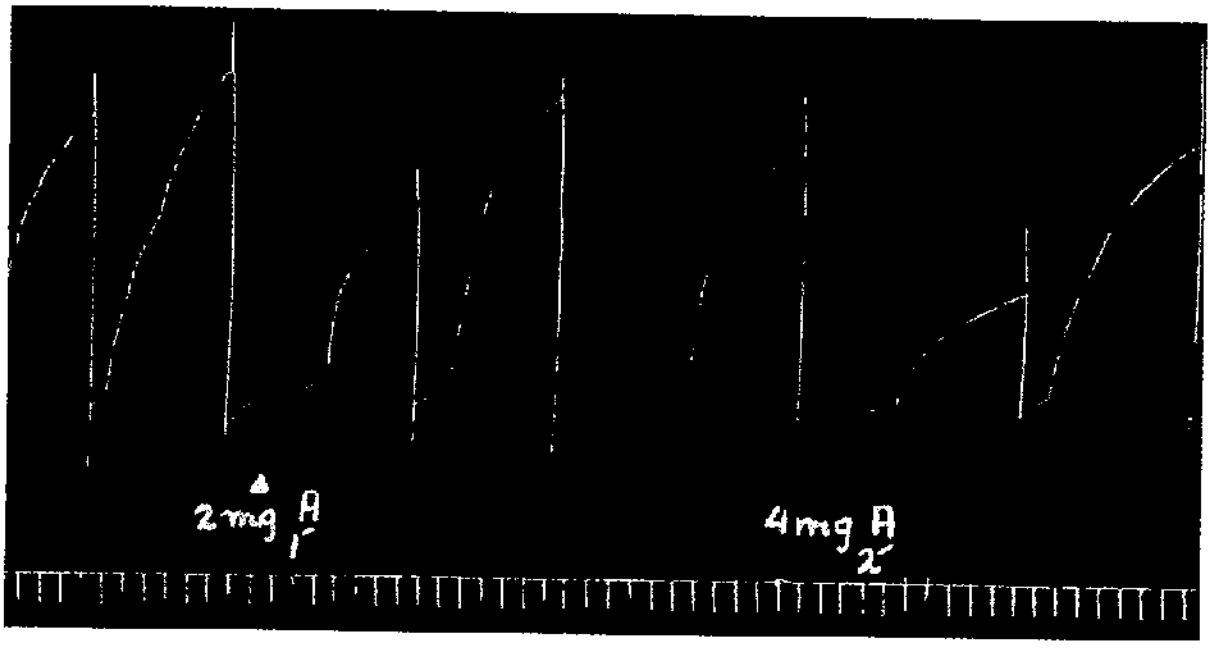

Fig. 13

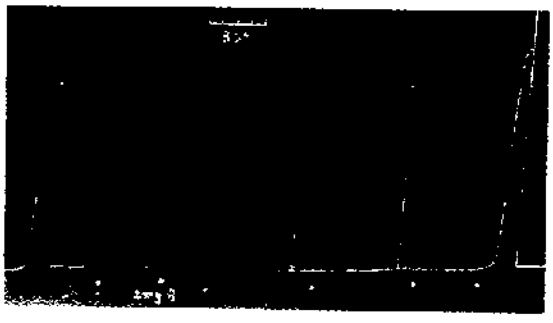

Fig. 14

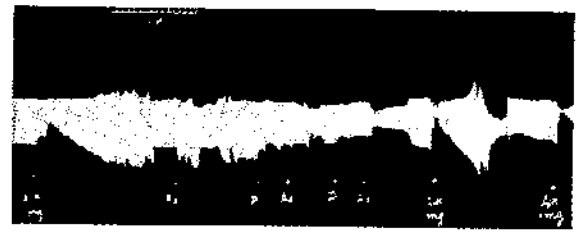

Fig. 15

Fig 16

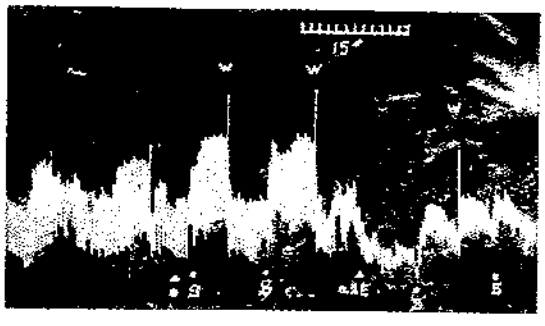

Fig. 17

Fig. 18

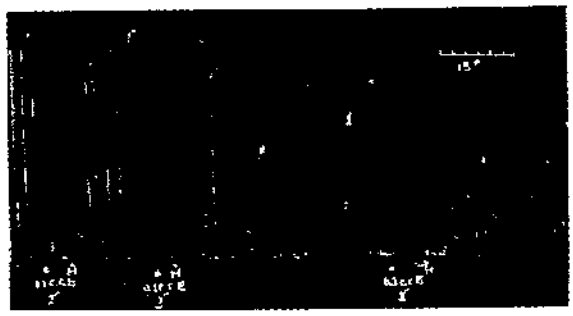

Fig. 19

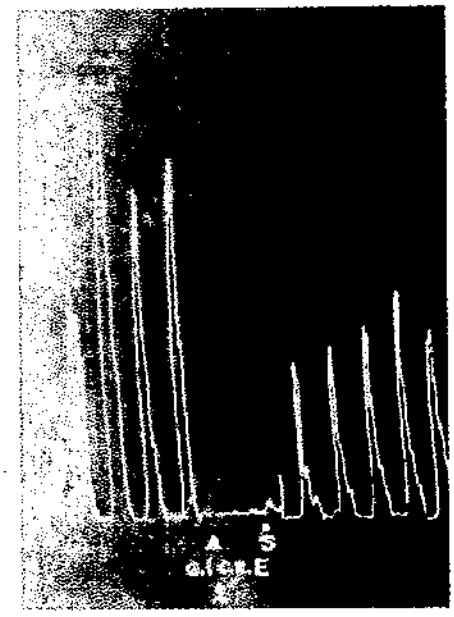

Fig. 20

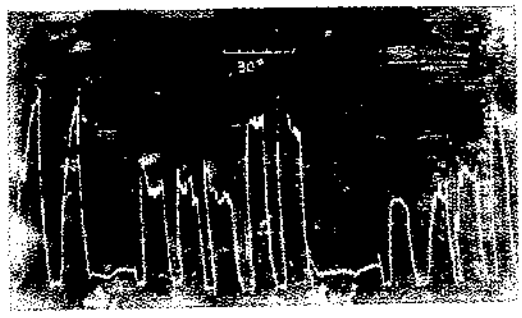

Fig. 21

Fig. 22

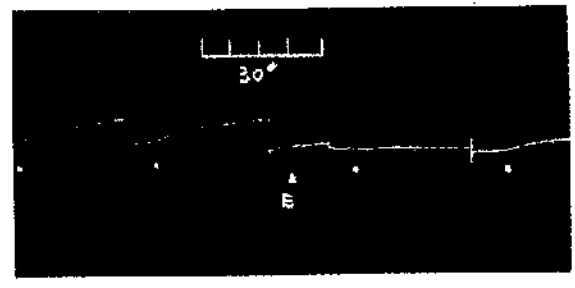

Fig. 23

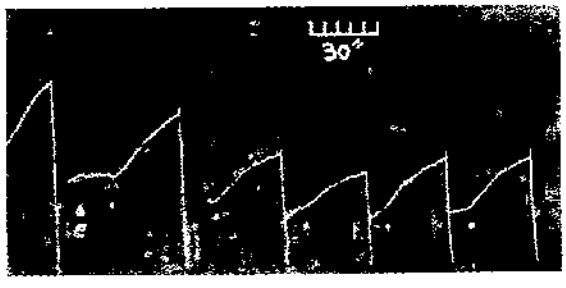

Fig. 24

Fig. 25

extract reduced the response to Serotonin (Fig. 17) and abolished the response to barium chloride (Fig 18).

On the guinea pig ileum, the extract inhibited the response of the muscle to contractions induced by histamine (Fig 19), Serotonin (Fig.20) and angiotensin (Fig 21). The response to nicotine is not affected except in very large concentration of the extract. The effect of the extract is dose-dependent and reversible. On the rat stomach fundus strip, the extract reduced the response to serotonin (Fig. 22). On the isolated guinea pig tracheal strip, the extract inhibited the response to angiotensin (Fig. 23) but not to histamine. On the isolated rabbit aortic strip, the extract reduced the response of the muscle to angiotension (Fig. 24) but not to noradrenaline. On the mammalian heart, the extract produced a direct stimulant effect (Fig. 25). The chloroform extract of the roots was found to produce similar effect except that most of the effects produced on the smooth muscles were mediated through a direct inhibitory effect, where the extract was able to decrease the response os smooth muscles tested angiotensin and barium chloride.

DISCUSSION

Some pharmacological actions of the ingredients separated from astragalus, in addition to the extracts have been investigated. The glycoside is suggested to possess a positive inotropic effect on the heart as shown from its effect on the isolated mammalian heart. This preparation is sensitive to trace a cardiac glucoside like activity (Brown *et al*, 1962[14], Holland and Briggs, 1964[15]. The inotropic effect of the glycoside was manifested on both normal and hypodynamic hearts. It was reported that the degree of positive inotropic effect depends, to a great extend, on the functional state of the cardiac muscle (sciarine *et al* 1943[16], Braunwald *et al*, 1961[17], Rodman and Pastor, 1963[18] where the effect is more pronounced on hypodynamic heart than in sufficient one. High concentrations of the glycoside were found to produce cardiac inhibition with a decrease in the heart rate, arrhythmias may occur and then cardiac standstill. High concentrations of substances with cardiac glycoside like activity are known to impair the cardiac contractibility, produce contracture in isolated hearts, the heart rate may be reduced and arrhythmias are likely to occur and finally the heart functionally arrested (Klaus, 1966[19]. The glycoside was also shown to exert a positive inotropic effect on the isolated atria. Corresponding experiments for testing cardiac glycosidelike activity were reported to be performed on isolated mammalian atria (Ehmer et al, 1964[20], Erjarec & Adamic, 1965[21], Greef et at 1965[22]. The inotropic effect of the glycoside was not mediated through an adrenergic mechanism, most probably, it is mediated through a direct effect on the myocardium. Therapeutic actions of cardiac glycoside-like activity on the cardiac muscle are not mediated through adrenergic mechanisms and are not abolished by reserpine or adrenergic B-receptor blockers (Moran & Perkins, 1958[23], Morrow *et al*, 1963[24], Forster & Stolzenberg, 1963[25]. The glycoside is nearly devoid of significant antispasmodic effects.

The alkaloidal fraction produced an inhibitory effect on the smooth muscles. The ability of the alkaloidal fraction to inhibit the response to angiotensin indicates that it has a direct spasmolytic effect. In addition, the alkaloidal fraction showed moderate histamine and serotonin antogonizing effects. No significant anticholinergic effect was observed. The alkaloidal fraction showed a mild direct stimulant effect on the heart. The alcoholic and chloroform extract of the roots of astragalus showed potent anti-

spasmodic effect. The effect is not mediated through an anticholinergic effect. It is suggested that this effect is mediated through a direct action on the smooth muscles as proved from their antagonistic action to the spasmogenic effect of either angiotensin or barium chloride. The alcoholic extract showed some histamine and serotonin antogonizing effects. The alcoholic extract of the shoots of astragalus showed a similar effect to that of the glycoside indicating that the glycoside is the main active principle present in this extract. The chloroform extract of the shoots of astragalus also produced similar affects to those shown by the alkaloidal fraction suggesting that the alkaloid may constitute its main active ingredient.

CONCLUSION

Astragalus contains some active ingredients having different pharmacological effects. The main action of the glycoside and the alchoholic extract of the shoots was a direct cardiac stimulant effect. The other fractions showed potent antispasmodic effect. This is a preliminary study. Now, work is in progress to determine the other possible pharmacolobical effects and toxicity of the plant.

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PHARMACOLOGICAL STUDIES ON EMBLICA OFFICINALIS

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INTRODUCTION

Avicenna (Sheikh Bu Ali Sina, 980-1037 A.D.) was the author of the 'Canon of Medicine' *(Al--Qanoon)* Fig. 1. In his tract on cardiac drugs he has listed 64 drugs which he used for the treatment of cardiac diseases[1]. A possibility of errors of interpretation exists around the research on such drugs mentioned in old treatise. Research problems pertaining to these drugs can be resolved by applying the modern scientific principles. Attempts have been made to investigate some of the drugs mentioned by Avicenna (2,3,4). This paper deals with one such drug namely *Emblica officinalis.*

The fruit pulp of *Emblica officinalis* (English: *Embelic Myrobalans:* Hindi: *Amla* mentioned hereafter as *myrobalans)* is one of the important drugs used in the Indian systems of medicine. It is used both as a medicine for some diseases and as a tonic to build up lost vitality and vigor[5]. In Unani (Graeco-Arab) system of medicine, it is described as a tonic for heart and brain. Being a rich source of vitamin C it has been successfully used to treat human scurvey[6]. Barring the discovery of ascorbic acid and presence of large amount of tannins, there does not seem to have any detailed work done. Therefore, the fruit pulp was subjected to chemical and pharmacological investigations.

In order to do this,various claims of the practitionersof the indigenous system of medicine had to be kept in mind in order to devise suitable experiments to their validities.For example, *Chavanaprash,* a preparation containing mainly myrobalans is extensively used in India for chest diseases and for lowered vitality. It was not difficult to devise a test for at least one of these claims, namely, treatment of cough[7]. Screening for anti-bacterial and anti-fungal activity showed mild anti-bacterial activity[8]. The active principle appeared to be present in a fairly concentrated form in a fraction which was prepared by treating 80% alcoholic extract of myrobalans with HCL and extracting with ether. This semi-pure fraction inhibited the growth of *Micrococus pyogens* var. *aureus, Salmonella, typhosa* and *paratyphi* at a concentration of 0.21 mg/ml and that of *M. Pyrogens* var *albus. S. Schottmuelleri* and *S. Dysenterics* at a concentration of 0.42 mg/ml when tested by agarstreak method.

During the general pharmacological screening of the 80% alcoholic extract of myrobalans for various pharmacodynamic actions, a cardiotonic activity was observed. This property did not appear to be a true cardiotonic activity but was more like the actions of adrenaline[9]. A pure crystalline material was isolated from the alcoholic extract which was a neutral non-nitrogenous substance with significant pharmacological actions. This active principle was designated as *'phyllemblin'*.

AVICENNA

AVICENNA: (Arabic: Ibn-e-Sina) was called the "Prince of Physicians". Born near Bukhara, 980, at Hamadan, Persia, 1037. Arab philosopher and physician, considered by some scholars to have been the greatest produced by the culture of the eastern Arab world. He displayed (c 997) his medical proficiency while still a youth, by curing a Persian ruler of a critical illness, and was thereafter variously physician and adviser to rulers at Khiva (c 1004) and Hamadan (until 1037). He was the author of more than 100 works, of which his Canon of Medicine (Qanoon) is unquestionably the most important, and was widely translated in Europe during the Middle Ages.

Fig. 1

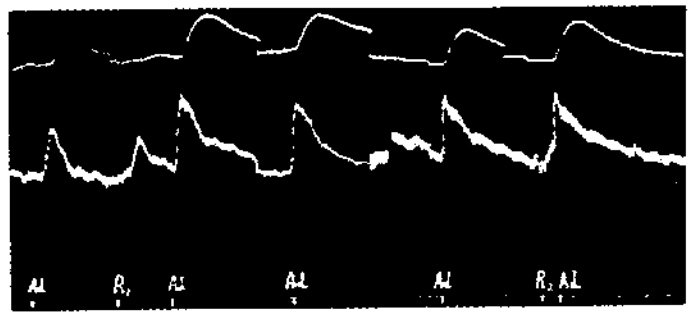

Fig. 2

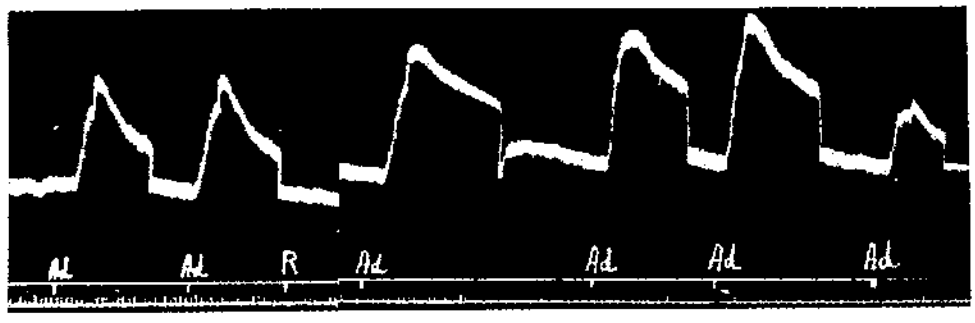

Fig. 3

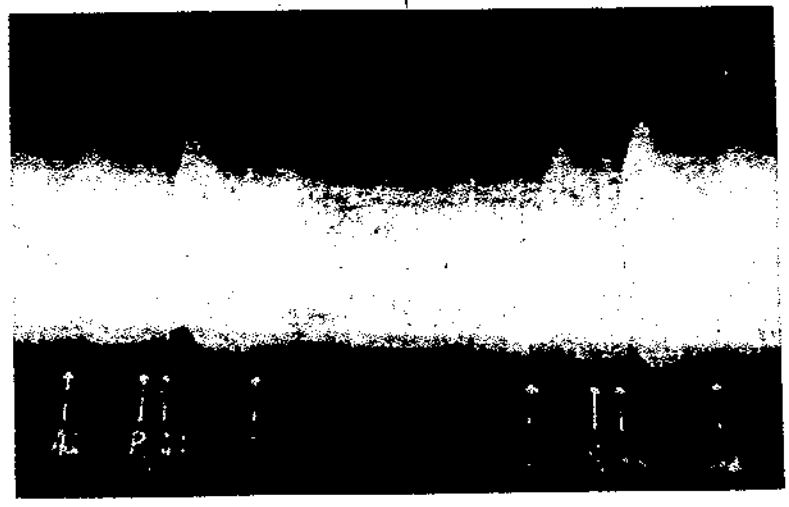

Fig. 4

EXPERIMENTAL

Preparation of Extracts

An authentic sample of dried fruit, cut to remove the seeds was further dried in an air-circulating drier at 40°C and powdered to pass through 64 mesh sieve. The powder (1 kg) was extracted by percolation, successively with petroleum ether (60-80°C), ether and 80% ethyl alcohol. All the extracts were concentrated *in vacuo* and kept in a vaccum dessicator over calcium chloride till the weights were nearly constant. For administration, a quantity of these extracts representing a definite quantity of crude drug was suspended in 1-3 ml distilled water.

Isolation of phyllemblin

Powdered dried pulp of myrobalan (7 kg) was defatted with petroleum ether and percolated with 80% ethyl alcohol. The alcoholic extract was distilled *in vacuo*, the extract suspended in 2.5 litres of 80% ethanol and mixed with a strong solution of potassium hydroxide (580 ml of 60%) till the pH was 10. It was left for 24 hours in a refrigerator. The mixture was then diluted to 10 litres of distilled water and extracted repeatedly with peroxide-free ether. The combined ether extract was washed first with water then with 5% Hcl and again several times with water. Ether extract was then dried over anhydrous sodium sulphate and distilled. A brownish residue (10g) was obtained. This was washed with cold chloroform which removed the brown coloured matters. The pale residue, insoluble in cold chloroform, was dissolved in boiling chloroform, decolourized with a small quantity of animal charcoal and cooled when phyllemblin crystals appeared as white needles (yield 0.80%).

Pharmacological Testings

Output of respiratory tract fluid

Rabbits of either sex (2-2.5 kg) were anaesthetized with urethane (7 ml. of 25% per kg) and the respiratory tract fluid (R.T.F.) was collected according to *Pharmacodynamic actions* the method of Boyd and Parry[10].

For *in vivo* experiments cats, dogs and rabbits were used. Cats (3-3.5 kg) were anaesthetized with 85 mg/kg chloralose (intravenously) was used after initial, induction of anaesthesia with ether. Dogs were anaesthetized with 30 mg/kg pentobarbitone sodium intravenously. Rabbits were anaesthetized with 7 ml of 25% urethane intravenously. Studies on blood pressure, respiration, intestinal movement and nictitating membrane were made on cats and dogs according to standard methods. Studies on the rate and depth of respiration was carried out according to the method of Burn[12].

The isolated hind limb of rat and isolated ear of rabbit was perfused with warm oxygenated Ringer's solution and the outflow measures as drops/min or ml/min.

Studies on isolated organs such as the heart of frog and rabbit, auricle of rabbits, duodenum of rabbit, ileum of guinea-pig, seminal vesicle of rat, tracheal chain of guinea-pig and uterus of rat were made according to standard methods.

Acute toxicity of phyllenmblin was studied on mice. The drug was administered orally for acute toxicity studies.

RESULTS

Effect on respiratory tract fluid (R.T.F.)

The experimental animals used for expectorant activity differs from the normal animals because it is anaesthetized and is held partially upside down over a period of 6-8 hours which was the period of study in most of these experiments. The mean rate of production of R.T.F. was about 4 ml/kg/24 hrs. in rabbits. Each animal served its own control. It was observed that the R.T.F. during the second hour of the experiment could be taken as control value since variation in the output was observed only in the first hour of observation.

Petroleum ether extract, ether extract, 80% alcoholic extract, product of steam distillation of fruit pulp and phyllemblin was tested for expectorant activity.

After taking the R.T.F. reading in the second hour, the drugs were administered orally in a dose equivallent to 4g of fruit pulp and the effect was noted hourly for next 5 hours. Six rabbits were used for each drug. Results are presented in Table I.

Only 80% alcoholic extract showed an increase in the output of R.T.F. It showed an increase of 60.35% in R.T.F. secretion over the normal. For comparison other known drugs commonly used as expectorant was used. For example, ammonium chloride (400 mg/kg) produced an increase of 36.7% in R.T.F. The results indicated that with the dose given, 80% alcoholic extract of myrobalan produced the highest excretion of the R.T.F.

For the determination of the mode of action, rabbits were given, 80% alcoholic extract by different routes viz. (a) orally (b) intraperitoneally (c) intravenously and (d) intraperitoneally after an injection of cholinergic blocking agent like atropine sulphate (2 mg/kg) or oxyphenonium bromide (2 mg/kg). The dose given intravenously was 25% of that given orally. In all the cases 80% alcoholic extract showed considerable stimulation of R.T.F. excretion and the stimulation was much more when the drug was given parenterally (Table I).

Pharmacodynamic actions of Phyllemblin

Cardiovascular action

Phyllemblin had very little or no effect on the blood pressure of dogs or cats (Fig. 2). However, it potentiated the pressure response of 1 ug of adrenaline on the blood pressure of cat. Dose of 5 mg phyllemblin produced significant potentiation of the action of adrenaline in normal anaesthetized cats and in spinal cat preparation (Fig. 3).

Small doses of phyllemblin (2 and 3 mg) showed a negligible stimulation of isolated perfused frog heart while 4 and 5 showed an inhibition. Phyllemblin showed a significant potentiation of the effect of

Fig. 5

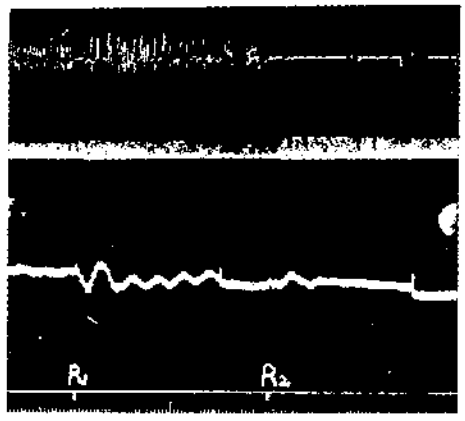

Fig. 6

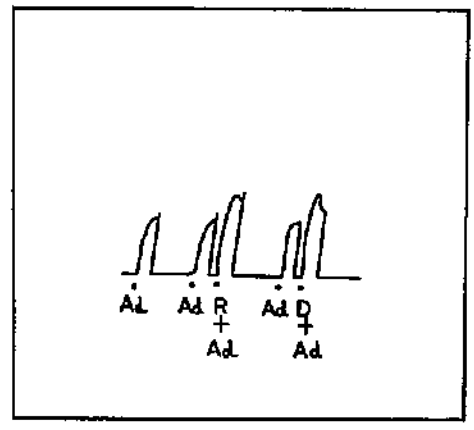

Fig. 7

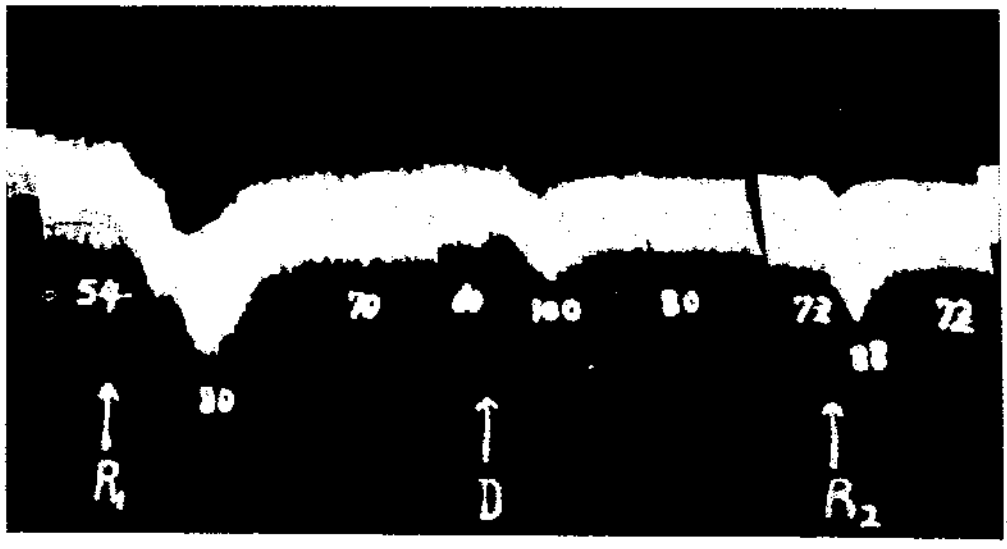

Fig. 8

0.1 ug adrenaline at doses of 100 and 500 ug (Fig. 4) On isolated perfused rabbit heart, phyllemblin produced stimulation of the heart movement at the doses of 50, 100, 500 and 1000 ug (Fig. 5). Phyllemlin (10 and 20 mg) potentiated the stimulant effect of 20 ug adrenaline on the isolated auricle of rabbit.

In isolated frog heart perfused with normal Ringer's solution phyllemblin (1 mg) increased the cardiac outflow from a normal of 5 ml/min to 6.5 ml/min. Comparable increase in the outflow was observed with 1 ug of adrenaline. In another set of experiment where frog heart was perfused *in situ* with normal Ringer's solution, the outflow was 13 ml/min. When the normal Ringer was replaced with 1/4 th calcium Ringer, the cardiac outflow decreased from 13 ml to 2 ml/min. When 1 mg/ml of phyllemblin was administered at this stage, the cardiac outflow increased from 2 ml to 9 ml/min.

Phyllemblin (5 mg) decreased the outflow of perfused rat hind limb. The decrease was from a normal of 285 drops/5 min to 180 drops/5 min. Under similar condition 2 ug adrenaline decreased the outflow to 82 drops/min. Similarly, on perfused isolated ear of rabbit, phyllemblin (3 mg) decreased the outflow from a normal of 170 drops/6 min to 64 drops/6 min whereas adrenaline (2 ug) reduced the outflow to 38 drops/6 min.

Intestinal smooth muscle:

Phyllemblin (28 mg) arrested the intestinal movement *in vivo* in cat. (Fig. 6). In doses of 1, 2, 3, and 4 mg/25 ml bath produced relaxation of isolated duodenum of rabbit and markedly potentiated the relaxant effect of 0.5 ug of adrenaline in dosed of 50, 100 and 200 ug. Phyllemblin opposed the spasm induced by actylcholine, histamine and barium chloride on guinea-pig ileum. In doses of 1.8, 0.55 and 0.30 mg/25 ml bath fluid, phyllemblin produced 50% blocking of the action of a standard dose of histamine acid phosphate (10 ug), actylcholine (10 ug) and barium chloride (100 ug) respectively.

Nictitating membrane of cat:

Phyllemblin (10 mg) itself produced mild contraction of the nictitating membrane and also potentiated the effect of adrenaline (5 ug) at doses of 10 and 15 mg (Fig. 2).

Seminal vesicle of rat:

Phyllemblin *perse* did not produce contraction of isolated seminal vesicle of rat but significantly potentiated the effect of 10 ug adrenaline. The adrenergic potentiating activity of 500 ug of phyllemblin was comparable with 100 ug of ephedrine hydrochloride (Fig. 7). Ascorbic acid (40 mg), gallic acid (40 mg) and tannic acid (40 mg) present in myrobalan did not potentiated the action of 10 ug adrenaline.

Isolated tracheal clain of guinea-pig and arabbit respiration:

Phyllemblin (4 mg/25 ml bath) completely blocked the actionof 20 ug histamine acid phosphate on isolated tracheal chain. Ephedrine Hcl (2 mg) produced inhibition of the histamine equivalent to that produced by 2 mg phyllemblin.

Phyllemblin (50 mg) produced marked relaxation of the respiratory movement in anaesthetized rabbits and the respiratory rate increased from 54 to 80 per minute. Ephedrine (5 mg) caused relaxation of respiratory movement and respiratory rate increased from 60 to 100/min. A comparable dose of phyllemblin (5 mg) produced equal or a slightly more relaxation (Fig. 8).

Acute Toxicity

Phyllemblin was well tolerated by mice in doses upto 100 mg/kg when given intraperitoneally in mice and upto 500 mg/kg when given orally. At doses above 500 mg/kg animals appeared drowsy and dull soon after the injection and were active again after 1-3 hours.

DISCUSSION

Expectorant activity of the 80% alcoholic extract of the fruit pulp of *Emblica officinalis* was studied by the technique proposed by Boyd and Perry[10] which is fairly simple and reproducible. Of the several fractions studied, only 80% alcoholic extract showed activity. Phyllemblin was not active. Gallic acid, tannins and ascorbic acid present in the extract were also tested and found inactive. An attempt was made to study the mode of action. The alcoholic extract was effective orally, intraperitoneally, intravenously and even in atropinized animals. This is unlike ammonium chloride, which is known to act as a reflex stimulating agent of bronchial secretion through the irritation of the gastric mucosa and is inactive when given parenterally. Since the action of the extract was not blocked by cholinergic blocking agents, it was inferred that like eucalyptol (Boyd and Pearson[13] it directly stimulated the bronchial glands.

The pharmacodynamic actions of phyllemblin (a white crystalline compound, m.p. 161-3°C isolated from 80% alcoholic extract) can be grouped into two classes (i) direct action on various systems, (ii) potentiation of the actions of adrenaline. Of the direct effect, mention may be made of the mild stimulation of isolated heart of frog and rabbit, short rise in cat's blood pressure, contraction of the nictitating membrane, reduction in the outflow of the perfused isolated hind limb of rat and ear of rabbit, increase in cardiac outflow of frog heart and antispasmodic action on intestinal smooth muscle. Of the indirect action, potentiation of the action of adrenaline on the blood pressure of cat, isolated frog heart, nictitating membrane of cat, rabbit, intestine and seminal vesicles of rat.

Phyllemblin resembles adrenaline in its direct effects, but it does not resemble in other details. For example, *per se* it does not elevate the blood pressure, does not contract the seminal vesicle and does not elevate the blood glucose level. It resembles ephedrine in its ability to potentiate adrenaline. But differs from ephedrine in some respects; for example, it does not show tachyphylaxia. It stimulates the heart, produces coronary dilation and peripheral vasoconstriction. Therefore, its action is adrenergic but it is neither completely like adrenaline nor like ephedrine.

The antispasmodic activity and adrenergic potentiating activity is comparable in many ways to rutin and other flavanoid compounds. However, it was found that phyllemblin had no effect on capillary permeability. It has been argued that rutin exerts its adrenergic potentiating activity mainly due to its antioxidant property.

CONCLUSIONS

Fruit pulp of *Emblica officinalis* is a rich source of vitamin C and provides vitamin C in most stable form. Its bio-availability in cases of pulmonary tuberculosis is much better than synthetic vitamin C. It possesses powerful expectorant activity by directly stimulating the mucous cell of the bronchial tree. In addition the extract has mild antibacterial activity.

Phyllemblin, an active principle isolated from the 80% alcoholic extract of *Emblica officinalis* acts on cardiovascular and other systems partly like adrenaline and partly like ephedrine. The investigations support the use of this drug by Avicenna (Sheikh Bu Ali Sina) in the treatment of cardiovascular diseases and its present use in cardiovascular and chest diseases in the Indian systems of medicine.

ACKNOWLEDGEMENTS

I wish to thank Hakeem Abdul Hameed, President, Institute of History of Medicine & Medical Research, New Delhi, India for his suggestion to undertake the scientific evaluation of the drugs used by Sheikh Bu Ali Sina (Avicenna) by using modern techniques. It was his dedication and keen interest for the work of Avicenna which inspired me to take up the investigations on cardiac drugs mentioned by Avicenna.

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COMMENTS AND DISCUSSIONS

Prof. H. Wagner,

I want to make some remarks on the last four papers. As for as the two last papers are concerned I want to offer my co-operation as a chemical analyst and structural instructor of this compound so for as its active principle is concerned, if you are interested. The other lecture, was lecture on the treatment of vitiligo. The psoralea is one of the ingredients in this prescription, contains furocoumarines and these furocoumarines are wellknown to stimulate the melanine production by this pigmentation and in this context, I want to know whether you have also tested Ammimajus. Ammimajus is a well known drug in Egypt and may be also in India, which also contains furocoumarines and therefore I want to know whether there is any comparison to this Ammimajus, which is well known as a treatment for the Vitiligo. The last remark to the lecture on the Butea which is used as a liver protective drug. I want to make one proposal because, we have done many works on drugs which have liver protective activity. The use of Carbon tetrachloride as toxications for the liver is well known, but has its disadvantage, that it has not such a good relevance to the man. So, my proposal is in future to use more toxications like bifambicine, which is an antibiotic and if you use it for two to three weeks' treatment, you get a lot of side effects and on the liver also. Bifambicine, which is a toxication from mushrooms, is also a very toxication to the liver. Since toxications may have more relevants to the man and so in future this substitute should be used for this evaluation. Thank you very much.

Chairman:-

Thank you for your offer any way. Prof. Wagner.
Would you, like Hk. Iqbal Ali, like to answer the question on Vitiligo?

Hakim Mohammed Iqbal Ali.

About Ammi majus, I would like to say that, there, at our institute, we did not conduct any study on Ammi majus or Atrilal. But in some of our other units at Aligarh, the work had been done and I think the results were found equally effective there also, when Ammi majus was in crude form. One point I want to emphasize at this occasion, that a number of Psoralea preparations are available in the market, but the results obtained by those preparations are not so encouraging as they were found in our case at our institute. Hyderabad is known as a big city, and it seemed the number of all dermatologists, famous dermatologists of the city are referring the cases to our institute and we have seperately presented a paper at some other occasion, dealing with this aspect, that the patients who receive treatment from other disciplines and the patients who receive the treatment from our side. Those who did not give any response for a long period of 5 years, 10 years and nine years. Here also, I showed a case of a lady having both the lesion on the chest and on the back since last nine years, she was having that thing and continuously for nine years she took treatment from this Psoralea preparation and was not cured. But within a short period of seven months she was cured by these two medicines. And one thing more, I want to emphasize and I think it is the right time for that, that as my friend S.K. Nazimuddin said in his paper about Butea Mono-sperma. We now have conducted the research on this thing also clinically, using this thing in the cases of Infective Hepatitis and the results obtained were 100% success. I can say that the drug is quite safe. What I mean to say is that such hundreds of Butea-like drugs are found in the treasure of Unani system of Islamic Medicine if we explore and now we should go for those things and on one hand they are quite safe, devoid of any harmful effects and on the other side they possess the significant curative effects. Thank you!

Chairman

Thank you very much. Perhaps your comment on the use of Butea Mono-sperma would be taken note of for future research.

Would you like to comment, the gentle man who talked about the liver injury.

Mr. S.K. Nazimuddin:-

We have made note of this subject already discussed. We also dealt with the Cholesterol inducement, feeding heavy cholesterol as well as alcohol. Because we thought this drug may be effective against the Alcoholic induced Hepatitis and we will be able to do this trial to test its efficacy.

Mr. Ali Quasim.

I would like to ask Hakim Mushtaq who said about the scientific evidence of the product used. I would like to ask whether this scientific evidence is considered enough to find the authenticity and safety of the drug or do we apply more scientific standards before marketing.

Hakeem Mushtaque

So kind of you for this very excellent observation. I have to say that when I say "Scientific Evaluation" of the drug, I mean that since in our system of medicine the drugs are mentioned, even the single drugs are mentioned in the treatment of various diseases, but for example I would like to say that Aviceena, the eminent physician in Islamic Medicine has mentioned more than sixty drugs in the treatment of the heart ailments but he has not mentioned exactly this drug is to be used in what heart ailment and when I say the scientific evaluation of the drug, I won't say the exact mechanism of drug action which is to be ascertained and how far the drug is effective and in what respect the drug is effective. And secondly as far as marketing of the drug is concerned the drugs used in ancient system of medicine are in clinical use for the last centuries, I can say, and the results are before us and the drugs are potent undoubtedly and the most of the drugs are free from toxic effects; may be because of their crude nature because the nature has created in the drugs itself their antidotes, for their toxic effects and we see that when the active principle is isolated, it may become more potent, but the toxic effects, which induce many more ailments later on in the patients, have also been reported. Secondly, what we have to do, I think, in our opinion we have to provide a scientific base for the use of the drugs being used for the last many centuries in the Islamic system of medicine and to evaluate on the modern scientific lines the exact nature of the drug and exact mechanism of its action. Thank you.

Dr. Salim-uz-Zaman Siddiqui,

With reference to the points that were just now mentioned, with regard to the isolated individual, active constituent and the total extract or the total isolates of the significant active constituent. In this connection I will particularly refer to the case of Rauwolfia alkaloid, Reserpine. In one of the about eight or ten alkaloids isolated, way back in 1930-s from the drug root, Rauwolfia Serpentina, which was used for a long period by Hakeem Ajmal Khan as a treatment for various mental ailments. It was on that account that work on this was started in 1930 at the Tibbi College Research Institute in Delhi. Now it was found much later that Reserpine has the dual activity of reducing high blood pressure, that is hypotensive activity and also as a sedative in the treatment of mental ailments. So, it has this dual central action on the one hand and hypotensive action. But pharmacological and particularly clinical studies carried out over about ten years back by Prof. Moyer in the States, it was found that when Reserpine is used over a longer period in the treatment of hypertension (high blood pressure) in 50% of the cases, it produces heavy depression, modelling suicidal tendencies and schezofrenia, apart from diarrhoea. But, another commercial product, I forgot its name, prepared by one of the pharmaceutical firms which consists of the total alkaloid or the total extract, that has much less of this depressive action, this negative, undesirable side effect, than Reserpine. It was claimed by the CIBA group that Reserpine is the only active constituent having this dual activity of reducing blood pressure on the one hand and this is used as a tranquillizer in the treatment of mental ailments. Now, I did not agree with this and as a result of studies carried out on fresh, undried Rauwolfia-Serpertina roots a certain complex was isolated from the petrolium ether and ether and ethyle (methyle) acetate from the insoluble fractions; water soluble, ethyle

(methyle) acetate insoluble. From that we isolated a certain complex with the use of only solvent systems without any chemical interaction. What so ever, and the isolated complex which we named as Surpajmaline, it was water soluble, about 1% in the weight of the total drug, the root was found during this period of growth chromatographically free from Reserpine, vacinamine and other weaker bases, which are soluble in methyle acetate. The complex has the same order of hypotensive activity as Reserpine without its undesirable side effects, which are due to the weaker bases on the other hand. Now, complex consists of 3 alkaloids, the proportion of alkaloids: 2 monosugars which are present in it is something like fifty/fifty and the alkaloidal portion consists mainly of Ajmaline about 20% and 20 — 25% serpentine & serpentinine; these three main components are there. Now, this complex has been isolated from the same material. It has no activity, that undesirable central side actions and it was not only tested by the Karachi Council of Scientific & Industrial Research, but by a German Doctor, a colleague and partner. He carried out the experiments on Surpajmaline and it was also later referred to another laboratory, where they carried out pharmacological work for supporting the results of this German Doctor. It was also found by the same person, it has almost minimal toxic action as compared to the Reserpine and other alkaloids , but as it is a mixture, inspite of the fact that therapeutically, that clinical research is carried out by Merck also proved the same point. It has not gone into production nor we have any possibility of doing it on our own and a drug which can be so useful in the treatment of hypertension, just like Iodine nothing is done with it. I want to make out this point because just I have pointed out that the whole drug or certain parts of the extract can have the potentiating as well as the de-toxicating components present. It is possible to be studied to verify all these points.

Dr. H.H. Siddiqui

I think this question has been mis-understood. What he wanted to know is that if he has to allow this drug, whether he required a clinical and toxicological data for safety and the quality, that is the point he really wanted to ask, which has not been answered. But the point here is, we have with us another expert who deals with this and we have Hekeem Mohammed Abdul Razaac, who deals with this aspect, whether there has to be a standardization to do that, you have to put it in condition like we put for all drugs. Every country has drug Control Board which specifies the minimum requirements for the toxicological evaluation and the effectiveness. These are the two main requirements, but there are certain problems in these preparations because in India and also in Pakistan as I understand that these preducts if they are prepared according to the world treaties they are exempted from these one because they are being used for thousands of years or so, but if we change the process then they have to provide the data which you are asking for.

Chairman: (Dr. Abdul Razzak Al-Udwany)

This discussion may be carried out privately out-side the Conference Room. Before the end of the session, I have a little note to read to you from the American Institute of History of Pharmacy, which is addressed to Honourable Secretary General and the Conference participants.

"The American Institute of History of Pharmacy extends greetings to our colleagues in the Islamic World and we convey warm best wishes for the success of your Conference on Islamic Medicine. We are pleased that you have invited Dr. Sami K. Hamarneh, the president of the Society to contribute to your Conference. May this occasion offer a further avenue towards better understanding of the long history of the interchange between the Islamic World and other cultures to the benefit of health services internationally. With the cordial greetings from the American Institute of History of Pharmacy. Yours Sincerely, John Paras Condolla, Director".

Thank you very much. I would like to thank all the participants, and all of you, ladies & gentlemen for your presence and your patience.

CHAPTER TWO

(Some Selected papers - Not presented)

PRELIMINARY CHEMICAL PHARMACOLOGICAL STUDY FOR ALHAGI MANNIFERA (Desr)

Dr. M. Th. Ghoneim, Dr. A.R. El-Gindy, Dr.R.Alami, Mrs. E. Shoukry and Dr. R.Fattouh.

PRELIMINARY CHEMICAL AND PAHARMACOLOGICAL STUDY FOR ALHAGI MANNIFERA (Desr)

M. Th. Ghoneim, A.R. El-Gindy, R.Almi, E.Shoukry and R. Fatthouh
Kuwait

Some preliminary pharmacological studies were carried out and it was found that the alcoholic extract of Alhagi produced a potent antispasmodic effect. In addition, the extract showed some histamine and serotonin antagonizing effects. It is suggested that the extract contains more than one ingredient.

INTRODUCTION

Alhagi mannifera (Desr) Plants grow wild in Kuwait. It is used by the *beduins* for treatment of renal colic. Hussein reported that the extract of species grow in Egypt has a bronchodilator, in addition to smoth muscle relaxant effect.

In the Phytochemistry Research Lab. a preliminary chemical screening was done and found that it contains, cardeneloids, sterols and triterpens, carbohydrates and/or glycosides, flavonoids but no alkaloids.

It was found of interest to study the possible pharmacological effects of the plants.

MATERIALS AND METHODS

A. The extracts of the plant.

1. The alcoholic extract of Alhagi mannifera / Desr (AE) was prepared after sucessive extraction.

2. The supernatant fraction of this alcoholic extract, which was prepared by diluting the extract with water (ranging from 1:5 to 1:100) then centrifuged. The supernantant portion was taken as a fraction (SAE).

3 The alcoholic extract of the powder was packed on silica gel and extracted by different organic solvents started from petroleum spirit (40-60°), chloroform and then alcohol 95 percent. Each extract was evaporated separately to dryness *in vacuo*. The residue was preserved in dessicator to be used as a fraction (AEAE).

B. The animals used included rabbits, albino rats, guinea pigs and toads of either sex. The animals were kept under the same conditions, allowed water *ad* libitum. The animals were kept fasting 12 hours before sacrifice.

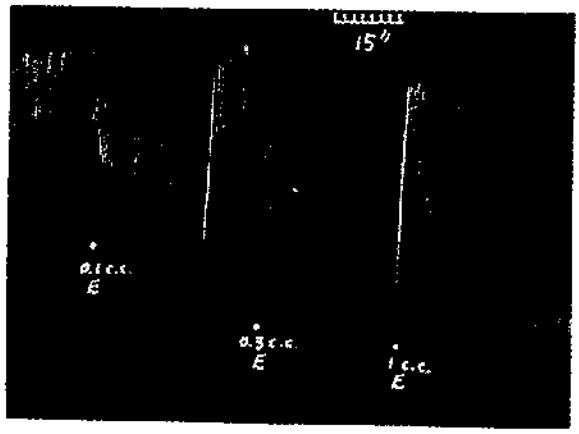


Fig. 1

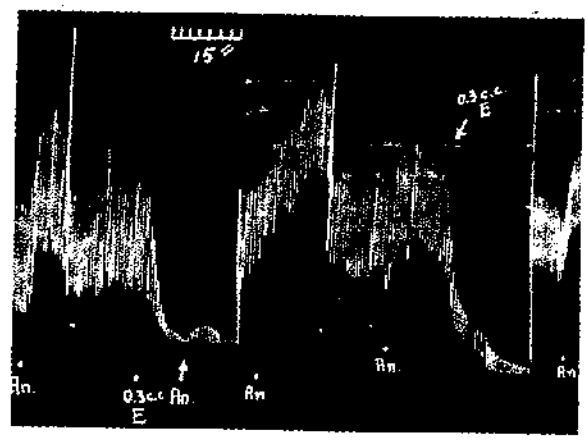
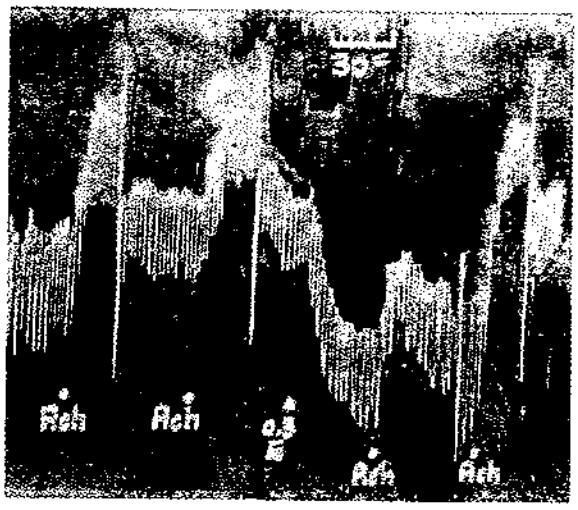


Fig. 2



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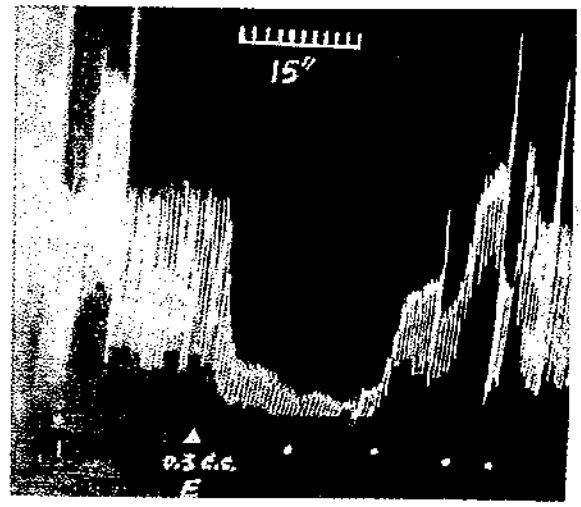
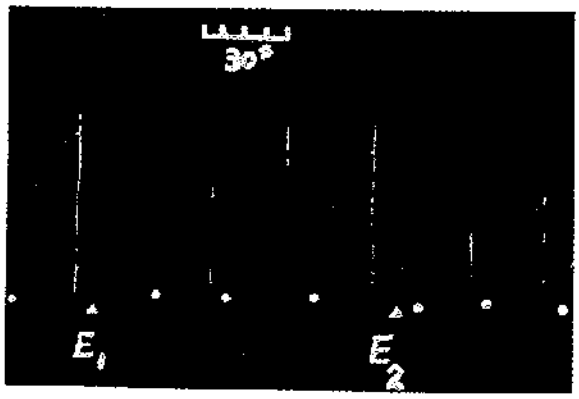


Fig. 4



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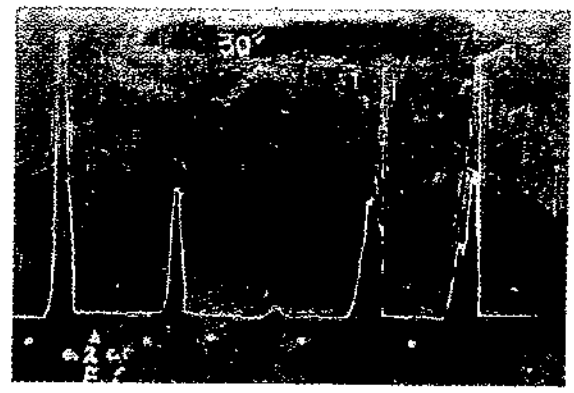


Fig. 6

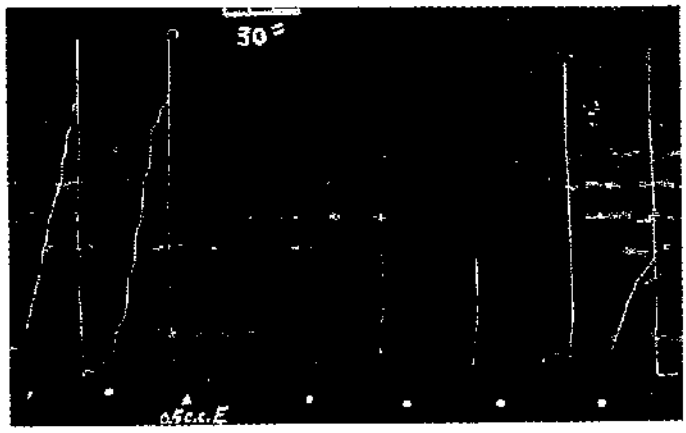
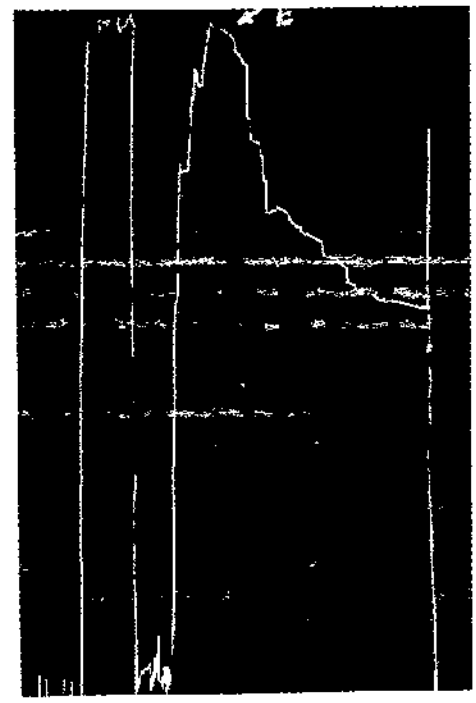


Fig. 7



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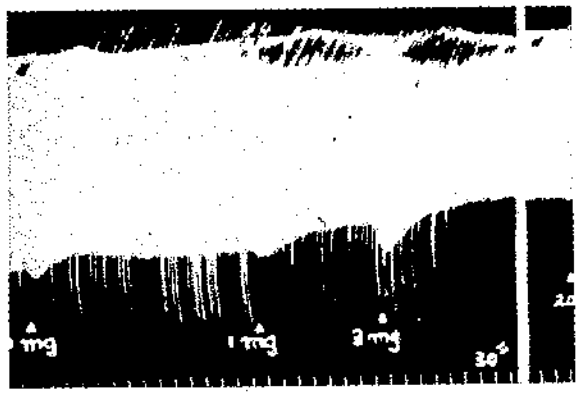

Fig. 9

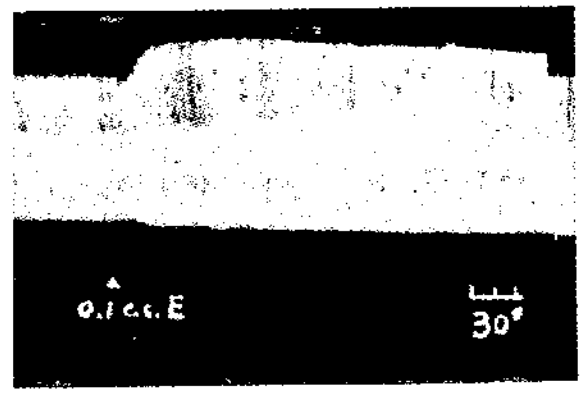

Fig. 10

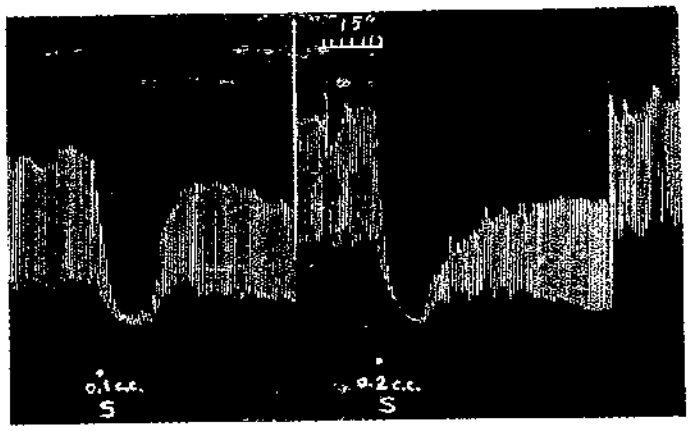

Fig. 11

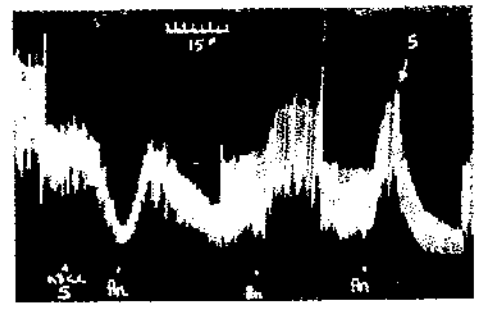

Fig. 12

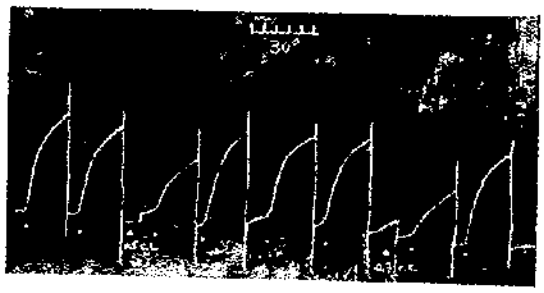

Fig. 13

Fig. 15

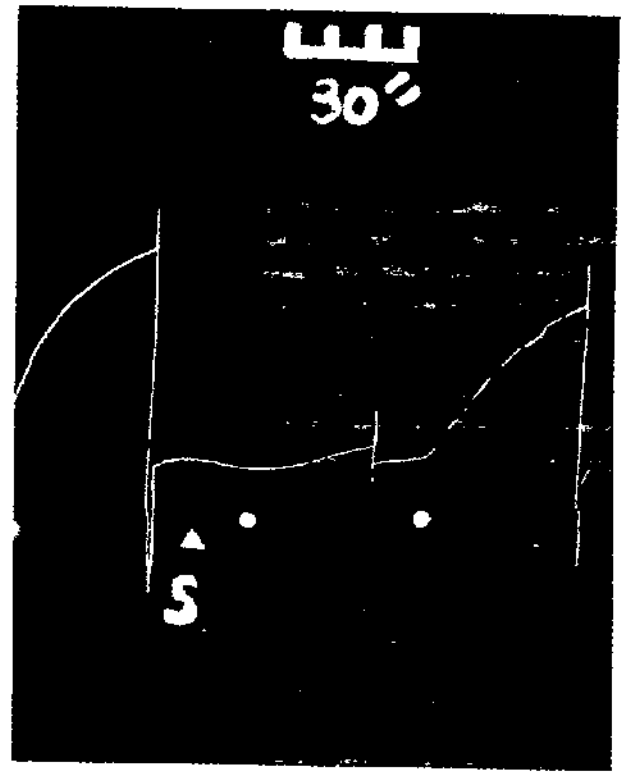

Fig. 14

Fig. 16 a

Fig. 16 b

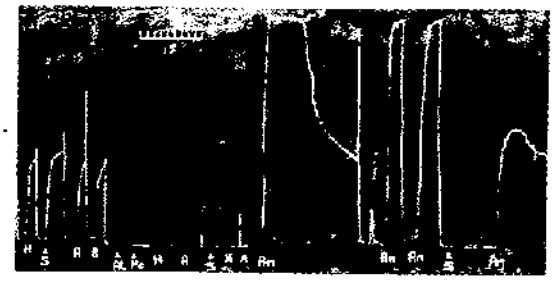

Fig. 17

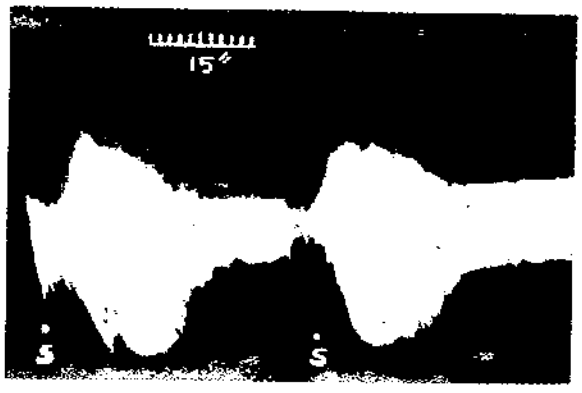

Fig. 18

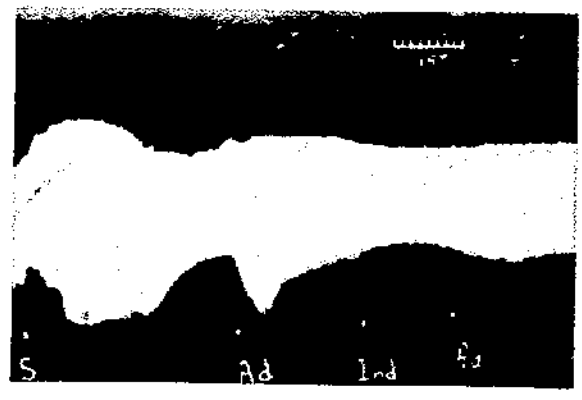

Fig. 19

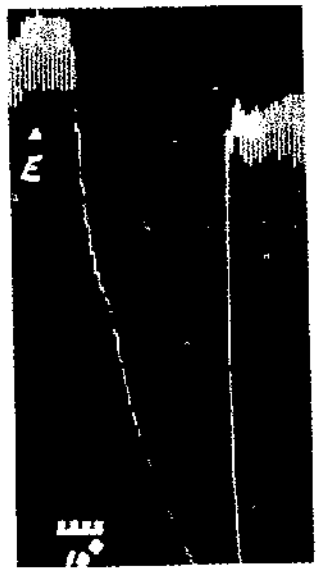

Fig. 20

Fig. 21

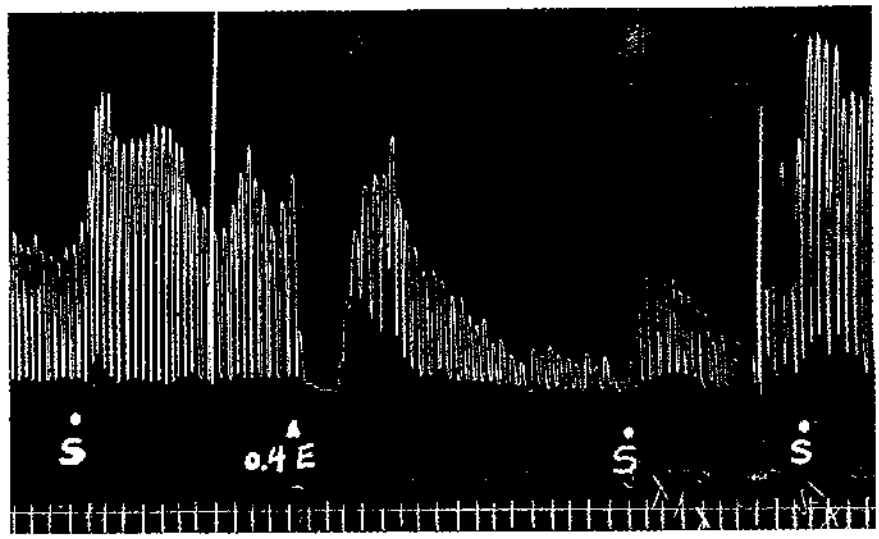

Fig. 22

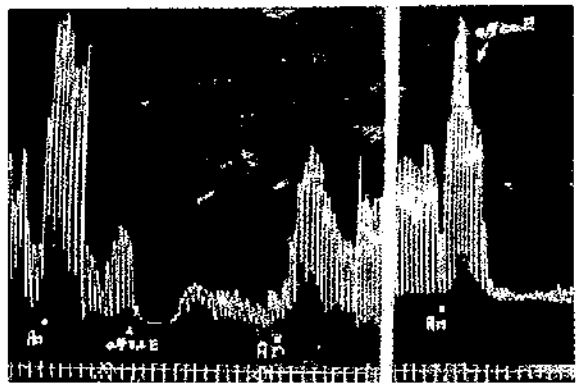

Fig. 23 a

Fig. 23 b

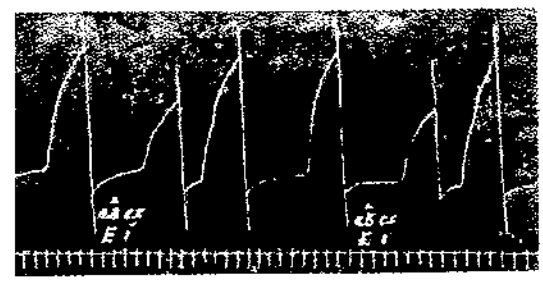

Fig. 24

C. Methods for Pharmacological screening

The pharmacological investigations were carried out using the following preparations:

1. Isolated rabbits duodenum and jejunum (Modified Magnus technique, 1904
2. Isolated guinea pig ileum (Burn, 1952 a)
3. Isolated skeletal muscle of the toad "rectus abdominus muscle" Burn, 1952 b)
4. Isolated perfused rabbit's heart (Langendorff, 1895)
5. Isolated perfused toad's heart (Burn, 1952 c)
6. Isolated rat stomach fundus strip (Vane, 1957)
7. Isolated rabbit aortic strip (Furchgott & Bhadrakom, 1953)
8. Isolated guinea pig tracheal strip (Ghosh, 1971)
9. Isolated non-pregnant rat uterus (De Jalon, 1945)

RESULTS

The alcoholic extract of Alhagi (AE) produced a potent inhibitory effect on the tone and rhythmic activity of the rabit's duodenum and jejunum (Fig.I.) The (AE) showed a potent inhibitory effect on the response of the muscle to angiotensin. In addition, it was able to abolish the spasmogenic effect of angiotensin (FIG. 2) The (AE) also inhibited the response of the muscle to serotonin (Fig. 3) but not to acetylcholine. The effect was reversible and dose-dependent. The (AE) reduced the response of the guinea pig tracheal strip to histamine (Fig. 4) It also inhibited the response of the rat uterus to the spasmogenic effect of angiotensin (Fig.5) The (AE) reduced the response of the rat stomach fundus to serotonin induced contractions (Fig.6) The (AE) caused relaxation of the guinea pig ileum when the muscle was under the spasmogenic effect of angiotensin (Fig. 7). The (AE) produced a stimulant effect on the isolated perfused heart, the effect was of a short duration. Large doses produced a stimulant effect which was followed by cardiac depression (Fig. 8). The (AE) produced a stimulant effect on the isolated toad's heart, mainly on the amplitude of contraction (Fig. 9).

The supernatant fraction (SAE) produced effects similar to those produced by the extract on the tone and rhythmic activity on the rabbit's duodenum and jejunum (Fig10)and on the effects of angiotensin on the muscle (Fig11). The (SAE) slightly reduced the response of the muscle to acetylcholine (Fig 12). On the guinea pig trachea, the (SAE) reduced the response of the muscle to the effect of histamine (Fig. 13) and serotonin (Fig.14). The (SAE) decreased the response of the rat stomach fundus to serotonin (Fig.15). On the guinea pig ileum, the (SAE) produced a stimulant effect by its own action. The effect was not abolished after atropine (Fig. 16a) or concentrated nicotine (Fig.16b). The stimulation was abolished after mepyramine, after this the (SAE) was able to decrease the response of the guinea pig ileum to angiotensin (Fig. 17). On the mammalian heart, the (SAE) produced a stimulant effect which was preceeded by a short period of depression (Fig. 18). The stimultion slightly decreased after B - adrenergic blockade (Fig. 19). The alcoholic eluate of the alcoholic extract of Alhagi (AEAE) was shown to produce inhibitory effect on the rabbit's duodenum nd jejunum (Fig 20). The (AEAE) inhibited the response of the muscle to the effect of histamine (Fig. 21), Serotonin (Fig. 22) but not acetylcholine. The (AEAE) decreased the spasmogenic effect of angiotensin (Fig. 23 a). The (AEAE) was able to relax the muscle which was under the effect of angiotensin (Fig. 23 b). The (AEAE) inhibited the response of the guinea pig tracheal strip to the effect of histamine (Fig 24)

DISCUSSION

The alcoholic extract of Alhagi was found to possess potent antispasmodic effect which was manifested on several preparations. The extract was shown to decrease the spasmogenic effect of angiotensin, this effect was clarified in 2 ways, firstly, the extract decreased the response of the rabbit's duodenum to the spasmogenic effect of angiotensin. Secondly, the extract produced relaxation of the muscle which was under the spasmogenic effect of angiotensin. The extract also inhibited the spasmogenic effect of angiotensin on several other preparations. The spasmolytic effect of the extract is suggested to be mediated mainly through a direct effect on the smooth muscles since the extract was nearly devoid of anticholinergic or ganglion blocking effects. The extract was shown to exert histamine and serotonin antagonizing effects. On the guinea pig ileum, the supernatant fraction was shown to possess a dual effects, the first is stimulatory and the second is inhibitory. The inhibitory effect was masked by the influence of the stimulatory effect. The stimulation is not due to ganglionic or muscarinic effect but most probably mediated through a histamine like action because it was abolished after mepyramine. Once the stimulation was blocked by mepyramine, the supernatant fraction exerted its inhibitory effect which is suggested to be due to a direct action, this was manifested from the antagonizing effect to the spasmogenic action of angiotensin. Thus the supernatant fraction is believed to contain either one substance having a dual effect or more than one substance having different effects. The main pharmacological effects shown by the alcoholic extract were found to be also induced by the alcoholic eluate of the alcoholic extract. Other eluates were almost free from significant pharmacological actions. The alcoholic extract exerted moderate cardiac stimulant effect which is suggested to be due to a direct effect on the myocardium. This study is a preliminary one. Further investigations are carried out now to study the detailed pharmmacological actions of the plant as well as the possible toxicity.

CONCLUSION

The alcoholic extract of Alhagi was shown to possess antispasmodic effects. The effects are suggested to be mediated through a direct action on the smooth muscles. The extract exerted some histamine and serotonin antagonizing effects on some smooth muscles. It is suggested that the extract contains more than one active ingredient.

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PART SEVEN

SEMINAR ON PHILOSOPHY OF ISLAMIC MEDICINE

Part Seven: *Seminar on Philosophy of Islamic Medicine*

CHAPTER ONE

(Papers - Presented)

1. REPORT ON THE THIRD SESSION
   Editors
2. SOME OBSERVATIONS ON THE PROGRESS OF MEDICINE AND THE IMPERATIVES OF REGENERATION OF TIBB IN MODERN TIMES.
   Dr. Salimuzzaman Siddiqui.
3. PHILOSOPHY OF ISLAMIC MEDICINE.
   Hkm. Abdul Hameed.
4. THE THEORY OF TEMPERAMENT, HUMOURS AND ELEMENTS IN ISLAMIC MEDICINE.
   Dr. Kamal Muhammed Habib.
5. AN APPROACH TO THE SCIENTIFIC INVESTIGATION OF THE THEORETICAL AND APPLIED ASPESTS OF TIBB.
   Dr. Atta-ur-Rehman.
6. TRADITIONAL MEDICINE AND PHYTOCHEMICAL RESEARCH.
   Dr. H. wagner.
7. COMMENTS AND DISCUSSIONS.

REPORT ON THIRD SESSION

This session was held in the evening hours from 4.00 to 6.00 p.m., under the Chairmanship of Dr. Salimuzzaman Siddiqui, with Dr. Ahmed Rajai El-Gindy as moderator.

In this session, the seminar was conducted on "The Philosophy of Islamic Medicine". Five scientists and scholars presented their papers. In the end comments and discussions were invited by the Chairman.

Editors.

SOME OBSERVATIONS ON THE PROGRESS OF MEDICINE AND THE IMPERATIVES OF REGENERATION OF TIBB IN MODERN TIMES

Salimuzzaman Siddiqui

Pakistan

I feel most grateful for being accorded the opportunity to participate in this Conference, with the subject matter of which I have had a life-long involvement, with particular reference to pharmaco-chemical researches in medicinal plants. I may briefly refer in this context to the origins of the healing arts which go far back into antiquity. Available historical records seem to show that the first known physicians, as distinct from the so called witch doctors, were Shen Nung in China and Sekhet Enanach in Egypt, who lived around 3,000 B.C. The older records on medicine from the Babylonian civilization include over 900 recipes, providing in each case the remedy with its dosage. On the other hand, it is on record that Schen Nung the Emperor of China, around 5000 years ago, was greatly interested in the medical craft and discovered a large number of drugs. and poisons by experimenting on his own person. His compilation known as *Pen Tsao*, the Great Herbal, contained the description of over a thousand drugs, many of which like opium, rhubarb, conite and croton are still in use in the indigenous system of Chinese medicine. Analytical studies in more recent times have led to the discovery of many important drugs of modern medicine, like ephedrine from the Chinese herb *Ma Huang*. Yet another Chinese Emperor, Hwang Ti, who lived around 2600 B.C., is believed to be the author of *Nei Ching*, which is considered as the basic reference work of Chinese medical literature.

2. In the Indo-Pak subcontinent, records of the indigenous system of medicine known as Ayurveda, go back to 700 B.C., and its systematistion is attributed to Charaka, and Susruta, who cited about 700 medicinal plants. It is not unlikely that the ancient *Moen Jo Daro* civilization of the Indus Valley, which dates back to about the same period as the riverine civilizations of Sumer, Egypt and China, had also made sizeable contributions in the medical field, some of which may have been absorbed in the Ayurvedic system after the advent of the Aryans in this region. Then, during the Hellenic period, great many advances were made in medicine, which are exemplified by the great names of Hippocrates, Aristotle, Theophrastus and Galen.

3. Another great reservoir of medical knowledge during the early and later middle ages, was provided in the Muslim period of science and medicine. In this context it may be noted that the *Canon* of Avicenna (Bu Ali Sina) served as a textbook of medicine in Europe till the 17th century A.D., and continues as such in the Greco-Arab system of medicine known as *Tib-e-Unani*, which still claims to provide medical relief to well over 70% of the population in the Indo-Pak subcontinent.

4. Against this historical background, and with reference to the various issues dealt with at some length in my contribution at the International Hijra Symposium held in Pakistan (Islamabad) on Islam and Science, I would here allow myself some observations concerned with problems relating to the regeneration of Tibb in modern times. First of all I would in this connection submit my views in regard to the confusion concerning the widely used expression "Systems of Medicine", and their relative scientific status.

5. The fact of the matter is that, in the different fields of exact and semi-exact sciences there can be one and only one systematised body of knowledge at any given time, if one keeps away from epistemological hair splitting. In the case of medicine, however, the position is that, while it has through the age, functioned as the mother of the various scientific disciplines, it still continues in its own right as a healing craft, which is not amenable to the rigours of scientific methodology. This is so, because the scientific disciplines have a comparatively limited number of experimental variables to deal with; in contrast to this, the variables concerned with the pursuit of knowledge in the field of medicine run into infinite proportions, with the result that its findings are not capable of reproducibility with any degree of exactitude. It is, indeed, this circumstance which is responsible for the continuance of the traditional systems of medicine with their well defined theoretical concepts, and modes of treatment based on these concepts. To meet this situation, some of the philosophers of science concede the possibility of a theoretical pluralism, that takes the place of a single monolithic theory.

6. With regard to the basic commitment of Tibb to the scientific attitude, I would refer to Avicenna's definition of Tibb: "Tibb is the knowledge of the states of the human body in health and decline in health; its purpose is to preserve health and endeavour to restore it whenever lost". Dilating on the validity of this definition in a strictly logical sequence, he observes that the theoretical and practical aspects of medicine are indissolubly linked; medicine should rather be interpreted as having two sides: the theoretical that deals with the principles of medicine and the practical which describes its various applications. In so far as the theoretical aspects of Tibb are concerned, there is a vast area of unresolved problems which call for deep reflection and study. For instance, mention may be made in this connection to the correlation of what is termed as *mizaj* in Tibb and chemical structure of the significant constituents of *mufridaat* and their extracts on the one hand, and the relationship between *akhlaat* and incidence of allergy, on the other. At the International Symposium on Medicinal Plants of the Middle East and Rauwolfia for the pharmaceutical industry, held at Peshawar, in 1960 under the joint auspices of UNESCO and PCSIR, I had offered some leads for researches in this direction in my closing address, to which I would briefly refer later on. However, by way of illustration of Avicenna's scientific acumen and his deep sense of humility in the context of the cosmic dimensions of knowledge, I would here quote his verse:

> "A THOUSAND SUNS DAWNED IN THE INMOST RECESSES OF MY HEART.
> AND YET THEY COULD NOT LIGHT THE WAY TO THE ULTIMATE REALITY OF
> A SINGLE PARTICLE OF SAND".

7. But all this refers to the glories of an all too distant past. In the situation brought about by the catastrophic events that culminated in the collapse of the Caliphate in Baghdad (1258), the creative urges released by the Quranic commandment for the pursuit of knowledge for unravelling the laws of nature (Sunnatullah), slackened and gradually frittered away. It was thus also, that instead of meeting the challenge of Avicenna's *Qanun-fil-Tibb* to posterity for further relentless search, testing and retesting the principles laid down in it, the *Canon* was gradually taken as the last word on medicine, little realising that there are no last words in the realm of science or medicine.

8. Taking stock of this stagnant situation in the first decade of the current century, the great physician and statesman of the Indo-Pak subcontinent, Masihul Mulk Hakim Ajmal Khan, recognized the importance of integrating the Tibbi system of medicine with advances in the various branches of science, and put forward the proposal of establishing a Tibbi College with the incusion of courses in anatomy, physiology, pathology and pharmacology. It may be noted that this concept was generally hailed by the western medical profession, and fierce opposition to it came from the *Vaids* who considered the Ayurvedic system as sacrosanct, and the *Lucknow School* of Tibb which was of the view, that this would lead to confusion and loss of identity of the Unani Tibb (Islamic Medicine). However, Masihul Mulk's persistant efforts ultimately crystallised in the establishment of the Ayurvedic and Unani Tibbi College at Delhi in 1920. Furthermore, he had also provided for the establishment of a research Institute in the College for scientific studies in the medicinal flora of the subcontinent.

9. At the Symposium held in Peshawar to which I have referred earlier, some of the delegates from the Muslim countries of the region, considered the whole system of Islamic medicine as an anachronism in modern times, a view which is now being largely shared by the medical profession in Pakistan also. I would not like to go into various reasons for this polarisation on professional and socio-economic grounds. However, it has to be noted, that it presents a glaring contrast to the positive approach of the medical profession towards Tibb, which I have already pointed out under para 6.

10. In support of that view it may be stated that, acknowledging the importance of Hollarrhena antidysenterica (Kurchi) in the tretment of amoebic dysentery, Dr. Haines of the Bombay Medical School isolated the p principle alkaloid of its bark in 1858. Furthermore, in so far as drugs based on medicinal plants had served through the ages as the mainstay in the treatment of various diseases and human ailments, Dymock, Hooper and Warden produced the classical work entitled "*Pharmacographia Indica*" in the late 1890's in three volumes. They cover comprehensive accounts of the history, uses, economics, botany, chemistry and pharmacology of the entire medicinal flora of the subcontinent, and continue to serve as a primary reference for research workers in the field of herbal drugs. On the other, under the leadership of Colonel Sir R.N. Chopra as Director of the School of Tropical Medicine in Calcutta, a comprehensive programme of pharmaco-chemical and clinical studies in the extracts and constituents of medicinal plants was launched in the 1920's, which progressively gathered force and led to the establishment of research centres in this field, at some of the universities and specialized institutions of the subcontinent.

11. Leading on from here to the imperatives involved in the regeneration of Tibb, we have got to fully recognise the importance of its judicious integration with the physical and biological sciences, under

a carefully planned, phased programme. In this context, we may well rely on Avicenna's dictum of a close interlink between the theoretical and practical aspects of medicine. It is important to note this, because according to the generally prevalent view, all we have got to do is to carry out scientific studies in the constituents of medicinal plants and pharmacopoeial preparations of the Tibbi tradition, without any reference to the theoretical aspects of Tibb. This is rather strange, because along with the establishment of a Research Institute for the scientific investigation of medicinal flora, Masihul Mulk had also established a Committee for studies on this sector of Tibb, in the light of modern sciences.

12. Keeping these facts in view, I would first of all bring up certain proposals for the consideration of the Conference, which relate to systematic studies in the constituents of medicinal plants, which constitute the main base of the Tibbi pharmacopoeia.

13. The first and foremost problem in this connection is concerned with well organized facilities for the availability of authentic medicinal plant materials, collected dried and stocked, under proper supervision. This is important enough for the pharmaceutical industry including the *Tibbi Dawakhanas*, like the pharmaceutical complex of the Hamdard Foundation in Pakistan, the annual turn over of which compares favourably with other pharmaceutical industries in the country; but having to deal with the chemical investigation of spurious or adulterated drug material can be a veritable despair of research workers. It is vital, therefore, that a "Bureau of Plant Industry" should be established on the lines followed in U.S.A. and U.S.S.R. As a part of its programme, this Bureau should be entrusted with planning and promoting the cultivation of medicinal plants. It should also arrange for the maintenance of full information for plants of economic importance, by instituting surveys for providing statistical data regarding the export and import of drugs.

14. The second most important problem associated with researches in medicinal plants relates to the provision of facilities for cooperative research on the part of botanists, chemists, pharmacologists and clinicians, because it is only through such joint efforts that new therapeutic agents can be established, and the preparations of the Tibbi tradition adequately evaluated and standardised.

15. In illustration of the importance of this problem I may be forgiven, if I cite an example from my own experience. In the 1930's, a whole series of new alkaloids were isolated from the roots of Rauwolfia serpentina, which was used over a long period by Hakim Ajmal Khan in the treatment of mental ailments. Owing to lack of arrangements at the Tibbi Research Institute for pharmacological investigations, it was only decades later that two of these alkaloids, namely Reserpine and Ajmaline, gained world wide importance in the treatment of cardiovascular diseases and mental ailments. It may be mentioned in this connection, that the expression, Tranquillisers, as a definite category of therapeutic agents, was first employed in reference to Rauwolfia and its bases. The alkaloid *Ajmaline*, named after Hakim Ajmal Khan, has been in large scale production over the last two decades in Germany, *as a* drug of choice in the treatment of cardiac arrythmias of various origins. As a result of more recent work in Pakistan, an alkaloidal complex patented under the name Serpajmaline, was isolated from the fresh roots of Rauwolfia. Pharmacological studies in this complex which was chromatographically free from reserpine, showed it to have the same order of hypotensive activity as reserpine, without its undesirable central depressant action. But in this case also, it has not so far been possible to establish it as a valuable therapeutic

agent, due to lack of facilities for clinical trial under controlled conditions. I have dealt at some length with this account of Rauwolfia, as it may in full measure bring home to us the essential need for close cooperation in the multi - disciplinary field of scientific investigation in medicinal plants, and to further pinpoint the fact that even work of excellence in isolated sectors cannot lead to their rational utilisation.

16. In view of the points mde out in the preceeding paragraphs, I would earnestly plead for the establishment of an adequately funded Centre of pharmacological and clinical research for screening uniform constituents of natural products and their derivatives, as well as complexes and preparations used in Tibb. Along with this it will also be necessary to provide pharmacological cells at research institutes engaged in the isoltion, structural and synthetic studies in alkaloids, glucosides, triterpenoids and other physiologically active constituents. This would provide the facility for the preliminary screening of chemicl substances, on the basis of which promising therapeutic agents can be referred to the Centre for intensive, indepth studies needed for establishing their therapeutic utility.

17. Reverting to the theoretical aspects of Tibb, mentioned in para 6, I may point out that there is one particular aspect of multi - disciplinary studies in this context, which may possibly open up a new field of investigation, parallel in its approach to studies in the correlation of chemical structure and pharmacological action.

18. As may well be conceded, studies in such correlations are still in their fact-finding stage, and it is extraordinary how few are the generalisations which it has been possible to arrive at on the basis of these facts. Most outstanding amongst them are the Curare like action brought about by the quarternization of organic bases of widely varying structures, and the inactivation of a variety of substances through the introduction of a carboxyl group in their structure. This position is highlighted in the fact that in the field of synthetic drugs, over five to six thousand substances are synthesised and pharmacologically screened, before arriving at a single new therapeutic agent, that goes into commercial production.

19. Reflecting on the so called "heating", 'cooling", "moist" and "dry" attributes of drugs in the sense these terms are employed in the indigenous systems of medicine, it appears that a far wider basis for generalisations as to the relationship between chemical constitution and these characteristics of drugs with reference to their mode of action on the human body, might be arrived at in accordance with the theories of the two systems of medicine. A few examples may be cited in illustration of what is meant here. In the case of drugs, the "significant" constituents of which are alkaloidal in character and thus contain a basic nitrogen atom in a more or less complicated chemical structure, we find that they are considered in the Islamic System of Medicine as "heating" and "drying" in character. On the other hand, the plant products in which the "significant" constituent has a carboxyl group, as in the citrus fruits, tamarind and unripe mango, are considered as cooling in nature. In the same manner, the presence of an active constituent with organically combined sulphur makes for the "heating" attribute of a drug; and products like camphor and a variety of drugs, the significant constituent of which is a terpenic body are generally ascribed a "cooling" character. There will certainly be exceptions to such general formulations, as for instance in the case of opium, which is an alkaloidal drug but is considered to be "cooling". It is just in these cases, however, that a thorough study of the subsidiary constituents could

be of great interest, in so far as it may ultimately reveal the extent to which such a variation may be due to them, or to certain structural characteristics of the active constituents of the drug. Such an approach to scientific research in a restricted, tangible field would be something quite distinct from a purely abstract consideration of the respective merits of the various medical systems. It may in fact well serve as a starting point for those who subscribe to the scientific discipline, and also provide a fairly rational basis for profiting from the age-old empirical observations in the long and weary search for factual knowledge.

20. The objective of these observations, is not to hurt feelings in any quarters, but to bring home the necessity of going back again and again to the vast fund of empirical knowledge in the Tibbi tradition, for study and investigation with the help of modern techniques and procedures. This will help to rehabilitate the Unani Tibb as a vital force in the promotion and development of medicine, and bring it more closely in line with the demands of exactitude and quantitative measurements, on which the whole edifice of scientific disciplines rests. And, in that long, unending process of giving medicine a scientific basis, with all its baffling experimental variables and psycho-somatic intricacies, the Tibbi system can make its fullest contribution to the alleviation of disease and preservation of health in the socio-economic compulsions of the situation in which we find ourselves.

At the end, I would invoke divine guidance to our deliberations, leading on to firm decisions and their vigrous implementation for achieving the objectives of the Conference.

PHILOSOPHY OF ISLAMIC MEDICINE

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Religion, Medicine and philosophy have remained interdependent in someway or the other. However, it is a queer incidence that for none of the three were prescribed definite limits, nor exact and well settled definitions. Exact definitions of the three are still missing. Science is an exception as by and large, its limits stand determined. Disease, an in-separable phenomenon of human life, still lacks the unanimous and conclusive definition and it is so, when the medical literature over flows with all sorts of definitions of disease. Different sciences and disciplines have defined disease, health and medicine differently, according to their respective approach and inclinations. This confusion may largely be due to the fact that the position of man and his existence in the universe has not been defined or determined clearly. Existence of Man vis-a-vis the universe may be a distant matter, Nearer at hand, I feel the physicians could determine rationally the position of man vis-a-vis the terrestrial plane we inhibit, the clearer picture of the medicine, disease and health would emerge and much of the confusion disappear. Medicine has passed through various vicissitudes, sometime sorcery influenced it on some false pretext of religion, sometimes it wandered through the mazes of mythology. For hundreds of years philosophy chased it. Ibn-Sina warned others of the evils of philosophical aberrations, but he too could not resist the philosopher in him and mixed philosophy with medicine, as it is evident from his books on medicine. The succeeding physicians did not lag behind in inducting philosophy in medicine and vice-a-versa and in confusing the problems of the two by this ad-mixture. After renaissance, commences the era of pure science that too draged medicine within its own fold . Attempts were made to solve every medical problem in the light of science notwithstanding the plain facts that man has not only a material, physical existence, but also possesses Self and Soul As a result there was a stage when all emphasis was placed on Anatomy and solutions of medical problems were sought on the basis of this branch. Then came the stage when physiology, whose achievements are admittedly remarkable, was the dominating force. Ours is the age of physiology and we struggle to find such general causes of disease as could help in its eradication. Side by side with the purely medical aspect of physiology the psychological sciences are also having their impact on medicine because of which the causes of disease and means of its removal will be sought in the Soul and Psyche and there may emerge a tendency to neglect the body much in the same way as the Soul was neglected up to this time. We should endeavour to rid medicine of the maze of excess and deficiency and recreate the preventive stage as a stage of generalized principle and pragmatism. The factual data collected in medicine has crossed all limits of expansion and now it is equally important to classify and arrange it accordingly to some principles. Mere knowledge will not help us to achieve tangible results. If intellect has to keep pace with science. Un-fortunatley, medicine failed to meet in a planned way the tide of materialism allowing itself to be lost in a world of confusion. It has now to guard itself against excessive cycles. We have to deduce and enunciate general principles of medicine, define its objective, determine precisely the basis of treatment and lay down laws for treatment. Hippocrates' well known theory of the unity of organism and its holistic concept of disease stands vindicated by modern scientific standards and can help us in evolving generalized principles with such suitable terminology as would meet the requirements of our own age.

As regards the definition and objective of medicine, Ibn-Sina is perhaps un-surpassed in persecuity. His definition of medicine is too complete to permit any addition. He defined medicine in these words; Tibb i.e. medicine is a branch of knowledge which deals with the state of health and disease in the human body for the purpose of adopting suitable measures for preserving or restoring health. Emphasis is on 'health' and not on 'disease', suitable measures for preserving or restoring health. This is from his part, from Canoon, fil-Tib, para. I.

For the following reasons Ibn-Sina's definition should be wholeheartedly accepted. What are the reasons for this acceptance? The name *Tibb* physic, which Ibn-Sina gives to his medical system being derived from, Physics, denotes that it is based on physical laws and not on dogma. By describing, *Tibb,* as a branch of knowledge, Ibn-Sina presents medicine not as a mere collection of technical data but as a complete science of integrated theory and practice. By emphasizing that health and disease are but states of the human body and not malicious influcences inflicted by some outside agency. Ibn-Sina adopts a more natural *way* of human ailments. By including the subject of health, Ibn-Sina gave to Islamic medicine a much wider scope. By directing studies of medicine towards health rather than disease, Ibn-Sina offered the much needed corrective for the modern medical system which is occupied more in the study of disease than health. Again, habits, occupations, climates and other social and allied factors have their own impact on health. By basing his studies on human body, Inn-Sina gives to Islamic Medicine a constitutional approach which helps to lay the proper emphasis on a study of the Soul *Ruch*. I feel the basis of treatment should determine precisely what principle a physician has to follow. The *flux* of time has not rendered the writings of Hippocrates, obsolete. He was the first physician to realize the importance of *physus* and present his own concept of disease in place of the clinical one. In Islamic Medicine, this *physus,* along with the exposition of its **modus-operandi** assumes the form and name of *Tabbiyat Mudalira-e- Badan.* Physus, the inherent physical faculty of defence and adjustments and some-what in-correctly translated into. Latin, *avis-medicatris-detri.* By laws of treatment, I mean the temperament and the aspect of which gives a distinct position to Islamic Medicine by virtue of its treating each patient as an individual unit. A discussion on temperament is found in the writings of Hippocrates: under such heading as, "Constitution Dithesis,Catarthesis." Galen gave new dimensions to it. Muslim medical author worked on the theory of temperament most assiduously and finally established it as a principle of norm of treatment. With their penetration they succeeded in locating the relationship between diseases, various humours and the disturbance of temperament. They emphasized that the true objective of treatment, what is the rectification of this disturbance of temperament. A decision of the four basic problems cannot be taken by the philosophy alone nor by logic, meta-physics, limited observations and half baked experiments. Today, we have scientific information on medicine and its allied disciplines. In addition we have such material on philosophies of science and medicine as had the support of sciences. Thus the final findings we could arrive at in respect of the four basic problems would present a coherent, correct, actual, practical and timely solution for the confusion witnessed in the sphere of medicine today. Even modern medicine has to make this struggle and place itself on sound foundations lest it might take a retrogressive course and be a victim to meta-psychology, parapsychology and many other "isms". I have on the basis of my theoretical and mostly practical experience of medicine and awareness of the deficiencies in medicine and within the time available, I thought over them. In 1962, I published relevant material in the form of a book "*Theories and Philosophies of Medicine*". Later committees were formed and seminars held. In 1973, I presented through "*Philosophies of Medicine and Science*", problems and perspectives. Another book of 293 pages, material pertaining to fundamental issues of medicine. The book was sent to such scientists all over the world, that could help in the matter. It was expected that avenues for discussion will open and the problem evaluated in their proper perspectives leading to their positive solution. Unfortunately, the expectation did not materialize. Quite many specialists in medicine, philosophy and science among them some Nobel Laureates. The break up is like this:- seven of Nobel Laureates in Medicine & Physiology, four in

Physics and three in Chemistry; appreciated the move but none came forward for solid basic work. In november 1979, I renewed my courage and vigour and took up the issue of elements. I found that an International Seminar on "Earth Elements and Man", was imperative. By way of abandoned precaution, I first addressed my letters to some 50 selected specialists of India in Medicine, Physics, Chemistry, Bio--chemistry etc. A few of them made a sincere effort to grasp the problem fully. I tried to dispel doubts which some raised, by further explaining my approach through another letter. About 3/4 Part of this letter, had an important bearing on the subject and its delineation. The magnitude of the problem, I feel is such that without grappling with it no firm foundation can be laid in science or philosophy with regard to disease and health. It is due to this lack of progress in the area that a very long list of definitions of disease does not contain even one which is agreed upon and medicine suffers from the absence of accepted therapeutic fundamentals.

Then, I attempted to focus attention on the absence of a well concerted and organised research on the fundamental issues of the theory, e.g. we are yet unaware from medical view point of the true position of Man on Earth. The correspondance contains my conviction on the correctness of my approach. I started collecting material from our own Institute, as well as from other sources and assigned preparation of preliminary report to Dr. Vohra of our Institute. Last August, he gave me a report of some 127 pages which contains sufficient material on topics suggested by me. He would have been spared of this labour, had he or I found the book "The Elemental Composition of Human Tissues and Body Fluids", and fortunately anough this is a very significant and a very important book, at least on some aspects of the subject, by Ayyanger, Coleman & Bowman, (West Germany). The material already collected and this book has strengthened my convictions further

When I find an opportunity to spare some 20 days for my staff and I am closeted with a thorough examination of all the material, I shall be able to draw the necessary inferences and hope that some significant conclusions might surface up in respect of body, its organs, fluids and their actions and reactions. The number of elements, 17 or 18 found in human body up-to 50 years back has now reached to 81 out of 92 naturally occurring elements. This fact is perhaps trying to take up the old philosophical concept that Man is a Micro-cosm. If he could reach that destination, you can well imagine how different the ways of philosophy, theory and practice of medicine would be from that of the present philosophy, theory and practice of medicine. Then, perhaps it may be possible to interpret successfully how the quantity of Sodium Chloride in sea water is the same as in blood or the percentage of water in human body is the same as the on surface of earth etc. Evidently when the new discipline of human elementology leads up to some definite conclusions, it will be possible to undertake purposeful researches on ancient elements and modern fluids, temperament, physus, neither properly determined nor properly arranged. They were also not scientifically experimented. Some modern writers like W.H. Seldon, author of "Varieties of Temperament", have taken support from their own experiments, in such classes as Introvert and Extrovert and other classes of temperament, while dealing with the subject of temp-

eraments. However, there experiments had no strong foundation. The material on Earth Elements and Man, extensive researches thereon and then experiments made on the basis of these researches would, in all probability provide foundations more meaningful, useful and practical for medicine and medical man, both in theory and practice. It is hoped so, as the nature itself has laid the foundation of body and physical life on elements which are on earth in different quantities, with different manifestations, meanings and purposes.

As a last word I may respectfully submit that it is very necessary that these important issues be considered in depth and conclusions drawn for the benefit of medicine and mankind in general.

THE THEORY OF TEMPERAMENT, HUMOURS, AND ELEMENTS IN ISLAMIC MEDICINE

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The paper discusses the theories of humours, elements, and temperament in Islamic medicine, and shows how they served as very potent diagnostic tools, and also how the Muslim dialectitians of the early medieval age also incorporated the atomic theory of the Methodicists, that is, of the school of Asklepiades. It also discusses how the 13th-century physicians prepared compounds for the treatment of complex diseases and how far they succeeded. Further possibilities of research have been highlighted, and it has been shown that the four-humour's theory survived up to the eighteenth century in the West and that we come across variations of it up to the present time as well.

Whether the system of medicine based upon temperament, elements, and humours should be designated as Islamic *Tibb* or not, will remain a matter of controversy perhaps. But it ought to be stated there that Muslims have added so much to the basic concepts of this system, restated the problems in so differently radical fashions, have expanded the Greek materiae medicae to such an extent (so as to be almost unrecognizable) that the expression, Islamic medicine or *Tibb al-Islami* should not either be regarded as unjustified or a misnomer. Natural drugs (half of them hardly identifiable today) which numbered at best 600 in Dioscorides' time had grown to some 3,000 by the thirteenth century and to 10,000 by the eighteenth century. Moreover, their temperaments were also being studied. A word or two about the nature of the temperament of a drug may not be out of place here. When we say that a medicine is hot or cold, it does not mean that the temperament of it is hot or cold, but that such a drug after acting upon the innate heat *(hararat gharizi)* or the metaboic make-up of the system would generate a lessor or greater degree of cold or heat than is present in the body. Also a medicine that is hot or cold for one patient may not be so hot or so cold for another. Hence the conceept of the temperament of the patient, which is unique for every individual.

Diagnostic medicine in the hands of Muslim Physicians also underwent a radical transformation. *Asbab* (caustaions) assumed a new meaning. To quote only one instance here, hemicrania or migraine (which is poetised so delightfully by the seventeenth-century satirical English poet, Alexander Pope, in the *Rape of the Lock),* which is pain in one side of the head, was well-known to the Greeks, as is attested by the words, *hemi* (half) and *crania* from *cranium* (the skull). But the real distinction between migraine or megrim and organic headache was distinguished by Nafis bin ᶜAwz Kirmānī in the *Sharh Asbab* (Commentary upon the Aetiology of Disease).[1] Migraine is *shaqiqah, sawda-e-nadafi,* and

sawda-e- ghaythani, characterized by pain at intervals, retching, and subsidence when the temple is pressed. This is not so with organic headache which is known as *sawda-e- baydawi* in the terminology of Islamic medicine. If it is thought that that diagnosis, prognosis, and elucidation of the principles of *Tibb* came virtually to a *cul-de-sac* after Ibn Sīnā, nothing would be far removed from reality, for Ibn Baytār, Ibn Rushd, and Nafīs bin ᶜAws Kirmānī, to name only a few, kept on reinterpreting the diagnostic, humoral, elemental, and temperamental aspects of Islamīc medicine. Nafis's *Sharh Asbāb* and *Nafīsī (Sharh Mawjas)* represent notable landmarks in the history of Islāmic medicine. Both works, although edited by an Iranian, are in Arabic.

It has to be said at the outset that the hypotheses of temperament, elements, and humours are not verifiable in that they are qualitative and are based upon thousands of years of experience. It has been said about the humoral theory that it is not "scientific" in our sense of the word; "nobody had ever seen the black bile, and the qualities hot, cold, dry, moist were not physical concepts. Sea-water was considered dry, pepper hot, while the rose was cold. Qualities were not measured, but assumed logically on the grounds of certain observations."[2] Nevertheless, the theories of *Tibb* do lend themselves to modern interpretations. For example, the laws of the conservation of matter and energy have their counterparts in *Tibb*.[3] Thus the exponents of *Tibb* would explain and uphold these laws by postulating that the four elements of *Tibb* are the ultimate units of matter that are incapable of further division or disintegration, and that the change is merely in their quality and quantity.

The law of constant proportion states that a chemical compound always has the same composition, i.e. it always contains the same elements in the same proportion by weight. This is explained by *Tibb* on the basis of the qualitative relationship of the four elements. This law, of course, does not apply to isonerism, but int he theory of *Tibb* it is accounted for on the basis of changes in the form or position of the elements which amounts to almost the same thing as the recognition of different and varying architectonic patterns attained by the combining elements in the present day chemistry.

Charles's law states that at even pressure gases expand 1/273rd part of their volume at 0-10° C in temperature. This has its counterpart in *Tibb* in the concept that heat leads to expansion. Likewise, Boyle's law is also generalized in *Tibb*. According to its concept, the action of pressure is similar to that of cold, and its direction of force is opposite to that of heat. Similarly, Dalton's law of partial pressure, the law of osmotic pressure, and the laws of diffusion of gases and of Dulong and Petit have their counterparts in *Tibb*. In this context Shah makes a rather interesting observation:

> The method of determining the molecular weight of various substances from the rising of boiling point and the lowering of freezing points of their solutions is accounted (for) by the Yūnānī generalization that the greater the earth in a solution, (the) greater is the resistance to change from liquid
>
> to gaseous or to solid state and hence greater is the weight. The melting point of ice is lowered by increasing pressure as the increased density would increase its earth and thus its resistance.
>
> The air being hot, (and) thus active, (represents) a generalization which provides... basis for the kinetic theory which assumes that the molecules of gases are in a continual state of motion.[4]

The theory of four elements in *Tibb* - viz. air, water, fire, and clay (or earth) - thus represents a generalization of the physico-chemical laws. The difference between the present - day *in vitro* and *in vivo* physico-chemical studies is that, while the former study physico-chemical changes as unit processes, *Tibb* has to take a far larger perspective, as it has to deal with human beings *qua* living objects. Shah further observes:

> ... in this way the four elements could be seen also in the constitution or (the) atom as the active electrons and the reactive protons and in (the) dynamic activity of the cell as water in the form of (a) colloidal suspension of proteins, earth the various salts, air the gaseous exchanges all as in a "dance" which is continually expressing the dry sol and moist gel phases of the cellular life. This conception, it must be emphasized, is by no means inclusive of every phenomenon. For the relatively impler physico-chemical field, we can recognize many exceptions, such as the dual behaviour of hydrogen and the earthy ice being lighter than water.[4]

Coming now to humours, Aristotle believed that, while the four elements of air, fire, water, and earth composed the substance of man, the four humours, cold, hot, moist, and dry are the "accidents" of man.[5] No better definition of humours is perhaps possible. The excess of any one of the four humours - phlegm, blood, bile, and atrabile - leads to a disease, and the restoration of a patient to health would demand that the balance which existed before be restored. This balance varies from one person to the other and it is here that temperament comes into play, for, according to *Tibb,* each organism is characterized by its own temperament, and is unique for that reason. It must, however, be borne in mind that Hippocrates and Galen did not theorize first and treat afterwards. The theory was the result of thousands of years of observations and practice, and the compounded drugs were possibly preferred by Hippocrates and Galen because of their synergistic action.

The early Greek physicians also emphasized the concept of *vis mediatrix natural,* viz, that man regains health quite often through the unconscious mediation of chemical reactions within the body. Hippocrates and Galen were both aware of the incurable nature of cancer, and they both very strongly recommended that it should not be touched or operated upon last it should spread. If left alone, the patient could last out quite a few years. One of the aims of the drugs in the Hippocratic system was, therefore tochelp carry out this healing reaction.[6] *Tibb* has continued with this approach.

What, ever, distinguishes the latter-day Islāmic medicine, especially from the tenth century onwards with the rise of the ᶜAsha ᶜirites, is the development of the atomic theory which is rather closely allied with the particulate theory of medicine. The *mutakalimūn* or the dialecticians of the age were greatly concerned, together with the physicians, with the twin phenomena of generation, i.e. coming into being or existence, and corruption, i.e. death or passing away. Contrary, however, to the belief of the monists and pluralists who believed that generation and corruption occurred in the same substance, the *mutakalimūn* believed that generation was the combination of elementary codies that made for man, while corruption was the dissociation of these bodies. Thus Ibn Rushd (1126-98) deseribes how composite bodies originate from the elements.

> Since we maintain that hot and cold may be absolute and may also be subject to increase or decrease, we say that which is generated out of them is not absolutely hot or absolutely cold, but rather do we say that it is hot and cold simulataneously just as we say of intermediates, i.e. hot

relative to the absolutely cold at the extreme and cold relative to the absolutely hot at the extreme... It takes by way of mixtures[8].

Mixture became an important subject with Muslim physicians of the mediaeval age. Thus Abū Bakr Muhammad ibn Zakariyyā al-Razi (died 923 or 932 A.D.) says: "It one mixes a small quantity of pure white with average white, this average becomes more white, more beautiful, and more true,"[9] Ibn Rushd elaborates the same idea when he says:

> Mixture occurs when each one of the two contraries acts upon the other with nearly equal force in such a way that miscibles acquire a single property intermediate between these two contraries. The substratum for this property will necessarily be the combined magnitude of the miscibles, as is the case when each one of the miscibles, as it is altered by the other, acquires a given property to an equal extent so that when each attains the intermediate property which is naturally a single property of a single substratum, the substratum of both is their combined magnitudes.[10]

If a compounded remedy were to be administered, mixture would obviously be very important. Each simple in *Tibb* is assigned a Galenic effect or degree. There are four degrees of heat, cold, moisture, and dryness. We may denote H for heat, C for cold, D for dryness, and M for moisture. Thus if mezereon or *mādharyūn (Daphne mezereum* L.) is represented as H_4D_4, it means that it is hot and dry to the fourth degree, and caution should be exercised in the administration of such drugs. Ibn Sīnā gives the Galenic degrees of some 760 drugs arranged in alphabetical order in volume II of the *Canon,* but two centuries afterwards over 3,000 drugs had been graded.

Now the principal points of the atomic theory of the *mutakalimūn* were:

(i) Each corporeal substance is made up of very small perts, designated atoms which have no quantitatives properties or relationships but may at different times possess qualitative values.

(ii) Each atom may be characterized by certain properties, called "accidents" which include such properties as motion, rest, life, death, ignorance, knowledge, combination, separation, & C.

(iii) Atoms must possess the property of undergoing "accidents" and only atoms have accidents.

(iv) There are only material atoms and their concomitant accidents.[11]

Vital force or *rūh* in Ibn sina is a quasi-material substance. It is not the sould or anima, which is immortal, and personal. In biology it was reintroduced as *elan vital* by Bergson and as *entelechy* by Driesh, Nizamī-i Urudī in his Chahār *Maqālah* says:"It is a subtle vapour which rises from the blood, diffuses itself to the remotest arteries, and resembles the sun in luminosity."[12]

Both in materiae medicae and pharmacy Muslims were making rapid strides. Levey and al-Khaledy, for instance, note about Najīb al-D'in al-Samarqandī (killed by the Mongols during the pillage of Herat in 1222 A.D.):

> To describe the reluctance of some physicians to allow for growth and development of knowledge, al-Samarqandī quotes the poet, al-Mutanabbī: "Their works remain after the masters because of cowardice. Perdition may touch them, but they are still being followed."
>
> (Al-Samarqandī) does not rely entirely on the humoral t theory, and in the practical art of compounding, does not consider the theory of decisive importance. In general, however, al-Samarqandī is aware of many "accidents", and attempts to consider all of them in the preparation of a remedy.[13]

It would not be true to say that al-Samarqandī took the humoral theory lightly. It would be perhaps more plausible to affirm that empirical knowledge was moving faster than the theoretical.

Now coming to drugs, a few instances might be quoted of their Galenic nature. To quote one example only, nard *(Nardostachys jatamansi* D.C.) is described as a deobstruent and stimulant, diuretic, and emmenagogue. It is recommended in various disorders of respiratory and digestive organs and as a nervine tonic in hysteria. Its Galonic effect is hot in the first degree and dryness in the second, while, according to some, it is dry in the third degree. Lemon-grass is its substitute.[14] It is in such cases that a judicious selection of the drug has to be made. On the other hand, Celtic nard, which belongs to the same family, Valerianaceae, is so fattening and flatulent that it has to be administered with oxymel and stomachic confections. It is therefore essential to know beforehand the Galenic effect of a drug so its effect may either be enhanced or alleviated - something very akin to the compounding of drugs today. A rather interesting example of such a prescription is that of an "electuary for cleansing of the lungs." This was a preparation especially devised by al-Samarqandi.

> Equal parts of blue lily and liquoric root are both rubbed, pounded, and sieved, if ripe, and when purity is desired. One may be more than the other according to the desirability of the properties of one or the other. It is kneaded in honey...[15]

Now liquorice is HD, while lily is H_2D_2. Thus the incorporation of lily enhances the synergistic action of liquorice.

Among the reasons which have been advanced by al-Samarqandī for preparing compounded mixtures are as follows:

1. It may be that there is no single drug to overcome a given malhumour in strength. It will then be necessary to compound from one which is stronger in the quantity of its humour with one which is less so. Both are blended to put up resistance against that malhumour.
2. One drug may not suffice, and another is added to it to attain synergistic action.
3. There are certain differences in the state of a disease, its associated circumstances, and treatment. A drug may, for instance, perform opposite actions at the same time, e.g. absorbing and bringing up phlegm in diseases of the chest, or the abetting and hindering of tumours. Hence a phlegm attenuant may have to be compounded with an expectorant-and a dissolvant of the tumour with an expeller.
4. Through compounding a drug having more potency than all the simples added together may achieve greater effect against poisons and illnesses.
5. The distance of the stomach from the site of the illness is a rather important consideration. A drug should be so compounded as to facilitate its quick access to the sick organ.
6. Two drugs are compounded to achieve diffferent results from the same organ. Thus in a compounded drug one simple may ease the symptoms, whilst the other may dissolve the humour.
7. Drugs are compounded to overcome the distastefulness of a simple.
8. A drug may be too potent, in which case it is compounded with a moderator like turpeth (which is H_2D_2).
9. As a corollary to the last, a drug may be added to prevent the possibility of harm by the orginal drug, e.g. in the use of purtatives with correctives.

10. A preservative may be added to prolong the life of a drug. (In the present-day Tibbī preparations sodium benzoate is generally employed.).

11. Different drugs require different usages and dosages. A mixture of both may be desirable.

12. In order to use a single drug more effectively, it is necessary sometimes to mix one with another, e.g. an unguent with verdigris for wounds.[16]

Likewise, in the calculations of weights according to which the drugs were to be administered, the following factors were to be kept in mind: (i) the strength of the drug, (ii) its effectiveness, (iii) its benefits, (iv) its usefulness alone or in combination, (v) the distance of the alling organ from the stomach, (vi) drags in the compounded remedy that would weaken its strength, and (vii) ill effects of the drug upon other organs.

As a matter of fact, in the present-day *Tibb*, the use of simples is largely in syrups. Compounded confections and fermented medicines have as much as 100 or more ingredients.[17] Be that as it may, this approach is no different from the combined therapy of our day - procaine with penicellin, vitamin therapy with antibiotics, and so on.

We now come to the symbolism of elements and the theory of tempeament. Ibn Sīnā holds that the organization and differentiation of objects is the results of four primary quantities or energies, the *quwā*, which comprise heat, dryness, cold, and moisture. Rather than the four elements of fire, earth, water, and air these are the elements.[18] "Like other objects, the so-called elements are also compounded of the primary qualities, but, since they have them to the maximum and minimum extent, they have been employed as sybols to represent the various qualities dominant in their composition."[19] He himself shows that he does not take the classical definition of the elements literally, so he says:

> By air we do not mean the air as the element which is pure and simple, but the atmospheric air which surrounds us. The air is not the pure elemental air, even if that be supposed to have any existence.[20]

Eddington writes about the inevitability of symbols:

> The environment of space and time nd matter, of light and colour and created things, which seems so vividly real to us if probed deeply by every device of physical science, at the bottom we reach symbols.[20]

Max Planck observes as follows:

> Indeed, if we want to grasp reality, the world beyond the senses, it can be perceived indirectly through the medium of the world of senses, and by means of certain symbols which our senses allow us to apprehend... The study of Physics which a generation ago was one of the oldest and most mature of natural sciences has today entered upon a period of storm and stress which promises to be the most interesting of all. There can be little doubt that in passing through this period we shall be led not only to the discovery of new insight into the secrets of the theory of knowledge. It may be that in the latter many surprises await us, and that certain views eclipsed at the moment may revive and acquire a new significance. For this reason, careful study of the views and ideas of our great philosophers might prove extremely valuable in this direction. [21]

From al-Samarqandī's medical formulary, Ibn Baytār's *Jāmi ᶜMufradāt*.. and al-Zahrawī's *Tasrīf*, we can very well gauge that by the thirteenth century Islāmic medicine had achieved a high water-mark. The symbols employed by Ibn Sīnā could not have been but qualitative, for by that time only three physical laws had been formulated - those of Euclid, Archimedes, and Ibn al-Haytham. It is only after New-

ton that the physical laws of Nature were gradually reduced to mathematics and statistics and these laws began to be applied to biological organisms. Ibn Sīnā's concept of the elements is therefore rooted in the tactile, perceptive, and palpable impressions recorded by man. But then man is himself liable to change. Speaking of Ibn Sīnā's approach in this regard, Shah observes: "Although this may be useful for stimulating research, it is not the way to progress and discovery."[22]But then the medicine of the West was even in a more disorganized state in Ibn Sīnā's time, and obviously his teachings must have played a part in the Renaissance. Rational science had its beginning in the sixteenth century, although in certain fields like the manufacture of paper, use of stamping mills, watch-making, girth-harness for the horse, and mechanization in general Europe was forging ahead by the twelfth century.

During the present-day mass production of drugs from petrochemical foodstock or massive culturing of antibiotics, less attention is given in allopathy to the patient's temperament, although the concept is as true today as it was before. We know that people are allergic to antibiotics, iron therapy, and sulpha drugs. In modern science temperament and constitution are often employed synonymously, but in *Tibb* this is not so. Ibn Sīnā, for example, defines temperament as follows:

> Temperament is the pattern resulting from the interaction of the opposing qualities of elements. The elements divide into minute particles to secure intimate contact with one another. When the qualities of these particles act and react on one another, there emerges a new pattern of qualities which is uniformly distributed throughout the particles of the elements. Since the primary qualities of the elements are four, namely, heat, cold, dryness, and moisture, the temperament of a newly organized or disintegrating body is a product of these qualities.[23]

Shah further elaborates upon this:

> Temperament is the pattern of activity and reactivity in the body as a whole or of its parts. The heat and cold in it may be identified with the dispersive and aggregative aspects of energy, while moisture and dryness with the receptive and resistant aspects of the mass respectively.[24]

Constitution in *Tibb* is *ṭabbiʿyah* which comprises seven factors, of which *mizāj* is one. *Mizāj* subsumes two kinds: (i) the equable, in which the elements and the humours are more or less equally balanced; and (ii) the inequable, which is called *ghayr muʿtadil*, in which there is dominance of one temperament over the other. The latter is further subdivided into eight kinds: (i) hot, (ii) cold, (iii) humid, (iv) dry, (v) hot-dry, (vi) hot-humid, (vii) cold-dry, and (viii) cold-humid. It is not our intent to go into the details of these permutations and combinations. Ibn Sīnā has dwelt in considerable detail upon them.[25]

The temperament of a person is measured against that of a balanced person under normal conditions Since the skin of the body, and the skin of the terminal phalanges in particular, is the most sensitive part of the body, touch has been adopted as the most ready means of perception. The body is, however, submitted to thorough examination of all five senses, so that the general physique, pulse, feel of the body, type of hair, sleep, work, emotional characteristics, colour of the stool, urine & C are carefully noted for proper diagnosis.

On this basis, the people living in northern climes and those working in water would be moist; children and youths are held to be hot, but children are more moist and the young more dry. The middle-aged and the elderly ones are cold and dry (no doubt, since the petabolic processes tend to slow down in them). Women are generally colder than men. Blood is hot and moist; bile, hot and dry; phlegm, cold and moist; atrebile, cold and dry. Bones are cold and dry; brain, cold and moist; heart, hot and dry; and liver, hot and moist. Explained in terms of mass and energy, activity is hot and reactivity comprises dryness and moisture.

Shah in this connexion observes:

> This is a notion of great importance to the clinician both from the (viewpoint) of physiology and psychology as well as diagnosis and treatment and thus deserves to be investigated with the help of electronic devices.[26]

Shah has made a very interesting comparative study of the temperament through the ages. Susruta (500 B.C.), for example, postulated his *Tridosha* hypothesis. Here temperament was divided into three kinds: *Vata* (metabolic carbon dioxide), *Pitta* (metabolic water), and *Kapha* (metabolic salt). Hippocrates divided temperament into two kinds: the apoplectic and phlegmatic, while Galen divided it into four kinds: the sanguine, choleric, phlegmatic, and melancholic. Halle Husson (1821) classfied temperament into *temperamens partiels, cephalique, abdominale,* and *thoracique.* Rostan 1(828) classified temperament into *type musculire, cerebral, digestif,* and *respiratoire* types. Carus (1853) recognized the athletic, cerebral, phlagmatic, and asthenic types, while Laycock (1862) formulated the sanguineous, bilious, phlaamtic, and indancholic types.[27] Eppinger (1917) and Hess (1931) accorded recognitionto only two kinds of temperament: sympatheticotonic and vagotonic. Danielopolu (1920) again recognized four types: amphotonic, sympatheticotnic, vagotonic, and amphohypotonic. Karl Gustav Jung, the famous psychologist, formulated in 1923 the extrovert and introvert types on behavioural level,[28] while Kretschmer (1926) identified three temperaments: the athletic, pyknic, and leptosome.[29] Hurst (1927) postulsted hyperasthenic gastric diathesis, hypoasthenic gastric diathesis, gall-bladder diathesis, asthma and migraine.[30] Pavlov (1849-1935) on the basis of his study of stimulus and response through his experiments on conditional reflex worked out four typoes: lively, impetuous, calm, and weak.[31] Pearson and Wyllie (1935) and Sheldon (1940) recognized three human types: mesomorh, ectomorph, and endomorph.[32] William F. Petersen (1946) accorded recognition to two temperamental types, pyknic and leptosome.[33] Vannier (1952) on the basis of physiological studies recognised the carbonic, phosphatic, and fluoric types, while Brooks and Mueller (1966) reduced human temperament to two types: the uric acid and cholestrol. And the story is by no means over. It is rather interesting that none of the theories mentioned above has gone beyond four types.

It would also be noted that the four-type temperamental theory in Islāmic medicine allows functional changes. If, for example, children are moist, when they grow up, they become drier; that is to say, metabolic changes in man tend to slow down with age, which is true today as it was before. Galen's theory, on the other hand, leaves no room for functional changes, since he has reduced man to types. Likewise, the *Tridosha* concept leaves out fire. Jung has restricted himself to psychological and psychosomatic types, but his theory would also be open to the same question. Hess and Eppinger limited their concept to only two types, the sympatheticotonic and vagotonic, but as the following table compiled by Reimann would show,[34] they are identifiable with the cold-moist and hot-dry temperaments described by Ibn Sīnā.

VAGOTONIA	SYMPATHETICOTONIA
"Wet" type with increased oral, nasal, bronchial and other secretions	"Dry" type with decreased secretion
Low temperature	High temperature
Low basal metabolism	High basal metabolism

Low blood pressure	High blood pressure
Slow pulse rate	High pulse rate
Increased peristalsis	Decreased peristalsis
Vaso-dilation	Vaso-constriction

The Hess-Eppinger concept, however, does not take cognizance of any state that would correspond to the hot-moist and cold dry types described in *al-Qānūn* and offers no explanation of the signs of vagotonia and sympatheticotonia being present in one and the same individual. Ibn *Sīnā's* concept of temperament is therefore much more flexible. He says:

> ... but though we may guess that it is the proportion of the ingredients which account for the existence of a temperament, it is quite another thing to be definite about the absolute proportion of this co-mixture and we shall be ignorant of this as long as we live in this world.[35]

There is, however, similarity between Susruta's *Tridosha* theory and William H. Sheldon's concept of endomorphy, ectomorphy, and mesomorphy.[36] His concept, as well as that of Kretscmer's, which is based upon morphology, disregards differences of activity in a person who is either a wiry hyperthyroid, or sluggish hypoadrenal.[37] The clinical classification by Carus and the physiological one by Danielopolu "would appear to be nearest to the four innate types described in the Canon." But they also take no account of the associated biochemical and environmental variations. About Pavlov's concept, Shah observes:

> Since the four types proposed by Pavlov correspond also to the four temperaments by Avicenna, it may be hoped that no sooner is science able to measure the heat, cold, dryness, and moisture of bodies in precise terms, the identification of excitation and inhibition with heat and cold and mobility with moisture, would explain all the equilibriated and unequilibriated patterns of the body.[38]

Even today we speak of phlegmatic, arteriosclerotic, stolid, rheumatic, & C types, and therefore it cannot be denied that the theory of temperament has lasted into allopathy even today.

Although the concept of humours originated with Hipoccrates, there is little doubt that its evolution is due to Muslims. *Ikhlāt* (humours) is the plural of *khilt* which literally means a mixture. It is due to *istihālah* or change from one form to the other. Hippocrates observed blood with the naked eye and concluded that the red portion of the blood is the blood humour, the white material mixed with the blood is the phlegm *(balgham)*, the yellow-coloured froth appearing at the top is the bile *(safrā)*, while the heavier part which settles down is the atrabile or *sawdā*. Phlegm is cold and humid, bile is hot and dry, and atrabile is cold and dry. This concept was further elaborated by Galan, and all diseases were attributed by him to the unequal distribution of humours.

On the other hand, Ibn Sīnā's description of humour is brief. Al-Kindī before him had prescribed only one prescription for the correction of humours, and we have already seen that al-Samarqandī's approach to the humoral theory was rather pragmatic. Ibn Sīnā has this to say about humours.

> Humours are the nutrient material for (the) body. A substance is nutritious if its qualities are similar to those of (the) body, and a substance which has a qualitative resemblance to the body can only be a compound and not a simple material like water. It is not true that strength depends upon the

presence of a large quantity of blood in the body and that weakness results from its deficiency. Strength and weakness depend upon the amount of nutrition available in (the) blood and the quantity of food actually utilized in the body.

There are certain other aspects of humours which are really the concern of philosophers and not of physicians; hence these have been omitted.[39]

Humours are either natural or unnatural *(taba ʿi* and *ghayr taba ʿi).* Thus phlegm from the viewpoint of taste is classified as saltish, insipid, acrid, and sour. From the viewpoint of consistency it is either watery or m mucous, viscid, immature. Bile may be natural or burnt (calcined). In the latter state it may be verdigris-like, mixed with dense phlegm *(safrā mirrah)* or with viscid phlegm *(safrā muhlyyah),* or it may exist in admisture with calcined bile. When finally burnt, it is known as *safrā kurrāthiī* (leak-coloured bile). *Damm abīyad* or white blood would corresponds to leukaemia whilst *damm ghayr taba ʿi* or unnatural blood corresponds to a state at a remove from the natural state. Atrabile or black humour settles down as a layer during the formation of the chyle. It comprises two types: (1) the natural kind which is the sediment of blood, settling down at the bottom; and (2) the unnatural kind formed through admixture with another humour.

The secondary humours are known as *ratūbāt,* or fluids. Cohesive fluids are *ratūbāt asliyyah* while the other secondary humours are extra - and intra - cellular fluids like the equeous, crystalline and vitreous humours and lymph, the last being known as *ratūbat talliyah.*

The microbial bodies are the evil bodies from the earth. Ibn Sīnā seems to have been conscious of sepsis.[40] As regards the origin of the microbial bodies, he states that sometimes the source of putrefaction is distant, at others close at hand, and still at many times it is visible and invisible. Among the visible centres of putrefaction, he mentions the decomposing waters of putrefying lakes or decomposing corpses of soldiers killed in battle or of persons who had died in epidemics.[41]

Whatever the validity of the humoral theory, it has served very well as a diagnostic tool. The physician practising Islāmic medicine would claim that the examination of the pulse rate would provide him more data about the illness of the patient than reading with the thermometer, since it provides him with data about palpation and other allied factors such as the heat of the body. Many examples of the diagnostic accuracy of *Tibb* could be cited. Thus Ibn Sīnā describes the symptoms of the excess of blood as follows: feeling of heaviness in the body, especially behind the eyes, and over the head and temples & C. This is the diagnosis of blood pressure. In a similar fashion he has described the characteristics of phlegmatic, billious, and atrabilious persons.[42] He also emphasizes the importance of the examination of urine and stool.[43] In short, Tibb believes in *in vivo* interpretation.

Henry E. Sigerist emphasizes the utility of the humoral theory as follows:

> The theory of four humours could also be used to explain the various constitutional types of man. No two individuals are the same, to be sure, but one can distinguish certain groups... It was observed in antiquity that certain physical and mental qualities occur in definite combinations... The humoral theory seemed to explain these differences. It was assumed that one of the four humours could dominate *diaphysin* i.e. physiologically, without causing disease. Thus, if the black bile, the *melaina chole,* dominated, the individual belonged to the melancholic type, which Aris-

totle described in the *Problems*. It was a type to which many men of genius belonged... but a somewhat unbalanced type which today we would call manic - depressive...

Similarly, it was assumed that the blood, the phlegm, and the yellow bile would dominate physiologically, and the Arabs described the sanguine, phlegmatic, and choleric types. These views persisted for a long time, and it is impossible to understand Shakespeare's plays if one is not familial with them.[44]

Asklepiades in the first century B.C. advanced the theory that the human body was built of atoms joined together to form the structural parts, and always in constant motion in the pores of the organism. An organism remained healthy so long as the atoms were capable of free movement; disease resulted from disturbance of the movement. The disciples of Asklepiades, elaborating his doctrine, came out with the coincept of relaxation and contraction, and abnormal relaxation or contraction resulted in disease. We have already observed that the atomicity of Asklepiades, as a result of independent stimulas, was taken up by the *mutakalimun.*[45]

Shah has aptly summarized the status of the problem of the fundamental concepts of *Tibb* by stating that it claims that structure is only one aspect of constitution and scientific discoveries of the specifics, by quantitative methods, though invaluable through the use of life-saving drugs, are in themselves not sufficient to solve every problem of treatment. He therefore argues:

Research on *mizāj* or the qualitative aspects of the drugs may help (i) the chemist with ideas for correlating physico-chemical structure of drugs with their activity via the elementary qualities. With the basic knowledge of *Tibb* he should be able to plan a more systematic, groupwise, and meaningful research... (ii) The pharmacologist may be able to find some appropriate "simple" and perhaps more suitable formulae for clinical tests and trials on the lines recommended by *Tibb*... (iii) The physician may also receive some helpful ideas in the matching of drugs against the functional and presently obscure diseases.[46]

The materiae medicae of *Tibb* are also not a static affair either. A new use, for example, of the embelic myrobalan fruit is its administration w with iron in cases of anaemia, jaundice, and dyspepsia.[17] With the active principles of drugs coming in for review and discovery, the field of natural drugs is full of promises. It would be also worthwhile to investigate with the cooling, heating, humed, and drying properties of drugs are associated with specific organic radicals, as Dr. Salimuzzaman Siddiqui, F.R.S., emphasized twenty years ago.

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AN APPROACH TO THE SCIENTIFIC INVESTIGATION OF THE THEORETICAL AND APPLIED ASPECTS OF TIBB

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Medicinal plants along with other drugs of mineral or animal origin have continued to serve through the ages as a source of medicament for the treatment of a number of diseases in several traditional systems of medicine in different parts of the world. The use of these drugs has however remained largely empirical, depending by and large on the cumulative observations by traditional physicians of drug--patient interaction rather than on any extensive analytical data. This has been mainly due to the fact that the precise biochemical mechanisms through which life functions have not been understood and it is only during the last three decades that the broad features of some of the myriad of wondreous chemical processes that occur within the living cell have begun to be recognized.

How does life function? This is a question over which man has pondered since the very beginning of his creation. There are those who would contend that life is just a conglomerate of molecules thrown together accidentally by nature which, brewed in the cauldron of time, have developed the capacity to correlate with each other to a degree that they can now feel and think. There are others who would simply say that it has been "created" and would go no further. Whichever school of thought one belongs to, one has to admit that living organisms exhibit a highly complex panorama of remarkably intricate and yet beautifully organised biochemical reactions which can be studied in unambiguous quantized terms.

The Democretean approach to biology was atomistic in concept concerned primarily with the reductive analysis of biological species into their various parts. The Aristotelian approach on the other hand was holistic in nature, emphasising the integration and interaction of the individual parts within the whole. These apparently contradictory approaches actually complement each other inasmuchas any complex system in more than just a sum of its parts. This is so by virtue of the modes of regulation and interaction of these parts. The Democretean approach leads us into the intricacies of molecular biology while the Aristotelian approach on the other hand results in the adoption of an integrated approach to these underlying factors, leading first to man and then, through interaction of men, to societies and nations.

The quasimystical approach adopted to the mechanisms by which life functioned received somewhat of a set-back when it was discovered by Waston and Crick at Cambridge in early 1951 that the gene, which carries in it the elaborately coded sequences which determine whether the newborn will be man or monkey, was composed of deoxyribosenucleic acid (DNA). This opened the way to a series of spectacular advances in the field of molecular biology which include the structure elucidation of hemoglobin by X-ray diffraction, the replication of DNA in a test-tube by means of a purified enzyme, DNA--polymerase, and the unravelling of the genetic code. Vast areas of cellular biology still remain however to be properly understood. These include the precise chemical reaction sequences leading to cellular differentiations and morphogenesis which occur during the embryological development of living organisms, and such neural functions as learning, memory, emotions, consciousness and sensory perception. It is clear however that such phenomenon as thought, humour, happiness, depression etc. are not "abstract" as one would imagine but are based on definite and discrete molecular interactions which can be enhanced, suppressed and otherwise manipulated. This understanding has led to a whole new field of chemistry and a number of compounds are becoming available which can control human thought patterns and emotions. The human biological system may thus be considered as being a composite of an amazing multitude of chemical and biochemical reactions, which govern such processes as cell division, transfer of hereditary characteristics and formation of anti-bodies to combat disease, to mention a few illustrative examples. The majority of these processes are not fully comprehended but the most basic and the most important mechanistic pathways have been clarified due to the untiring and dedicated efforts of several eminent scientific groups around the world. These stunning advances have been made possible in part by the availability of highly sophisticated scientific instruments, and by the development of radio-isotope tracer techniques which have allowed scientists to monitor the metabolic fates of drugs administered to living systems. The scientific revolution and the accompanying technological break--throughs have thus transformed medicine from the state of an "art" bordering on witchcraft to a science during the course of the last two centuries.

All along that this has happened, the practitioners of traditional medicine have continued to render valuable service towards alleviating disease by using remedies based on herbal and mineral drugs. The therapeutic efficacy of these drugs has been established through centuries of experience and the body of knowledge so accumulated forms a veritable treasure house for further scientific investigation. The wide application that herbal medications still find in the West is grossly under-estimated. In U.S.A., for instance, of the 1.532 billions prescriptions dispensed during 1973, 25.2% contained active constituents obtained from higher plants with a cost involvement of about 3 billion U.S. dollars.[1-3]* One of the chief contributions of the early Islamic period to scientific progress was that it gave to the world "the scientific method" — demonstrating the importance of controlled experimentation and obsdervation, and analysis of the resulting experimental data to obtain reproducible results. That no systematic attempt has been made so far in the Muslim World to apply the very methodology that they gave to the West to

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* The most commonly encountered pure compounds from higher plants during that year were steroids (95% of them derived from diosgenin; 14.69% of total prescriptions), codeine (2.03% of total prescriptions), atropine (1.5% of total *prescriptions),* reserpine (1.45% of total prescriptions), pseudoephedrine, ephedrine, hyoscyamine, digoxin, scopolamine, digitoxin, ilocarpine and quinidine (all less than 1% of total prescriptions).

investigate the therapeutic activity of various remedies in use by the Muslim Tabibs is a sad reflection on the prevailing state of affairs in the field of scientific research.

Viewed with the present day understanding of molecular biology and the mechanism of enzyme--controlled reactions, the original definition of "temperament" as propounded by the great Ibn Sina as "the pattern resulting from the interaction of the opposing qualities of elements"[4] appears to have little relevance in the context of modern scientific know-how. Yet we must judge it on the basis of the existing state of scientific knowledge at the time when it was enunciated. Inasmuchas we stand at the apex of a growing pyramid of knowledge with the works of great scholars of the past forming its base, we must acknowledge our indebtedness to the minds and works of such scientific giants as al-Biruni, al-Haitham and Ibne Sina whose glorious contributions to the advancement of science in their time are universally accepted. I leave it to the other participants at this Conference to describe the contributions of Muslim scientists in more detail.

There are several aspects concerned with the theory and application of Tibb that warrant serious scientific investigation. The first of these relates to developing a clear and unambiguous understanding of the biochemical basis of temperament.

The concept of "Mezaj" or temperament is based on the assumption that people differ from each other, and must therefore have different responses to individual drugs. A scientific mind naturally queries whether there is any reasonable basis for this assumption. People certainly differ in physical form as in evident from their height, weight, colour of their skin etc. Yet these dissimilarities my appear, at first glance, to be minor. A deeper look reveals that certain broad similarities can be recognised in the human race and one can create scientific groupings based on the basis of various biochemical parameters e.g. blood type, cholesterol levels etc. A still deeper probe at the molecular level into the human system reveals that literally millions of different chemical reactions are occurring in the human body. Most of these reactions are under strict enzymic control and are reversible. The rate and point of equilibrium in each of these reactions is determined by many factors such as pH of the surrounding medium, concentration of interacting molecules, genetic control etc. Thus in each person the equilibrium point of these reactions can vary, albeit to a small extent. The overall summation of these equilibria will thus present a differing "biological spectrum" which would determine the precise "mezaj" or temperament of each person. Thus at the molecular level, no two persons would have an exactly identical temperament, although certain broad categorisations would be possible. This would explain why drugs often have different effects on different individuals. They would be subjected to altering patterns of body chemistry and the metabolic pathways, even if identical, would produce metabolic products in varying concentrations at specific time intervals after drug intake depending on the kinetics of the catabolic processes in progress. The biochemical "summation spectrum" encountered in different individuals thus represents the total sum of all the chemical reactions occurring within the body, and the overall biochemical resultant would differ from person to person.

It is apparent that the enormous complexity of the biological system does not lend itself readily to a scientific analysis of all that occurs within it. This is one reason why modern medicine has concentrated on the use of individual drugs where the precise metabolic paths can be followed by radioisotope tracer

techniques and the mechanism of the drug-body interaction rationalised. This may be visualised as a "single component- complex" interaction i.e. a single organic drug interacting with the large number of organic moieties in the body.

In the case of a herbal concoction, literally thousands of different compounds are present and it becomes impossible with the present state of scientific and technological know-how to determine the precise affect of each component on the body. This may be considered as "complex-complex interaction" i.e. the whole conglomerate of organic compounds present in the concoction interacting with the organic molecular moieties of the complex biological system.

What is then the scientific approach to probing into the nature of temperament? Clearly as temperament is intrinsically related to the mechanism by which the human body functions, it is necessary to find correlations between temperament and the various biochemical parameters e.g. bile level, blood type, enzyme assay etc. This would involve identification of temperaments of individual patients by a panel of "hakims" and analysing the biochemical parameters in association with pathologists, biochemists and doctors. The data which would accumulate from such a study is likely to provide meaningful pointers to the factors which have a bearing on temperament.

I would submit here the following action - oriented program for an investigation into the theory and practice of Tibb:

1) A working group of prominent hakims, doctors and scientists should be constituted. The hakims sould identify the "Mezaj" of patients and a team of doctors, pathologists and biochemists should analyse the characteristic biochemical parameters of each patient with a view to understanding "Mezaj" in terms of biochemistry and molecular biology.

2) A panel of "hakims" should identify those remedies used in the Islamic system of medicine which are highly effective in diseases which are amenable to quantized analysis. These remedies should then be administered to patients, under the joint supervision of hakims and doctors, for clinical trials. In cases where striking cure rates are observable, the remedies used should be submitted to teams of pharmacologists, clinical pharmacologists, toxicologists, microbiologists and phytochemists for a thorough investigation. Those drugs which are found to be toxicologically safe and effective can be introduced directly for use in an integrated pharmacopœia. This suggestion is in line with resolutions of World Health Organisation and U.N.I.D.O. I reproduce here Resolution No. 17 adopted at the U.N.I.D.OO. Technical Consultants Meting held in Lucknow in March 1978:

> *"Many of the developing countries have strongly established traditional systems of medicine and large segments of the population still depend upon these for medicare. Efforts should be made to integrate the use of these traditional remedies within the medicare programmes in these countries. For doing so:*

1) The production of the well accepted remedies of the traditional system should be taken up in centralized agencies with proper quality control facilities.

11) For such of those durgs which are going to be used for long periods it would be necessary to

carry out sub-acute and chronic toxicological studies to ensure their safety.

III) Such of those remedies which are not yet well established in their use, direct clinical trials for establishing their efficacy should be carried out so that these drugs can be used with greater confidence.

IV) There is need to put in the necessary inputs for the production of traditional remedies on a firm scientific basis such as in observing proper procedures for the cultivation of plants their storage, their processing and analysis of the medicaments made for them.

V) Once herbal remedies are established to be useful on the basis of pharmacological / clinical / toxicological studies, they should, after authentication by the Departments of Health of each country, be incorporated into the educational courses of medical colleges.

VI) Those remedies which need to be tested experimentally should be tried as they are used in traditional system of medicine in animal experiments to authenticate and substantiate the claims for them.

3) In order to carry out the above program of research, it is necessary that a research institute of an international level of excellence be established with all the necessary facilities by way of highly qualified personnel and instrumentation. This should contain a hospital unit for clinical trials, a general pharmacological and toxicology section for biological screening of Tibbi drugs, and a microbiological section for determination of anti-bacterial and anti-viral activity. Plans for the construction of such a "National Institute for Tibbi Research" have already been completed by a "National Council for Tibbi Research" constituted by the President of Pakistan, but little progress has been possible for reasons I shall not dwell upon here. I would propose here that if the Kuwaiti authorities are willing to provide the finances, then a Kuwait - Pakistan Institute for Tibbi Research could be jointly established at Karachi. This would cost about 10 million U.S. dollars and would constitute a major step forward towards bringing about a renaissance in Tibb. The phytochemical investigations can be carried out jointly at H.E.J. Postgraduate Institute of Chemistry, University of Karachi which is now one of the leading centres of natural product chemistry in this region of the world, and the Department of Chemistry, University of Kuwait. The maps and detailed proposal for the construction of such a centre are available with me for further consideration.

4) As annexure, I am attaching a list jointly compiled by me along with other U.N.I.D.O. Consultants at the U.N.I.D.O. Consultation Meeting held in Lucknow, India in March 1978,[3] which shows various active principles isolated from medicinal plants.

I thank the organisers of the conference for inviting me to Kuwait to present my views on the subject. I end this article with an expression of hope that some concrete measures will be adopted at this conference for research on various aspects of Islamic medicines.

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ANNEXURE - I

Therapeutic Group	Essential		Second category	
	Plant	Active constituent	Plant	Active constituent
Anaesthetics	—	—	—	—
Analgesics, antipyretics,	*Papaver somniferum*	Morphine Codeine	*Aesculus* *Hippocastanum* *Aesculus indica*	Aescine and total extract
Nonsteroidal anti-inflammatory drugs and antigout drugs	*Gloriosa superba*	Colchicine		
Antiallergics	—	—	—	—
Antidotes, chelating agents, cholagogue			*Combretum micranthum*	Extract
Anti-epileptics	—	—	—	—
Anti-infective	*Cephaëlis ipecacuanha*	Emetine	—	—
Antiprotozoal	*Cinchona* sp.	Quinine	—	—
Anthelmintic	—	—	*Chenopodium ambrosioides*	Ascaridol, *total extract*
	—	—	*Artemisia maritima*	Santonin
Antimigraine	*Claviceps purpurea*	Ergotamine	—	—
Antineoplastic	*Catharnthus roseus* *Catharanthus lanceus*	Vinblastine Vincristine	*Podophylum hexandrum (P.emodi)* *Prunus africana*	Podophyllotoxin and total extract Total extract (specific for prostate enlargement)
Antiparkinsonism	*Mucuna pruriens*	1-Dopa		
Blood and haematopoietic system	—	—	—	—
Cardiovascular				
Antihypertesive	*Rauwolfia serpentina* *Rauwolfia vomitoria* *Rauwolfia confertifloratum*	Reserpine	*Rauwolfia* sp.	Deserpidine
	Catharanthus roseus *Catharanthus lamceis*	Raubasine Vincamine	*Ammi visnga*	Visnagin
	Vinca minor *Voacanga africana a* *Voacanga thoursil a*			
Anti-arrhythmic	*Cinchona* sp. *Rauwolfia serpentina* and other species	Quinidine Ajmaline	*.strophan thin*	*Strophanthin*
Cardio tonic	*Digitalis lanata* lanatosides	Digoxin and *Lantosides*	*Thevetia nerifolia* *peruvoside*	*peruvoside*
	—	—	*Urginea scilla (Scilla maritima)*	Proscillaridine Rutin or bioflavanoids
Dermatological peparations	*Ammi majus*	Xanthotoxin	*Psoralea coryli-folia*	Psoralen
	Centella asiatica	Asiaticoside	—	—
Diagnostic agents	—	—	—	—
Diuretics	*Theorbroma cacao*	Theophylline		

a Provides raw material for drug production.

Gastointestinal drugs				
Antispasmodics	*Duboisia myoporoides*	Total alkaloids		
	Duboisia leichartii	atropine or		
		hyoscyamine		
	Atropa belladonna			
	Atropa acuminata			
	Datura sanguinea			
	Datura stramonium			
	Datura metal			
	Hyoscyamus muticus			
	Hyoscyamus niger			
	Physochlaina prealta			
Cathartics	*Cassia angustifolia*	Sennosides	*Rheum* sp.	Total extract
	Cassia italica	mixture or		
	Cassia acutifolia	sennosides A, F	*Aloe* sp.	Aloin
Laxatives	*Plantago oveta*	as such and pro-		
Anti-ulcer	*Glycyrrhiza glabra*	ducts glycyrrhetic		
		acid and extract [a]		
Antidiarrhoeal	*Berberis aristata*	Berberine	*Ceratonia siliqua*	Total extract
Hormones	*Dioscorea deltoidea*	Diosgenin [a]		
	Dioscorea floribunda			
	Dioscorea composita			
	Costus speciosus			
	Solanum laciniatum	Solasodine [a]		
	Solanum khasianum			
	Solanum xanthocarpum			
	Agave sisalana	Hecoginin [a]		
Immunologicals	—	—	—	—
Muscle Relaxants	*Physostigma*	Physostigmine		
(peripherally acting)	*venenosum*			
and antagonists				
	Chondrodendron	d-Tubocurarine		
	tomentosum			
Ophthalmological	*Pilocarpus* sp.	Pilocarpine		
preparations				
	Physostigma venenosum	Physostigmine		
	Duboisia myoporoides	Atropine [a]		
		(as homotropine)		
Oxytocics	*Claviceps purpurea*	Ergometrine		
Psychotherapeutic			*Rauwolfia serpentina*	Reserpine and crude extract
			Rauwolfia confertiflorum	
			Rauwolfia vomitoria	
			Valeriana wallichii	Valepotriate and total extract
			Valeriana officinalis	
Drugs acting on the respiratory tract	*Ephedra gerardiana*	Ephedrine	*Glycyrrhiza glabra*	Total extract
	(Ephedra vulgaria)		*Glycyrrhiza uralensis*	
	Ephedra nebrodensis		*Glycyrrhiza violacea*	
	Theobroma cacao	Theohylline [a]	*Glaucum flavum*	Glaucine
		(as aminophylline)		
	Papaver somniferum	Codeine	*Polygala senega*	Total extract
Solutions correcting water, electrolyte, and acid-base disturbances	—	—	—	—
Vitamins and minerals	—	—	—	—

a Provides raw material for drug production.

BIOLOGICALLY ACTIVE PLANTS CONSIDERED DURING THE TECHNICAL CONSULTATION

			Availability		Region			Market potential		
Name of plant	Part of the plant used	Product	vated	cult- Wild	Africa	Latin America	Asia	Method of production a	Local	Export	Trend
Acacia arabica											
Acacia senegal	Stem	Gum		+	+				+	++	Steady
Aconitum sp.	Root	Total extract		+			+	C	+	+	Down
Acorus calamus	Rhizome	Essential oil and crude drug		+			+	A	+	++	Steady
Aesculus hippocastanum	Seeds	Aescin and total extract	+	+			+	C	+	++	Up
Agave sisalana	Juice	Hecogenin	+		+	+	+	D	+	++	Steady
Aloe sp.	Leaf juice	Aloin	+	+	+	+	-		+	++	Steady
Ammi majus	Seeds	Xanthotoxin	+	+	+		+	D	+	++	Up
Ammi visnaga	Fruits	Visnagin, khellin		+	+	+		C	+	++	Steady
Amomum subulatum	Fruits	Essential oil	+	+	+		+	A	+	++	Up
Amomum xanthioides	Fruits	Essential oil +	+	+		+	+	A	++	Up	
Andira araroba	Stem wood	Total extract		+	+	+		C		+	Steady
Anethum sp.	Fruit	Essential oil				+	+	A	+	+	Steady
Anise	Fruits	Essential oil	+		+		+	A	++	++	Steady
Artemisia maritima	Flowering tops	Santonin		+	+		+	B	+	+	Steady
Atropa belladonna	Leaf and roots	Total alkaloids	+				+	C	++	++	Steady
Berberis aristata	Root, stem bark	Berberine		+			+	B	+	++	Steady
Berberis asiatica	Root, stem bark	Berberine					+	B	+	++	Steady
Berberis lycium	REoot, stem bark	Berberine		+			+	B	+	++	Steady
Betula alnoides	Stem bark	Crude drug		+			+		+	+	Steady
Capsicum annum	Fruit	Capsicum oleoresin	+		+		+	D	+	++	Steady
Carica papaya	Fruit	Papain	+		+	+	+	B,C	+	+	Up
Carum carvi	Fruit	Essential oil	+		+		+	A	+	++	Steady
Cassia acutifolia	Leaves and pods	Sennosides		+	+	+	+	C	+	++	Up
Cassia angustifolia	Leaves and pods	Sennosides	+				+	C	+	++	Up
Cassia italica	Leaves and pods	Sennosides		+				C	+		
Catharanthus roseus	Leaves and roots	Vinblastine, vincristine, rubasine	+	+	+	+	+	D	+	++	Steady
Centella asiatica	Whole plant	Asiaticoide	+	+	+		+	C	+	++	Steady
Centella acuminata	Roots	Emetine	+			+	+	D	+	++	Up
Cephaelis Ipecacuanha	Roots	Emetine			+	+	+	D	++	Up	
Ceratonia siliqua	Fruit	Total extract	+	+	+			C	+	++	Steady
Chenopodium ambrosioides	Flowering top and whole plant	Essential oil	+	+		+	+	A			Steady
Cinchona sp.	Stem and root back	Quinine, quinidine	+	+		+	+	B	++	++	Up
Claviceps purpurea		Ergotamine, ergotoxine, ergometrine	+			+	+	B	++	++	Steady
Cola nitida	Seeds	Total extract	+	+	+	+		B	++	++	Up
Combretum micranthum	Leaves	Total extract		+	+		+	C	+	++	Up
Commiphora mukul	Resin	Gum		+			+	D	++		
Costus speciosus	Rhizome	Diosgenin		+		+	+	D			
Costus citratus											
Cymbopogon flexuosus	Leaves	Essential oil, citral	+		+	+	+	A	+	++	Steady
Datura sp.	Leaves	Atropine									
Derris elliptica	Root	Rotenone	+	+	+		+	D	+	++	Up
Digitalis lanata	Leaves	Digoxin and lanatosides	+		+			C,D	++	++	Steady

Dioscorea sp.											
Dioscorea leichardt	Tubers	Diosgenin	+	+	+	+	+	D	++	++	Steady
Duboisia myoporoides	Stem	Hyoscyamine, hyoscine	+	+	+	+	+	D	++	++	Steady
Ephedra gerardiana	Whole plant	1-Ephedrine		+			+	D	++	++	Steady
Ephedra vulgaris	Whole plant	1-Ephedrine		+			+	D	++	++	Steady
Ephedra nebrodensis	Whole plant	*1-Ephedrine*		+			+	D	++	++	
Eucalyptus globulus	Leaves	Essential oil	+		+	+	+	A	++	++	Steady
Glaucum flavum	Leaves	Glaucine		+	+		+	C	++	++	Steady
Glaucum simplex	Rhizome	Colchicine		+	+		+	D	++		
Gloriosa superba	Rhizome	Colchicine		+	+		+	D	++	+	Steady
Glycyrrhiza	Rhizome	Total extract		+			+	B	++	++	Steady
Heracleum candicans	Roots	Xanthotoxin		+	+		+	D	+	++	Steady
Hibiscus sabdariffa	Flower	Dried flowers	+		+	+	+		+	++	Up
Holarrhena floribunda	Stem bark	Conecsine and total alkaloid	+	+			+	D	+		
Hydnocarpus kurzii	Seeds	Fixed oil, hydnocarpic acid		+			+		+		
Hydnocarpus wightiana	Seeds	Chaulmoogric acid									
Hyoscyamus sp.	Root	Hyoscyamine and other alkaloids		+	+				+		
Lippia chevalieri	Whole plant	Camphor and essential oil		+	+			A	+	+	Steady
Lobelia pyramidalis	Leaf, flowering top	Lobeline and total extract		+			+	D	+		
Mentha sp. (Japanese mint)	Whole plant	Essential oil	+		+	+	+	A	++	++	Up
Mentha piperita											
Mucuna pruriens	Beans	1-Dopa	+	+	+	+	+	B	+	+	Steady
Oncoba echinata	Seeds	Fixed oil			+						
Papaver somniferum	Capsule and latex	Morphine, codeine moscapine papaverine	+			+	+	D	++	++	Up
Passiflora sp.	Whole plant	Total extract	+	+	+	+	+	C	+	+	Steady
Pausinystalia yohimba	Stem bark	Yohimbine and total extract		+	+			D	+	+	Steady
Physostigma venenosum	Seeds	Physostigmine, stigmasterol		+	+			D	+	++	Steady
Physochlaina praelta								C,D			
Pilocarpus sp.	Leaves	Pilocarpine		+		+		D	+	+	Steady
Plantago ovata	Seeds, husks	Ispaghula, psyllium	+				+		++	++	Up
Podophyllum hexandrum (P.emodi)	Tubers	Podophyllin, podophyllotoxin		+			+	D	+	++	
Polygala senega	Roots	Resin		+	+				+	+	Up
Prunus africana	Stem bark	Total extract		+	+			C	+	++	Steady
Psoralea corylifolia	Seeds	Psoralen		+			+	D	+	+	Steady
Rauwolfia heterophylla		Reserpine, ajmaline, deserpidine, rescinnamine, reserpiline									
Rauwolfia serpen	Roots										
Rauwolfia vomitoria				+	+			D	+	+	Up
Rhamnus purshiana	Bark	Crude extract		+		+		C	+	+	Steady
Rheum emodi	Rhizome	Total extract	+	+	+		+	C	+	+	Steady
Rheum palmatum	Rhizome	Total extract	+	+	+		+	C	+	+	Steady
Ricinus communis	Seeds	Fixed oil	+	+	+	+	+		+	++	Steady
Solanum sp.	Berries	Solasodine	+	+	+	+	+	D	+	+	
Sterculia	Bark	Gum									

setigera	exudate			+	+		+		+	+	Steady
Strophanthus gratus	Seeds	Strophanthine, strophanthidine		+	+			D	+	+	Up
Strophanthus kombe											
Strychnos nux bvomica	Seeds	Strychnine		+	+		+	D	+	+	Steady
Tabernanth iboga	Stem bark	Ibogaine		+	+			D		+	
TTaraxacum officinale	REoot	Resin and total extract		+		+	+	D	+	+	Steady
Thevetia nerlifolia	Seeds	Peruvoside	+		+	+	+	D	+	+	Steady
Urginea indica	Bulbs	prosciliaridine		+	+		+	C	+	+	Steady
Urginea scilla											
Valeriana officinalis											
Valeriana wallichii	Rhizome	Total extract	+	+		+	+	C	+	+	Steady
Voacanga thoursii											
Voacanga africana	Seed	Tabersonine		+	+			D		+	Up
Vinca minor	Leaves	Vincamine	+	+	+	+	+	D	+	+	Up

ADDITIONAL LIST OF PLANTS USED MAINLY IN TRADITIONAL MEDICINE IN AFRICA, ASIA AND LATIN AMERICA

Name of plant	Part of plant used	Type or use of drug
Acacia catechu		For ulcers, boils, indigestion and throat pain
Acacia senegal	Gum	In diarrhoea
Aconitum heterophyllum		Antiperiodic, antidiarrhoeal, antirheumatic
Achyranthus aspera		In leprosy
Acorus calamus		Antispasmodic, carminative, antitussive
Adansonia digitata		Antidiarrhoeal
Adhatoda vasica		Antitussive
Adonsonia digitata		
Aegle marmelos		Antipyretic, stomachic, antidiarrhoeal
Alchornea cordifolia		Antimalarial
Allium sativum	Bulb	Anti-infectious
Aloe barbadensis		
Alpinia galanga	Rhizome	Anti-infectious
Alpinia siamensis	Rhizome	Anti-infectious
Alstonia scholaris		Antimalarial, febrifugal, antidiarrhoeal
Althoca officinalis		Antidiarrhoeal, antidysenteric
Amonmum xanthoides		For tincture of car-damom, antitussive
Anacardium occidentale	Bark	Antidysenteric
Andrographis paniculata	Plant	Antidysenteric
Anisomeles ovata		Carminative
Annona muricata		
Areca catechu	Seed	nti-infectious
Artemisia abiutlium	Flower	
Artemisia herbealba		
Asiacuosi asu		Antimalarial
Asiacuosi deo asfarms moris (fresh)		Anthelminthic
Asparagus racemosus	Root	Antidysenteric
Asparagus racemosus		Refrigerant, diuretic, antidiarrhoeal

Atrocarpus lakoicha	Bark	Anthelminthic
Averrhoa carambola	Flower	Anthelminthic
Azadirachta indica	Bark	Antimalarial
Azadirachta indica	Oil	Antiseptic; in rheumatism
Baliospermum montanum		Antifilarial
Bauhinia malabarica	Plant	Antidysenteric
Bergenia ligulata		In fever, diarrhoea and pulmonary infection
Berberis aristata		In diarrhoea and jaundice
Berberis asiatice		
Bidens fulosa		
Bidens pilosa		Antimicrobial
Blumea balsamifera		As camphor
Boarhavia diffusa		Hypertensive, antidiuretic
Boerrhavia diffusa		In uterine bleeding
Butea frondosa		Anthelminthic
Carrophyllus aromaticus		For toothache; carminative
Carthamus tinctorius	Flowers	Stimulant
Carum copticum (Ajowan)	Fruit	Stomachic, carminative
Cassia tistula		Laxative
Catharanthus roseus		
Celosia argentea	Seed	Anthelminthic
Centella asiatica		In skin diseases
Cephaelis ipecachuana		In amoebiassis
Chenopodium ambroslodes		Bilassia
Cimunum cyminum	Fruit	Anthelminthic
Cinchona sp.		Antimalarial
Cinnamomum camphora		For rheumatism
Cinnamomum inuctum	Leaf oil	Antidiarrhoeal
Cimmamomum tamala	Bark	Aromatic, stomachic
Citrus aurantifolia	Root	Antidysenteric
Cleomechlidonii	Root	Anthelminthic
Clove		Carminative, stomachic
Coleus kilimanoschari		Antimicrobial
Coptis tecta	Rhizome	Tonic antidiarrhoeal, ophthalmic
Cucurbita peps	Seeds	Anthelminthic
Curculigo orchioides		For sthma, gonorrhoea; as diuretic and tonic
Curcuma comosa	Rhizome	Blood circulation regulator
Cyperus rotundus	Bulb	Anti-infectious
Cyperus scariosus		Antidiarrhoeal, anti- inflammatory

Datura fostusa		
Datura stramomium		
Derris pinnatus		Antimalarial
Desmodium gangeticum	Root	Astringent, tonic
Desmodium triflorum	Plant	
Dipterocarpustuberculatus	Resin	For ulcers
Dobelia ribes		Anthelminthic
Dohedra gerardiana		Antiasthmatic ; for inflammation of bronchi
Eugenia Cumini	Bark	
Eugenia jambos	Seed	Antidysenteric
Eugenia malaccensis	Bark	
Eupatorum odoratum	Herb	Haemostatic
Euphorbia thymifolia		Antidysenteric
Eurula foelida		For gastric disorders
Garcinia pedunculata	Dried fruit	For indigestion
Gentiana kurroo	Rhizome	Bitter tonic
Gentiana sp.		Antipyretic
Glycyrrhiza glabra		Colitis
Gremmatophyllum speciosum	Bulb	Anthelminthic
Hagenia abbysinea (*Taenia, Botigocephalus*)		For ophthalmic disorders of children
Heliotropum indicum	Herb	For ulcers; diuretic
Holarrhena antidysenterica	Bark	Antidysenteric
Iboza riparia		aAntimicrobial, antimalarial vermifuge
Iris nepalensis		Diuretic, in bilious obstruction
Ixora cocoeinea	Root	Ant-infectious
Juniperus sp.	Fruit	
Lansium domesticum	Seed	Anthelminthic
Linaria ramosissima		Antimalarial
Lobelia pyramidalis		Antispasmodic
Mallotus philippinensis		Anthelminthic
Matricaria chamomila		
Melia azadarach	Leaves	Anthelminthic
Mentha citrata		
Mesua ferrea		Stomachic, expectorant, paste for bites
Millingtonia hortensrs		For hypertension
Mimosa pudica	Leaves, roots	For haemorrhoids

Mirabilis jalapa		Wound dressing
Momordica charantia		Hypoglyaricht
Murraya paniculata	Leaves	Anthelminthic
Mustard		Oil for massage and ointments
Myristica fragrans		Carminative; for nausea and vomiting
Nardostachys jatamansi		Carminative; for cholera and hysteria
Nutmeg		Carminative, stomachic
Ocimum basilicum		Antidysenteric
Ocimum sanctum		Hypoglycemic, expectorant
Orchis lanata		Tonic
Pandanus odorus	Leaves (fresh)	Anti-infectious
Perezia cuernavacana	Roots	Antitumoral
Phyllanthus emblica		Refrigerant, diuretic and laxative
Phylanthus madraspatensis		Antidysenteric
Picrorhiza scrophularaifolia		Antipyretic, stomachic
Pinnus sp.	Resin	Carminative, expectorant; in asthma and bronchitis
Piper betle	Leaves	Anti-infectious
Piper nigrum		Stomachic, antitussive
Piper longum		Antifilarial, antipyretic
Piper longum	Rhizome	Stimulant, tonic
Plantago major		Antidysenteric
Plumbago rosea	Root	Stimulant in rheumatism
Plumbago zeylanica		Antifilarial
Podophyllum hexandrum		For liver and gall blader
Portulaca oleracea	Leaves	Anti-infectious
Pouzolzia pentandra	Leaves	Anti-infectious
Punica grantum	Fruit	Anti-infectious
Quisualis indica	Seed	Anthelminthic
Rauwolfia serpentina		Hypnotic, sedative, hypertensive
Rheum emodi		Purgative; in diarrhoea
Rhus vulgaris		Hemnionoides
Rubia cordifolia		For leprosy
SSapindus mukrolli		Spermicidal
Securidace longipedunoculata		Molluscicidal
Securinega virosa		Polyvalent
Smilax peguana	Rhizome	Antisyphilitic
Stemona collinsae		
Stemona curticli		

Stemona minr	Plant	Anthelminthic
Stemona tuberosa		
Streblus asper	Seed, bark	Anti-infectious
Strophanthus sarmentosus		Trastone, sactone
Swertia chirata		Antimalarial, antipyretic,
Swertia moorcroftiana		anti-infectious; for diarrhoea, jaundice
Tamarindus indica	Pulp	Laxative
Taraxacum officinalis		Diuretic; for chronic disorders of kidney and LIVER
Terminalia arjuna		
Terminalia belerica		Laxative, antipyretic; for dropsy, haemorrhoids
Terminalia belerica	Fruit	Bitter tonic, a astringent
Germinalia chebula		Antidysenteric
Thapsia garganica		Rubefiant
Tinospora cordifolia	Plant	Anthelminthic
Tinospora cordifolia	Stem	In diabetes
rachespermum ammi		Antispasmodic ; in cholera
Valeriana wallichii		Carminative; in nervous disorders
Vernonia amygdalina		Vermifugal, antiviral
Veronia anthelminticum		Anthelminthic
Veronia cinerca		Antifilarial, antipyretic
Vitex glabrata	Leaves	In diabetes
Zanthoxylum armatum		In dyspepsia and cholera
Zingiber officinalis		Antidysenteric

TRADITIONAL MEDICINE AND MODERN PHYTOCHEMICAL RESEARCH

H. WAGNER

West Germany

For a long time it appeared that no consensus could be reached between traditional medicine, meaning essentially phytotherapy, and modern drug therapy. In this respect a great change of attitude has occurred and one notes also in the USA a slow reversal of trend.

What are the reasons for that?

Many reasons can be given, the negative ones being:

1. The financial expenditure for the development of a market-ready synthetic drug is out of proportion to success achievedm. Today one has to reckon with an average of 8000 synthetic products per marketable drug.
2. The development of "tailored" synthetic drugs - so-called "drug designing" — despite individual successes, is still in the beginning.
3. Increasing awareness that with introduction of synthetic products there is threatening increase of drug side effects.

The positive reasons are:

1. The discovery of revolutionary novel methods in plant analysis.
2. Reverting back to natural products as ideal models for the development of newer drug effects.
3. Awareness that we need also drugs against chronic deseases and for prevention.
4. Improved information on the plants already investigated and particulars of their biological activity with the help of computers.
5. Improvement of international co-operation by establishing societies, exchange of scientists and organizing symposia.

Despite these positive reasons, which have led to a process of rethinking and introduced a trend

reversal, there is still a lot of difficulty, criticism, and prejudice that confront a more efficient promotion of medicinal plants research.

I name them:

1. The complexity of constituents in a plant "the inconstant conglomerate".
2. The often fantastic spectrum of indications.
3. The considerable subjctivity in judging successes and lack of double blind studies.

A great handicap in addition that stands in the way for the introduction of phyto - preparations is the *Dogma of Monosubstances.* The supporters of this dogma fail to realize that it is the therapeutic effect which is important and not the activity of the mono-substace as proven by pharmacological tests.

However, I would like to advocate the thesis that a real progress in the field of systematic medicinal plants research can only be achieved if the individual active principles are isolated and their effects demonstrated by conventional methods.

I want to illustrate these efforts by giving you three examples taken from our research programme. They are primarily meant to clarify:

1. that folk medicinal application does not help in all cases in the search for active principles,
2. that one cannot dispense with special methods of pharmacological investigation,
3. that the knowledge of a new active principle can provide stimulation to drug research as a whole.

Example 1: Annona squamosa

There is an abundance of chemical and pharmacological investigations on this plant. The diagram illustrates the various structure types, derived from dopamine, found so far in the Annonacee. The folk--medicinal use is manifold stretching from its use as tonic to an anticancer drug though conspicuous effects are absent. An obscure literature reference reports on a cardiotnic activity and we pursued this lead.

We used the tests of Prof. Reiter on the isolated papillary muscle of the guinea pig for localising and isolating the active principle. As seen from illustration 3 it was possible to enrich the active fraction by a factor of 3 through exraction with butanol. Polyamide and Sephadex - chromatography resulted in the final isolation. The active principle was enriched 20-fold in the fractions 47-80.

Subsequent to the elucidation one was led to ask the question: Why was this compound not found out in earlier investigations; As explanation could be considered:

1. the low concentration
2. the considerable instabilit
3. the lack of test methods in micro scale
4. the masking of the cardiotonic principle by other activity profiles.

The example shows that it is possible to isolate new active principles from plants with a wide spanning indication spectrum employing refined pharmacological and chemical methods.

The discovery that higenamine possesses a positive inotropic activity, reacting against ß-*receptors,* leads to the next question. Do other tetrahydro isoquinoline alkaloids also possess the same activity since this structure type is not uncommon in the plant kingdom?

The next table shows that this effect is not restricted to higenamine but can be observed in cases where one or two hydroxyl groups, as in tetrahydropapaveroline, are present in the benzyl portion of the molecule. The dopamine structure in the isoquinoline part is however, essential.

This information is of general pharmaceutical interest for the synthesis of analogous compounds.

Example 2: Colobrina asiatica

The second example shows that a systematic pharmacological screening often leads to a surprising result despite lack of concrete clues from folk-medicine. *Colubrina asiatica* is used in the Phillipines for external treatment of skin diseases. In the Fiji island the leaves are considered as an ideal washing agent.

O-Methyl-Dauricin, a tetrahydro isoquinoline alkaloid, was isolated from the bark of this plant by Tschesche. The drug exhibited a *conspicuous sedative effect* on being subjected to pharmacological screening. A similar activity was exhibited by the drug *Zizyphus jujuba,* which likewise belongs to the rhamnacee-family and is known in Chinese medicine as a sedcative drug.

Two new saponins, both containing ebelin lactone as the common sapogenin, have been isolate from the leaves of *Colubrina asiatica* and their structures elucidated. These differ from the zizyphus saponins only in their sugar composition. The illustration shows that even with a dosage of 1mg/kg an activity quotient of 0,3- 0,6 was exhibited measured on the spontaneous motility of the mouse. This tranquilizer efffect was confirmed by experiments on animals pretreated with amphetaminek and chlordiazoepoxide. This action is very high and lies above that of the valepotriates of valeriana. The lethal dosage of 1.72.2g/kg permits an extraordinary therapeutic width.

This sedative action is completely new and surprising for compounds of the saponin series. These substances may possibly serve as a basis for new preparations.

Example 3: Silybum marianum

The last example differs from the two previous ones. This is a classic demonstration of the isolation of an active principle, with the help of pharmacological testing, from a drug used in therapy since millinea and ist subsequent basis for a new drug preparation.

Sillybum marianum was already therapeutically in use since antiquity due to its effectivity on liver and bile.

In order to locate the activ principle, we used a liver damage test. The liver will be damaged by an agent, which is toxic to the liver f.i. tetrachlorcarbon. If one administers afterwards a sleeping drug such

as Urethan, one notices a prolongated sleeping time due to the reduced degradation of Urethan. A drug, which has protective activity, must be able to antagonize this prolongated sleeping time to a certain extent. In the case of Silybum a flavonoid fraction enriched with Silymarin, had an inhibition effect of about 60%.

With the help of this test, we were able to locate the activ principle in the flavonoid fraction. We have isolate three compounds, which showed about the same activity and represented the activ principle of the drug. The compounds Silybin, Silkydianin and Silychristin (= Silymarin), belong to the new class of *flavonolignans.*

Meanwhile about twenty different tests a clinical trial and a double blind study have been performed. The three flavonolignans are now on the market as Legalon(R).

One experiment was particularly informative. This is the phalloidin test. Phalloidin is highly toxic to the liver. Silkymarin protects the liver cell to 100% if given one hour before the phalloidin administration. Even when Silkymarin is given ten minutes after the phalloidin administration, one finds a 100:% protection against phalloidin.

Silkymarin has two mechanismes of activity on a molecular - biological base. It tightens the cell membran and occupies the recepters on the out-side cell membran.

By this it hinders the toxic agents to penetrate. The second action is on the polymerens B. It stimulates the RNA systhesis and by this the synthesis of proteins.

CONCLUSION:

The following points emerge from the three examples from our own research work:

1. With the methods at our disposal today it is possible in each case to find active principle and elucidate its structure in drugs whose effects have been proven clinically or known in folk-medicine, even when the substance is present only in a slow concentration and when the substance is very unstable.
2. Experience of folks-medicine plays one important role in the discovery od medicinal substances. As shown by two examples also systematic pharmacologic screening of drugs without any direct indications can also lead to new interesting active principles.
3. Pharmacological screening must be systematised and made available to laboratories which do not have these facilities at their disposal. In this context it seems to us necessary that laboratories without these possibilities look for partner institutes abroad and agree upon common research projects. This collaboration could start on a private basis and a later official support should be aspired for.

COMMENTS

AND

DISCUSSIONS

Dr. Baquai

Mr Chairman, there is no question. I just want to make a comment and I would like to menti on that it is not that something which has been proved, but it just occurred to my mind. Dr. Ata--ur-Rehman was just talking about the philosophy of Islamic Medicine in which he mentioned the temperament and the nearest scientific explanation to temperament. I think this matter is now taken up and it is coming up, when we go to the tissue transplant. The question in tissue transplant actually is again the same as of temperament. You can not transplant the kidney of one person to another unless the two tissues match and similarly it is the higher form of evolution, because one medicine has a different effect and the other medicine has got a different effect on another man and similarly, one man is not going to accept the tissue of a second man unless the two can match. And the science has found a solution of this by performing the tissue typing. This tissue typing which is being done for the transplant purposes, actually brings us nearer to the temperament of the two persons and this just occurred to my mind and this is the only explanation I can give.

Dr. Salim-uz- Zaman Siddiqui. (Chairman).

It appears that there are no other questions to ask because apparently everything was done and said in such exclusive manner that what has been said, been accepted by the audience. I would like to know something from Dr. Ata-ur-Rehman. At present, the position is that if an active principle is isolated from a particular drug and some of its derivatives proved much more effective and much less toxic, whether the Tibbi system would be in a position to include that in a pharmacopeia or not. A present from the medical side, it is more or less urged that the Tabib should have nothing to do with synthetic drugs or with uniform active constituents.

Dr. Ata-ur-Rehman:

Mr. chairman, it is a very interesting point you have raised here. I believe that the division is very, very artificial. As you have very exclusively explained in your presidential address, that any one time, there can be anyone body of knowledge which can exist. There may be many ways of looking at the same truth, but the truth essentially is one. And I think this division between Tabibs and medical doctors, has arisen purely because history has passed it in a certain manner. That the advances in Indo-Pakistan subcontinent, in particular, this is reflected by the fact, that certain people had the facilities to go into the medical colleges, acquire a certain type of education; other people did not have the facilities and so on. But this division is really very, very artificial and ultimately

there has to be an active inter-action between the people in various disciplines resulting in an overall unified picture of truth as we understand it. And I think an extremely interesting demonstration of what I am saying was given by our Indian friends, who are basically Hakims but who were talking on pharmacological aspect this morning, with such great lucidity and command that what I am saying, actually bears out by itself, that here were the people who had no direct medical background, yet they had gone through pharmacological studies within their Tibbia Colleges and they then started doing clinical trials and ultimately the results that they obtained would be quite acceptable and parallel to those that would be obtained in a proper clinical trials in hospitals. So, this division is really artificial and this has arisen for various reasons that I won't go into, but I think that there should be no shirking. If there is an active substance, bio-logically active substance, which is available with modern medicine, then there should be no reason why the Hakims should not use it, as long as they are properly educated in knowing the whole back-ground to that substance, the toxicology, in which situation it should be used and that needs a lot of education. So, it carries with it a certain degree of danger and vice-a-versa. There is no reason why the concoction, the biologically active concoctions that our Hakims possess, if they can be demonstrated by clinical trials, there is no reason why our doctors should not use them. So, I believe really, that we should think in terms of the future of an integrated pharmacopoiea in which contribution to truth, medical truth have been made from all parties concerned. Thank you.

Dr. Salim-uz-Zaman Siddiqui.

Any question which might have emerged?

I would ask one question from Prof. Wagner. You see, in the chemical field, if you arrive at certain results, they are reproducable, but as I pointed out in the morning session, this cann't be said of pharmacological data and very often the screening that is done at one place has to be repeated in other laboratories to be quite sure of the results, that had been obtained. Another point is that the total screening, it takes such a long time and I wonder if any one center will be well equipped enough to take care of all the branches of the screening and whether in your opinion there should not be a sort of a cooperation which you have suggested, as between various centers of pharmacological and clinical research, should settle, which particular areas should be covered by one and which by the other.

Prof. Wagner.

May be one remark. It is a very interesting point. I think, if the active principle is known then it is also possible to standardize its extract. In other words you can also standardize plant, drug or preparations from different origins, from the different harvest, if they have been tried or not tried, you can standardize on its active principle and I think this is, of course necessary. You can not say that a drug from South America which is grown in South America and which is grown in India must have the same activity. It can be possible that it have the active principle in it but in a different quantity and it is of course, necessary to standardize it. And here we have a lot of very sophisticated tools. It is very simple, in the short time to measure the amount of the active principle, but this,

of course is absolutely necessary to draw attention on the origin, on the time of harvest, how it was dried and so.

Dr. Salim-uz-Zaman Siddiqui

Any other question?

I think it will be necessary to have a get-together for working out the recommendations for the Conference, for instance, the establishment of a clinical and pharmacological research center in Kuwait. I hope very much, that this would be accepted by the Government. It will be my most earnest pleading that this will be done and the other is about the supply of the medicinal drugs, the plant drugs. It is impossible to approach any particular center for obtaining drug material that you need. One has to go around begging. I have gone through this whole difficulty right through life and if, as I have suggested in my paper, if the Agriculture Board is established it will relieve the situation in a great deal. And there will be some other recommendations also, which will be coming up through discussions, in a small meeting; perhaps of the various Chairmen of the Conference and some others might get together and work out positive decisions and also mechanism for the implementation of those decisions. Most of the time what happens is that there is a whole set up of recommendations but at the end of the Conference, there is not follow-up action for implementation. So, I have to thank you, I thank all the participants for their very interesting papers and I offer my congratulations.

PART EIGHT

ESTABLISHING AN ORGANISATION OF ISLAMIC MEDICINE

Part Eight: Establishing an Organization of Islamic Medicine

CHAPTER ONE

1. REPORT ON SPECIAL SESSION.
   Editors.
2. COMMENTS.

REPORT ON SPECIAL SESSION

This session was specially held in the evening hours (after Magribe pays) under the chairmanship of H.E. Dr. Abdur Rahman Al-Awadi. The discussions focused on "Establishing an Islamic Medicine Organization". Openning this Session, the honourable chairman said: I welcome you to this meeting. We have assembled here to discuss the recommendations of the Executive Board of the Conference, regarding the establishment of the Organization of Islamic Medicine. I am thankful to the members of the Board, who have taken pains to discuss all the aspects of the Organization at length and to have given their recommendations.

I now invite you to give us your suggestions and comments on this important topic.

(After these comments Dr. Ibrahim Badran read out the recommendations of the Executive Board on the establishment of an organization of Islamic Medicine, in Arabic).

Then the invited delegates gave their opinions and suggestions. Six dignitaries gave speeches, which are included in this part. This session ended at 9.00 p.m.

Editors.

Dr. Baqual:

It is a matter of much pleasure and I believe the Committee has already gone to all the deliberations and I put a concrete proposal before this house that the recommendations of this Committee should be adopted as such and passed. This is my proposal.

Dr. Ata-ur-Rehman:

Your Excellency, Ladies, and Gentlemen. First let me congratulate you for this fantastic donation, that has been made here. That is a historic moment that you are going to have a really powerful research unit in this country. I congratulate you because you are setting an example for other Arab and Muslim nations to follow. There is just one humble plea that I make here, which is that this center, should be dedicated for clinical and general pharmacology. We have had the opinions of Prof. Wagner and Prof. Salimuzzaman and other eminent scientists. There should certainly be some work also in the center, to revive the history and to look into the history of Muslims, but say if 10% work is gone into looking into the past, let 90% of work be dedicated to the future. So, what I plead for, is a really modern set up, with clinical and general pharmacological laboratories, with all the latest equipments and facilities in terms of; for Bio-chemical research, for Phyto--chemistry, for Micro-biology. In the beginning you will probably have difficulties to find trained man-power and here I would suggest that you can get some of the top professors, say, from U.S.A., some Muslim scientists also you might be able to attract here and because that will be the heart of it. It will not be the buildings, it will not be the equipment, the heart of the whole institution will be the personne. And if you can get really top quality personnel over here, who have out--standing status in their own fields of science. Then the success of this venture will be insured. So, with this note I end. Thank you.

Chairman:

Thank you very much for the comments and I would like to remind you that tomorrow, Insha-Allah, in the evening we will have a general session for general recommendations. Actually there are so many other recommendations to be placed before you. One of these is a specific recommendation for starting a specific set-up. Definitely, the Organization and also the Center and all the co-operation is going to be on the context of looking into the future. I mean, we have had enough trial of th past.

Dr. Salim-uz-Zaman Siddiqui:

Your Excellency, I have to express my greatful thanks for being invited to participate in this Con-

ference and for the hospitality extended to us. I have been further honoured by chairing one of the sessions, in which I have presented my views in respect of the regeneration of Tibb in modern times and dealt with certain imperatives that relate to it. Among them, I have put up two specific proposals; one is, a center for clinical and pharmacological research in Kuwait for undertaking, for the integ-ration of the Islamic Tibb with the various scientific disciplines, on the basis of which the progress that has been made by the modern medicine has been possible. It is a must. I have been in this whole thing for over 50 years, struggling and struggling, isolated a number of alkaloids which we could not utilize here. I am referring particularly to the alkaloids of Rauwolfia-Serpentina. Ten new alkaloids were isolated in the Research Institute, established by the late Hakim Ajmal Khan, in Delhi. Ajmaline, Ajmalinine, Ajmalicine were named after him. Serpentine, Serpentinine and many others after that. 30 years after this, the pharmacological investigations were carried out by CIBA, and they found that Reserpine has the dual activity of reducing high blood-pressure and also for the first time the expression 'tranquillizer' was used as a definite category. For the first time it was with the reference to Rauwolfia alkaloids, that this expression has been used, and it was developed there for years together and even perhaps now. About 25% of the income of CIBA was based on Rauwolfia roots which was found to be the drug of choice in the treatment of *Cardiac arrythmias* of various origins and is being produced today in Germany in hundreds of tons. But what do I get out of it? What does Pakistan or India get of it, where pioneering work in Rauwolfia field was done and it is accepted that it was done. I have continued like this, pleading and pleading for the establishment of a research institute, explicitly for carrying out clinical research on the medicinal plants, their extracts and the prescriptions also, as they are used in Islamic Tibb, So that the products that are obtained, and which have proved their utility in modern medicine, can be utilized also in Tibb. And it is a must that we should have a center of this nature, because I can tell you that over the last 10 years or so, we have worked on Peganum Hermala for instance. It grows wild without any inputs, in Pakistan, in Arabian countries, in Central Asia and so on and so forth. Nothing has been done about it and there is hardly any uniform compound, univorm alkaloid of it, which has gone into pharmaceutical industry, but it is possible we have obtained as a result of researches over the last 10 years, something like 60 new derivatives of the alkaloids, many of which may prove to be pure, just like the Rauwolfia alkaloid or from *Vinca Rosia,* the anti canceragent. And I would plead with you, plead with all the force at my disposal, that it will be a historical event if specifically this recommendation goes through from this Conference about the establishment of a pharmacological and clinical research center here, with all the modern facilities. It takes heavy funding, for instance, we had the Post Graduate Institute of Chemistry, established in Karachi University, with the aid of the German Government. They sent their representatives and found that good work was being carried out there and they have given something like five million Marks and one of the industrialists also has given fifty lakhs of Rupees for this Institute, but we don't have a pharmacological center. We have about 100 new drugs, which are awaiting reseaches in these fields.

As so for the point was raised, whether the patients in Kuwait would accept that. The patients accept Reserpine, they accept Ajmaline. You see it comes under a different name, They call it *Gilvithermal,* but they have to write under-neath Ajmaline Hydrochloride. So, you see. I feel so miserable, with the whole life time of experience. For God's sake, listen to this plea.

Excuse me, if I have said anything which goes against the grain. I apologize.

Chairman:

Thank you very much, Prof. Salim-uz-Zaman, I don't think you have said anything that goes against anything and I think all you have said is very sensible and we hope that we can achieve that.

Dr. Moataz Marzooki:

We must classify our work, we may start the Tibb-a-Nabvi. We make a group which are to be specialized in Tibb-a-Nabvi. There are true Hadiths, which have proved to be, as long as the Hadith has been told or has been stated to be a true Hadith. There should be a fact behind that Hadith. (ﷺ) Our job is to pick up and get this fact. This is most important point. Tibb-al-Islami; we may all together join in this work. We may put down our areas, some subject here and we all together, take some drugs for example on which we want to do the pharmacological reactions. From our side, I, myself am ready to do all the clinical application for every drug of ophthalmalogy. I am responsible for that in front of all of you, but may be, I may have no chance to get the pharmacological reactions. We state down the names of that drug and you can do your pharmacological reactions here and I can do my application there and after that we can send the messages and complete the subject.

Dr. Mushtaque Ahmed:

In the name of Almighty Allah, the most Beneficient and Merciful and with Salams on His Greatest, Latest and the Last Messenger, Mohammad. (ﷺ)

This is the matter of pleasure and honour for me to express my views in respect of the establishment of a permanent center of Islamic medicine in Kuwait and I feel pleasure in knowing it that the Government of Kuwait is so interested in promoting and reviving the Islamic medicine and I think this is a sign of the renaissance and the revival of the complete Islamic code of conduct and life.

In respect of the establishment of this permanent center, I have a proposal. That is, the center be so established that the clinical researches are conducted side by side with that of the pharmacological phytochemical and micro-biological researches on the drugs which are used in Islamic system of medicine and specially which have been reported in the ancient books, authored by the Muslim and the Arab scholars. In my opinion, in addition to the research, the system should be adopted as profession, because you see, in India for the last two or three centuries, so much of the researches have been done on, what is known there as the Unani system of medicine. But since it was adopted as a profession there, it could stand the challenge of the time and millions of people in India are receiving treatment by the Islamic system of Medicine, for their ailments, both the acute and the chronic diseases are very nicely cured. In the earlier session, this has been demonstrated by many of the scholars that how for the Leucoderma and Facial palsy is treated by the drugs mentioned in Islamic System of medicine, and the results are so encouraging that in India

much.

Dr. Ali Akbar:

Before we thank the Committee of the Motammar for inviting us, so we can speak in this congress and hear so many things, what we had before not heard, because of lack of literature. So, I suppose what another colleague from Egypt had said that, what we are to do now is to produce more Ibn-Seenas, not one, millions of Ibn-Seenas. I mean men of education. You can take young generation to become Muslim doctors. It means doctors who master the modern medicine but are also good Muslims *with ihtaet and tawhid.* It means, they put their medical practice according to Islam. You know, I think, most of the doctors see in a patient money, oh money, money, but another doctor says I see in every patient Amal. It is different. That is a man of good education. In our country we have now established a medical school, to produce Muslim doctors; doctors who will master the medical science according to this time and who will be good Muslims and practice their medicine according to Islam. Thank you.

PART NINE

MEDICINE AND MESSAGE OF ISLAM

Part Nine: Medicine and Message of Islam

CHAPTER ONE

(Papers presented)

1. REPORT ON FIRST SESSION
   Editors.
2. RELIGIOUS PREACHING AND MEDICAL PRACTICE.
   Mr. Abdullah Akil.
3. MEDICAL ETHICS AND EDUCATION.
   Dr. M. Jurnalis Uddin.
4. THE INFLUENCE OF ISLAM TO THE DEVELOPMENT OF MEDICINE IN INDONESIA.
   Dr. H. Ali Akbar.
5. ROLES OF ISLAMIC STUDENTS AND LECTURERS OF THE FACULTY OF MEDICINE IN SPREADING THE TEACHINGS OF ISLAM IN THE MUNICIPALITY OF PALEMBANG.
   Dr. Agoes A.
6. ISLAMIC WORK THROUGH MEDICAL SERVICES IN SOUTH AFRICA.
   Dr. G.M. Hussain.
7. SOME ISLAMIC REFLECTIONS ON MEDICINE AND SCIENCE.
   Dr. Omer Hasan Kasule.
8. MENTAL HEALTH OF MUSLIM MINORITY WITHIN MULTIRACIAL COMMUNITIES: SOCIO-EDUCATIONAL ASPECTS:
   Dr. Suleiman Rajah.

REPORT ON FIRST SESSION

This session was held from 8.00 to 10.30 a.m., under the Chairmanship of Dr. Abdul Aziz Kamel, with Dr. Ahmed El-Kadi and Dr. Abdel Sattar Abu Ghoda as Co-Chairman and moderator respectively. Seven scholars presented their papers on "Medicine and the Message of Islam". In the end, the comments were invited by the Chairman. As all the comments and discussion were in Arabic, these are not included in the english portion.

Editors.

RELIGIOUS PREACHING AND MEDICAL PRACTICE

Abdullah Akil,

Kuwait

It is universally acknowledged that religious preaching, spreading all over the world, has exploited medical practice, as a very successful means, to gain more believers in the religion it preaches.

If one cares to look at the reports issued, now and then, by the preaching organizations and the International Church Council, one would clearly see how generous the expenditure is, and how intensive the efforts exerted by preachers are.

Thus, we feel that it is our duty to review in this paper, some aspects of preaching in the field of medical services, especially in Africa, South East Asia, and in particular, Indonesia. Before we do so, however, we have to get acquainted, in brief, with the role of medical practice in religious preaching and its effect on the people. Everyone knows that the patient regards his doctor as his only hope of getting rid of his illness. Thus, he is always willing to listen carefully to him, to obey his instructions and to be impressed by his attitudes. If the doctor is preaching a certain religion, this religion can easily find its way to the patient's heart and mind. The patient would, then, get his medical treatment mixed with the doctor's concepts and beliefs.

Preaching itself is as old as the first age of Christanity. It is an issue that has very serious implications, both in its planning and in its objectives. Its most effective tool has always been the exploitation of medical services.

If we review, in passing some preaching medical activities, illustrated by figures, we can realize the huge amount of gains and conquests scored by these people, as well as the great number of institutions founded by them. In 1546, preaching started in Indonesia, as the Catholic preacher Franciscos Xaverbus arrived at the town of Embon. Preaching activities covered many inslands there. Then, protestant missions followed suit. In 1802, these missions started to flourish, as the first papal legate was appointed in Embon. (The first public Mass was held on 10.4.1808). In 1813, the preaching missionries started to exercise their influence on Moslems of China, particularly through the practice of doctors and nurses. As to Egypt, the first preaching institutions and medical centres were founded in 1854 . These were followed by some more scientific organizations and medical departments in 1882. In 1892, the North Africa Preaching Society started its activities by setting up medical preaching institutes and organizations. In 1898, another society was set up aiming at preaching Christanity to the whole of Egypt starting with the Delta and Suez Canal. In Eden, a Scottish preaching mission was founded in 1885, consisting of two preaching doctors. In 1889, the Arab Preaching Mission (affiliated to the American Reform Church) founded several divisions in Basra, Kuwait, Bahrain, Sheikh Othman, Eden, Mosul and Baghdad. (One of

the preachers at that time stated that the number of patients who frequented one of these hospitals exceeded twenty thousand Moslems).

In 1892, Persia started receiving great number of preachers, who soon became very popular owing to the medical services they offered to Moslem men and women, while in direct contact with them.

Thus, we can notice that preachers were interested in invading Islamic countries through the medical services. They are still doing the same at the present time; spending large amounts of money and mobilizing big number of doctors, nurses, and chemists. Such deeds look noble and benevolent at the surface, but they cover the wicked and malicious interests that lie underneath. In a preachers' conference held in Cairo in 1906, the need for more medical missions was explicitly stressed, since they enabled preachers to get in direct contact with the Moslem public, and to exercise their influence on them. Two illustrative cases were quoted, one of a little Moslem girl, the other of a Moslem man, both of whom were sincerely nursed and taken care of by preachers, until they were both converted to Christianity. One of the doctors, speaking at the same conference, stated that a medical missionary should always remember that his first duty is preaching; medical practice comes next. Another speaker, Dr. Anna Weston, said that 30% of the patients frequenting the Mission Hospital in Tanta (Egypt) were Moslem peasants, mostly women; and that the preaching method employed there was to refer to the Bible in simplified discussions, without going to extremes. The Chairman of the Conference said that preaching should start from within the Moslems themselves and that the best way to do so was through medical practice (away from any official interference from the Government) since it is the Moslems themselves who frequent such hospitals.

In another Conference, a colonial one, held in Berlin (Germany), the speakers expressed the view that Islam was the great enemy to their colonial ambitions, and that one of the ways to fight Islam was to make use of missionary practices. One of them went as far as saying that Islam is the only enemy of preachers in Africa.

Now, let us have a look at the statistics of the Conference held in Edinburgh in 1910, dealing with the achievements of medical preachers in Islamic countries:

550	hospitals
1024	pharmacies
111	medical councils
98388	preachers
92	nursing societies
265	orphanages
88	lazar-houses
25	schools for the blind
21	first-aid institutes
103	clinics for opium-addicts
15	asylum for widowed persons

In 1927, that is, seventeen years later, the Encyclopedia of Social Sciences (p. 546) listed the fol-

lowing figures, which illustrate the great expansions that took place:

1550 hospitals
3543 clinics
1889 orphanages
185 lazar-houses
299 infirmaries
32 hospitals for the blind and the dumb.

If we look more closely at the preaching invasion of Indonesia, according to modern statistics, we shall be greatly awed by what goes on in the biggest Islamic country. The Christian minority are prospering at the expense of the Moslem majority. They enjoy luxury and security, and appropriate all the high ranks and positions to themselves, such as positions of Ministers, General Directors, Commander--in-Chief, Governor of the Central bank, Managers, Party-leaders, etc. The reason why Indonesia has been so defenceless against preaching invasions is the extreme leniency exercised there. Preaching campaigns come to Indonesia from all over the world - from the International Church Council (Geneva), from the Vatican (Rome), from the Baptist Society (U.S.A.), etc.. They come to Indonesia carrying the latest means of preaching and propaganda; they even employ complete steamboats, aircrafts, airfields and wireless sets.

The International Church Council has founded an organisation called The Church Council Organization for Development Enterprises. This is intended to participate in the different development fields in Africa and Asia. Through their great potentialities, they can move in all directions, especially medical services of every type, such as hospitals, orphanages, nursing institutes, pharmacies, etc...

We also notice that the preachers take special interest in gynaecology and obstetrics as part of their plans to influence the attitudes of women, since women generally constitute a basic factor in the social changes of their countries. In a country like Nigeria, for example, medical practice had remained in the hands of preachers until very recently. The Central Government has very few hospitals and 80% of the teaching staff of the Faculty of Medicine (Ahmadu Bellu University) are preachers.

It is also reported that they are in command of some of the hospitals built by the Saudi Arabia Kingdom in Yemen; and that eight churches have offered to run the Children's Hospital that the State of Kuwait has established in Juba (Southern Sudan) and has instructed its management to the organization of Islamic cause.

After such a detailed statement, which leaves no doubt as to the exploitation of medical practice by Christian preachers, we face a very important question: What is the attitude of the Muslim doctor towards all this; and have there been any organized attempts to employ the Muslim doctor as a preacher of Islam? I am sorry to say that Islamic preaching, up till now, has not gone beyond the stilted style of traditional sermons. I have not heard of the existence of any Islamic preaching organizations, except for some little efforts exerted by some Moslem doctors in Egypt and Indonesia.

On the other hand, I believe that every Moslem doctor should shoulder some part of the responsibility, sparing no effort in checking the Christian preaching tide that exploits medical practice as a bait

to lure Muslims everywhere. We must also investigate this serious phenomenon and make our plans for dispatching preaching doctors to Indonesia, Africa and other places.

This is a challenging task.So,we must exploit medical practice in propagating Islam every where. We must also ensure the safety and well-being of Moslem doctors in areas where Christian preaching is very dominant. We must check this strong current before it is too late. We have to employ all legitimate resources, including medical serivces, whose effect on the people is always very deep and beneficial. So, Moslem doctors, set to this task, as I know you are capable of it; may God help us all !

MEDICAL ETHICS AND EDUCATION

H. Jurnalis Uddin

Indonesia

Say: Truly my prayer and my service of sacrifice, my life and my death are (all for Allah, the Cherisher of the Worlds.

Medical ethics is of normative in character. It means that it cannot be described. The contents of the medical ethics should consist of good norms and values which should be in force in the medical world. Theoretically speaking, the medical ethics cannot be taught to the students of medicine in the same way as other disciplines. Yet, it is mistaken to say that a student who gets grade A in the oral or written examination on medical ethics shall never guarantee an excellent character in daily life. Because the character of a man is in fact the result of his faith *(iman)*. On the other hand, a student whose conduct and behaviour is always inspired by the divine sparks and enlightment will be of good quality. The medical ethics should be made a part of character education. It must have a universal and permanent basis i.e. the guidance from God which is everlasting. It must not be changeable all the time like fashions in dress making. And unfortunately in the Western countries and many other secular states one medical ethic is based on the changing customs and traditions so that it is capable of being changed and modified to befit the current circumstances.

In Islam, the medical ethics cannot be separated from the totality of human existence. It is closely related to the ultimate goal and destiny of mankind which is physically and spiritually evaluated by the God the Omnipresent and the Omniscient. Even before a Muslim doctor begins his treatment on a patient, God has already, through his angels, noted his good intentions, as said in one of Hadiths al-Qudsy, narrated by Bukhari and Muslim:

"WHENEVER MY SLAVE PLANS TO COMMIT A CRIME, DON'T WRITE IT DOWN. BUT WHENEVER HE HAS COMMITED SUCH A WRONG-GOING WRITE DOWN ONE REWARD. BUT WHEN IT HAS BEEN DONE, WRITE DOWN TEN REWARDS."

Despite the fact that Man has the highest position being the Allah's Khalifate on earth, it is not easy for him to carry out his task, as said the Surah al-An'am: V 165:

ITS IS HE WHO HATH MADE YOU (HIS) AGENTS, INHERITORS OF THE EARTH; HE HATH RAISED YOU IN RANKS, SOME ABOVE OTHERS; THAT HE MAY TRY YOU IN THE GIFTS HE HATH GIVEN YOU. FOR THY LORD IS QUICK IN PUNISHMENT-YET HE IS INDEED OFTFORGING, MOST MERCIFUL.

(Quran Sb: V165)

Everything possessed by human beings such as rank, degree, property, wealth, beauty and even children the temptations to test the quality of Faith. In Surah adz-Dzaariyaat: V56, God says the goal of human existence:

> HAVE ONLY CREATED JINNS AND MEN, THAT THEY MAY SERVE ME. *(Quran S51: V56)*

It is quite easy for a man to deceive other people in any place and any time. But he will never be able to deceive God as He is watching him all the time even when he is alone in the dark cave or deep hole in the ground. No matter where he is, God always watches his behaviour and conduct. Not only that, even his ideas and thoughts deeply hidden in his hearts are always heard and known to God. He may feel completely free in this world but he will be bound to be punished in the hereafter. And a Muslim doctor is not exception to this universal truth. He must always adjust his conduct and behaviour to the ultimate goal of his existence: to serve Allah. He must always endeavour to promote his faith to attain the stage or level of muttaqien as prescribed by God in Surah Al-An'am: V162, to achieve mardhatillah, the favours of God.

A doctor is the best man among other best men: the primus inter pares, but it is only if he is willing to carry out his task, as said in Surah Ale Imran: V110:

> YE ARE THE BEST OF PEOPLES, EVOLVED FOR MAKKIND, EN JOINING WHAT IS RIGHT, FORBIDDING WHAT IS WRONG AND BELIEVING IN ALLAH.
>
> *(Quran, S3: V110)*

CONCLUSION

Medical ethics should be taught not only like other disciplines of sience. Medical ethics should be viewed as "ibdah" (divine worship). Accordingly, besides teaching medical ethics and its function in human life, the teachers should also give noble and praiseworthy examples. Uswatun hasanah (good examples) is a key to success. Consequently, the teaching of medical ethics would not be successful and fruitful unless the teachers and teaching staffs have demonstrated good examples in their daily life. Not only the teaching staffs but also members of civitas academica should possess noble character. The teching staffs should consist of good Muslims. Likewise there must be also good Muslim workers, managers, janitors, nurses, technicians, administrative staff, engineers, barbers, dressmakers, tailors and even street vendors and hawkers, so that all of them will create the Islamic sphere as well as the Islamic spirit which are conditio sine qua non for building up religious way of life in the campus, a non-secular community. A community with a total view of human life without any dichotomy between the worldly life and the life in the hereafter. A campus community which reflects the totality of Islamic way of life in all its facets and aspects.

THE INFLUENCE OF ISLAM TO THE DEVELOPMENT OF MEDICINE IN INDONESIA

H. Ali Akbar,

Indonesia

Up to the 15th Century of Hijrah, Indonesia developed two kinds of medicines: Indigenous and modern one. Indigenous medicine preoccupied the health service system up to the golden age of Hinduism and Budhism.

Although it is still disputed among the historians, the most accepted thesis is that the inception of Islam to Indonesia can be traced back to the 9th century at the latest. That means along with the era of Islam crusading the world up to Spain in the West and the China in the East.

And then came Europeans, especially the Dutch who set their foot for three and half centuries and brought along with them the modern medicine to the country. The Characteristic of the modern medicine is its secular approach and implementation, which are clearly against Islam. The paper finaly trys to discuss the endeavour of the Indonesia Muslims to set forth a national health system in the country in conformity to the Islamic teachings.

INTRODUCTION

Nobody knows exactly when and how man began to know diseases and medication for the first time. However, it is safe to say that all kinds of contemporary methods of healing and medication have been derived from ancient medication which, thanks to various kinds of scientific discoveries and inventions of medical instruments, has developed into modern medicine. And it is interesting to note that the ancient art co-exists in this modern world with modern medicine, not only in the Middle East, as told by Dr Karmi a lady-doctor who wrote in the "The Emirates Magazine" but also in many other developing countries including Indonesia. Among modern sciences that have contributed a great deal to modern medicine are: physics, physiology, chemistry, biology, biochemistry, anatomy, etcetera and among instruments are microscopes and stethoscopes. Medicine is a part of civilization (tamaddun). It is the essence of human thought and experience. Accordingly it must be influenced by philosophies of life as well as religions of the people concerned.

The Republic of Indonesia, which was proclaimed on 17 August, 1945, is a unitary state which unites various tribes with all kinds of customs, traditions, beliefs, an religions, such as Animism, Budhism, Hinduism, Confucianism, the religion of Java, Catholicism, Protestantism, and Islam. But thanks to God, most of them admit they are Muslims. In other words about 90% of the Indonesian people are Muslims. It means that the number of Muslims in Indonesia are more than 100 million.

The motto used to unite these different tribes with different customs and traditions is "Bhinneka Tunggal Ika" or "Unity in Diversity" based on the state philosophy "Pancasila".

TRADITIONAL MEDICATION

Like in many other developing countries, medication in Indonesia falls into two categories:

1. Traditional medication; and
2. Modern medication.

Traditional medication is conducted by *"dukun"* (medicine man, both male and female dukuns. Originally, this traditional medicine was influenced by animism, i.e. the belief that natural objects, natural phenomena, and the universe itself possesses souls or consciousness as well as the belief in the existence of spiritual beings that may exert all kinds of influences on human beings. People who adhere to animism must observe and give due attention to these spiritual beings in order to avoid their harm and danger.

There are still many people who strongly believe that especially those who live in the remote areas that mountains, caves, bridges, big trees, water springs, crossroads as well as graves are inhabited by spiritual beings or *"hyang"* and that many accidents are caused by ghosts, goblins, fairies, etc. The totality of human existence is under the influence of these spiritual beings, some of them are wicked and others are good in nature. Needless to say that these wicked and evil spiritual beings are quite detrimental to human life. Some of these spiritual beings dwell in certain places and others are wondering here and there.

To protect themselves from these evil spirits, people have to offer sacrifices especially for the ones who control certain places.

Only the *"dukun"* knows and has, therefore, the right to identify the kind of disease and its medication and the kind of offerings to be given as well as the place where the offerings to be placed.

There is close relationship between *"dukun"* and his patient and the *"dukun"* is highly respected and appreciated by his community. The fee for medication is entirely up to the patient himself. The medication consists not only of offerings but also medicines that should be made and prepared by the patient himself or byhis family. Such medicine are made of various kinds of leaves or fruits and the *"dukun"* determines the way of preparing and taking them.

There are some dukuns who make use only of one medicine, i.e. fresh water which should be exorcized by the dukun and it will become a kind of panacea which is supposed to be effective for all kinds of diseases and illnesses, both bodily and mentally.

Diseases can be prevented by a kind of mascot, talisman or amulet prepared by the *"dukun"* It consists of a piece of paper with illegible letters written on it, combined with criss-crossing lines, sometimes like the picture of stars or circles wrapped with lead and then inserted into a pocket made of cloth and tied to or hung around the neck or around the waist of the man, boy, girl, or woman concerned.

There are also dukuns who just prepare medicines made of leaves or barks or fruits that have been dried up usually called *"jamu"*. The dukun decides which *"jamu"* to be used for each disease as well as the way to use it. Apart from jamu for curing diseases there are also *"jamus"* to regulate menstruation, or to make it run well whenever it runs at irregular intervals. Even there is *"jamu"* for producing abortion and *"jamu"* that is supposed to make people fall in love with somebody, for example, a jamu that can make a beautiful girl madly in love with a youth. And last but not least there is also a kind of jamu that can make husband divorce his wife.

As for girls, they are usually warned not to look down upon any man who teases them or addresses them in the street or somewhere else, because by means of *"guna-guna"* (charm), the man concerned will be able to make the girl fall in love with him and will look for him no matter where he is. The girls are also warned not to throw away their nails or hairs everywhere but should be carefully kept because they can also be used to make *"guna-guna"*.

They are also *"female dukuns"* who help pregnant women during labour and delivery. There are other dukuns who specialize in bone fracture or joint dislocation. By pulling the neck of a cock, the dukun will be able to repair broken bones. There are also dukuns who specialize in taking out stones from the kidney without surgery. There are also dukuns who can make people mentally at ease and at peace, and treat neurosis and even cure insanity.

From the viewpoint of hygiene and sanitation all these dukuns are completely ignorant of the rules of cleanliness. Various kinds of beliefs and religions both heavenly and wordly (religions) have no or only very little influence on this traditional medication, maybe due to the fact that all these beliefs and religions teach no or only very little about cleanliness as the basis for medication and health. Accordingly, this traditional medicine is not different from its original pattern, despite the fact that these beliefs and religions have been in existence for centuries in Indonesia.

Needless to say that traditional medicine is not based on exact sciences. Consequently, it cannot be taught didactically and analytically. either can it be taught in the classrooms. It is just handed down orally from one generation to generation and it is usually confined to certain families, who hand it down to their children.

Islam does have much influence on traditional medicine, although in some cases Islam has succeeded in eradicating the belief that diseases are caused by evil spirits.

Islam teaches patience to the patient and eradicate the tradition of giving offerings to the spiritual beings. Islam teaches the people to be optimistic, to pray to God for convalescence because Allah is the only healer for any kind of diseases and illnesses.

Islam teaches people to make much repentance; but the Islamic teaching on cleanliness and medication have been ignored. Maybe this is due to the fact that ulemas in general put great emphasis only on the creed (aqidah), faith, taqwa (Godfearing), worship and akhlaqul kareemah.

The sayings of both God and His Apostle (ﷺ) are always read and recited but there is no sufficient comment and explanation about their implementation in the daily life. For example the Islamic teaching about "pure water" and "clean water" which has been enjoined by Syari'at. Despite this teaching about pure and clean water, to clean filth and dirt, the Muslims very often than not still ignore the rules of hygiene and sanitation. They have no objection to using river water which is full of dirt, rubbish and even human faces to take ablution *(wudu')* and take a bath.

There are still a lot of Muslims who are illiterate in Latin letters. The poor social and economic conditions make them unable to make their environment healthy and to provide their houses with pure and clean water. Nor are they able to provide their dwelling places with good and healthy bathrooms and toilets.

Traditional medicine in the form of animism as well as the medicine that has been influenced by Islamic teachings still exists among many Indonesian Muslims. Education at religious schools do not say much about health, let alone about its implementation. This is due not only to their ignorance of modern science about cleanliness but also due to their lack of understanding about the true meanings of Islamic teachings. Furthermore, cleanliness needs a huge amount of funds.

> ...AND HE CAUSED RAIN TO DESCEND ON YOU FROM HEAVEN, TO CLEAN YOU THEREWITH, TO REMOVE FROM YOU THE STAIN OF SATAN....
>
> (Quran S 8; V 11)

From modern medical science, it is the rain water which is the best for purification because it is free from any kind of bacilli and bacteria. It is by means of rain water, besides river water, well water, spring water, that Allah enjoins His slaves to wash the small *"hadats"*, urine, faeces as well as any other kind of filth which may produce all kinds of diseases; and to wash big *"hadats"*, after sexual intercourse, menstruations, and nifas. Most of the Indonesian Muslims are not yet in a position to enjoy the use of pure and clean water, except water for taking ablution according to the rule of Fiqh, because of their low standard of living. This is especially true of those who live in big cities such as Jakarta, Semarang, Surabaya, etc.

Traditional medicine is not in conformity with Islamic teachings, simply because in Islam medical science should be based on the laws of nature as expounded by modern sciences such as physiology, physics, chemistry, anatomy, bio-chemistry, and even psychoanalysis, etc. This is due to the fact that Allah always give high appreciation to those who have knowledge as written in many verses of al-Qur'an:

> HAAMIIM; THIS QUR'AN IS A REVELATION FROM THE GRACIOUS, THE MERCIFUL. A BOOK THE VERSES OF WHICH HAVE BEEN EXPOUNDED IN DATA AND WHICH WILL BE REPEATEDLY READ, COUCHED IN CLEAR ELOQUENT LANGUAGE, FOR A PEOPLE WHO HAVE KNOWLEDGE.
>
> (S 41: V 1-3)
>
> ...AND THESE ARE THE LIMITS PRESCRIBED BY ALLAH WHICH HE MAKES CLEAR TO THE PEOPLE WHO HAVE KNOWLEDGE.
>
> (S 2 : V 230)
>
> AND THESE ARE SIMILITUDES WHICH WE SET FORTH FOR MAN KIND, BUT ONLY THOSE UNDER STAND THEM WHO HAVE KNOW LEDGE.
>
> (S 29 : V 43)
>
> PROCLAIM THOU IN THE NAME OF THE LORD WHO CREATED. CREATED MAN FROM A CLOT OF BLOOD. PROCLAIM. AND THY LORD IS THE MOST BOUNTEOUS. WHO TAUGHT BY THE PEN. TAUGHT MAN WHAT HE KNEW NOT.
>
> (S 96 : V 1- 5)
>
> ...LORD, BESTOW ON ME INCREASE OF KNOWLEDGE.
>
> (S 20 : V 114)

ADVISORY COUNCIL FOR HEALTH AND SYARA'

During the war for independence, Muslim leaders as well as Muslim people had contributed a great deal to achieve freedom for Indonesia. So it is logical if in the free Indonesia they always endeavour to establish Islamic laws within the Republic of Indonesia.

The influence of Islam began to appear when in 1954 the Department of Health was under the leadership of a Muslim doctor of Chinese origin. He organized a body which was to deal with health and medical problems concerning Islamic teachings. The body was called: *MAJELIS PERTIMBANGAN KESEHATAN DAN SYARA' (MPKS)* or in English: "A Advisory council for Health and Shariyah" The function of this body had been to assist the Minister of Health with *"Fatwas"* concerning health and medical problems faced by the Indonesian People who have been mostly Muslims.

MPKS has two medical doctors as the Chairman and Secretary and 12 Ulemas as members.

During 25 years, MPKS has succeeded in providing 20 fatwas concerning health and medicine, among others:

1. Tuntutan Rohaniah Agama Islam dalam Perawatan Orang Sakit (Spiritual Guidance in Islam for Medical Treatment of the Patient which contains guidance for doctors, nurses, and other medical staffs concerning the performance of treatment given to all kinds of patients; the patient with slight illness, the patient with serious illness, the patient who is in the state of sakratul maut (sying), the newborn baby, as well as the correct behaviour and good conduct (akhlaqul kareemah) that should be possessed by the medical staffs; including also the manners and etiquette in visiting the sick people.
2. Islamic teachings concerning:
   a. cornea transplantation;
   b. anatomical autopsy for medical education; clinical autopsy for the sake of the development of medical science; autopsy for forensic medicine;
   c. blood transfusion;
   d. spleen biopsy;
   e. artificial insemination, etc.

Through these fatwas of MPKS, it is expected that not only doctors and medical staffs but also society in general should come to know that Islam has special teachings concerning medicine and health as well as the proper treatment of the patient, which is in conformity with modern science. This kind of understanding is specially needed on the eve of the Islamic Renaissance today.

THE ISLAMIC MEDICAL SCHOOL AND HOSPITAL

During the last 20 years a remarkable phenomenon has come to light in the world of higher education and health, i.e. the emergence of health service units based on Islamic teachings in the form of clinics, polyclinics, hospitals as well as the medical faculties to educate Muslim doctors. Having been dissatisfied with health services in public hospitals, the Indonesian Muslims, especially those who are active in health services, deem it necessary to establish health institutions which should be imbibed and inspired by Islamic spirit and to establish medical faculties to educate Muslim doctors. At the same time there is a striking tendency among doctors to be so fond of materialistic way of life as well as secularistic way of medical approaches. Even many of them have violated the "physician's oath."

It is worth mentioning here that no matter how good is the so-called "Hippocratic Oath," and in some cases it is in harmony with Islamic teachings, but without putting it on the firm basis of Islamic creed and faith, such an oath is just spiritually empty in nature and if the doctors begin the oath by saying *"Wallahi"* it means that they violate Islamic oath on purpose. This is an indication about the superficiality of their understanding concerning Islamic teachings so that they are unable to put their passions and worldly desires under control despite the fact that according to Islamic teachings the biggest war happens to be the war against our own passions and desires.

As a matter of fact, up till now there have been quite a great number of scientists who confess to be Muslims still consider that Islam is just the worship of God, fasting during the Ramadhan, al-Haj, giving

religious tilth and alms, without exerting any influence on their conduct and behaviour. During the passing year of 1980 there had been a lot of articles and writings in the mass media: the newspapers, magazines, etc., which contain criticism against doctors and physicians, dentists and surgeons, gynecologists etc., who have been greatly influenced by "money culture" (to use the term among international intellectuals). They put charges much too high beyond the reach of the poor people. At the same time they also refuse to be called in at night or when they are not within working hours. It is not, therefore, surprising that no less than the Minister of Health and even President Suharto himself deemed it necessary to warn the doctors, etc., not to violate the Physician's oath and to put their charges within the reach of the patient's income.

One of the Islamic medical faculties established in Indonesia is the: *"YARSI SCHOOL OF MEDICINE"* founded in 1967. YARSI SCHOOL OF MEDICINE has been established to train the students to become "MUSLIM DOCTORS." What we mean by the term "MUSLIM DOCTOR" is a doctor who is fully qualified in modern medical science and at the same time has been completely familiar with the essence of Islamic teachings and devoute enough in practicing Islam in his daily life, has good condcut and behaviour (akhlaqul kareemah) and does his medical practice in harmony with Islamic teachings for the sake of reaching *"mardhatillah" (Allah's favours).*

With these Muslim doctors, YARSI has been anxious to reach the level of glory that use to be achieved by the Muslim doctors during the Middle Ages in the field of health services in the sense that their quality should also be standard of the best health services in the modern world. We are so keen to produce the new Rhazes and the new Ibni Sina who are expected to be brighter and more brilliant than their precedecessors, the old Rhazes and the old Ibni Sina.

The three brilliant stars of medicine during the Middle Ages, Rhazes (860-932), Ibni Sina (980-1036), and Avenzoar (1094-1162) were the heads of hospitals. So they had all the necessary facilities for studying their patients. They made "case histories" and the hospitals kept records of these in their registers:*The Islamic Physicians were the first to develop clinical teaching in hospitals.*

The first Muslim hospital on record and founded by the Caliph Welid, at Baghdad in A.D. 707, and he made special arrangements for the blind and for the lepers. In the tenth century, the chief hospital at Baghdad had a staff of 24 physcians. There were special departments for ophthalmic cases, for fevers, for diseases of women and for accidents, and the physicians were given charge of these in accordance with their special knowledge and skill. This hospital had a famous department for the care of the insane, and the Arabs were far ahead of the Christians in their *kindly* treatment of the mentally afflicted. Speaking of this hospital in his *Histoire des Arabs* published in Paris in 1854 Sedillo says *"What especially characterised the school at Baghdad in the beginning was the truly scientific spirit which presided over all."* To go from the known to the unknown, then from effect to causes, and only to admit as true what had been demonstrated by experimental work such were the Principles taught by the masters!

Under the Arabs in Egypt hospital organisations was very advanced. At the el-Nazuri hospital at Cairo (founded 874) all the patients were classified and nursed in the special section devoted to the type of disease from which they were suffering: these departments inluded a special hospital for women. All patients were attended by specialists whilst a staff of musicians, story-tellers and singers were employed to while away the tedious hours of convalescence.

MODERN MEDICATION

Modern medication is often considered to be identical with Western medication. This is not surprising, because it is the Western people, in the case of Indonesia, it was the Dutch who introduced such method of medication to the society. For the sake of the perpetuation of their colonial rule on the Indonesian Archipelago, the Dutch began to establish elementary and high schools (both junior and senior high schools) and later institutes of higher education such as the faculty of law and the faculty of medicine, in their efforts to get educated employees for their administration. It is important to note that in all these institutions of education they taught not only Malay but also Dutch and other foreign languages such as French, German, and English.

The faculty of medicine was aimed at training students to become medical doctors. They were expected to promote public health and to eradicate common diseaseas as well as communicable diseases such as pest, typhus addominalis, dysentry, smallpox, framboesia, etcetera.

Needless to say that during the Dutch colonial rule all kinds of official educations including education at the Faculty of Medicine are of secular nature. At the same time the students who happened to have such Western education had been trained to feel superior to their fellow countrymen who had no chance to enjoy such an education. They also looked down upon the Muslims who, being mostly uneducated, were ignorant of cleanliness, hygiene and sanitation. For example, those uneducated Muslims often used the same water for washing their feet and for gaggling and rinsing their mouths. They were not yet in a position to interpret and practice the saying of the Holy Prophet (ﷺ) that "Cleanliness is next to Godliness" or "Cleanliness is part of Faith". It was this misunderstanding of the true Islamic teachings that could be considered the main reason why the educated people often scorned Islam and the Muslims.

In accordance with the policy of education during the Dutch colonial rule there appeared two groups of Muslims: on the one hand those who were educated at the government schools; and on the other hand, those who were educated at religious schools. It would be logical if the two groups were separated by the widening gap. Those who were educated at Western institutions blindly imitated Western way of life and in many cases they were more westernised than the western people themselves: in the case of Indonesia they were of Dutch character much more strongly than the Dutch themselves. And some of them even went too far as to feel ashamed of admitting their own religion. They were ashamed of being Muslims, let alone of going to the mosque to pray.

As touched earlier the education of the medical faculty was also of secular nature and in those days Islam was not yet able to exert any influence on it. Such an education has been opposed to Islam. Physician's oath was uttered in Dutch.

The common people didn't like modern medicine yet and some of them even refused to have vaccination against epidemy, endemy, etc. This was specially true during the fasting month of Ramadhan simply because they were of the opinion that vaccination would make their fasting null and void.

Once a medical officer was nearly killed by the people because he wanted to perform spleen biopsy, on a corpse that was considered to have suffered from pest. They strongly believed that a corpse should not be afflicted. The Department of Health could not work very well because the Dutch government failed to convince the people of the necessity to take medical measures in order to protect public health.

Nevertheless modern medicine has been in many cases in keeping with Islamic teachings because it has the result of many centuries of medical researches conducted scientifically by thousands of contemporary medical scientists. Even a lot of Muslim doctor themsleves have participated and contributed a great deal to modern medicine. And they also took significant part in liberating sciences from the Church opression which had hampered scientific progress and development.

The world used to be familiar with Islamic medicine and Muslim doctors, which was handed down in many western languages such as Dutch, English, German, and French. One of the important books about this phenomenon is *ISLAMIC MEDICINE* written by Seyyed Hossein Nasr. He wrote inter alia as follows:

> "Islamic madicine and its allied subjects such as pharmacology, surgery and the like drew their spiritual sustenance from the message of Islam and received their nourishment from the rich soil of Graeco-Alexandrian, Indian, and Persian medicine. The result was the creation of an extensive field embracing nearly every branch of the medical sciences, some fourteen centuries of history and a vast geografical area stretching from southern Spain to Bengal, for on this particular field nearly all the regions of the Islamic world made some contributions. This fact added to the nature of Islamic medicine which is at once an applied science, an art and in fact an aspect of the whole of life touching upon activities ranging from eating to bathing, has caused many scholars to separate medicine from the other sciences. In fact to do justice to all branches of Islamic medicine it would really be necessary to devote a separate study to it."

The whole of Islamic medicine is also related to Islam through the injunctions contained in the Qur'an and the Hadits concerning health and various questions related in one way or another to medicine. The aspects of the Divine Law (Shari"ah) concerning personal hygiene, dietary habits, ablutions, and many other elements

affecting the body are again related to medicine. Finally, esoteric teachings concerning the soul in its relation to the body and the body as the 'temple of the spirit' creat a link between medicine and various aspects of the teaching of Islam. The result is that, whatever historians may say of the Greek, Syriac, Indian or old Persian origins of this or that medical idea or practice, Islamic medicine has lways been seen by Muslims as closely related to religion.

As far as the practice of medicine is concerned, again Islamic civilization created certain institutions and norms closely related to its own general structure in order to make the teaching and practice of medicine possible. Gradually, the figure of the physician who had originally been usually of Christian, Jewish or even Zoroastrian background or actually a member of these communities, become totally Muslimized and there came into being the Islamic figure of the *hakim* (literally: wise-man or sage) who was at once physician and philosopher as well as master of most traditional sciences. Most of the early Islamic philosphers from al-Kindi to Ibnu Sina and Ibn Rushd were in fact accomplished physicians, and some like Muhammad Ibn Zakariyya' al-Razi and Ibne Sina were unrivalled authorities on medicine.

CLEANLINESS IN ISLAM

As for cleanliness, Ilmu Fiqh has a special chapter called *"Baabut Thaharah"* based on the saying of God and Hadiths (the tradition of the Prophet Muhammad (ﷺ):

AND ALLAH FAVOURS THOSE WHO ARE CLEAN. (Quran. S 9 : V 108)
YOU SHOULD CLEAN YOUR APPARELS. (Quran S 74: V 4)
"ALLAH S.W.T IS GOOD AND LOVES ALL THAT ARE GOOD: HE IS CLEAN AND HE LOVES CLEANLESS: HE IS GENEROUS AND LOVES GENEROSITYI HE IS MAGNANIMOUS AND LOVES MAGNINAMITY; ACCORDINGLY, PLEASE KEEP YOUR YARDS CLEAN."

(Narrated by Tarmidhi from Sa'ad, Kitab Fathul Qadir, Juz II, page 239).

The chief means for cleanliness is clean water. Long before the appearance of modern medical science, Islam had taught that written in Surah al-Anfal.

There is a description given of the greatest of the Cairo hospitals the al-Mansur as it was in 1284. In the building of it masons and carpenters had been brought from all parts of Egypt and loiterers in the street and passersby in the what ever their rank, were obliged to assist in this work until, we are told, most people avoided going that way. When finished, it was a great quadrangular building with fountains playing in each of the four courtyards it had its special wards for particular diseases, for women and for convalescents; there were outpatient clinics, diet kitchens, an orphan asylum and a chapel. It also possessed commodious lecture rooms and an extensive library. It had a staff of male and female nurses, and as was usual in these hospitals, a staff of musicians and story-tellers. When patients who had recovered left the hospital they were given five pieces of gold about 50 shillings, so that they were not forced to do any heavy work until they had completely regained their strength. The large endowment made this possible, as it also enable the patients to be given every comfort whilst in hospital, this was the most famous of the Saracenic Hospitals. Prof. Dr. S.A. Rahman, M.D. wrote in his inauguration speech for professorship among other:

"The Abbaside caliph Muqtadir built several hospitals of which one called *"Bimaristan-us-Sayyadah"* was the biggest. Ibnu-e-Jubair, the Arab traveller, visited Baghdad at this time and has left the following account of Muqtadir's hospital.

"In between the main street and the Basra Gate is the "Hospital Road" leading up to this great establishment. It is a beautiful and magnificient structure on the right bank of the river Tigris. This hospital is split up into various wards and each ward has a number of rooms giving one the impression that the ward is a royal palace in which every convenience is provided. Best arrangements exist for providing medical aid. The patients are dealt with very courteously and sympathetically. All patients are given free medicine and food.

One of the famous hospitals was that built by Nuruddin Zanghi at Damascus. How courteously the patients were treated in this hospital is explained by the personal experience of the historian Tabari who writes:

"When I visited this hospital at Damascus in the year 474 A.H. (about 1216 A.D.) I found the food served to the patients was so nice that I pretended sickness and got myself admitted. I was served with very delicious food and medicine. But the chief medical officer, who had examined me, had evidently made the correct diagnosis, for after three days of my stay, I received a note from him in the following words" a guest should not stay more than three days."

We are indeed overwhelmed by deep feeling of admiration whenever we study the achievements of Muslim doctors during the illuminating glories of Muslim kingdoms in the past.

Whether the Muslims in Indonesia in general and YARSI School of Medicine in particular, will be able to produce achievements in the filed of medicine as those achieved by the Muslim doctors in the past is, of course, dependent on our efforts and prayer to God Almighty, simply because such a grand endeavour must be influenced by various kinds of non-medical factors such as political, social, economic and many other factors which are sometimes completely beyond our control. In other words, we must work hard to replace secular medicine by medicine inspired by Islamic spirit, but in the final analysis we must be completely submissive to the will and judgement of Allah s.w.t. However, we are conviced that God always keeps His promises as stated in Quran:

> AND FOR THOSE STRIVE TO MEET US WE WILL SURELY GUIDE THEM IN OUR WAYS. AND VER ILY, ALLAH IS WITH WHO DO GOOD.
>
> (S 29: V 69)

Meanwhile, we are also absolutely aware that the yarsi school of Medicine still a long very hard way to go before we can achieve such noble ideals; however, we must not be in despair. Allah forbids His slaves to be downcast by His saying in Quran:

> ANY WHO DESPAIRS OF THE MERCY OF HIS LORD BUT SUCH AS GO ASTRAY.
>
> (S 15 : V 56)

SUMMARY

Summarily speaking, there are two different kinds of medication in Indonesia: i.e. traditional and modern medication. Traditional medication is derived from animism and despite its long existence in Indonesia Islam has very little influence on this primitive way of medication, because Islamic teachings are in conformity with modern medication and modern method of hygiene, sanitation and sciences. Modern medication which is now in existence in Indonesia was introduced by the Dutch colonial government and is of course of secular nature. During the Dutch colonial rule the Islam did not have any influence on this secular medical science, but during the period of national independence, despite its slowness, the influence of Islam on modern medicine begins to appear come to light. Modern medication is in many cases in harmony with Islamic teachings which put great emphasis on the importance of good hygiene, sanitation and scientific thought.

This favourable process has been accelerated by the emergence of Islamic hospitals as well as medical faculties especially the *YARSI SCHOOL OF MEDICINE*.

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ROLES OF ISLAMIC STUDENTS AND LECTURERS OF THE FACULTY OF MEDICINE IN SPREADING THE TEACHINGS OF ISLAM IN THE MUNICIPALITY OF PALEMBANG

Agoes A.,
Indonesia

INTRODUCTION:

In the history of the Indonesian nation, the region of South Sumatra is one of the provinces with strict Islamic notions and ethics. This can be proved by the presence of a great mosque in the heart of the City of Palembang whch is already more than 200 years old. There are also several names of Moslem Princes whose names perpetuated to some quarters in the municipality. Lately a considerable progress can be observed in the spreading of Islamic teachings, especially in the municipality of Palembang. New mosques have sprung up both of national standards or simpler ones. Mass prayers in the evening during fasting month of Ramadhan and at noon on Fridays draw more and more prarticipants.

After the establishment of the Faculty in 1962 we were wondering to what extent the students and the lecturers participated in supporting the spread and the development of the teachings which was quite gratifying. Viewed in a simple way we can draw conclusion that this participation has been realized in compliance with one of our motto "three dedications of higher education", that is Dedication to Community, beside the other two education and implementing research[1]. Some students and lectuerers aid the regional government in coping with natural disasters (Flood, Health Service for Transmigrants, Mass Circumcision, Health Care for Orphans and the Aged, etc.). Several lecturers have been called upon to give medical talks in mosques during Ramadhan evenings or to supplement programs to local Radio and Television Stations. There are even lecturers who are actually members of local group clergymen devoting regularly their time and knowledge as preachers in certain mosques.

AIMS OF THE STUDY

1. To know the personal activites of students or lecturers in practicing Islam.
2. To know the influence of the presence of the student or the lecturer in the communal society on the spreading of Islam.
3. This data will aid the government in outlining the task of the student or the lecturer in field service rendered to community that has some connection with the preaching of religion. In a wider scope to

aid the Division of Islamic Religion in the Department of Religious Affair to make a plan or raise funds for spreading of Islam by medical mission.

MATERIALS AND METHODS

The materials to be surveyed consist of muslim students and muslim full time lecturers of the faculty at one side and the Chiefs of the quarter of their domiciles at the opposite side. Moslem students total 419 among 475 or 82.2% and moslem full-time lecturers totalling 111 among 156 or 71.7%.

Two kinds of questionnaires sheet were forwarded to be filled i.e.:

1. A sheet for student or lecturer containing personal data, religious activities, causeries, organizations and background of his or her religious educations.
2. A sheet for Chief of the quarter containing an evaluation of the students or lecturer(s) who has his or her domicile in his district.
3. A map plotting the dispersing domiciles of the valid respondents will be made as well as to group chiefs of quarters according to respective respondents.

RESULTS

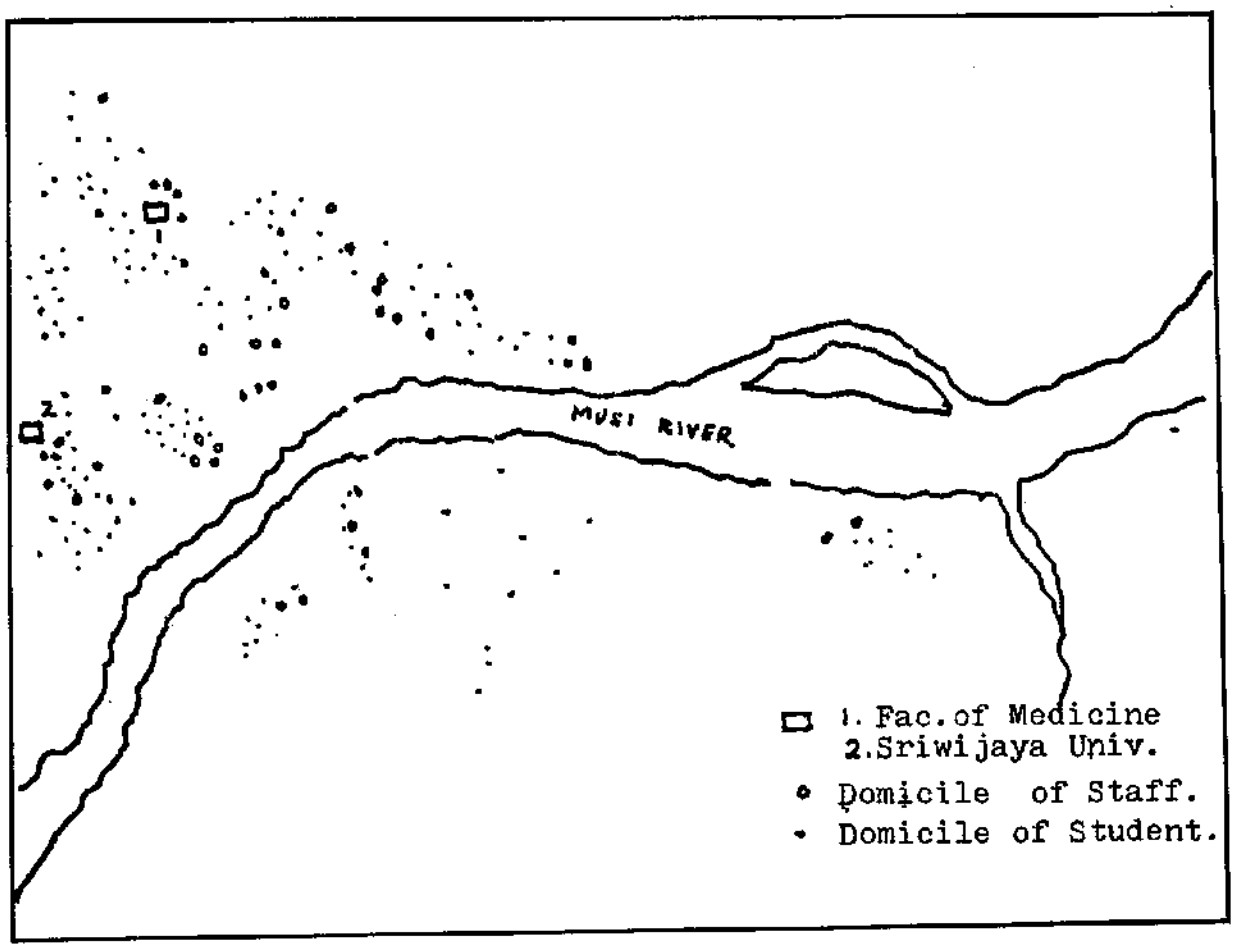
1. There were 475 medical students (M 292, F 183) among which 419 Moslem and 56 Non-Moslem. The total number of full time staff was 156 (M 127, F 29) among which 111 Moslem and 45 Non--Moslem. Part-time staff was 101. Questionnaires were distributed to 419 Moslem students and 111 Moslem staff. Forms for Chiefs of quarters were 530. After being screened, the total valid respondents were:
   Students 274 (65.2%), Male 198, Female 76
   Staff 48 (43.6%) Male 35, Female 13
   Chiefs of Quarters 53 (after being grouped) or 85.4% of the total number of quarters in Municipality.
2. Map of the students and staff domicles dispersed in the Municipality (Area 224 km sq. with pop.: 612, 969).

3. Personal Religious Activites.

3.1 There were 73.2% students who knew the existence of mosques in their quarters and 24.5% in their sub-districts. The percentage for staff was 69.2% and 36.4% respectively.

3.2 There were 12.4% students and 37.9% staff who never took part in mass-praying in mosques. On the other hand students did 1-5 times weekly 63.2%, 6-10 times 18.2% and more than 11 times 6.2%. This figure for staff was 33%, 23.4% and 5.7% subsequently.

3.3 There were 38.7% students and 47.9% staff who never attended Friday mass-praying at local mosques, while 22.6% took part 1-3times a month for students and 20.8% for staff. The group who performed obidiently 4 times a month was 10.9% for students and 31.3% for staff.



4. Personal Activities to deliver Medical Talks and Organization.

4.1 There were 1.8% students and 16.6% staff who had given lectures voluntarily in TV / Radio stations and 9.2% students, 33.3% staff in mosques during Ramadhan evenings. There were 89% students and 50.1% staff never did.

4.2 There were 5.5% students and 20.8% staff who never participated in Islamic organisation or committee. On the other hand 74.1% students and 58.3% staff who had ever registered as members of official Islamic organization and 20.4% and 20.8% have ever experienced to be a member of a committee (such as Haj Festival, Idul Fitr, the Prophet's(ﷺ)birthday, Ascension, etc.)

5. Personal religious educational background and the ability in al–Qur'an reading.

5.1 There were 36.5% students and 8.3% staff who never had any special Islamic Education. Meanwhile, 55.1% students and 62.5% staff had their knowledge from parents. This figure was 3.6%, 16.6% for groups having a special religious School.

5.2 There were 10.9% students and 20.8% staff who could not read al-Qur'an perfectly. On the other side 51.8% students and 37.5% staff could read well for themselves and 37.2%, 41.6% students and staff subsequently had experiences participating competition in al-Qur'an reading.

6. Percentage of Chiefs of Quarters who evaluate the respondents. There were 32.6% evaluate with Excellent, 50.6% Sufficient and 16.8% Poor for students and the percentages for staff were 23.7%, 69.9% and 6.3% respectively. This evaluation was concerned to personal conduct viewed from Islamic religon (behaviour, dedication and human relation with neighbours), personal influence to spreading of Islamic teaching by medical background.

DISCUSSION

The curriculum of the Faculty is aimed at the training of students to become Community Oriented Physicians[2]. Thus their way of thinking that has been Hospital Oriented so far is redirected back to the

community. The implementation of determinative factors that exist in their surrounding should be utilized right from the start by giving Introductory Lectures on Sociology, Anthropology along with *Panca Sila* (The Five Principles) and Religious Teachings which were already commenced in 1964.

Before the students take their degree as Medical Doctor, that is when they have finished theoretical training in Medicine and acknowledge as a Doctorandus Medicinae, they are required to expose themselves to the rural community under the Program of Intra-Curricular Field Training six months in villages. In these locations, the individual student frees himself from his specifically medical background and becomes a generalist educating and aiding villagers working for their districts development side by side with other students of different faculties (Law, Economics, Engineering, Agriculture etc.) They took part in the Rural Development Process by way of an integrative and well-balanced approach of several kinds of disciplines.

If we study the data obtained we realize that we can regard dedication of students or lecturers to his or her milieu as an entry point to general development, including the sprading of Islam. But mostly, as is usually the case with every developing country in drawing up the state budget priority must be given to other sectors than the spreading or religion. Efforts like this should call for funds donated by generous supporters.

CONSLUSION

A study has been done on the role of students and lecturers of the Faculty of Medicine, Sriwijaya University, in spreading teachings of Islam in the Municipality of Palembang. This survey was done in six sub-districts by investigating correlative factors between the activities of the students / lecturers privately and the evaluation of Chiefs of quarters where they domiciled. The results can be summarized as follows:

1. A student or a lecturer can play an active role in spreading the study and the teaching of Islam in his or her community by way of dedicating his or her skills and knowledge as part of Social Dedication Duty.

2. With a skilful direction and integration students or lecturers can support effectively spreading of Islam both quantitatively and qualitatively.

3. A member of the teaching staff with a solid religious education will be very advantageous in promoting the quality of preaching in mosques and through the Radio / TV Program.

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ISLAMIC WORK THROUGH MEDICAL SERVICES IN SOUTH AFRICA

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South Africa

In South Africa as in many parts of the world, there is a renewed interest in Islam, both among Muslims and Non-Muslims. A lot of organisation and work is required to keep this interest alive. The medical field is no exception, and a tremendous amount of work is required both within it and through it to strengthen the spirit of Islam and to spread the Message.

The call to the Muslim Health Care Personnel is the same universal call "Al Auda ila Al Islam" i.e. come back to Islam, meaning let us not be Muslims just in name only. Let us live Islam in its totality and let it emanate from every action of ours both Professional and otherwise. This involves educating ourselves about Islam and orientating our lives according to the dictates set out by our Creator. It also required us to research the Islamic viewpoint on issues related to Medical Ethics and to apply these to our patients.

In South Africa to achieve our objectives we have formed a national body - The Islamic Medical Association - following in the footsteps of our North American counterparts.

A brief outline of the background of South Africa and its people will help in understanding our role and work. South Africa has a population of about 26 million people of which the indigenous Africans number over 20 million, the Whites about 4 million, over a million are classified as Coloureds (ie people of mixed parentage), and just under a million are of Indian origin. The Africans are further sub-divided into 10 separate groups each with its own allocated area called Homeland or Bantustan. The groupings are based on language, dialect and cultural differences. Grouped with the Coloureds are the Malays who are Muslims and who were originally brought to South Africa as slaves from Malaya. Classified with the Indians are a small group of Zanzibaris who are actually Muslims of African descent but who are from Malawi (Nyasaland) and settled in S.Africa.

Under the Separate Development and Group Areas Laws of South Africa the different race groups are allocated their own separate residential areas, each with their own facilities. Persons belonging to one group cannot reside in another groups area, nor can they send their children to another groups schools. Worst still a tremendous problem arises with regard to "mixed" marriages. Firstly marriage between Blacks & Whites is totally forbidden. Marriage between the different Black groups while not prohibited by law leads to numerous problems vis a vis selection of residential area since by staying in any particular area one or the other spouse will contravene the law. Also the problem of deciding under which group the children are to be registered and which groups school they will attend.

Overall the racial grouping and separation has resulted in the cocooning of the different groups in their own areas making it difficult to establish contacts and particularly to maintain them, especially with the Africans.

The Muslims in South Africa total about a 1/4 million and comprise about 1% of the total population. They are distributed among all the race groups. The majority belong to the Indian and Malay Groups, being about 125 000 each. The New Muslims make up bout 15000 of the population, being mainly the indigenous Africans and about a thousand whites. It must be remembered that the Muslims in all the groups are a minority and are swamped by the Non-Muslims living around them. The Muslim community, especially the majority Asiatics, has organised itself to nurture its religious beliefs by establishing and maintaining masjids and madressas in their own areas. There are also a number of Muslim organisations among them who help to maintain the religious and cultural identity of the Muslims. They are making efforts to spread Islam among the indigenous people, but the overall contact between the brothers of the different races is at a superficial level and essentially at work. This creates practical difficulties in conveying the Message to the other groups and particularly of assimilating them into the Ummah.Despite this Segregation, *Dawah* work is continuing.

Until recently, there was no organised effort to bring in the doctors and the medical service to propagate Islam. Once this realisation dawned and the realisation of the need to have a central organisation; and having been impressed by the IMA of North American and its work; we have also just established our own Association with the able help of Dr.Ahmed al- Qadi of the United States (a founder member and past President of the IMA of North America).

In the South African context where separation on racial and ethnic lines is legally promulgated and promoted, there is suspicion when an organisation with "restrictive" membership is mooted. Since the IMA of S.Africa is specifically for the Muslims it is regarded as another "divisive" organisation by some with the resultant strong opposition to its formation and existence. The overall tendency is to move away from any concept that tends to compartmentalise and segregate the people. People find it difficult to understand that our needs and moralities, coming from Allah, are unique and cannot be catered for by any Non-Muslim Professional organisation, whilst no lay Muslim organisation is capable of coping with our Professional needs. Hence our own Muslim Medical Body is necessary to be formed.

Our main objectives are: —

1. to promote a better understanding and appreciation of Islam and of Medicine within the framework of Islam.

2. to constantly remind and educate the Muslim Health Care Personnel of the Islamic values , morality, etiquette and ethics and to apply these in the Health Care sector.

3. to orientate Health Care Education with Islamic values and outlook in the application to patient care.

4. to promote research and publications in the field of Islamic Medical History , Prophetic Medicine, Islamic Medical Ethics and Medicine in general from the Islamic point of view.

5. to be a "Mercy unto Mankind" in the true example of our Prophet (ﷺ) by providing necessary

assistance within our scope and capability whenever and wherever needed in the form of clinics, relief work and rehabilitation.

Our overall aim is to conscientise the Muslim Health Care Personnel towards Islam and to introduce Islamic Ethics into our profession. The idea is to move away from the slavery of Western and other alien morals and principles and to create productive Islamic units with a commitment to Islam, particularly in relation to our patients. The Medical profession can also be very effectively used to propagate Islam not necessarily through any formal preaching but by high morals, ethics and deeds based on Islamic principles.

To achieve this we need to first of all arm ourselves with knowledge of Islam with the proper motivation and direction and then to put into operation a programme of action suited to our conditions. We use our meetings to learn from the Quran and for talks from both Medical and Non-Medical Professionals on various topics related to our objectives. For Instance we had the Chief Qadi from Bihar, India, Moulana, Mujahidul Islam Quasemi who gave the Islamic viewpoint on a wide range of Medical Ethical issues. Part of the talk was translated and published as a booklet entitled Conception — The Islamic Viewpoint.

Documentary films and slide shows are also arranged to help in motivaiting us and giving us the Islamic direction. We are also producing a modest Bulletin called BIMA. We hope that eventually this will grow into a journal. Literature from other organisations is also distributed among our members. Our major activites and achievements are in accord with our objective of to be a "Mercy Unto Mankind" in the true example of our Prophet (ﷺ) . There are vast areas of South Africa which are underdeveloped with very low standards of living, poor literacy rate, poor or non-existent facilites, poor standards of hygiene and rampant malnutrition. Whilst medical facilities of a high standard are available in most of the developed urban areas, they are either non-existent or very far removed in these, mainly rural areas. Also where facilities are available there are times when they are beyond the reach of many people.

As individuals most doctors do provide some form of relief and welfare service, but there is a great limitation on the amount and scope of service which they can provide.

Also their service is limited to built up areas and not available where it is most desperately needed. The IMA realising the need for some form of organised relief work has established medical clinics in certain areas to meet the following objectives:

(a) to provide basic medical relief for common simple ailment.

(b) to use the opportunity to implement Preventive Medicine by educating the local populace in the basics of hygiene, simple guides to balanced nutrition, child health care including immunisation and ante-natal and post-natal care.

(c) to use the opportunity to involve our Health Care Personnel in a welfare programme in an Islamic atmosphere and thus make them cognisant of their Islamic duties towards mankind.

(d) to use the opportunity for *dawah* work.

It is for the latter 2 reasons that our 3 clinics to date are all linked to existing "Islamic Centres" so that Islam may be viewed in action. Let us take the clinic at As Salaam for example. As-Salaam is an educational institute presently training new Muslims from the Black indigenous population of South Africa as dawah workers and Madressa teachers. The institution is situated on a farm, far removed from the humdrum of urban life being about a hundred kilometers from the city of Durban. It is ideally situated in what is called a non-demarcated zone where the laws of segregation are not applied. Thus free interaction can occur here between the members of the different racial groups on a 24-hour basis without any obstruction to access. This allows the Islamic way of life to be infused in its totality. At present, there are 20 students undergoing training. They are being trained to become local Imams able to preside over all the needs of their communities to which they will proceed on qualifying to work among their own people in their own areas. The presence of the institution with its masjid and training programme gives the doctors and their work the Islamic background and atmosphere. This allied with the high morals and ethics of the doctors invites people towards Islam, while at the same time dispelling a commonly held local belief that Islam is a religion of the Indians only. Thus through medical service by showing their concern for the underpriviledged the doctors can help in spreading the message of Islam. As for the clinic our aim is to expand its service gradually to eventually develop it into a hospital with bed facilities and full time staff. Insha Allah.

In addition to the clinics, we offer advisory, relief and welfare assistance to the community, when and where needed in the form of talks, demonstrations, first aid clinics, circumcision clinics, disaster relief, etc. This year we have also initiated a pilot scheme providing medical assistance to our Hajees during the Haj period. We hope to help develop this, Insha Allah, into a regular organised affair for all Hajees. The South African Muslim has also shown his willingness to helphis Muslim brothers in other parts of the world in disaster situations.

For projects such as these, we need to establish lines of communication. We feel that the time has come for the Muslim Ummah to have an International Red Crescent Association to co-ordinate and direct our relief activities.

CONCLUSION:

Ours is just a beginning. We are a very young body and are just getting off the ground. We pray that we will grow and diversify and improve and live and project the true spirit of Islam, tied down to no other ideology than that laid down for us by Allah, so that we please him and attain eternal bliss.

SOME ISLAMIC REFLECTIONS ON MEDICINE AND SCIENCE

Omar Hasan Kasule
Uganda

A wind of change is blowing all over the Muslim world and is affecting Muslim communities everywhere. Muslims are realising their present weakness and have realised that it is by return to Islam that the *Ummah* once had. This realisation is manifesting itself in all spheres of a Muslim's life including medicine. It is from this aspect that this paper seeks to explore the contemporary Islamic movement from a Medical point of view. Some assumptions are made which will be developed in the course of this paper:

One — Islam teaches us to seek cures for diseases and take preventive measures against them.

Two — There is no demarcation between matter and spirit in the lives of men so there are spiritual aspects to the practice of medicine.

Three — Social factors are involved in the causation and cure of disease.

Four — Islam encourages research and advancement of medical knowledge and its application to alleviate human suffering within its legal and moral framework.

THE BASIS FOR MEDICINE

Bukhari and Muslim reported a similar *Hadith* from Abuharayrah. In a *Hadith* reported by Ibn Majah, Hakim and Tirmidhi from Ibn Jazamah the Prophet Muhammed (ﷺ) said that

> "TREATMENT OF DISEASE WAS WITHIN GOD'S PREDESTINATION. IF HE PREDESTINES THAT SUCH WILL HAPPEN FOR SUCH AND SUCH A REASON IT HAPPENS WHEN THAT REASON OCCURS, IN THIS CASE THE MEDICINE GIVEN IS THE REASON PREDESTINED TO BRING ABOUT A CURE."

The Prophet (ﷺ) medicated himself and told his companions to do the same. Thus medicine and medical treatment have a well established place in Islam. cannot accommodate the belief held by a certain Christian sect in Uganda called the *Bamalaki* who refuse all types of medical treatment in the false belief that disease is some punishment from God and they have no control over it and that it would be improper to interfere with its natural course.

DISEASES AND THEIR TREATMENT

All lawful means of procuring a cure for diseases are allowed by Islam, alcohol and other prohibited things are not allowed.

Organic disease has a recognisable pathology and treatmment consists of reversing that pathological state back to normal or alleviating its effects. Western man finds no peace of mind despite the abundance of food and other emenities of life. Suicide, antisocial personality disorders, criminal tendencies, drug and alcohol abuse are on the increase. The aetiological diagnosis for this is lack of spiritual health and well being among the people who live in a society that has no moral moorings to guide and nurture it and in our approach to medicine and the solution of the problems that confront us we must remember this aspect and remove the causes. When confronted by a case of alcoholic addiction, drug abuse or social perversion we have to look beyond and know that there lies the final and definitive line of management. Muslim physicians have to inform themselves on how Islam provides for spiritual and social welfare and in their treatment of patients they have to bring this up. A Muslim physician must aim at attaining the stage of perfection when he himself is the source of treatment.

The saying of the Prophet (that for every disease there is a cure has a reassuring effect. To the patient it gives the strength and patience to hope for a cure and not lose hope however serious his condition may be. To the physicians it gives encouragement and drive to persist in seeking cure. Those of us who have had the opportunity of looking after critically ill patients know how important it is for the physician to keep his calm, to continue hoping and to radiate hope to his patient and the relatives. This saying of the Prophet (ﷺ) is also an encouragement to the medical scientist to continue his researches into the causes and curses of diseases because it reassures him that there is a cure to be found, a new drug or a new procedure to be invented.

PREVENTIVE MEDICINE

The ancient Chinese paid their physicians only when they were well and payment was stopped as soon as the client fell sick and would not be resumed until after recovery. Preventive medicine was a well recognised concept in traditional Africa for example there was a custom of giving a fruit tree to a midwife who would be entitled to its produce as long as the child is maintained in good condition. In many parts of the developing world there is a move towards primary health care which aims at preventing diseases in the simplest and cheapest ways possible.

The principle of taking measures to avoid disease or containing its deleterious effects and spread is well laid down in Islamic teachings. The Qur'an explicitly forbids us from exposing ourselves to what will cause us harm

AND MAKE NOT YOUR OWN HANDS CONTRIBUTE TO YOUR DESTRUCTION

(Quran S2: V195)

Islamic law contains provisions to protect the body and the mind from disease. Certain foods are forbidden (Quran S2:V123) and by extrapolation anything that will be harmful to health is forbidden as food. The Qur an not being a textbook of science did not go into the details of how harmful ingestion of some things harms good health and Muslim medical scientists are challenged to research in this field.

Fasting is an act of worship but has in addition other benefits to the individual undertaking it. The fact that he voluntarily abstains from food and drink for a day and withstands thirst and hunger despite the fact he could procure food for himself if he wished away from public view trains him to control himself and this training is useful to him even after the end of Ramadhan. He is master of himself and has complete control of his desires.

Factors arising from the society are involved in disease causation and have an influence on the success of treatment, therefore a physician cannot afford to ignore these factors. He has to understand the interplay, often intricate, between the physical and social environments of his patient on one hand and the disease process and its management on the other. Illness also has social implications that have to be considered. Good physicians therefore extend their appreciation of a particular case from the individual patient to the society in which he lives and know that there is more than science in the management of disease.

Recent reports have shown that in Australia 75% of men above 20 who were drowned had taken alcohol, 5% of Finish, 33% of Norwegian, 14% of English and 27% of Scottish sailors who were drowned because of alcohol ingestion even in moderate amounts. Surveys on American drinking practices reveal that approximately 2/3 of the adult population in U.S.A. use alcohol at least occasionally. It is estimated that 12% of the American population are heavy drinkers, that 5 million adults have significant alcohol related problems and 4 million abuse alcohol to the extent that they are at high risk of developing alcohol, addiction. A survey in hospital emergency room revealed that 30% of individuals involved in highway accidents, and 16% murdered in occupational accidents had elevated blood alcohol levels. Alcohol abuse is a significant contributing factor to over 50% of motor vehicle fatalities. It affects health and impairs social function. Even moderate intake of alcohol has been shown to have bad effects especially on judgement and often a prelude to alcohol abuse.

Alcohol is implicated in several psychiatric disorders. The abuse of alcohol is basically a social problem with many medical consequences and the ultimate cure does not lie with the hospital-centred physician. The main cure is a social one and here lies the role of Islam and the committed Muslim physician. Islam forebade alcohol because it is harmful to man and society. It has laws that aim at organising a society devoid of the factors that push men towards abuse of alcohol. Islam has not been the only one in forbiding alcohol. several others tried and continue trying through legislation and sometimes force but no one has managed to solve the problem. The U.S.A. tried legislative control early in this century and had to give up. A president of an African country threatened to resign if his country men did not curb their drinking but with no effect. Let us see how Islam solved the problem.

When the decisive prescription for prohibition came, it was easy for people to give up because they had been prepared by being given reasons beforehand and were living in a society committed to a certain moral code, it was obvious to them that it would be impossible to adhere to that code if they also continued taking alcohol.

It is reported that a man came across a group of companions taking alcohol and as soon as he told them of its prohibition they all threw away the liquor immediately. There was no hesitation, no second thoughts. It is also reported that alcohol flowed in the street of Madina on that day as people poured it away in obedience to the Quranic injunction. A question may rightly be posed here how did Islam manage to achieve the complete eradication of a deeply rooted social habit of taking alcohol so easily where many who have tried before have failed? It is beyond the imagination of many that we can wake up one morning and that at a mere word the streets of our present cities are flooded with alcohol, bre-

weries and drinking places closed down and alcohol addicts rehabilitated instantly'! Islam was able to achieve precisely this 14 centuries ago because the people at Madina where this transformation occured were living in an Islamic society. Islam is capable of accomplishing a similar feat even today if it is given the chance of creating an Islamic society and infuse its values among the people.

Alcohol, like sexual corruption, are social problems with medical consequences and to men of conscience they are best tackled at their source (In society). Islam offers the social solution in creating an Islamic society.

RESEARCH AND KNOWLEDGE

Knowledge is an essential prerequisite for performance not only in medicine but in all other human activities even prayer.

Islam recognises division of labour in the community so that each person can devote his energy to acquire knowledge and skills in a particular field so that he or she may be able to perform best in his chosen field as the Prophet Mohammed (ﷺ) said,

"IF ANY OF YOU UNDERTAKE ANY WORK HE SHOULD DO IT PROPERLY".

In a saying of the Prophet (ﷺ) He instructed us to look for knowledge as it is fast expanding and its frontiers are shifting fast. Medical research is revealling facts not known a few years ago and this process will continue as man tries to find out more about himself and the disease that affect him so that he may evolve effective cures. In addition to acquiring the medical knowledge existing at the moment we have to add to it and extend its frontiers. Muslim physicians and medical scientists in particular must have a "frontier mentality" always imbeded with the desire to forge ahead. Islam encourages research and creates a suitable atmosphere for it to thrive. In many a verse of the Qur'an we are urged to explore, to deliberate and to conclude. Thus it is very important that we have some people devoting themselves to research work and extending the frontiers of knowledge. In this context I would like to discuss some aspects of medical research and knowledge.

(1) Since all knowledge ultimately must issue from one Creator, it is not conceivable that it can contradict His religion. God is the ultimate reality so to a Muslim scientist research to further knowledge and get new facts and ideas is a search for reality.

Due to an accident in history that occured in Western Europe in the dark ages and before the renaissance, many people have in ingrained in their minds that religion is fundamentally incompatible with science. If by religion is meant the Christian church of the period which tortured scientists, burned them at the stake and ham-pered the progress of scientific knowledge by using its authority to support wrong scientific facts and preventing exploration for true facts, this assention is right. Islam is, however, very different from that. It has always given a place of honour to its scientists and always encouraged them to do research. Many of them led prayers in the mosque and were leading theological consultants and never experienced any incompatibility between their faith and their scientific work. What happened

in medieval Europe was that the church as an institution had deviated much from the true religion that Jesus Christ had taught.

(2) Science is one of Man's productive ways of exploring his environment and trying to understand himself. It is however not the only way. Many facts important to man in his life do not come from scientific research, many have come as revelations to prophets who in turn passed them to us. Despite its great contributions to human welfare - science has serious limitations. It is therefore wrong to sacrifice all on the "alter" of science and technology and take them as a new God, to be worshipped for this would be a reversal of role. Science has to be at the service of man.

(3) Some facts are known where as others are not. Of the unknown facts some can be discovered by research whereas others cannot for example the nature of the soul. Thus scientific facts are not absolute truth whereas religious facts are. We daily see new scientific theories replacing previous ones because better and more accurate observations bring out new facts and new relationships.

(4) True science leads to IMAN if it is studied with an unbiased mind it leds one to several discoveries and realisations:

(a.) The complexity of creation implies that there is a Creator for such a complex and intricate creation cannot conceivable emerge spontaneously. (b) There is an order and harmony in the universe and research scientists strive to discover physical laws that describe this order and sort out the relationships. As one researches further into the realms of the unknown one is struck by the orderliness of the universe and the harmonious relationships of its various components underneath the apparent chaos. The billions of cells that compose it are each a complex factory, well organised and efficient in its specialised function.

The minute details of each cell's function are well harmonized and co-ordinated with others in the tissues and organs. There is no waste of inefficiency and all are organised for the function of life that may be thrown out of balance now and then by disease. The 19th century French Scientist Clause Bernard was struck by the constance of human physiology when he wrote "le milieu interieure est la condition de la vie libre" constancy maintained in varying external conditions and stresses. An inquiring research scientist must begin to ask himself whether such order and harmony could arise our of nothing or emerge spontaneously. Further reflection will lead him to the conclusion that there was a Creator and a mighty one.

In this way scientific research and knowledge can lead to faith and many scientists and medical men have been converted to belief in God through their scientific researches. The Holy Qur'an alludes to this.

ON THE EARTH ARE SIGNS FOR THOSE ASSURED OF FAITH AND ALSO
IN YOUR OWN SELVES WILL YE NOT THEN SEE *(S 51: V20.21)*

As Muslim physicians and scientists we can help to show these land marks and milestones to our professional colleagues who have not yet recognised the way to God in their professional work.

(5) The Qur'an is not a medical or scientific textbook neither is it a textbook of any other branch of knowledge. It, however, contains several references to the various branches of knowledge and just provides pointers and encouragements to man to explore and get the knowledge for himself. The prophet Muhammed (ﷺ) was not a professional scientist nor a physician. He was a messenger of God with the primary aim of passing on the message which would lay down the guiding principles and moral code for scientific advance.

The Qur'an is the embodiment of all Islam's teaching but needs interpretation for proper understanding. The Prphet's (ﷺ) sayings, life and behavior were an interpretation of the Qur'an in practical terms.

Exigesis *Tafsir*) of the Qur'an during the Prophet's (ﷺ) life time was a relatively easy task because whenever there was a problem he could He approached directly for its interpretation and elucidation. After His death it fell upon the Muslim Scholars to carry on the interpretation. No age has ever claimed to understand the Quran fully, so deep are its meanings that with every era new understandings and appreciation are achieved with the advancement of human knowledge. There are several Qur'anic verses that have become only fully understood and appreciated in our generation, thanks to scientific and technological advances.

Verses of the Qur'an that have scientific connotations can not be understood except superficially by a scholar who is not scientifically trained and there is a place for a Muslim scientist on the panel of *Mufassirin.* Many aspects of the *sharia* involve medical considerations and for proper understanding medical men have to be involved. Two challenges may arise from here. On one hand, we may not have enough Muslim scientists or medical men capable of playing this role mostly due to one sided training because their Islamic knowledge may not match their scientific or medical knowledge. On the other hand, we are confronted by the more traiditionally minded Islamic scholar who will not appreciate the need of associating scientifically or medically trained *Ullamas* in the interpretation of the Qur'an.

We Muslims believe that Islam is the religion that modern man needs (with all his science and technology). It is not easy for one not versed in the scientific and technological achievements of the age to interpret the Quran and the teachings of the Prophet Muhammed(ﷺ)on medical and scientific matters In such a way that modern man will understand them yet modern man must get the message of the Quran because it is relevent to him.

The challenge before Muslim scientists and medical men in the coming century is to make a distinctly Islamic impact on medicine and science. This will require a return to the Quran and other teachings of Islam and finding out the relevant teachings and then related them to the situations obtaining now. So far few efforts have been made in this direction. Let us make the beginning.

MENTAL HEALTH OF MUSLIM MINORITY WITHIN MULTIRACIAL COMMUNITIES: SOCIO-EDUCATIONAL ASPECTS

Sulleman Rajah

Mauritius

The migration of individuals have been from time immemorial a natural drive or purpose. This has been a continuous process, and has seen the establishment of communities spread over the whole world. This natural process has seen the implantations of religious groups within indigenous societies. Such migrations have lead to the propagation of Islam with all the precepts of our Holy Prophet Mohammed (ﷺ) in places where worshipping according to local customs or where other religions had started a conversion of the local people.

The establishment of Islam has been in certain regions firmly implanted in the Northern parts of Africa, the Indian subcontinent, and to a certain extent in the Far East. But South of the Sahara, minority groups came into formation, most settlers in the African regions bordering on the Indian Ocean have been mainly from the Indian subcontinent in the late nineteen century or early twentieth century. They came in as traders or as skilled workers or labourers and maintained their Islamic faith and culture and gave their children an Islamic education.

After the second world war, social changes started to appear in the whole world with the consequence that Western education was given a more prominent part and the children of these settlers were encouraged to take up this western type of education. They had to attend schools run by the priests and nuns, and it was a must for these children to learn the prayers of the Nassaras or to learn the Bible as a class subject. Fortunately, the parents were still able to control their Islamic education, and the children did not have doubts in their mind and were able to get through their studies.

The first generation of migrant children were able to have a wide knowledge of Islamic education and able to get through in life. Madresas were a must for the Muslim children, after *Fajr Salaat* until 7-8 a.m., then they would go to mission or western type schools. At the early part of the nineteen fifties, boys only were attending these schools, but later girls joined these schools. Some girls stopped at primary education level, but some continued their studies to secondary education level.

Though most settlers were traders, some were employed as labourers to do menial jobs. They were staunch Muslims, and were at times pressurized to become christians with the promise of better paid jobs, which fortunately, *Alhamdolillah,* did not tempt them, and continued their *Ibadaat,* according to the teachings of the Holy Prophet (ﷺ)

The early seventies brought changes with all communities, air transport, mass media systems and Western propaganda machines surreptitiously infiltrated most religious faiths. The youth in the western countries became agnostic and cultureless, and have no religious backgrounds or knowledge. Their churches are empty and in some religious groups, the priesthood is reduced to a minimum or their average age is around the fifty. Revival groups are spreading, trying to gather their lost sheep.

However, in the Muslim minority groups, the fall out is negligible, because Islamic practice is being constantly maintained within the minorities, and by Allah's Will, safeguarding these Muslims. Initially, Islam was being taught or explained to the believers in Urdu, but the Holy Quran is continuously read in the Original Arabic text. Now with the second or third generations, the communication is carried out in the local dialect or languages; the explanations and meaning of the Holy Quran and the Islamic education is done in the local language, and hence is easily understood by the majority of the muslim population. And it is remarkable, Alhamdulillah, that where the other places of worships are empty, our Mosques are full, and during the Holy Month of Ramadan, it is a delight to see the Jamaat's attendance.

Naturally, the other religious groups have been examining this natural progress of Islam, and are now trying to campaign for their religions or try to convert our Muslim brothers, and they have failed to do so, through the protection of Almighty Allah. As I mentioned above, the mass media, through television, and other audio-visual techniques is bringing in the lives of all individuals, news, information or education in their own homes. This invasion of the privacy of the individual is a directed one. In an Islamic country, censures act as control to prevent the infiltration of non-Islamic material. Unfortunately, in the western world, either no censure exists or due to the breaking up of cultural values all indecent or pornographic material invade the homes of the population at large.

Of course, the programmes are made or directed for their local population which is becoming agnostic from day to day, and have lost all notions of religion or discipline. Unfortunately, within these countries, the protection or the religious convictions of the minorities is not provided for, and television sets are in the homes of our Muslim brothers and sisters, hence an indirect indoctrination is being carried on.

At *Magrib* prayers, T.V. programmes create tension states in the Muslim children: should they watch T.V., or do they go for their Ibadaat? Musical programmes likewise, show the Muslim youths to learn western dances and songs and may lead them eventually to adoption of Western mores and culture at the expense of their Islamic traditions.

In this region of the Indian Ocean, where Muslims have migrated from the Indian sub-continent, and have settled in the small islands, like Reunion, Seychelles, Mauritius, Madagascar, and the Southern part of the African continent, they maintain their faiths and educate their children. Other religious groups have not interferred directly, but indirectly through the education system and this has been a failure. the majority of the people of this Island with a population approaching one million, and a percentage of Hindus of 52.8% have not allowed pressurization, Muslim 16.6% but in the neighbouring Island of Reunion, which is territorially part and parcel of France, and where the official religion is the Roman Catholic church, and on the principle of "Liberty, Equality and Fraternity" of the French Revolution, the minority Muslim community had to integrate within the French culture. The children of our Muslim brothers over there go to the primary and secondary schools (as education is compulsory) and come into contact with

the other French children and these muslim children have been put through a deculturation process and adopt new values, either in attire, behaviour etc.. These male and female adolescents have a certain freedom which formerly were controlled by their parents. They mix freely and are invited to parties. The parents occupied by their business did not see the danger that their children were going through, until crises situations arose, when their daughters or their sons started eloping with French boys or girls. These crises situations brought to the attention of their parents, the dangerous paths taken by their children, and the neglect, and the lack of control and guidance through a proper muslim education.

The consequence was a series of depressive illnesses seen and treated within the members of the Muslim community there. Anxiety states among the Children, and breakdown of family structures were seen.

The adoption by the young muslims of alcohol and drugs lead to some of them becoming known alcohol and drug dependent subjects.

These crises made the Reunion Jamaat aware of the dangers which were unfolding before their children and Alhamdolillah, they were able to curb the situation and bring back within the fold these muslim youths who had been waylaid.

In another country, the Republic of South Africa, where Apartheid (racial discrimination) is being carried out, an unforeseen beneficial consequence of this Apartheir (which is against Islamic teaching), has been the maintenance and propagation of Islamic principles and practice. The racial barriers put by the South African authorities have been beneficial to Islam. Our Muslim brothers and sisters over there continue to lead their lives according to our religion and the teachings to the Holy Prophet Mohammad (ﷺ) and to bring up their children according to Islam without being put under pressure like in Reunion Island. It is most gratifying to see the number of madressas and mosques which are the centres and pillars of Islam, and bring a sound mental health among the population, and it is to be noted that up to now there is no Muslim psychiatrist in the South African Muslim community. The sound practice of Islam makes it unnecessary for the need of mental health workers, as Islam itself through the Holy Quran and the teachings of the Holy Prophet (ﷺ) make us find a sound balanced mental health.

In Mauritius, where at primary education level, religious classes form part of the curriculum. Unfortunately, these classes are not up to the standard where our Muslim children get a sound knowledge of Islam, and the continuity of their Islamic education has got to be done in *Madressas* after school hours and this post-school education has to compete unfortunately with the private tuition for other subjects.

The consequence was a constant competition for a better achievement at school / college to get a good school certificate or higher school certificate which will allow them to get a white collar job to be able to attend the University. This competition at the primary school education level affects all school children as it is a national examination hence a good result gives access to the better secondary establishments. I see a high number of children before or after this primary school examinations, as the parents of these children tend to expect a lot from their children and they in turn do not want the high hopes put in them by their parents, or their teachers as well, turn to failure.

But once at the secondary level, these adolescents have to go through a constant competitive pro-

cess, so that when they reach the terminal stage of their education, they will be competing for the government scholarships and those who come after the scholars, may apply for one of the scholarships offered by foreign donor countries, and here deserving Muslim students are "politically" boycotted and frustrations and deceptions are observed among them.

Another aspect concerns the Muslim parents who being of a second or third generation, work in their business, and become rich and having acquired a fortune feels that they should migrate from their present home in a Muslim area to another one where the Muslim community is negligible. This wish to rise in social status makes them start adopting values which go against Islamic traditions. They attend cocktails, parties and start partaking alcoholic beverages. To be well "appreciated" they start going frequently to clubs, restaurants, casinos, and to do like the Jones's, start giving parties or cocktails in their new homes, trying to make new sets of friends or neighbours with the result that adoption of these new values are looked by their children as accepted ones and hence could be theirs too. Their children are invited to parties where alcoholic drinks are served, and free mixing of the sexes occur. These parents do not see the dangers to which they expose their children, in joining the mad rat-race to achieve social success, at the expense of their own family and without regard for their Islamic background and religion. They also tend to forget their own poor muslim relatives and may even look down upon them.

Another consequence of their sudden social rise is the imitations of everything that is non Muslim (may be except the food), and they live in a life of make-believe,unnatural and at times almost solitary, in their rich homes, except surrounded by parasites who live at their expense. This rise in the social climbing also leads them to move to residential areas, where praying facilities are not within reach, hence lead to less attendance at the mosques, thereby failing to one of the five basic principles of Islam, which is the Salaat.Likewise, their children too do not attend, and their "friends" are those living in their neighbourhood, and adopt customs foreign to Islam, and subsequently become strangers to their own groups.

The role of the women folk is of primary importance. Muslim women on the whole tend to respect their muslim education, and do their Salaat and read the Holy Quran daily, and set the example to their children. They see that the children pray and read the Holy Quran, safeguarding the continuity of Islam, and their children from the pressure exercised by Western culture and mass education.

If the Muslim women folk do not keep this way of education and Islamic upbringing, the next generation of female parents will forget to inculcate the Islamic education to their children. As mentioned before, the female students are compelled to attend primary and secondary schools, and hence are subjected as the male muslim youths to the attractions and western non Islamic ways of life.

What has been described above appears to be of a social nature, but when an analysis is made of these social influences on minority Islamic groups, one finds that the virus of Western World has been infiltrating gradually these muslims communities tend to disrupt the mental and social equilibrium within the Muslim population.

In the last fifteen to twenty years, there has been a migration of Muslims from the Middle East, India, Pakistan, Malaysia, etc. to Western Europe and to a lesser extent to the United States of America,

and has seen the implantations of Muslim communities. The dilution of these Muslim groups within these countries has not drawn the attention of the leaders of these Minority Muslim groups and their children will be subjected to a bigger pressure in these Western countries where social and religious values are different or inexistent, and could lead to their complete disappearance as Muslims of their next generation. It is, therefore, imperative that our Muslim brothers and sisters who are not aware of the dangers inherent of living in these countries to counteract dangers that are waiting for themselves or their children. Mental breakdowns, behaviour disorders, depressive illnesses, addictions or other neurotic illnesses will be seen.

From our experience, it is of foremost importance that preventive measure be taken now so that Islam as a religion does not lose any of its members, as modern technology and rapid air transport facilities are bringing in our homes destructive measures.

As a Muslim, I hope, *Insha Allah,* that our Muslim scientists and educationalists will help to prevent this disintegration of our newly established minority Islamic communities and continue to see that indirectly their mental health be safeguarded. May Allah grant us the strength and will to see that adverse groups do not make us lose our Iman and that of our Islamic children.

CHAPTER TWO

(Some Selected papers - Not presented)

ISLAMIC MEDICAL MISSIONARY SERVICE.
Dr. Syed Mushtaque Ali.

ISLAMIC MEDICAL MISSIONARY SERVICE

Syed Mushtaque Ali
India

20 years of practical study of health problems - socio-clinical of Muslim in and around the villages within a radius of 50 km of the city of Cuttack - an old capital of the State of Orissa in South-eastern India.

Being socially backward and economically poor, the Muslim, who form 4% of the total population in the state, have been having unfathomable problems of ill-health. Cornered with frustration, I, alongwith some energetic friends of mine, started a free clinic in Kandarpur, a place at a distance of 20 km: a charitable outpatient dispensary inside Cuttack under the banner of Muslim Youth Cultural Association and a general ward in my private Nursing Home for indoor treatment (mostly operative).

Training of young boys and girls to groom them as paramedics have been giving fruitful results but frustration gets deepened when young brilliant doctors are forced to abandon their further study due to financial problems.

This paper is not written by a specialist about specialities for specialists but an outcry of twenty years of frustrated experiences coupled with tortured feeling of deep sympathy from multitude of health problems prevailing amongst our community and possible positive measures recommended to be executed through a central organization.

OUR PROBLEMS

1. MATERNAL / CHILD MORTALITY (The Uncared Ones)

Maternal, perinatal and neonatal mortality have been taking heavy toll of life and the amazing part of this truth is that about 70-80% of such deaths are avoidable.

Maternal Mortality

As compared to the national figures of maternal mortality of 7.8 per 1000 births (1974) the same in our brotherhood stands at 15.5 per 1000 birth in the State of Orissa. The incidence is found to be more in rural areas where more than 70% of our population live, majority of them, under poor socio-economic condition.

Perinatal Mortality

The perinatal mortality rate records as 100-120 per 1000 births - as against 53.8 per 1000 births recorded at Vellore. A high perinatal death rate is an indication of poor maternal health supervision: poor nutrition of mother; inadequate facilities for delivery and care of the baby after birth.

2. SCHOOL CHILDREN: (The Neglected Ones)

80% of our school going children seek their primary education in "MADRASSA" — where the teachings are in Urdu or Arabic medium. Unfortunately, these Madrassas are not covered by School Health Program.

More than 60% of the children are found to harbour affections of the eyes. In severe cases of impaired vision, the victims are as handicapped as totally blind. In less severe forms, the impaired vision resulting mainly from uncorrected refractory errors adversely affects the careers of many young boys and girls who are otherwise brilliant in their respective fields of study. 70-80% of such cases if not treated or treated improperly result in partial or total blindness in later life.

Dental caries, untreated septic tonsillitis and CSOM besides causing general debility, loss of class hours and economic strain on the family are wellknown footsteps for major killers and crippling diseases of the later life.

In the lands of have-nots, all the cards are stacked against health. Inadequate diet, malnutrition besides poor environmental sanitation provide excellent substratum for certain invalidating ailments such as primary complex: Tuberculosis and other infectious diseases. According to the Harvard standard 60% of the children are found to suffer from 1st degree: 20%, 2nd degree: 10%, 3rd degree and of malnutrition. Only 10% of the children have satisfactory nutritional status.

3. CANCER,TUBERCULOSIS AND LEPROSY

Muslim ladies have been found to have major share in late cases of carcinoma of the breast and cervix - mostly because of being in purdah and in absence of qualified lady medical personnel, they show greater reluctance in seeking medical advice in earlier stages. The same reason can partly be attributed for high maternal mortality and Prenatal deaths.

A sample survey for tuberculosis in a rural area showed a positive result in about 55% of the population - out of which about 80% of those having preliminary stage.

4. THE EVASIVE CURABLES

Different communities have put up their own charitable or semicharitable medical institutions where sophisticated treatment is provided to the members of the community either free or at subsidised rates. Christian Medical College at Vellore, South India is an example of the same. Unfortunately, we do not have such an institution in whole of India for us and thus quite a few precious lives are getting jeopardised at their zenith causing colossus loss to our brotherhood.

5. HEALTH UNCONSCIOUSNESS - (High Cost of Ignorance)

Superstition, ignorance and fear are still as much a threat to health as are microbes of the diseases.

6. COMMUNICATION GAP (Burning Problem)

Present day "city-bred" doctor coming out of sophisticated medical institution armed with most modern methods of investigations and treatment, astonishingly finds himself incapable of delivering his goods as a generalist capable of tackling preventive and curative health services in the villages. A sense of frustration engulfs him as the community, expecting some spectacular results, looks upon him an alien with certain misgivings and refrain from seeking his advice and treatment which he is so eager to part with. Thus an ominous gap exists between him and the community and the common man, which requires to be bridged.

7. PARAMEDICS (Bridging the gap)

The communication gap between the doctor and the community requires to be bridged by PARA-MEDICS - Intelligent responsible boys and girls with basic schooling and recommended by their own community are to be picked up and trained in approved hospitals for 12-18 months. After a satisfying training they will be put back in their own community with some kits and a manual for their references whenever necessary.

Working whole time on self-employed basis Paramedics, tailoured primarily for providing preventive care will, in case of necessity, be able to extend curative treatment at the door step of their own community. Simultaneously he or she will provide a meaningful liaison with the doctors posted at villages or towns and serve as *"Hand shake partner"*.

RECOMMENDATIONS

MEDICAL BENEFIT PROGRAMME

The medical benefit programme for the community should be channelled through a central organisation to be named as "ISLAMIC HEALTH ORGANISATION". The whole programme should be self--oriented and not money-oriented. One's own resources in shape of buildings, manpower and local finances should form the basis for enrolment under this organisation. Islamic Health Organisation with its headquarters in the capital city of an Islamic state should function within the following broad principles.

1. *Assessment and evaluation of health problems of each State.*

2. *Provide guidelines for organising preventive health mesures* e.g. care of mothers; children; survey programme and nutritional programme.

3. *Higher training for doctors.*
   Doctors, preferably young with brilliant records should be picked up through a central pool and sent for sophisticated training in some most modernised hospitals under a contract to come back and serve in hospitals under the care of I.H.O.

4. *Hospitals*

Small centres with mobile medical units should be set up covering number of villages. Paramedics should be involved in these peripheral hospitals. Complicated cases requiring sophisticated treatment may be sent to hospital set up in bigger cities. The capital city of the State should have one most modernised hospital to cater to the need of most complicated case...

5. *Islamic College of Medical Science and Research*

In order to have uniformity in teaching and training at post-graduate level, an accepted curriculum should be drafted to be executed under the Islamic College of Medical Science and Research. All branches of Medical Science including the Indigenous medicine should have the place of teaching and research.

RESEARCH

The requirement for research is indispensable but its applicability should be enlarged to find out the hidden treasures of the nature present in its natural environments.

Tremendous strides had been made in the indigenous medical science during the medieval period with the practical teaching of Rhazes, Avicenna coupled with experiences of Indian saints as Vaid Manak but unfortunately it went into total oblivion with the advent of the modern medicine in 14th century. The lost threads need to be picked up and a thorough research should be made in the science as well. The whole ethics of research, clinical, experimental and on drugs, should be based on discovery of simple, low cost, appropriate technology, the result of which are replicable under routinised setting.

ISLAMIC MEDICAL TASK FORCE

Natural calamities, with striking suddenness, produce unpredictible sufferings, and injuries comparable to war-time disaster requires management with adequate medical help. Injudicious handling, undue haste and ignorance particularly in carriage or transportation of the injured to distant places for treatment, have known to cause permanent disability or even death. These problems necessitates adequate and energitic treatment at or near the site of occurence of the tragedy. Thus the need of having a Medical task force which can move or air-lifted to the site of accident within shortest possible time. This Islamic task force, with one unit in each state, will have voluntary services of the doctors, nurses and paramedical staff and equipped with mobile operation theatre, tents, beds, x-ray units, dried plasma and other life saving drugs. The task forces, if circumstances permit, should hold routine joint exercise once every year during the period of Haj. This would not only help the different units from all over the World to assess and evaluate their own unified function but also extend helping hand to the local authorities.

SUMMARY

An amazingly high maternal and infant mortality along with chronic disabling diseases during the school-going age amongst our children, leave those who survive to adulthood perpetually tired and weak. Poor environmental sanitation, lack of health education, paucity of medical amenities alongwith ominus gap of communication between the doctor and the community in rural areas have been found to

be some of the contributory factors for pathetically poor health prevailing amongst our brotherhood.

Preventive, detective and curable medical benefits should bechannelled through a central body i.e. Islamic Health Organisation. Chains of well equipped hospitals are required to be set-up for extending most modernised curable treatment with easy reach of the common man.

Rehabilitation of a patient should form as an essential part of the treatment. Research studies should be made in all aspects of medical science including the indigenous one.

Well equipped Islamic Task Force with doctors and nurses on voluntary basis to combat medical emergencies on or near the site of accident should form an essential part of the massive medical benefit programme.

ACKNOWLEDGEMENT

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PART TEN

MEDICAL ETHICS AS VIEWED BY ISLAM

Part Ten: Medical Ethics As Viewed by Islam

CHAPTER ONE

(Papers Presented)

REPORT ON SECOND SESSION

This session was conducted by Dr. Ahmed Kamal Abdul Magd as the Chairman, with Mr. Arafat Al-Ashi as the moderator. It started at 11.00 a.m. Six scholars presented their papers on "Medical Ethics as Viewed by Islam". In the end, comments were allowed and the session ended at 6.00 p.m. As all the comments and discussions and one paper were in Arabic, we are not including them in this volume.

Editors.

PRELIMINARY MEDICAL ETHICS IN ISLAM

Yunus Muftu
Turkey,

Man has ever been concerned with his health and what relates to it. In every era of the history of mankind, a group of people appeared amongst others, practising medicine. Unfortunately, the belief in demons, stars or evil spirits was prevailing. For this reason, humanity paid a very high price through lost lives to discover the nature of illness. Then came the glorious rise of Islam, which gave respect to science and scientists, starting a new era in the different aspects of medicine. It is noteworthy that great respect was given to all those who tried to help others and practiced the art of healing.

The holistic approach of Islam to health entails that it is a complementary state of physical, psychological and social condition of well being, and not the mere absence of disease or infirmity. There was a complete plan for personal and community health. Islam urged believers to preserve their health and keep strong and useful to the society. Jabir reported Allah's Messenger (ﷺ) as saying.

> "THERE IS A REMEDY FOR EVERY MALADY AND WHEN THE REMEDY IS APPLIED TO THE DISEASE, IT IS CURED WITH THE PERMISSION OF ALLAH, THE EXALTED AND GLORIOUS".

The Allah's Messenger (ﷺ) asked one of his companions to call the physician al-Harith bin Kelda. The fact that this physician was not a Moslem is a clear directive to Moslems to respect science whatever was its source.

Moslem rulers paid great attention to the establishment of hospitals (Bimaristans) and schools (Madrassas). Both of these establishments were inter-related and participated in the qualification of many famous physicians. The famous story of Sultan Mahmoud the second is illustrative. He collected medical students and told them that he invited a physician from a non-Moslem country - Bernard - to teach them. The Sultan urges the students to try to gain benefit and knowledge from Bernard and follow his teachings. He aimed at substituting these by the spies in his army who were practising medicine.

We have many historical events speaking about the distinguished situation of physicians in the Moslem state being cared and respected by rulers. It has been mentioned that the Caliph, Haroon al-Rashid wanted to test his physician Bakhtishu in the presence of a group of physicians. He secretely asked his servant to bring a bottle full of camel's urine. Looking at it, the physician stated that it is not human urine. One of the companions of the Caliph, names Abu Quraish, cried: You are wrong, it is the urine of the caliph's fiancé. The physician insisted that it is not human urine and explained his view on the basis

of its colour, smell and consistency. He had acquired this through his father who was also an eminent physician.

The Caliph asked him jokingly "What do you think we feed the owner of this urine?" The physician said "good barley"! Al-Razi was one of the best physicians of his age. It is said that he failed to prepare some chemical compounds requested by al- Mansour. The later punished him by hitting him on the head with books. Some claim that he lost his vision after this accident. When a "Kahhal" i.e. Ophthalmologist volunteered to treat him, al- Razi asked him first about the anatomy of the eye. When he knew that the "Kahhal" did not know this, he refused being treated by an ignorant man. This throws light on Razi's medical ethics and concepts. Abu al-Nafis was a great scholar in basic medical sciences, but was not a master in therapeutics. He therefore never treated a case not fully understood to him preferring to refer the patient to another physician. He was never ashamed to confess his ignorance about a particular case.

The book "*Al-Mokhtar fil Tibb*" or "Selections in Medicine" written by the Baghdadi physician Ali b. Ali b. Abdul Monem, has devoted separate chapters for maternal and child health. The author discussed all subjects related to mother's health from the start of pregnancy, and even before, till the time of delivery and after. Later he discussed the methods of child care till he is grown up. In other parts of the book he discussed the physician-patient relationship and how to treat patients physically and psychologically. The practice as well as the teachings of this physician are excellent models of ethical principles in medical practice. He died at the age of 95 years. Two years before his death, he was unable to move and remained bed-ridden, yet he continued to teach his students who used to gather around his bed.

We should mention in this respect htat Islam paid great attention to the family as regards medical teachings. It is well known that the mother is exposed to different hazards the result from frequent or short spaced pregnancies or when she concieves at a very young or old age. The Holy Quran denotes that matemity should not be a source of harm to the woman.

> NO SOUL SHALL HAVE A BURDEN LAID ON IT GREATER THAN IT CAN BEAR. NO MOTHER SHALL BE TREATED UNFAIRLY ON ACCOUNT OF HER CHILD
>
> (S2: V233)

Finally, we would mention the distinguished attitude that Ibn Sina had in the field of medicine, philosophy and ethics as a model of Moslem scholar.

AN ISLAMIC CODE OF MEDICAL ETHICS

Hassam Gareeboo

Mauritius.

This is a fairly comprehensive draft of a code of Medical Ethics as set out by Islamic standards; based on the Quran and the hadiths.

The idea of instituting an Islamic code of medical ethics is praiseworthy and unique. In fact, no religious bodies have ever implemented such an idea before and it will undoubtedly prove very useful as guidelines for countries where Islam is the predominant religion. Right from the start, it should be understood that this code will be based exclusively on the Quran and the hadiths. This Islamic code of Medical Ethics would necessarily have to be fathered by an Islamic medical council of which membership of all Moslems doctors in the world must aspire. It would be a worthy decision if this conference decides to patronize such a Medical Council which would act as a focus around which Moslem doctors can gravitate. It would be a starting point for various future conferences on Islamic medicine, a revival of which I sincerely hope will be triggered off by this particular conference.

The Islamic code of Medical Ethics, as proposed by me, is set out below.

1. MOTIVATION:

The allegiance of the doctor is primarily to his patients and only the health of his patients prime over all other considerations e.g. that of religion, nationality, race, colour, creed, caste, politics or personal feelings. He should not be influenced by motives of profit. The practice of medicine must never become a question of money. The only motive is the cure of the patient. He should maintain the utmost respect for human life and human dignity.

Allah syas in the Quran that if:

> ANY ONE SAVED A LIFE IT WOULD BE AS IF HE SAVED. ALL HUMANITY, EQUALLY HE WARNED US THAT IF ONE TAKES A LIFE, IT IS AS IF HE KILLED ALL HUMANITY
>
> *(Quran. S 5:V35)*

The Holy Prophet (ﷺ) said:

> "A MUSLIM SHOULD DESIRE FOR HIS BROTHER WHAT HE DESIRES FOR HIMSELF".

Hadith

> "THE BEST OF MEN IS HE WHO IS MOST USEFUL TO MANKIND".

2. RESPONSIBILITY:

The responsibility of a doctor is tremendous because he is at all times dealing with people's lives, which are sacred. The doctor must honour this responsibility and the trust which the patient puts in him. For this reason, a doctor owes to his patients complete loyalty and all the resouces of his science. He has the responsibility of putting in the maximum effort in all aspects of health care to achieve the optimum result for his patient.

O YOU WHO BELIEVE, BETRAY NOT THE TRUST OF GOD AND THE APOSTLE.
(Quran, S 8:V27)

YOU WHO BELIEVE, FULFIL ALL OBLIGATIONS.
(Quran, S5: V1)

3. KNOWLEDGE:

A doctor must at all times continue to perfect himself in the science and art of medicine. Continued medical education should form part of the daily curriculum of a doctor. It is one of the means whereby a doctor can sincerely feel that he is doing the best he can for a patient.

O, MY LORD: ADVANCE ME IN KNOWLEDGE
(Quran, S20:V114)

WISDOM IS KNOWLEDGE AND IS A GREAT WEALTH.
(Quran. S2: V269).

The Holy Prophet(ﷺ)said

"SEEK KNOWLEDGE FROM THE CRADLE TO THY GRAVE".

4. TEMPERAMENT:

A doctor must always be kind, gentle and generous to his patients. He should always behave correctly towards his patients. He should show compassion to his patients when the occasion demands. This will create an atmosphere of confidence, relaxation and trust in the company of patients and this is conductive to the practice of good medicine. Islam preaches kindness and generosity on the part of Moslems at all times.

IT IS PART OF THE MERCY OF GOD THAT THOU DOST DEAL GENTLY WITH THEM.
(Quran, S3:V159).

ALWAYS SAY A WORD DIRECTED TO THE RIGHT.
(Quran, S33:V10)

5. HUMILITY:

A doctor must be humble because he knows that his knowlege of medicine is always imperfect and inadequate. This humility will permit him to learn from others even from junior colleagues.

The Quran teaches us Humility in all spheres of life.

AND THE SERVANTS OF GOD ARE THOSE WHO WALK ON THE EARTH IN HUMILITY.
(Quran, S25:V63).

6. A DOCTOR CANNOT ALWAYS CURE:

But he must at all times offer hope to his patients. He must always relieve the suffering of his patients, be it

physical or mental. He must never harm a patient, even during an attempt to treat his disease.

> IF GOD DO TOUCH THEE WITH HURT, THERE IS NONE CAN REMOVE IT BUT HE, IF HE DO DESIGN SOME BENEFIT FOR THEE, THERE IS NONE CAN KEEP BACK HIS FAVOUR. HE CAUSETH IT TO REACH WHOMSOEVER OF HIS SERVANTS HE PLEASETH.
>
> *(Quran, S.10:V107)*

Bukhari Vol. 7 No. 579. P. 392. Hadrath Aisha said:

> "WHENEVER ALLAH'S APOSTLE PAID A VISIT TO A PATIENT OR A PATIENT WAS BROUGHT TO HIM HE USED TO INVOKE ALLAH, SAYING, TAKE AWAY THE DISEASE, O THE LORD OF THE PEOPLE. CURE HIM AS YOU (GOD) ARE THE ONE WHO CURES. THERE IS NO CURE BUT YOURS, A CURE THAT LEAVE NO DISEASE".

7. PRIVILEGED POSITION:

A doctor must not use his privileged position for any form of personal gain e.g. in a business transaction with his patients etc.

8. SECRECY:

A doctor must preserve absolute secrecy in all he knows about his patients because of the confidence entrusted in him.

> The Holy Prophet (ﷺ) said:
> "A CONFIDENCE GIVEN IS A TRUST".

The Quran has strict rules about the principle of trust.

> GOD DOTH COMMAND YOU TO RENDER BACK YOUR TRUSTS TO THOSE TO WHOM THEY ARE DUE.
>
> *(Quran, S4:V58)*

9. EMOTIONAL INVOLVEMENT:

A doctor must not become emotionally involved with his patients. He must at all times restrain physical and emotional feelings evoked in him by patients. Should he fail in this or should the patient become physically attracted to him, then it is his duty to pass on the patient to the care of a colleague. (See Quran S4: V26, 27, 28)

10. ABORTION:

Abortion is prohibited. An exception is the therapeutic abortion if it is the only way to save the mother's life.

> KILL NOT YOUR CHILDREN FOR FEAR OF WANT. WE SHALL PROVIDE SUSTENANCE.... FOR THEM...
>
> *(Quran, S 17:V31)*

This verse is probably more relevant to infacticide than to technical abortion.

11. CONTRACEPTION:

The assumption that the world can produce enough to feed every mouth is incorrect because of the limited world food supplies and the unequal distribution of wealth. Therefore contraception should be encouraged by doctors, if advice is sought by his patients.

Some Arabs questioned the Holy Prophet (ﷺ) as regards contraception by the method then prac-

tised - "Azl" Coitus interuptus. He (ﷺ) replied:

"DO YOU DO THIS, IF GOD HAS DECREED THAT A CHILD IS TO BE BORN, NOTHING CAN PREVENT IT".

12. EUTHANSIA IS UNLAWFUL:

NOR TAKE LIFE WHICH GOD HAS MADE SACRED EXCEPT FOR JUST CAUSE.
(Quran. S17:V33)

In an attempt to relieve the suffering of the patient who is dying of a fatal disease, the doctor will unwittingly help the patient on his way to his death which in most cases is a desirable goal. In this particular case, the doctor is not committing Euthanasia but is observing one of the basic rules of medical ethics i.e. relieve the suffering of his patients.

13. EXORCISION:

Appeal to God to remove someone's illness is not prohibited but having recourse to evil practices is definitely prohibited. Bad omens and superstitious beliefs are unlawful and were greatly condemned by the Holy Prophet

14. TEACHING:

A doctor must always be ready to teach his junior colleagues and students in Medicine everything he knows and must not hide any special knowledge or special formula of drugs or special technique in surgery.

The best reference to this item is the life of the Holy Prophet (ﷺ) who devoted his entire life to teaching mankind the righteous path.

15. MEDICAL RESEARCH:

Research obviously has as objective the progress of medical science and this falls under the quest for knowledge.

The Prophet (ﷺ) said:

"GO TO CHINA IF NECESSARY TO SEEK KNOWLEDGE".

Clinical Research may be carried out by doctors if they observe the following principles:

a. Clinical Research is Ethical only if the doctor performing it is ready to include among his patients in the clinical trial his closest relatives e.g. his wife, children, parents etc.

b. Clinical Research should be carried out by scientifically qualified persons.

c. Patients included in clinical research must be made aware of all the facts involved in the research and he should give his consent if he is of age and of sound mind.

d. The right of a patinet to withdraw from a clinical research program must be respected.

16. WITHHOLDING INFORMATION AND EVEN LYING:

To a patient who suffers from a fatal disease like cancer is not a sin. His closest relatives must be made

aware of the nature of the illness. The patient must be told if he demands to know at all cost and the doctor deems thatthis knowledge will not unduly harm him.

17. CONVASSING:

A doctor must refrain from any form of self advertising or convassing. Some degree of advertising is necessary for a doctor who has just started a practice in a certain locality but it has to be discreet and humble.

18. CERTIFICATION:

Certification by a doctor must always be truthful: He should personally verify what he is going to certify.

19. SINCERITY (COMMON GOOD);

Doctors must always work for the common good; even if it means that it is detrimental to his personal gain. For example, doctors must always work towards prevention of disease although this will result in a reduction of his clientele.

This in fact is basically a form of charity and selfishness.

GOD PROMISED YOU FORGIVENESS AND BOUNTIES.

(Quran S2:V268).

Abu Hurara reported. The Prophet (ﷺ) said:

REMOVAL FROM THE WAY OF THAT WHICH IS HARMFUL IS CHARITY.

20. USE OF FORBIDDEN ARTICLES:

A doctor may at certain times use on patients drugs or materials which according to the Quran are forbidden e.g. intoxicants, under normal circumstances

BUT UNDER CERTAIN CIRCUMSTANCES THAT IS TO SAVE THE LIFE OF A PATIENT E.G. USE OF A PORK VALVE XENOGRAFT, USE OF ALCOHOL AND OTHER INTOXICANTS AS DRUGS, THEN THEY ARE PERMITTED.

(Quran S2:V173).

21. BEHAVIOUR TOWARDS COLLEAGUES:

A doctor should behave towards his colleagues as he would have them behave towards him. Doctors should keep good relations among themselves. A doctor should refrain from speaking adversely of his colleagues and should also avoid any remark disparging the skill or judgement of a colleague.

Holy Prophet (ﷺ) said:

" DO NOT HATE ONE ANOTHER AND DO NOT BE JEALOUS OF ONE ANOTHER AND DO NOT BOYCOTT ONE ANOTHER AND BE SERVANTS OF ALLAH AS BROTHERS AND IT IS NOT LAWFUL THAT HE SHOULD SEVER HIS RELATIONS WITH HIS BROTHER FOR MORE THAN THREE DAYS"

(Bukhari 18:57).

22. PRACTICE WHAT YOU PREACH:

A doctor must observe in private and public life what he preaches to his patients for their well being e.g. avoidance of alcohol, cigarettes, intoxicants etc. and observance of moderation in eating habits, regular exercise etc.

23. GENERAL BEHAVIOUR:

The Personal and public life of a doctor must be beyond reproach. He should not engage in any acitvity incompatible with the dignity of his profession.

Here a doctor must submit himself to the general principle of behaviour as preached by Islam.

Abdullah-bin-Omer reported, The Holy Prophet (ﷺ) said:

> "THE BEST OF YOU IS THE ONE WHO IS THE BEST OF YOU IN CONDUCT".

Abu Huraira said: The Holy Prophet (ﷺ) stated:

> "THE MAN WHO EXERTS HIMSELF ON BEHALF OF THE WIDOW AND THE POOR ONES IS LIKE THE ONE WHO STRUGGLES IN THE WAY OF ALLAH OR THE ONE WHO KEEPS AWAKE IN THE NIGHT FOR PRAYERS AND FASTS DURING THE DAY".

Quran Sura 2 V280, Sura 4 V31, Sura 17 V32, Sura 5 V6 provide guidelines for the doctor in his private and public dealings.

The nature of this paper does not permit any summary to be made or conclusions to be drawn, but it is my heartfelt desire that an Islamic code of Medical Ethics be set afoot and an Islamic Medical Council be established.

MODERN MEDICAL PROCEDURES IN THE LIGHT OF ISLAMIC JURISPRUDENCE

Ahmed Sharaf El-Deen,
Kuwait.

Part One

COMPREHENSIVE RULES OF MEDICAL AND SURGICAL PRACTICE (RULES OF ISLAMIC MEDICINE)

These comprehensive rules are divided into three sections:

Section A: Only God has the lawful right to the human soul. No one is allowed to dispose of the human body or part of it for unjustifiable reasons.

Section B: Superior interests should be given precedence over inferior ones; public interests over private ones. If confronted with two evils, we should choose the less. Moreover, necessity oversteps prohibitions.

Section C: A physician's duty is to try to heal patients, provided that they are willing to undergo such treatment (except in emergency cases). He should also aim at keeping the general health and restoring health to ill people. Furthermore, the treatment of a certain disease should not be undertaken at the expense of harming general health (or causing a more serious disease). If the case is hopeless, the physician should refrain from any further treatment.

He should start by trying simpler kinds of medicine. He should also give equal attention to the spiritual condition of the patient, which may well be the cause of his bodily sufferings. He should have the ability to inspire his patients with hope and patience.

A physician is not to be held responsible for unsuccessful results, as long as his proceedings were in the right direction. If he is strictly following the rules of his profession, he is not to be blamed for any unsactisfactory consequences.

Part two

LEGISLATION AND THE NOVEL PRACTICES IN MEDICINE AND SURGERY

Section A: TRANSPLANTING OF HUMAN LIMBS

Is it lawful from the point of view of Islamic legislation to cut off a part of a human body, in order to

plant it in the body of another person? Surely there is nothing wrong with the second half of this procedure (the planting) since it is done for the benefit of a patient with the objective of curing him.

The difficuty lies in the first part of this procedure (the amputation). If we are going to apply the "rule of necessity", then we shall get mixed up about the interests of the two parties; the benefactor and the beneficiary.

There is no direct stipulation either in the Quran or in the Tradition which deals with such a procedure. Legislative rules, however, demand that we take into consideration three separate aspects: the first is religious, dealing with the question of using parts of the human body (whether alive or dead); the second is legislative, dealing with the ways through which such usage can take place; the third is concerned with balancing the interests of competing parties.

As a general rule, no person is allowed to make use of the property of another person, except within the frame of lawful agreements or contracts. According to theologians, parts of the body cannot be disposed of by contract, the same as financial property; since they have included this last item in their legislations. It is true they have considered making use of woman's milk by contract but they differed in their judgements.

These judgements will be illustrated below, in brief, so that we can try to deduce some general rules from them. *First,* we consider human transplanting when there is no urgent need to apply it; *second,* we consider its application in cases of emergency.

First: Optional Application:

Only financial property can be disposed of. The human body cannot, in any event, be regarded as financial property. Alive or dead, the human body cannot be the object of business transactions. The human body has dignity, it may not be treated like commodities displayed in markets.

According to the Hanif Sect, human parts may be regarded as personal property of their owner. Therefore, one can dispose of a part of the body, for a lawful cause, such as to save one's life.

But the question is: Is it lawful to make use of the amputated part? Legislation stipulates that the things which we are going to make use of should be "purified" (immaculate). And are such human parts "pure"? As to the amputated part of a *living* body, no unanimous agreement has been reached, though the majority would say that even if it regarded as pure, making use of it would degrade human dignity. The amputated part of a *dead* body, also, should be buried together with its body, to preserve the sanctity of the dead.

However, a person can make use of a part which has been severed from his own body, as a remedy. It is lawful to resort to forbidden objects for medical treatment.

But can some one make use of a part of the body of another person as a remedy, when there is no other alternative? Most theologions would disagree to this, either out of respect for human dignity or for fear of causing any mischief to the other person.

As to making use of a woman's milk by contract theologians have agreed that it is a lawful act. The

reason is that such milk is intended to go out of the woman's body to be used by others. Theologians only disagreed as to the nature of this allowance, that is, as to whether it is absolute or restricted. They have agreed, however, that a woman may undertake to feed baby for a certain fee.

But the exception here is purposeful, it helps to keep the life of the baby. This means that we can make exceptions which provide for the necessities of other individuals. If legislation has allowed making use of a woman's milk by contract, then it has given precedence to general interests over human dignity.

Second: Urgent Application

Since it is lawful to resort to forbidden drinks and food (in the case of utter necessity) for purposes of medical treatment, by analogy, human parts can be so used. But the question is: Can we cut off some parts of an individual, living or dead, in order to treat another person? According to most theologies, this is not justifiable, even if the benefactor is dead. The Shafii Sect., on the other hand, would allow making use of the bloodless body of a dead person, in cases of emergency, for food. From this, we can deduce that he may also take part from the body of another person, for his own benefit.

Such allowance, however, is conditioned by the following: the case should be urgent, there should be no other alternative, the body should be bloodless, and the merits of committing such an act should overweigh all the merits of not committing it. Thus, it is forbidden to cut off a part from a living body. The reason for this is, either for preserving human dignity, or for fear of causing any harm or injury.

The immediate question, then is: Would transplanting be considered lawful in cases of extreme necessity, when it does not go against human dignity and when its merits outweigh its demerits? It is by answering this question that we can draw a hard and fast line between evidence for allowance and evidence for forbiddance.

Section B: BALANCING THE EVIDENCE FOR PERMISSION AND THE EVIDENCE FOR PROHIBITION

As illustrated above, transplanting was forbidden for two reasons: the preservation of human dignity (whether of the living or the dead) and the fear that it may cause some harm to the benefactor (the person from whose body a part is taken).

The general principle governing the gradation between right and wrong (that is, between the alternatives) is to choose the more advantageous from the point of view of public interests or the less of two evils.

An evident example of this, which we have discussed earlier, is making use of a woman's milk. So, what we want to do now is to prove that it is legal to make use of another person's parts from medical treatment, when such an act is deemed necessary. This is a point of gradation between competing interests. But the question of financial contracts will be excluded from our discussion since it is not related to our point here. What remains to be discussed here, however, is the issue of human dignity. This can be overstepped if we regard such practice as a noble act dedicated to the welfare of mankind rather than effecting one individual.

What we have to prove, then is that transplanting does not go against human dignity, on the one hand; does not go against the conditions of avoiding harm or injury, on the other hand.

First: Securing the permission of the legislator and the benefactor

According to legislation principles, transplanting would be allowed if the benefits resulting from its applications are greater than the benefits gained by not applying it. But the problem lies in appointing an authority, that is, a peroson who would decide in favour of one of the two alternatives.

If there is only one such arbitrator available, he is to be held responsibe for saving the life of the involved patient, even if he is going to sacrifice some personal interets, since the saving of one soul is considered as equal to saving the whole humankind.

Accordingly, if a person gives a patient a part of his own body in order to save the life of the patient, without, however, causing injury to himself, this would be regarded as a noble deed expressing compassion and sympathy, and not at all opposed to human dignity. Hence, it must be worthy of legislative approval.

If, however, this is going to cause some injury to the benefactor, we have to choose the less evil of the two alternatives, provided that the benefactor is willing to give precedence to public interests over his personal welfare. That is, he cannot be compelled to make such a sacrifice even in urgent cases.

Such transplanting, however, cannot be legalized unless we can be sure of its success. If there is any scientific medical or surgical doubt, it should not be undertaken. The same principle also holds with regard to making use of cadavers for anatomical purposes; an act which would secure general benefits for saving many lives. The late Shafii's authorized making use of the bones of dead persons for the sake of mending the bones of living persons, if no other laternative is vailable. To avoid violating the sanctity of death, the dead man's people should be consulted beforehand, unless the dead person himself had authorized them to make use of parts of his body after his death.

As to the recipient, there is nothing legally wrong with the transplanting, since it is done for the sake of keeping his health and life (as when one feeds on forbidden foods in cases of urgent necessity). Following from this rule of necessity, many legal opinions have been officially issued from especialized authorities allowing transplanting of human limbs, only on the aforementioned conditions.

Second: The conditions allowing for cutting parts of the body

Such conditions are related to the extent of the aceptance of the benefactor's motivation. If he is an adult in complete command of his mental faculties, he should do it of his own free will. If he is under age, his patron is not authorized to allow the cutting, unless it is the case that the cut off part will be transplanted in the body of one of the benefactor's sibbings.

We should also take into consideration the following conditions:

1. Conditions applying to human dignity:

Allowance can only be granted if it is necessitated by the health condition of the recipient patient. The benefit gained by the beneficiary should also be greater than the harm done to the benefactor.

The cutting should be done only within limits, that is without undue excess. The donation should also be free from any material motivation. Human limbs should not be treated like commercial items. Legislation has set a price for human parts only as blood-fine. However, we can set up a general system through which the benefactor can be helped financially, in return for the benefits he is going to lose.

2. *Conditions related to the balance between merits & demerits*

(A) *Restrictions protecting the benefactor:* The benefactor should not be seriously injured. The parts taken from his body should be replaceable, like tissues, skin, or blood. In the case of double parts, like the kidneys, the merits of risking the transplanting should outweigh the demerits. Single parts, however, should not be cut off. The governmental budget can cater for the unexpected risks of the operation, if any harm befalls the benefactor.

(B) *Restrictions protecting the beneficiary:* The benefit gained by the beneficiary from the transplanting must be weighty. The advantages of the transplanting should be greater than the advantages of medical treatment.

(C) *Restrictions of balancing the competing interests*

i. *General restrictions* After the physician's evaluation of the interests of each party individually, he should consider the whole case within an overall framework. This framework would be based on social, not personal considerations. That is, the collective interests of the whole society would justify the personal sacrifice of the benefactor.
When balancing the competing interests, moreover, one must also take into consideration the extent of the progress made by the medical sciences. If, for example, the body of the beneficiary is liable to reject an alien part, there is no point in taking the risk, since the demerits, in this case, outweigh the merits.

ii. *Verifying the death:* Using part of a dead body is subject to the same restrictions mentioned above. The only difference is that in the case of dealing with a cadaver no harm or injury can befall it. That is why the balance weighs in favour of the beneficiary. The point is, however, that no cutting whatsoever may take place before verifying the death.

I claim to have revised most, if not all, the Quranic texts related to death, and found nothing specific about what death exactly is. Theologians and traditionalists have not tried to define death from the medical point of view. Modern medicine has proved that a person may be neither alive nor dead, but somewhere in between. The brain may have died, but some parts remain alive with the assistance of artificial resussiatation apparatus. In this case, we want to know to what extent is it legal to cut parts off the body.

Death is divided into three phases. In normal conditions, we have what we call clinical death: first, the heart and lungs stop functioning; second, the brain cells die a few minutes later; third, the body cells die after a certain period (which differs from one person to another). Thus, a person's heart may stop working, but the cells of the heart remain alive. In such a case, death is only apparent, and the heart can be brought back to its normal function by the help of artifical resussitation apparatus. When the

brain dies, a few minutes after the heart and lungs have stopped working, then it is over. So, the criterion of real death is the death of the brain cells. Even after real death, some cells of certain parts of the body remain alive for some time (molecular life). These cells could be kept alive by supplying them with oxygenated blood, so that we can make use of them to help a living patient.

So, taking a part from the body of a person whose brain has died is considered legal. If we take the heart, for example, this would not be an act of killing.

Modern medicine, however, has achieved great progress in the area of transplantation, including the intensive care for a person about to die. This raises a problem which we need to consider in detail.

THE LEGAL LIMITS OF RESUSSITATION OR INTENSIVE CARE

Intensive care is discussed here as an example of medical practices which can be either allowed or prohibited, depending on whether it helps to keep an existing life, or it helps to prolong a sure death. It has also raised a religious problem with respect to the notion of bringing the dead back to life; a notion which contradicts the laws of heaven, since only God can do that. In order to arrive at the truth, we have to examine the exact boundaries of life and death when resussitation is applied.

First quest

"Intensive Care Prolongs Life"

Arrest of pulmonary and cardiac functions, it takes only a few minutes for the brain cells to die. During these few minutes, the person is still considered alive; he can still be saved before the brain cells dies. Thus, using resussitation in this case is a means to prolong the person's life. The question is not that of bringing him back to life, because he is still legally alive, even though some functions have stopped working. This means that a physician supplying a patient with artificial respiration apparatus, should not disconnect the apparatus before making sure that the brain cells have died, even if the apparatus is going to save another life (because people are all equal with regard to their right to live).

However, the physician might find himself in a crucial position if faced with more than one patient, and only one apparatus is available. In such circumstances, and all physical conditions being equal, the physician will have to make the right choice. Priorities however, should be based on objective considerations, such as the potential chances of saving the life in each case. In other words, his choice should not be based on considerations related to richness, authority or kinship. It will be more appropriate to charge a medical group, not a single physician, with the duty of making the decision.

Second quest

"Intensive Care Prolongs Death"

In centres of intensive care, physicians sometimes find that the cases calling for attention outnumber the available apparatus. They sometimes also find that an apparatus is used, not to save the life of a patient, but to prolong the final decision of death of another patient. We must note here that once the brain cells have died, it is absolutely lawful to disconnect the apparatus.

Question No. 1: Does intensive care mean bringing the dead back to life? We have seen that bringing the heart and lungs back to their normal function (before the brain dies) is not the same as bringing the dead back to life. To waken a patient from a deep coma, does not also mean bringing him back to life (in this case, the brain stops functioning but its cells remain alive). When the brain cells die, the patient is medically and legally dead; no human power can bring him back to life.

Some legislators went as far as saying that real death can only be realized, not after the bodily systems have stopped working, but after the complete disintegration of such systems, that is after autolysis of the cells. To my thinking, death is realized long before that. It is realized, according to modern medicine, by the death of the brain, which causes all the nervous functions of the body to stop working. To say that real death is the autolysis of the cells is not true since it is possible to preserve cadavers long after death (as in the case of embalmment).

Question No.2: Is it legal to put an end to intensive care? If the legislator has allowed medical and surgical practices for the preservation of life and health, the allowance ceases to hold with the termination of life. This applies to the medical practice represented in the resussitation of a person whose brain has actually died. Although the science of medicine would consider the heart of such a person to be dead, Islamic Jurisprudence is only concerned with heart beats as conclusive evidence. It is only when the heart stops beating that a person is to be considered dead. Although this criterion, now, seems primitive, it has its advantages with respect to the preservation of human rights to their full extent.

The legal difficulty lies in the problem of differentiating between somatic life and molecular life. If somatic life comes to an end, is it lawful to terminate molecular life?

1. Legislative opinion with regard to stopping intensive care

The distinctive components of human life are perception, feeling and the ability to keep in contact with the outside world. Such distinctive components cease to be when the brain cells die. Thus, to bring resussitation to an end in such cases, does not constitute an act of kiling, according to law and jurisprudence. (That is, killing a dead person is not murder.) So, if the physician is convinced that he is dealing with a cadaver, he should pay due respect to the sanctity of death. If he keeps the artificial resussitation apparatus connected, he is doing no more than prolonging the molecular life artificially, when the human life has already come to an end. Alternatively, he may be prolonging his last point of death in vain. The physician should refrain from committing such absurd acts. He should disconnect the apparatus so that it may be more usefully employed with living patients. A patient who has lost his human life would not have liked his last way to death to be so much troubled. It is also the right of the patient's family to ask the physicians to put an end to such practice; and it is the moral duty of the physician to do so, paying due respect to human rights.

There is no difficulty in saying that the disconnection of the apparatus before the brain dies is considered an act of killing; and that it is not considered an act of killing if the apparatus was connected after the brain had died. The real difficulty lies in the case when such an apparatus has been connected before the death of the brain, and disconnected after it. The patient in such is, from the point of view of medicine, a dead person, but from the point of view of law and jurisprudence, he is not yet dead, since

his death has not been formally declared. If the physician interferes before death takes place, he should not declare him dead before securing all the formal procedures which follow real death . On the other hand, he should not prolong such procedures so as not to hurt the feelings of his relatives, and so as to devote more time and effort to the task of looking after urgent cases.

2. Conditions to be fulfilled before stopping intensive care

We should take into consideration the various interests of the different parties, before deciding to stop the action of an artificial resussitation apparatus. Such interests include the benefit gained by the patient to whom the apparatus is connected, and the benefit that might be gained by connecting the same apparatus to other still living patients. We have already referred to the principle of giving precedence to the better of two choices and the less of two evils. It is quite evident that the perservation of natural life is more important than the preservation of artificial life.

The rule we propose to enforce here is that such cases should not be handled by an individual physician, but referred to a group of specialists. If such a group of physicians can become certain that the patient will never regain natural life, they should appeal to an official authority to obtain a permission for stopping the action of the apparatus. The official authority , in turn, would only agree to such an appeal after undertaking the formal procedures (like issuing an official statement or birth certificate). It is only then that the physician can disconnect the apparatus; his action would be completely legal and faultless.

CONCLUSION

The new medical and surgical scientific discoveries have made a colossal impact on our world, infringing upon our traditions. Such traditions consider the sanctity of the soul and the body as some of the pillars of our laws and legislation. If left without restrictions and limiting conditions, such discoveries wile effect great changes in our traditions, thoughts, and even morals. Thus, theologians should always seek new legal opinions to govern the application of such discoveries, taking into consideration the new potentialities of medicine and biology, without, however, contradicting the generalities of Islamic jurisprudence. Otherwise, the new discoveries in biology and medicine may do more harm than good.

The theologian should accept only that aspect of scientific research which serves the interests of legislation. Meanwhile, he should not stick to traditional judgements and old theologian exertions which can no more suit our modern age, and the immense discoveries revealed by the human mind.

Thus, the criterion on which this research is based, is the extent of agreement between the new medical achievements and the principles and generalities of Islamic jurisprudence.

I should also refer to the fact that lawful opinions should be based on precise scientific information. Hence, our natural and legal scientists should work hand in hand in order to arrive at the conclusions concerning legal judgements of the new scientific achievements. Such arrangements include not only legal laws, but positive laws as well.

THE PHYSICIAN'S ETHICS AND KNOWLEDGE OF ISLAMIC FIQH

Abdul Sattar Abu Ghedah
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INTRODUCTION

The Islamic Studies related to Medicine

As I wanted to tackle a subject that would b erelevant to the activities dealt with in this Conference, I thought science. Islam had greatly encouraged, and took care of medical sciences, in a way that helped the development and continuity of these sciences. The aim of this papeer, then, is to try to locate Medicine within the Islamic studies in general.

However, I am not going to deal with the historical or the interpretational aspects. The first of these two points refers to the history of the efforts exerted by scientists in writing medical books. Anyone who cares to look into specialized bibliographies, will find many examples of great medical works which are of universal high renown, such as those written by el-Razi, Ibn Sina, el-Zahrawi, el-Masri, Ibn Rushd, al-Andalusi, Ibn el-Nafees, and many other great Muslim scientists. The second of the two points (the interpretational aspect) deals with the relationship that holds between modern medical theories and Islamic legislative controls. This subject was also extensively dealt with by many writers.

Rather than dealing with the historical and interpretational aspects, we want to shed some light, in this study, on the originality of Islamic Medicine. Such a study then is best regarded as an initiative offered to other writers to start investigating the various aspects of this subject, starting with the Quran, through Sunna and Sirah(life of the Prophet) (ﷺ) and ending up with Islamic Jurisprudence and its legislative disciplines.

Legislative views on Medicine

From the legal point of view, a Moslem should be knowledgeable in the profession he practises, so that his actions and his earnings would be completely lawful. In the past, some theologians expressed certain doubts with regard to the legality of the profession of medical treatment as a whole. Later on, such allegations were refuted by the fact the Prophet (ﷺ) and his followers had resorted to medical treatment.

It is a legal obligation for every society to supply itself with the necessary medical practitioners.

Jurisprudence and Medical Experience

Medical experience has been discussed from the legislative point of view, as it relates to the Islamic laws which govern conditions of worships, relieving from acts of worship, or passing judgements in certain cases which involve parts of the human body. As it is a general principle of Islamic Jurisprudence to rely more heavily on natural observable facts than on the technical experience of a certain individual, the available alternative is to recruit a team of especialized medical experts.

The physician's experience may be resorted to in the following cases, which are related to conditions of worship:

a. Purification by water: which can be replaced by artificial (simulated) purification when the need arises, as in the case of splints.

b. Prayers: which can be performed in various bodily positions, depending on the physical condition of the patient.

c. Friday's Prayers: the patient may be relieved from the duty of attending it, when the physical condition of his body or feet does not allow him to walk to the mosque.

d. Fasting: It is only the pjhysician who can decide whether the patient's disease is chronic or not; if it is, the patient may atone for not fasting in Ramadan by charitable offerings; if it is not, the patient may substitute fasting in Ramadan by fasting on other days.

e. Fatal Diseases: these are not hopeless cases, but diseases that end up in death. The physician's decision is the only arbitrator in these cases, which are catered for by detailed legislative acts. Islamic legislation provides accurate criteria for dealing with all cases, needs, and contingencies. Such criteria can only be accurate if we refer, all the time, to technical experience. Examples illustrating the application of these criteria are various and manifold; such as the cases of sexual impotence (or other forms of inability) in marriage, which are discussed in detail in some great textbooks of the Islamic heritage, like "El--Hedayah" (The Guidance), "El-Furu" (The Branches), "El-Majmu" (The Sum Total) and others. Obviously, in all these cases, it is the physician (sometimes, the midwife) who has the final say, supported in his/her decision by his/her long technical experience in the field.

The Responsibility of the Physician

The responsibility of the physician is two-sided, one side is related to the terms of contract, the other side is related to the acts of law.

1. **The terms of contract:** The physician is bound to his patients by the general principles applying to all kinds of contract. He is paid a certain fee in return for the services he is going to render to his patient. Two stipulations, however, must be borne in mind:

(a) Recovery: The terms of contract, originally apply to duration, not to results. The physician offers his services for a certain period of time, by the expiry of which he is lawfully entitled to the appointed

fee, regardless of the results obtained from his treatment. That is, he is paid for "taking care" of the patient. Theologians differ, however, in their approaches to the stipulation of "recovery"; those who approve it take into consideration the legality of making contracts for "unknown ends", those who disapprove it take into consideration the element of "uncertainty about the future".

(b) Safety: It is unlawful to stipulate that the physician secures the safety of his patient from complications, because this goes beyond the capability of the physician. Since the physician cannot guarantee obtaining such ends, the stipulation itself is invalid. Legislation, here, protects the physician, if he gets involved in such an unfair contract.

2. **The acts of law:** This applies only to any offence a physician might commit within the limits of his professional practice. In general terms, the physician is not to be held responsible for any mischief caused by the practice of his profession. In some cases, however, the physician decides in favour of certain alternatives to the exclusion of others, relying on his scientific and practical experience. If, in such cases, the treatment results in death or in physical damage, the following stipulations should be taken into consideration before passing a judgement on him:

- Whether or not he is truly knowledgeable, not relying on false fame.
- How good or bad were his intentions before he started the treatment.
- Whether or not he worked in conformity with the technical rules laid down by medical scientists.
- Whether or not he was granted the permission to apply the treatment, either by the patient himself or by the patient's patron.

Resorting to Risky Treatment

The general rule to be applied here is choosing the less of two evils. If treatment is going to cause serious damage, it must be brought to an end. However, if stopping the treatment is going to cause more serious damage, then it must go on. Theologians also allowed cutting a damaged part off the body if it is going to infect the whole body.

Human Anatomy

In the past, people opposed the idea of dissecting the human body for anatomical purposes, on grounds of the sanctity of the body, whether alive or dead. Later on, theologians permitted such acts if they were based on more beneficial purposes, such as cutting open the womb of a dead women in order to save the embryo, dissecting certain parts of the body to reveal the secrets of a crime, or performing anatomy for purposes of medical education. In all these cases, theologians abided by the principle of choosing the less of two evils. The idea of "human transplantation", though highly complicated, is primarily based on that principle.

Resorting to Forbidden Drugs

The great majority of theologians allowed resorting to forbidden or unclean kinds of drugs in cases

of necessity, that is, when there is no other alternative. The general rule applying here is that necessity overrules prohibition.

However, Ibn el-Qayyem opposed this view on the grounds that such forbidden sorts of food or drink can never be hygienically useful, as this would be an ethical and logical contradiction. In allowing their medical use, the legislator would be encouraging people to make pretexts for using them for pleasure. Besides, he says, they cannot be a means of curing patients since they lack holy blessing. Thus, the disadvantages of the prohibition outweigh the advantages.

Examining the private parts

Physicians are not forbidden to look at private parts of the body. This view is in accordance with the two basic principles of "necessity overrules prohibition" and "choosing the less of two evils". Obviously, the private area of the male body is that from navel to knee, of the female body is the whole of it except the face and hands, with special emphasis on the genitals. Thus, a physician is allowed to look at such parts, or even to touch them (which is a more serious matter) only as much as the case demands.

Treatment of the other sex

It would be more in conformity with Islamic legislation if female physicians, rather than male ones, treated female patients. Theologians, however, allowed violating this rule when the need arises, such as in cases of emergency, in cases where no woman physician is available in the locality, or in cases of needing a more advanced level of experience or specialization. A male physician however, can always ask the help of a female attendantt.

Seclusion with a Woman

It is strictly forbidden for a man or a woman to get secluded from the company of others with a member of the other sex, that is, unless they are husband and wife, brother and sister, etc. (By seclusion here is meant one member only to each sex). To be secluded means to be safely locked in, according to Imam Ahmed and others. Thus, public places like hospitals or clinics cannot be regarded as secluded areas.

Treatment by Non-Moslem Physicians

Medical treatment is best conducted in an atmosphere of security, trust and ease. That is why, it is better not to seek treatment by a non-Moslem physician unless one is urgently compelled to do so. In such cases, however, one should use caution with regard to compounded drugs, and with regard to medical advice related to religious matters.

Medical Ethics

Speaking about the medical ethics that should be acquired by the physician, el-Taj el-Subky refers to the following properties:

- He should be kind to the patient, always offering good advice.
- If he sees that death is imminent, he could ask the patient about his will, only tactfully.
- He can look at the private parts of the body, but only as much as may be necessary.
- He should exercise patience, never pressing the patient to speak quickly in order to save time. He should not start practising the profession before being completely qualified to do so.
- He should bear in mind that his medical practice is not going to deter the execution of God's will.

There are also some other ethical properties derived from the general rules and manners of this profession, besides being provided for by jurisprudence. These ethical properties are related to keeping the secrets of his patients and abiding by the Hippocratic oath.

One more general ethical principle is that related to "calling on the patient", which is the duty of every Muslem of any profession. The physician, however, ie especially asked to apply utmost kindness, care and compassion, as this would create an atmosphere of sympathy and companionship. When calling on a patient, he should bear in mind the following points:

a) Calling on patients is a religious ethical duty.

b) A visitor should pray to God for a speedy recovery from illness, uttering some of the attested prayers..

c) A visitor should start by enquiring about the health conditions of the patient. In all cases, the reply would be: "By God's grace he is cured", except in the case of a physician asking about the progress of treatment.

d) A visitor should show kindness and patience towards the patient's sufferings.

e) It is hateful to wish death to the patient.

f) A visitor should comfort and soothe the patient.

g) A visitor should praise the patient by referring to his good deeds and worthy accomplishments, in order to rid him of his fears and restore his faith to him.

h) A visitor should stimulate the appetite of the patient.

i) A visitor should ask the patient to pray for him undoubtedly, seeking the patient's prayers would calm him and restore his self-confidence to him.

j) After the patient has recovered, he should be reminded of his pledges to God during his illness.

These were some points related to the knowlege and ethics of the physician. They are to be taken as representative, not as inclusive points. However, they show us the elevated rank alloted to medicine in legislative theology and ethics.

The best conclusion to my paper would be to quote the words of Imam el-Shafii, which relate physical treatment to spiritual treatment:

> "DO NOT DWELL IN A COUNTRY THAT DOES NOT ACCOMMODATE A THEOLOGIAN AND A PHYSICIAN".

ISLAM'S INFLUENCE ON MEDICINE

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The great influence of Islam on modern western medicine was the subject of many published books and researches. But unfortunately, few researches deal with the influence of Islam as a religion and teachings on medicine, and also its power in creating a healthy society having immunity against diseases.

The first to acknowledge these facts was the famous writer Bernard Shaw in the introduction to his book "The Doctor's Dilemma" He states that when the British imperialism occupied Sandwitch islands, a plan was implemented to convert the nationals from Islam to Christianity. Missionaries were established there for such purpose. Bernard Shaw here comments saying that unfortunately it has succeeded and resulted in the spread of communicable diseases all over the island. They neglected the Islamic teachings of personal hygiene and community health.

The following is a quick display of the impact of Islam on medicine:

1. Islam is the first religion to present a scientific and realistic theory on illness and acknowledge medicine.

Before Islam the whole world believed that illness is a devil which dwells in the human's body as a punishment of committing a sin against the gods and the only remedy is to perform a certain prayer to get that devil out of the patient's body. If the patient is not healed this means that his faith is stillweak. Church in the middle ages did forbid people from treatment and scientists were prosecuted and burnt as witches and their books were burnt too. Bernard Shaw described this saying that people refrained from calling doctors and left it all to God's mercy. This was the case in Britain until the 19th Century when a law was passed to imprison a father for six months who's child died without being examined by a doctor.

On the other hand, Islam gives us the following example: When the prophet (ﷺ) immigrated from Mecca to Madina, the sick approached him to be healed. He visited the sick and prayed for their relief, but he always told them to call a doctor. People were amazed and he(ﷺ) would say:

> "THERE IS A REMEDY FOR EVERY MALADY AND WHEN THE REMEDY IS APPLIED TO THE DISEASE IT IS CURED WITH THE PERMISSION OF ALLAH, THE EXALTED AND GLORIOUS."

Some of the companions asked whether using medicine and preventive measures would stop the fate and providence that Allah wanted. The Prophet (ﷺ) would answer:

"IT is GOD'S divine decree."

When the Prophet(ﷺ) himself was sick he used to follow medical prescriptions.

This proves that in the 6th century Islam came with a new concept of sickness which abolished the old concept of demons and sins.

2. Rejection of superstitions is one of the great achievements of Islam in the field of medicine, such as tattoo, foretelling and consulting the stars etc... The Prophet (ﷺ) says:

> "WHOEVER GOES TO A FORTUNE TELLER OR A DIVINER AND ASKS HIM ABOUT ANYTHING AND HAS BELIEVED WHAT HE SAID HE BECOMES A NON--BELIEVER IN THE REVELATION BY MOHAMMAD"

Thus Islam divorced medicine from priesthood in an age when medicine was mixed with jugglery.

3. Islam legislated a law to protect the medical profession from superstitions and at the same time to protect the practicing physician from professional mistakes. The Prophet (ﷺ) says:

> "WHOEVER PRACTISES MEDICAL TREATMENT WITHOUT BEING KNOWN TO POSSESS THE REQUISITE EXPERIENCE WOULD BE RESPONSIBLE FOR THE LOSS SUFFERED BY THE PATIENT".

This saying is exactly what we know today as a medical licensing and it states clearly the responsibility of professional mistakes. Contemporary laws protect the specialist from the results of diagnostic errors as long as it was not out of negligence or deliberate intentions.

4. Islam encourages specialization in medical profession

The Prophet (ﷺ) said:

> "WHICH OF YOU IS THE MORE SKILLED PHYSICIAN IN TREATING THIS AILMENT."

5. Islam declared an important scientific fact i.e. Every illness has its remedy, and even if some illnesses have no cure now, it is because of our lack of knowledge about it. Hence we should try to achieve such knowledge.

6. Islam considers cleanliness obligatory to Muslims and personal hygiene as a measure of *prevention of illness and a part of faith.* Islam rejects that dirt is a sign of modesty or a way of approaching Allah. Islam pointed to pollution of food, clothes and encourages purification. Islam defined *Najasah* and mentioned elements of it: pus, urine, stools, vomitus, saliva of dogs, the body of the pig, any putrified object etc... Taharah means freedom from Najasa. Purification can be achieved by means such as washing by running water, burning by fire, boiling in water, drying, etc...

Islam did not discuss cleanliness in a general manner but in full detail describing measures to each body part. This shows that Islam is the pioneer in the field of preventive medicine.

7. Thanks to Islamic teachings, Moslems used for the first time anaesthetics in surgery. Before Islam, the only known anaesthetic was wine. Its prohibition in Islam was a motive for Moslem scientists to search for the alternative methods, such as Arabic hemp.

8. Islam was the first to realise the infectious nature of diseases and prescribe isolation as a means of their control.

> "A DISEASE CARRIER SHOULD NOT INTRODUCE HIMSELF TO A HEALTHY PERSON"

Thus a person suffering from infectious disease should not mix with other people.

9. Islam established a scientific rule to control epidemics such as plague. The Prophet says:

> "WHEN YOU HEAR ABOUT IT DO NOT ENTER THERE AND WHEN IT HAS BROKEN OUT IN A LAND AND YOU WERE THERE, THEN DON'T RUN AWAY FROM IT.'

This is exactly what is followed in cases of epedemics in our modern times.

To appreciate more the previous saying of our Prophet (ﷺ) , we can go back to a book entitled "The Story of Medicine" by Joseph Gar isolation as a means of their control.

> "A DISEASE CARRIER SHOULD NOT INTRODUCE HIMSELF TO A HEALTHY PERSON"

Thus a person suffering from infectious disease should not mix with other people.

9. Islam established a scientific rule to control epidemi **10. As for genetics** and how it affects generation after generation, the Prophet (ﷺ) ordered to select the suitable wife for the seed because this would be transmitted to the new generations.

10. As for genetics and how if affects generation after generation, the prophet (ﷺ) ordered to select the suitable wife for the seed because this would be transmitted to the new generations.

11. In the book Story of Medicine by Joseph Garland, he states how Islam dealt with what is known today as geriatrics. Islam has advanced the care and respect of the old people. The first to mention it from the medical point of view was Ibn Sina in his book "The Canon". Islamic hospitals had a special ward for aged people.

12. Maternal and Child welfare Islam gave much care and respect to maternity. The rights of the pregnant and lactating were legislated. The same regarding the infant with respect to care and feeding. The science of maternal and child health owes much to the teachings of Islam.

Part Ten: *Medical Ethics As Viewed by Islam*

CHAPTER TWO

(Some Selected Papers - Not presented)

1. ISLAMIC CODE OF MEDICAL PROFESSIONAL ETHICS
   Dr. Abdul Rahman C. Amine and Dr. Ahmed El-Kadi
2. RULES AND ETHICS OF PRACTICING MEDICINE IN ISLAMIC HERITAGE.
   Dr. Mahmood Nazim El-Nesimy.
3. RULES AND ETHICS OF MEDICAL PRACTICE AS MENTIONED IN ISLAMIC MEDICAL HERITAGE
   Dr. Mohammed Al-Taieb Bassess
4. AN ETHICAL CODE FOR ISLAMIC MEDICAL PRACTICE.
   Hkm. Mohammed Qutubuddin Farooqi.
5. THE PRELIMINARY REPORT FOR THE GROUNDWORK FOR THE FOUNDATION OF A CODE OF ISLAMIC MEDICAL ETHICS
   Dr. Ihsan A. Karaagac.

ISLAMIC CODE OF MEDICAL PROFESSIONAL ETHICS

Abdul Rahman C.Amine and Ahmed Elkadi

U.S.A.

Medicine was defined by Muslim physicians such as al-Razi (841-926 A.D) and Ibn Sina (Avicenna, 980-1036 A.D.) as the art concerned with the preservation of good health, combating of diseases and restoration of health to the sick. For several centuries, the world has witnessed and benefited from the great advances made by Muslim physicians in the area of health sciences. These advances were not just based on technical skill or intellectual superiority. They were equally well founded on a clear understanding of the role of the Muslim physician as derived from Islamic teachings and philosophy. For thousands of years, ethics have been recognized as an essential requirements in the making of a physician. Al-though the ancient codes of ethics [1,2] have to some extent streassed this requirement, they were still deficient and contained grave errors[3]. Contemporary codes of ethics tend to be more liberal and less restrictive[3]. The Quranic ethics, on the other hand, stand out as a perfect model for all mankind, all professions and all time.

The medical ethical requirements proposed in this paper are primarily based on Quranic ethics. They include guidelines for the physician's behavior and attitude, both at the personal and professional levels. The same standard of moral and ethical values should guide the physician in his private life and while conducting his professional business as well A person who lacks moral values in private life cannot be trusted in professional activities, even with the highest professional and technical qualifications. It is impossible for a person to have two different ethical standards. Truthful is God the Almighty when He says:

"GOD HAS NOT MADE FOR ANY MAN TWO HEARTS IN HIS BODY.."

(Quran *S 33: V4,4)*

The following verses from the Quran are most suited as a guide for the personal characteristics of the physician:

LUQMAN ADMONISHED HIS SON: MY SON' HE SAID SERVE NO GOD BESIDES GOD FOR IDOLATRY IS AN ABOMINABLE INJUSTICE". WE HAVE ENJOINED MAN TO SHOW KINDNESS TO HIS PARENTS, FOR WITH MUCH PAIN DOES HIS MOTHER BEAR HIM AND HE IS NOT WEANED BEFORE HE IS TWO YEARS OF AGE. WE SAID: GIVE THANKS TO ME AND TO YOUR PARENTS; TO ME SHALL ALL THINGS RETURN. BUT IF THEY PRESS YOU TO SERVE BESIDES ME WHAT YOU KNOW NOTHING OF, DO NOT OBEY THEM. BE KIND TO THEM IN THIS WORLD AND FOLLOW THE PATH OF THOSE WHO SUBMIT TO ME: TO ME YOU SHALL ALL RETURN AND I WILL DECLARE TO YOU ALL THAT YOU HAVE DONE. "MY SON, GOD WILL KNOW ABOUT ALL

> THINGS BE THEY AS SMALL AS A GRAIN OF MUSTARD SEED, BE THEY HIDDEN INSIDE A ROCK OR IN HEAVEN OR ON EARTH, GOD IS WISE AND ALL--KNOWING. MY SON, ESTABLISH REGULAR PRAYER, ENJOIN WHAT IS JUST AND FORBID WHAT IS WRONG; ENDURE WITH FORTITUDE WHATEVER BEFALLS YOU, FOR THIS IS FIRMNESS OF PURPOSE IN THE CONDUCT OF AFFAIRS. DO NOT TREAT MEN WITH SCORN NOR WALK PROUDLY ON THE EARTH; GOD DOES NOT LOVE THE ARROGANT BOASTER. RATHER, LET YOUR GAIT BE MODEST AND YOUR VOICE LOW; THE HARSHEST OF VOICES IS THE BRAYING OF THE ASS . *(Quran, S31: V13-19)*[5]

God also says:

> ... AND THOSE WHO RESTRAIN ANGER AND FORGIVE OTHER MEN, VERILY GOD LOVES THOSE WHO DO GOOD . *(Quran: S3:V134)*[6]

God further states:

> "IT WAS THE MERCY OF GOD THAT YOU HAVE DEALTH WITH THEM GENTLY AND IF YOU WERE SEVERE AND HARSH-HEARTED THEY WOULD HAVE BROKEN AWAY FROM ABOUT YOU. THEREFORE, FORGIVE THEM, PRAY FOR THEIR FORGIVENESS AND CONSULT THEM IN THE CONDUCT OF AFFAIRS; THEN, WHEN YOU HAVE DECIDED TO PROCEED, DEPEND ON GOD FOR SUPPORT: VERILY GOD LOVES THOSE WHO DEPEND ON HIM. *(Quran, S3:V159)*[7]

Based on the above, the Muslim physician must believe in God and in Islamic teachings and practice, both in private and public life. He must be grateful to his parents, teachers and elders. He must be humble, modest, kind merciful, patient and tolerant. He must follow the path of the righteous and always seek God's support.

The physician equipped with the above-listed virtues is capable of complying with the needed professional requirements. The professional requirement is to acquire and maintain proper knowledge. God makes it clear in the Quran:

> ... SAY: ARE THOSE EQUAL, THOSE WHO KNOW AND THOSE WHO DO NOT KNOW?... *(Quran, S39:V9)*[8]

God also states:

> ... VERILY, THOSE WHO FEAR GOD AMONG HIS SERVANTS ARE THOSE WHO HAVE KNOWLEDGE... *(Quran, S35:V28)*[9]

Therefore, the believer is encouraged to always seek knowledge.

> "... SAY: O MY LORD, ADVANCE ME IN KNOWLEDGE". *(Quran, S20:V114)*[10]

The physician must also abide by the legal rule regulating his profession provided they do not violate Islamic teachings. The need to respect law and order is reflected in the following verse:

> "OH YOU WHO BELIEVE: OBEY GOD AND OBEY THE APOSTLE, AND THOSE CHARGED WITH AUTHORITY AMONG YOU..." *(Quran, S4:V59)*[11]

Recognizing God as the maker and the owner of both patient and physician, it is only logical that the care provided to his patient must be in accordance with God's guidelines.

A subject of great importance is the subject of life. Life is given by God and cannot be taken away except by Him or with His permission. God says in the Quran:

> IT IS HE WHO CREATED DEATH AND LIFE, THAT HE MAY TRY WHICH OF YOU IS BEST IN DEED... *(Quran, S67:V2)*[12]

He also says:

> ...NOR CAN THEY CONTROL DEATH NOR LIFE NOR RESURRECTION . *(Quran, S26:V3)*[13]

God further states:

> ... WHOEVER KILLS A HUMAN BEING IN LIEU OF ANOTHER HUMAN BEING NOR BECAUSE OF MISCHIEF ON EARTH, IT IS AS IF HE HAS KILLED ALL MANKIND AND WHOEVER SAVES THE LIFE OF A HUMAN BEING, IT IS AS IF HE HAS SAVED THE LIFE OF ALL MANKIND... *(Quran, S5:V32)*[14]

The physician therefore has no right to terminate any human life under his care. This also applies to the unborn baby since clear evidence indicates that human life starts at the time of conception. Consequently, the physician has no right to terminate the life of the unborn baby unless it constitutes a definite threat to the mother's life.

The physician must realize that God is watching and monitoring every thought and deed. This was clearly indicated in the verses quoted earlier from - Sura 31-of the Quran[5]. The same verses also indicate that the parents' demands are not to be obeyed if they are in violation of God's orders, inspite of the fact that parents are considered to be the most important persons to their children after God. Following the same principles, the physician has no right to follow popular demand or his patient's wishes if they are in violation of God's orders.

Based on sound logic and clear Islamic teachings, the physician has no right to recommend or administer any harmful material to his patients. The most concise yet comprehensive guide in this matter is found in the following verse of the Quran:

> ... AND HE MAKES FOR THEM GOOD THINGS LAWFUL, AND BAD THINGS FORBIDDEN... *(Quran, S7:V157)*[15]

This implies that anything forbidden by God must be bad or harmful; anything proven to be bad or harmful must be forbidden.

The humanitarian aspect of the medical profession must never be neglected nor overlooked. The physician must render the needed help regardless of the financial ability or ethnic origin of the patient. A beautiful hint is found in the following Quranic verses:

> AND THEY FEED, FOR THE LOVE OF GOD, THE INDIGENT, THE ORPHAN, AND THE CAPTIVE, (SAYING) WE FEED YOU FOR THE SAKE OF GOD ALONE: NO REWARD DO WE DESIRE FROM YOU, NOR THANKS *(Quran, S76:V8-9)*[16]

When entrusted with the care of a patient, the physician must offer the needed advice with

consideration for both the patient's body and mind, always remembering his basic obligation to enjoin what is just and forbid what is wrong.

The physician must protect the patient's confidentiality, reflecting God's description of the believers:

> THOSE WHO FAITHFULLY DIIP THEIR TRUSTS AND THEIR COVENANTS
>
> *(Quran, S 23:V8)*[17]

The physician must adopt an appropriate manner of communication and be reminded of the ethics of speech referred to in the Quranic verses quoted earlier in this paper.[5]. God also describes the good believers in the Quran and says:

> FOR THEY HAVE BEEN GUIDED TO THE PUREST OF SPEECHES...
>
> *(Quran, S22:V24)*[18]

Situations requiring the physician to examine patients of the opposite sex are always a test of his moral character and his strength. A basic instruction is found in the following Quranic verses:

> SAY TO THE BELIEVING MEN THAT THEY SHOULD LOWER THEIR GAZE AND GUARD THEIR MODESTY; THAT WILL MAKE FOR GREATER PURITY FOR THEM, AND GOD IS WELL ACQUAINTED WITH ALL THAT THEY DO. AND SAY TO THE BELIEVING WOMEN THAT THEY SHOULD LOWER THEIR GAZE AND GUARD THEIR MODESTY..
>
> *(Quran, S24:V30-31)*[19]

God further says:

> GOD DOES WISH TO LIGHTEN YOUR BURDEN, FOR MAN WAS CREATED WEAK..
>
> *(Quran, S4:V28)*[20]

It is, therefore, advisable that the physician examine patients of the opposite sex in the presence of a third person whenever feasible. This will be an added protection for the physician and the patient.

The physician must not criticize another physician in the presence of patients or health personnel, remembering the wise Quranic advice:

> O YOU WHO BELIEVE, LET NOT SOME MEN AMONG YOU MAKE FUN OF OTHERS; IT MAY BE THAT THEY ARE BETTER THAN THEM; NOR LET SOME WOMEN MAKE FUN OF OTHERS; IT MAY BE THAT THEY ARE BETTER THAN THEM; NOR DEFAME, NOR BE SARCASTIC TO EACH OTHER, NOR CALL EACH OTHER BY OFFENSIVE NICKNAMES...
>
> *(Quran, S49:V11)*[21]

God further says:

> GOD DOES NOT LOVE THAT EVIL BE VOICED IN PUBLIC SPEECH, EXCEPT WHERE THE PERSON HAS SUFFERED INJUSTICE...
>
> *(Quran, S4:V148)*[22]

The physician must refuse payment for the treatment of another physician or his immediate family. There is no specific instruction regarding this particular matter in the Quran or Islamic tradition. However, reference is made to another situation which may be used in analogy. God says regarding Zakat money:

> ALMS ARE FOR THE POOR, THE NEEDY AND THOSE EMPLOYED TO ADMINISTER THE FUNDS...
>
> *(Quran, S9:V60)*[23]

Here is a situation where the persons providing a certain service are entitled to the use of the same

service at the time of need. Applying the same principle, the physician who provides the health service to others is entitled to the use of the same service at the time of need.

Last, but not least, the physician must always strive to use wisdom in all his decisions and the reward will be great. Truthful is God the Almighty when He says:

> ... AND HE TO WHOM WISDOM IS GRANTED, IS GRANTED A GREAT DEAL OF GOOD INDEED... *(Quran, S2:V269)*[24]

In closing, reference is made to the Oath of the Muslim Physician adopted by the Islamic Medical Association in 1977[25], and which reflects the spirit and philosophy of the Islamic code of Medical Professional Ethics proposed in this paper.

In summary, the Muslim physician must believe in God and in Islamic teachings and practice in private and public life; be grateful to his parents, teachers, and elders; be humble, modest, kind, merciful, patient and tolerant; follow the path of the righteous; and always seek God's support. The Muslim physician must stay abreast of current medical knowledge, continuously improve his skill, seek help whenever needed and comply with legal requirements governing his profession; realize that God is the maker and owner of his patient's body and mind, and treat him within the framework of God's teachings; realize that life was given to man by God, that human life starts at the time of conception, and that human life cannot be taken away except by God or with His permission; realize that God is watching and monitoring every thought and deed; follow God's guidelines as his only criteria, even if they differ with popular demand or the patient's wishes; not recommend nor administer any harmful material; render needed help regardless of financial ability or ethnic origin of the patient; offer needed advice with consideration for both the patient's body and mind; protect the patient's confidentiality; adopt an appropriate manner of communication; examine a patient of the opposite sex in the presence of a third person whenever feasible; not criticize another physician in the presence of patients or health personnel - refuse payment for treatment of another physician or his immediate family and strive to use wisdom in all his decisions.

THE OATH OF A MUSLIM PHYSICIAN

Praise be to Allah (God), the teacher, the unique, Majesty of the heavens, the Exalted, the Glorious, Glory be to Him the Eternal Being who created the Universe and all creatures within, and the only Being who containeth the infinity and the eternity. We serve no other God besides Thee and regard idolatry as an abominable injustice.

Give us the strength to be truthful, honest, modest, merciful and objective.

Give us the fortitude to admit our mistakes, to amend our ways, and to forgive the wrongs of others.

Give us the wisdom to comfort and counsel all towards peace and harmony.

Give us the understanding that ours is a profession sacred that deals with your most precious gifts of life and intellect.

Therefore, make us worthy of this favored station with honor, dignity and piety so that we may devote our lives in serving mankind, poor or rich, wise or illiterate, Muslim or non-Muslim, black or white, with patience and tolerance, with virtue and reverence, with knowledge and vigilance, with Thy love in our hearts and compassion for Thy servants, Thy most precious creation.

Hereby we take this oath in thy name, the Creator of all the Heavens and the earth and follow Thy counsel as Thou have revealed to Prophet Muhammad (ﷺ)

> WHOEVER KILLETH A HUMAN BEING, NOT IN LIEU OF ANOTHER HUMAN BEING NOR BECUSE OF MISCHIEF ON EARTH, IT SHALL BE AS IF HE HATH KILLED ALL MANKIND. AND IF HE SAVETH A HUMAN LIFE, IT SHALL BE AS IF HE HATH SAVED THE LIFE OF ALL MANKIND..
>
> *(Quran: S5: V35)*

This Oath is adopted by the Islamic Medical Association of U.S.A. and Canada.

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RULES AND ETHICS OF PRACTICING MEDICINE IN ISLAMIC HERITAGE

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The rules and ethics related to medical practice consist of: having the necessary medical experience, being authorized to practice medicine, and adhering to the good manners and the Islamic legislation governing it. Violations of such rules (to be discussed at the end of this paper) incur great medical responsibility.

A. MEDICAL EXPERIENCE

Such medical experience is brought about through training and scientific competence. These two stipulations form the basis of correct diagnosis and right choice of the suitable kind of medicine.

The implication of the Prophet's (ﷺ) tradition is the encouragement of scientific research: to be always on the look out for new effective and powerful kinds of medicine. This tradition also implies encouraging physicians to try to promote their medical knowledge by keeping up with new discoveries in the fields of diagnosis and treatment.

The Prophet(ﷺ)urged the people to seek medical treatment from those who are experienced in medical practice; and warned those who lay claim to the profession falsely, saying that they are to be held responsible for all mischief endangered through their ignorance and their professional transgression.

The Prophet(ﷺ)also did not try to discriminate between a Moslem and a non-Moslem physician, since what really counts, in matters of medical treatment, is experience and honesty. That explains why some non-Moslem physicians attained elevated ranks among caliphs and ruling classes.

B. MEDICAL AUTHORIZATION

The first Islamic State lasted no more than ten years. That period was replete with conquests, events and a great many acts of legislation. There were so few physicians and the medical practice at that time was not subject to any legal authorization.

Later on, rulers were assigned the right to regulate the different affairs of the society, and people were asked to obey the rulers.The Abbasid caliph al-Muktader bi-Allah was then, the first ruler to issue an

order stipulating that in order to practice medicine a physician must pass an examination. By such an act, he laid a precedent for many other nations.

The Chief Physician of Baghdad Ibn al-Telmiz also used to inspect the physicians of Iraq. He once summoned all physicians in order to find out how much knowledge does each of them keep in store.

C. MANNERS RELATED TO PRACTICE

Arab Islamic culture urged all physicians to preserve the old instructions of Hippocrates (which were laid down in his charts) only adding to them, or improving upon them. The Chief Physician of Cairo Ibn Radhwan, commenting on Hippocrates' instructions, mentioned seven stipulations that a physicians must abide by. These are:

1. He should be morally apt, having no physical defects, intelligent, considerate, sensible and good natured
2. He should be clean and well-dressed.
3. He should be discreet enough to keep the secrets of his patients.
4. His desire to heal the patients should outwiegh any material considerations.
5. He should be interested in learning and in trying to be as much useful to others as possible.
6. He should be magnanimous, modest, truthful, never coveting what he sees at the places that he frequents.
7. He should be trustworthy (being entrusted with souls and moneys of other people); prescribing no medicine that would cause any mischief or miscarriage, treating an enemy just as faithfully as he would treat a friend.

We can notice that all these qualifications (with the exception of being free from physical defects), as human characteristics, are also mentioned in the teachings of Islam, some as obligations, others as favourable options.

In addition to such personal properties, a physician (whatever his creed may be) must also distinguish himself in Islamic ethics and manners by acquiring such attributes as the following:

1. He should spare no effort in securing an ill person, in performing all necessary aids, day or night as much as he can afford it.
2. He should treat patients with all due kindness, be lenient when questioning them, always taking into consideration their psychological and social conditions.
3. He should resort to tact in getting a patient to know about his illness, always trying to reassure him . He should refrain from speaking about any emminent danger (giving that piece of information only to his close relatives).

4. He should wish the patient a speedy recovery, always consoling him with kind words, or seeking holy blessings, so that the patient would remain contented and hopeful of God's relief.

5. He should refer the patient to a specialist or a medical consultative committee , whenever the need arises.

6. If more than one physicians are visiting a patient, the most experienced of them should have the upper hand in matters of treatment, otherwise, it would be the oldest of them.

7. He should refrain from backbiting or slandering his colleagues.

D. RESPECTING ISLAMIC LEGISLATION

The aforementioned medical ethics apply to physicians of all creeds. A Moslem physician, however, should respect and adhere to certain Islamic rules and acts of legislation. These are:

1. He should start any examination, diagnosis, or medicine prescription by seeking holy blessings: "In the name of God, most gracious, most merciful."

2. He should not uncover the private parts of the body except for as much as is necessarily needed.

3. He should not prescribe forbidden kinds of medicine needlessly , resorting only to such drugs (which have side effects) when it is absolutely necessary.

4. He should not, by any means,terminate the life of a patient whose recovery is hopeless or who is suffering from severe pains. Instead, he should try to help and relieve him until he dies.

5. He should not perform a sterilizing act (such as depriving a woman of reproductive ability) unless the case absolutely necessitates it.

6. He should draw upon his medical resources and the patient's general condition,before advising a patient to abstain from fasting in Ramadan, since fasting is itself sometimes helpful in the treatment of some illnesses.

E. THE TREATMENT OF OTHER SEX

According to Islamic teachings, a male physician should not examine a woman and vice versa. The only exception to this is when no female physician is available, or when the one available is not sufficiently artful or to be trusted by the patient or her family. According to Islamic Jurisprudence, the rule is: "Necessity oversteps prohibitions." In such cases, however, a third party should be present, except in first-aid emergencies.

F. THE PHYSICIANS' FEE

It is lawful for the physicians to earn his living through his practice. In old times, physicians used to charge the rich people very great fees; in return, they would treat the poor people free of charge.

Of late, many countries have started to fix medical fees for: examining a patient, treatment applications, medical analysis or x-rays.

However, it should be remembered that a physician should help the needy in one way or other. Such help could be rendered by relieving a poor patient from part of the fee (if not all), by offering him some money to buy the needed medicine, or by getting the necessary medicine for him. By this acting, he promotes the humane and noble ideals sponsored by Islam.

G. MEDICAL RESPONSIBILITY

A physician who ignores such medical rules and ethics incurs medical responsibility with regard to his transgression. If a physician, however, commits an unintentional mistake, which is not made through ignorance, he is to be pardoned. If it is done of ignorance, he should be punished. There are, however, some rules, which govern his contigency:

1. If a physician is clever enough and did his best, but some mischief befell the patient as a result of the physician's practice, this should not be judged as an offence.
2. If the physician is ignorant, and caused mischief (pretending to knowledgeable through powerful pompous speech) he is to be held responsible for what he did.
3. If the physician is artful and did his best, but could not control his doings quite right (could not handle the patient sufficiently well), he is to pay a certain amount of money as a fine.
4. If the physician is artful enough, but amputated a part without being granted the permission to do so, the case is disputable among different theologians.

I suggest that the funds of Physicians' Guilds would make up for such unintentional mischiefs. Other medical transgressions should be handled by the laws of the country.

The subject of observing medical responsibility and keeping the secrets of the profession, needs ample detailed studies, and should be administered by a committee embracing the best theologians of the different sects in Islamic countries and including representatives from medical guilds and ministries of health.

Lastly, I would like to extend my gratitude to the Ministry of Health in Kuwait and to those who helped in the preparation of this Conference, contributing to its success and to those who sponsored it.

RULES AND ETHICS OF MEDICAL PRACTICE

(As mentioned in Islamic medical heritage)

MOHAMMED AL TAIEB BASSESS,

Tunis

One of the most interesting manuscripts is a book "Al-Madkhel" by Abdullah Mohamed din al-Haj al-Abeday al-Maleky, one of the greatest men of the 8th century "Hijri" who died in 737 A.H. / 1336 A.D. in Cairo. This book is an important document as it exhibits in detail the Islamic Society at that age; how it suffered from ignorance, supersitions and corruption of moralties.

The author tries, in his book, to show his contemporaries the right way, good behavior and that all their actions should be sincere and for the sake of God. That is why all his rules and thoughts are based on the Islamic principles. The author discusses only the wrong side and how to correct it.

The physicians should always practice his work for the sake of Allah, his intentions should be only the service of Allah. So this will make his work a part of worship of Allah, and not for any worldly benefit, only to help his Moslem brothers, and to participate in their ailments with the greatest sympathy.

Ibn al Haj continues to emphasize the major importance of the moral aspect of medical prctice. The physician should approach his patient smiling in a cheerful way. He should be very honest in keeping the secrets of his patient, unless the patient permits him to tell such secrets to those who would sympathise and pray for him.

No one should be present while the doctor is examining the patient except one who could help and who is so close that the patient is not embarrassed in his presence.

The physician should enquire from the patient about his illness very slowly and listen in patience; sometimes he should repeat the questions as the patient could be hesitant or might be suffering from pain to talk easily.

In this part of the book, the author proceeds to criticize the physicians of his age, how they started writing or talking while the patient is still trying to explain his troubles thinking that they are clever or experienced. Hurry is ugly (according to Sunna) and especially in medicine.

The physician should know all about his patient,his health in general, his moods, his up-bringing, his

environment, his food and the drugs taken before. He should ask the patient and whoever is close to him or serving him. He should even inquire about the patient's parents and treat him accordingly. He should examine the patient's urine, since it is a major and decisive factor of his illness.

The physician should consider the financial state of the patient, if he is well off. The physicians should prescribe the suitable medicine,if not he should prescribe whatever the patient could afford.

If the physician is paid, he should accept the payment with the intention of using it as a support to continue his noble work. Paid or not paid should be the same for him, even not being paid should be better for the real payment is in heaven.

The physician should classify people in different groups.

First Group are the rich, he could accept their payment.

Second Group are the scientists and men of religion and those are neither rich nor poor. He should not accept payment and if he did so, only in case of need.

Third Group are the poor, he should even give them money to buy their medicine. The author proceeds mentioning the good manners and principals the physician should adopt.

What came in "al-Madkhel" does not include all medical ethics, but it is an examqple of what our grandfathers believed in.

In case of being unable to recognize neither the illness nor the treatment he should not prescribe any drugs or treatment since it is a waste of money.

The physician should be very tender and sympathetic and soothing according to the prophet's (ﷺ) saying"

"GOD IS THE-HEALER, YOU ARE ONLY A FRIEND".

This is a link between our past and present and discusses on our problems today. The previous text emphasises the moral attitude of the physician which affects directly the patient's morale and influences his treatment.

It touches also the morale of the physican himself in carrying his duties, sympathizing, soothing and caring for his patients, without considering the financial profits. Such principles will raise the standard of the profession .

As for the section dealing with the poor, it is magnificant, since he did not only advise free treatment, but also payment for the medicine.

The text did not advise only the physician but the patient and his family as well, so that they could help the physician to perform his duties. Medicine was not only the concern of physician but of other public figures too.

PROFESSIONAL INSPECTION OF PHYSICIANS AND MEDICAL PRACTICE:

The Islamic Administration originated the system of 'Al Hesba" i.e. Inspection.The duties of the

"Muhtaseb" was to supervise the different groups in the society in its behavior and dealing with the public and to fight cheating and superstitions. Control of medical practice was one of his main functions. Before any one practised medicine, he had to fulfill certain conditions and rules designed especially for physicians. Books of "Hesba" stated in details such conditions, rules and methods of control.

First: Scientific definition of physician.

Second: There should be a Chief Physician "Hakeem", famous for his wisdom and experience, who takes an oath before resuming his duties.

Third: To set an examination for each branch of medicine and after passing it, he could start practising.

Fourth: A list of duties to be followed in practical work.

Fifth: In case of a dispute, the Chief Physician should be the judge.

Sixth: Investigation of malpractice and trial of the physician by the court.

Seventh: Physicians should swear modified Hippocratic Oath before they are given the licence to practice medicine.

We should be very proud of this great system with its details as a proof of our Islamic heritage and the discipline to the Islamic society and of the high standard which Islamic Medicine had achieved in those eras.

The teachings of Islam do not contradict any of the detailed regulations necessary to control medical practice in our times as long as they are furnished on correct basis.

— The physician should be honest, religious and trustworthy.

— The physician should differentiate between Halal and Haram (allowed and forbidden) in his profession.

— The physician should not prescribe any 'haram' medicine unless it is really essential.

— The physician is responsible in front of Allah, since he deals with people's lives.

— The physician should take only payment necessary to support him to practise his noble profession.

— He should approach his patient cheerfully and sympathetically.

— He should keep his patient's secrets.

— His should care for his patients' psychological as well as physical state.

— He should not burden his patient with too much medicine.

— He should be patient and rather slow in examination, on history-taking and enquire his relatives too.

— If he fails to reach the diagnosis he should abstain from experimenting with a doubtful treatment.

AN ETHICAL CODE FOR ISLAMIC MEDICAL PRACTICE

Mohammad Qutbuddin Farooqi

India

Certain medical practices developed recently such as transplantation of organs, artificial insemination, post mortem examination, use of alcohol, contraceptive measures, other prohibited articles, and practices, are discussed in the light of Islamic Teachings.

INTRODUCTION

In this paper the ethical aspects of newly emerged problems of medical profession are discussed which bear much importance from Islamic point of view.

From the time medicine was practised some code of ethics was also followed. Hippocrates was the first physician who realised the need and laid down the principles of medical ethics, known and in practice as, "Hippocratic Oath". It was revised in different periods by different persons and committees, in 10th century by al Majoosi, and Abul Hasan al-Tabri, in 13th century by Ibn Rathwan of Cairo, in 12th century by Arnold of Villanova, in 18th century by Thomas Percival, in 1847 by American Medical Association, in 1910 by Flexner, in 1955 again by American Medical Association, and in 1964 and 1975 as a declaration of Helsinki, to mention a few. The basic percepts of medical conduct have remained the game over 2000 years.

Muslims (Arabs) acquired medical knowledge from Greece Egypt and India, etc. Whenever they took any thing from others they examined and reshaped it according to Islamic principles and teachings. To muslims, alcohol is absolutely (حرام) prohibited article, but to others it is not so, thus consumed freely in daily life as a drink and used in medicine, specially in tonics. Conversely mulsims abstain themselves from it and keep their medicine, too, free from it. Instead of alcohol they recommend the use of honey (عسل) about which Allah says that there is a cure for human beings in it, (فيه شفاء للناس) a pure, (طيب) chemically tested and natural preservative and itself a remedy for diseases. Similarly, mulsims count all excreta as (نجس، أذى) dirty and harmful and dislike its use.

Therefore, a separate code of Ethics for Islamic Medicine is inevitable to keep mulsims on the correct path showed by Allah; to save them from evil practices and so from perdition of this world and the hereafter. Islam is the only religion which guides man in every walk of his life, from birth to death and from thoughts to action and insists the believers to follow the guidance strictly and devotedly. The believer when stands on this path firmly, gets enlightenment and satisfaction thus cries out; (ان صلاتي ونسكي ومحياي ومماتي لله رب العالمين) , where his thoughts and actions do not transgress

the divine limits imposed upon him by Allah and Rasool. Today number of medical practices go against Islamic teachings as there is no proper sense of (طیب وخبیث) (حلال وحرام) in it. Islam is for (کافۃ الناس) the whole mankind and presents an exemplary and un-parallel standard of ethics, therefore, it should be promulgated throughout the world and adopted.

1- TRANSPLANTATION OF ORGANS.

The description of human organ transplantation is found in old chinese and Indian literature which dates back to IInd and IIIrd century B.C. The first successful kidney transplantation was done during 1951-53 by HUME, and in dogs by Ulman and Correl in 1902[5]. Many more organs have been tried in organ transplantation programme, including heart, lungs, cornea, ovaries, Fallopian tubes, skin grafts, pancreatic islet cells, intestine, spleen, and bone marrow etc. Consequently, organ preservation and tissue banking are the fields that have progressed enormously in recent years[6].

The first legislation is the E.C. Grafting Act 1952 replaced by Human tissue Act 1961.

These statutes provide that the person "In lawful possession" of a dead body may anthorize the removal of parts of the body for therapeutic purposes[7].

The principles which, in England, have been called "Contracting in" and "Contracting out", are of special significance.

Under "Contracting in" a person's body parts will not be available for transplantation unless he consents during his life time. On the other hand "Contracting out" asserts that all body parts of all dead persons should be available for the stated purposes, unless the deceased has recorded an objection during life time. The wishes of relatives will be irrelevant. (It was introduced in France by statute in December, in 1976 and in law of Hungry since 1972). There is a clear divergence of views in the community and those who opposed "Contracting out", often expressed the strongest objection to the idea of the human body, after death, being generally available (marketed) as a source of parts for community use.[7] In this matter, the Australian Commission adopting European ethics has condoned, even encouraged payment for blood, semen, pituitary gland and kidneys for transplantation[8]. Further it is confirmed that the wishes of Australian Community are that the death should be pronounced without undue delay in cases of irreversible Coma, So the tissues and organs used for therapeutic purposes which is confirmed by the Commission determined by opinion poll[8].

This clearly shows the direction towards which the world aiming. Donating organs or tissues by a person during his life or giving consent to use different parts of his body after death, apparently seems to be an act of great sympathy and an excellant deed. The person thinks that his body which will reduce to dust, how nice it would be if used for the benefit of mankind. It also seems an innocent operation by a sugeon. But when we reflect over it from Islamic point of view certain facts are revealed.

Satan, who is our enemy has challanged that he will use all his efforts to mislead man and drag him away from the path of Allah and at one occasion he said:- ولامرنهم فليغيرن خلق الله

In the past the types of (تغیر في خلق الله) were not so develooped and clear as are to day.

Castration, tatooing, use of others hair for beauty by women are strictly prohibited in Islam and described as:- (تغير في خلق الله) , then one can imagine about the transplantation of organs. One may doubt that it is correct for healthy persons but what about sick, serious and dying? To understand this problem, one has to answer this question, who is lawfully in possession of a dead body, raised by the worldly legislation. The same court at another place declared, as An English judge put in 1969. "A man may declare himself ready to die for another but the surgeon must not take him at his word". As no consent whether, "Informed" "Advised" "written' Notarized, or otherwise recorded, would give him immunity from criminal charges.[7]

It means, even if a person wants to die for other his offer is not accepted which shows that a person has no right for this type of sacrifice.

Perhaps, man when he wants to donate his organs thinks that he is an absolute owner of his body. Conversely, Islam teaches the believer that every thing belongs to Allah and nothing to him. When a thing does not belong to him it is obvious that he has no right to spare it.

The evil of "Contracting out", is very aweful as after death the different or all organs of a deceased will be preserved and made available for use leading to infamous trade of human organs and consequent crimes. The another alarming point is "The declaration of death without undue delay in cases of irreversible coma, and the use of tissues and organs for therapeutic purposes, if no valid objection present. It has two evils, use of organs which is already discussed and the second declaration of death in coma state. The evil of both the two are clear, hence, needs no explanation.

The guidance given through Quran and Hadith is very clear and leave no room for doubt or difference of opinion If at all the benefits of transplantation establish , it should be given up by Muslims to abide by the divine law. Nobody has right to interfere in religious teachings given by Allah, the Almighty. No living man can be put to risk for others and no part of the dead used either to save life or to correct the invalidity. Such cases should be left to meet their fate as is done when treatment fails, as no body is eternal and indispensible in this world.

It is therefore, recommended that the practice of transplantation should be discarded and the humanity saved from this evil and indicent practice. Instead of transplantation medicinal remedies should be found out for organic diseases with a firm belief that there is a remedy for all diseases (لكل داء دواء) and artificial limbs may be tried in place of limbs severed from a dead body.

2. ARTIFICIAL INSEMINATION

Desire for children is natural but as a matter of fact some of the couples remain childless, more in rich and less in poor. It has always been tried to combat sterility by medical profession but with little success. In primary sterility cases it has no remedy to offer. Islam has clearly explained that to whom so ever Allah wants keeps sterile. (ويجعل من ليشاء عقيما)

It shows that Allah is all powerful and man not so. Adoptation of children is allowed by some religions while in some other even acquisition of others semen is also allowed to compensate this deficiency, but these are strictly prohibited in Islam.

Sterility may be found both in man and woman. In case man is sterile artificial insemination is advo-

cated, which is heterologous (semen taken from a person other than husband). Semen is obtained by masturbation and deposited by means of a syringe in or near the cervix of the uterus. The use of frozen semen for A.I.D. is becoming increasingly common. Legal aspects of A.I.D. as applicable to India are:-

1- The donor and recipient can not be held guilty of adultery as Sec. 497, as there is no sexual intercourse.

2- The child will be illegitimate and so cannot inherit property [11]

It is also being recommended by some that woman may accept a gift of semen from big and famous persons to have genious children. What a shame, an abomination?.

An evil act of A.I.D. starts with evil practice of masturbation. A.I. done with permission of husband or without is very shameful, contemptous, humiliating and evil which throw away the man even below the rank of animals (أولئك كالانعام بل هم أضل سبيلا)

The integrity of a lineage bears much significance in Islam to develop a healthy, righteous and pious society and to keep up the high ethical values. That is why the adoptation of children is not allowed in Islam.

There may be no sexual adultery in A.I.D. but it is a clear racial adultery because of which the child is held illegitimate. Muslim society keeps up racial integrity to its most and can not tolerate any adultery in it.

It is, therefore, recommended that the contemptous and abusive practice of A.I.D. should strongly be condemned and legally prohibited.

3- POST-MORTEM EXAMINATION

Human body is a master-piece and mystry of the nature. It has been under the keen study for more than one thousand years Each and every fibre is desected and studied still there are areas which are not understood properly. Nature blesses man for his efforts so he thinks that ultimately he will find out the reality which always remain away like a horizen, towards which one can march but can never reach.

Medico-legal autopsy is performed to establish identity, cause of death, nature of death (whether accidental, suicidal or homicidal) and the time since death, with an object to control the crimes.

Statistical data collected carefully from police and courts alone can show the percentage of success obtained in achieving the said objectives and to what extent that has reduced the rate of crimes. There may be no doubt, certain indications are there for it but in most of the cases it seems unnecessary and injudicious. It is performed even in cases where the cause of death is quite clear. Not only this but some of the organs are also removed with or without permission of relatives, for further tests.

One can not remove either a part or a portion of a dead body according to Islamic teachings. At the time dead body is abluted if a portion of a nail is detached it is put with it in shroud and burried.

It is, therefore, recommended that medico-legal autopsy should be restricted to the cases where it

becomes inevitable for the above mentioned purposes. Even, in such cases permission should be sought for from Islamic Court and relatives, before it is conducted.

4- USE OF ALCOHOL AND OTHER PROHIBITED SUBSTANCES IN MEDICINE

The concept of (حلال وحرام) prohibited and allowed edibles is found in all religions whereas Islam has described these two types very clearly. The list of allowed articles is bigger than of prohibited. (من حرم زينة الله التي اخرج لعباده) Articles, in one way or other harmful to human beings are alone prohibited in Islam and alcohol is one of them (ان الله لم يجعل شفاؤكم في ما حرم عليكم واثمهما أكبر من نفعهما ، انه ليس بدواء لكنه داء).

Modern medicine now has realised the harmful effects of alcohol consumption. Several organisations are formed to curb the use of alcohol.

Alcohol is used as perservative in tonics by modern pharmaceuticals while Mulsims physicians are using honey and sugar as a good, natural and delicious perservative since one thousand years and more. Allah says about honey (فيه شفاء للناس) Bees are famous for their skill and intelectual powers so if they are trained to obtain juice from different medicinal plants and flowers something wounderful and much beneficial can be expected. Apart from this argument because it is strictly prohibited in Islam its use should be condemned and discarded, except in conditions which come under the leave of (فمن اضطر غير باغ ولا عاد) Honey and sugar may successfully be used as perservative in its place.

It is a duty of mulsim physician to see that no (حرام) prohibited thing is used even in medicine except when inevitable and that too transiently. It is therefore, recommended that alcohol and other prohibited articles should not be used in medicines or other commodities as a rule. May be permitted in extreme need if suggested by a honest and pious mulsim physician.

5- BLOOD TRANSFUSION

Study of blood groups and its cross matching made blood tranfusion easy, safe and practicable, which was otherwise dangerous due to possible risk of incompatibility between donor and recepients blood. Although it has been made safe and life saving but it is so far not studied whether it brings any change in recepients individual characteristics? And if so of what types? If this particular aspect of blood transfusion is studied and data collected on a large scale to note the change in ones character, temperament and habits it may perhaps disclose strange realities. It is a known fact that even food habits have a definite influence over ones characteristics.

It is therefore, recommended that blood transfusion should be restricted to the conditions when a special leave can be availed, in its correct sense. فمن اضطر غير باغ ولا عاد

6- MORTUARY

Islam insists to keep the dignity of the dead and to burry the body with all respect without any undue delay.

It is therefore, recommended that in unavoidable conditions the dead body may be kept in mortuary

for a least minimum time with permission of Islamic Court. أسرعوا بجنازة

7- FAMILY PLANNING.

An approach of a believer is quite different from that of a non-believer as discussed. A believer knows that the universe and all beings there-in are created by Allah and are in His full and active control. Nothing can happen but with His will. To whom so ever He wants gives children and keeps sterile the others, He likes. There are men who inspite of all their efforts do not have children. He manipulates his creatures as He wants and is aware of their problems and needs. Nobody has a little authority or a power to interfere in His affairs. Whenever He wants causes increase in the population and when likes cut it short. He has His own methods to control the population and to solve the arising problems. He says ولا تقتلوا أولادكم خشية املاق نحن نرزقهم واياكم وما من دابة في الأرض الا على الله رزقها

Conversely a non-believer taking himself responsible wants to control and regulate all such factors; as he does not believe in Allah and often devises rules and methods against His guidance.

It is a great injustice that one live in this world and enjoy to its best but dislikes to allow the others to come in.

Family planning methods which are freely available and adopted are leading the society towards sexual adultery as the risk of infancy is reduced. Further, the human interferences in natural processes have their own consequences and according to William boyd,"we are constantly interfering in nature, let us pay the penalty".

Therefore, the Family Planning methods other than abortion, vasectomy and tubectomy if not harmful to the parties may be permitted in individual cases or to masses. (كنا نعزل في عهدرسول الله ﷺ والقرآن ينزل)

Even abortion may be permitted if deemed necessary to save life of the mother, one may use harmless contraceptive methods, but should remember this Hadith while doing so:-

كيف ترى في العزل فقال رسول الله ﷺ أوانكم تفعلون) ذالك لا عليكم ان لا تفعلوا ، انه ليست نسمة كتب الله أن تخرج إلا هي كائنة.

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THE PRELIMINARY REPORT FOR THE GROUNDWORK FOR THE FOUNDATION OF A CODE OF ISLAMIC MEDICAL ETHICS

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U.S.A.

— HOMMAGE TO A NOBLE MAWLAWI, MY MENTOR,
DR. FERIDUN NAFIZ UZLUK, IN MEMORIAM -

The purpose of this presentation is to review the historical background of medicine and the antecedent of emerging paramount need for the reformulation of Islamic Medical Ethics and its code based upon contemporary developments of the Sharia and medical scholarship.

The history of man is old and the art is noble and long, yet the history of disease is older. In order to grasp the prerequisite ground of the art and its ethics. I wish to begin the deontology medical of Islam with the orientalist's epigram and a fragment of Plato's Ninth Letter[1]: TUBA SUB AE GIDE PALLAS- We all, altogether, help each other. In that "we are not born into this world for ourselves alone." Islamic medicine is not alone in the art and in humanity, it realizes that our profession, our patients and circumstances in which our professional lives are set, make many calls upon us. This is the time we live in: "For great is the call and great the hope."

Man by nature lives with hope and desires to know his own creation aand transcendental destiny. For Islam, the Supreme Deity is Allah, the Rahman (as known to Christians-the progenitor of all creation), the Rahim (as known to Jews-the source of motherly love). To Islam, life begins in the womb of mother, as it has begun since time immemorial in the realm of Allah. Accordingly, the birth of man, his life and his creative humanity are in the realm of Divine Providence; and therefore, man as Homo Religiosus on earth is the supreme gift of, and surrenders to, Allah.

In the history of western culture, milennia old civilization produced seminal documents of the world[2] to bring the very essence of divine life to terrestrial life itself. From the Code of Hamurabi of ancient Babylonia to historic Universal Declaration of Human Rights, humanity is gifted by celebrated seminal scriptures: first, the Proclamation of Mosaic Law on Mount Sinai, second the Sermon on the Mount of Jesus of Nazareth, and the last, the Qur'an of Muhammad (ﷺ) . A revelation in the last holy land to open a historical horizon for humanity, to illuminate the universal fact that man by nature is born free and equal in dignity and has rights to fulfill the Supreme Will of Allah, and to see the light of faith in the horizon of humanity.

The antiquity of medical sciences begins with Hellenistic medicine. It is the most outstanding and by Hippocrates of Cos (460-360 B.C.), the father of medicine,it rises into an enduring prominence. For centuries Corpus Hippocraticum has been the common denominator of rational medicine, and the Hippocratic Oath has been the exemplar code of medical practice.

In Hellenistic manuscripts "Forms and Ideas" of Plato, his doctrine of the immortality of the soul, along with Aristotelean logic and metaphsics, gave birth to epistemological analysis which identified Deity with eternal and universal law. This was an unparalleled controversy between two complementary dogmatic doctrines: the theological and the rational. In their spiritual forms they supplied conceptual sources of mytological and mathematical origin. Hippocrates removed mytology from medicine and hygiene. He placed greater emphasis upon the life history of the patient than the natural course of disease entity. He conceived the ideal physician as being the guardian of health and he put medicine on natural ground. His opus magnum, along with his view of "Vis Medicatrix Naturae", the celebrated Oath is a noble document of history. In the Hippocratic tradition of Hellenistic medicine, beside temple medicine at Cnidos, Galen followed the humoral theory and converted medicine into a science. However, unlike Hippocrates, he did not adhere to a definite code of medical ethics[3].

In the third century the Alexandrian renaissance gave, derived from Galen tradition, to the Museum of medicine "its full glory": two protagonists of anatomy were Herophilos of Chalcedon and Erasistrates of Iulis. And, the anatomists were the physicians according to the lost treatises of Apollodors of Alexandria. Proxagoras was the great medical teacher of the Alexandrian School, Furthermore, Summaria Alexandrinorum was not adherent to Hippocratic canons by genuine attachment.

In antiquity, the Hebrews learned medicine from the Egyptians. In the Alexandrian School, medical knowledge was highly developed. During pre-christian era, Jewish fellowship, according to the Dead Sea Scrolls of the Essene Monastery at Qumran, are maturing "Piety, Holiness and Justice" and the art of living at home and in the city.

Ancient Hebrews, according to the Talmudic tradition, attributed health and disease to a divine source. Healing was therefore determined by divine will; and in Hebraic culture the Talmud, the Five Books of Moses, attributed saintly qualities to physicians. To view the sanctity of human life, the saving of life, hygiene and diet were in accordance with Talmudic precepts.

After Arab conquest of the Middle East, Jewish philosophy was developed chiefly under the influence of the Arabians: the most notable personalities of the Jewish enlightenment were Avicebron (Ibn Cebirol, about 1020-1070) and Moses Maimonides (1135-1204) the last great representative of Jewish philosophy.

Judaism emphasized justice as the main divine characteristic, conceiving a moral obligation toward God by the everlasting Covenant of the Ten Commandments. According to Talmudic sources, two ideal doctors were the righteous Abba Umana and the divine doctor Kratnae. Abba Umana (blood-letter) was receiving daily greetings from the heavenly assembly. It is therefore evident that from antiquity, in Talmudic tradition, religious values were interwoven with medicine.

The Christian medical ethics history is the legacy of early Christianity. The earliest Christianity is, in

fact, a historical movement within Judaism: that which (Christianity) is the fulfillment of the promises originally made to Abraham, Isaac and Jacob. Therefore, the historiographic antecedent of the Christian dogma and its profound impact in Christian medicine is so evident that to provide a framework for Christian medical ethics, the wellmeaning reductionist maxims: "the Fatherhood of God and the Brotherhood of Man", and "So Faith, Hope and Love abide, these three", may be viewed suitable for the very foundation of Christian healing art.

From the beginning Christianity put genuine emphasis on Jesus' healing method in contradistinction with reality of sin and despair. From the third century of the early church, twin brothers Cosmas and Damian were considered the patron saints of medicine. The empathic view was that the soul, spirit and psychic function were considered healthy if they displayed love. Man's love for God and his fellow man transcended justice. Therefore, both faith and hope in Christian medicine attained a unique goal which was charity and healing faith.

Beside dominant orthodoxy of high scolasticism, Neo-Hallenist tendency was attempting to establish rational medicine in Christendom. Archaic and prototype examples of this movement were the Byzantine School of Medicine at Edessa, and the celebrated Nestorian Christian School of Medicine and its hospitals at Jundi Shahpur, Persia - an offspring of Neo-Platonist tradition of Edessa of Byzantinians.

In the light of historiography, Christian medical ethics finds its paths in the medieval era: Saint Augustine combines fidelity with authority in his treatise *On The Trinity,* and he juxtaposes the Christian doctrine, *In The City of God* with paganism, as a way of belief, worship and way of life. The outstanding exponent of medieval scholasticism, Thomas Aquinas, harmonizes the doctrinal traditions inherited from the fathers of the early church, relating these doctrines and traditions to the intellectual achievements of classical antiquity.

In Christianity, Majisterium of the Church was, and still is, the very basis of medical thinking, a universal web of relationships of medicine from within the doctrine. The magnificent *Summa Theologica* of Saint Thomas, its Thomism along with Peripathetism of Duns Scotus and Franciscan School, are the "most signal products of medieval thought" which fixed the perspective of Christian medicine in the centuries to come. The doctrine, therefore , was, and is in its contemporary status in the face of a profound epistemological obstacle or priority, vis-a-vis medical nosology pertinent to "equipotentialite technique (technike iatriek of Hippocratic view) and equipotentialite theorique" at the same time. This unresolved prime problem of Christian medicine is that the ontology of man, being ill in its logical form and in its historical genesis, is not yet amenable to a rational verification in regard to "primmordiality of problematique status of the normal and of pathological"[4].

Since the age of enlightenment in antiquity historians record that scholasticism in the medieval age found its own humanism. Humanism, whether that of Judeo-Christian, Islam or humanism medical, is inseparable from human values of scientific, technological or philosophical and moral inquiries, as well as those of the scriptures of seminal religions.

The medieval enlightenment, the most representative epithet for medieval culture, begins with the birth of Islamic scholasticism which finds its zenith in the thirteenth century. The antecedent source of

scholasticism in western Christianity comes from the relics of a great heritage left by the Roman world progressing toward monastic and capitular schools and celebrated palatine courts. In the eastern counterpart, the Byzantine scholasticism remained in its orthodoxy until the fall of Constantinople into the hands of Mehmed II,the Conqueror. In the map of history the enlightenment of Islam began between rival empires, Byzantium and Persia, with the birth of Muhammad (ﷺ) and with the rise of Qu'anic life and reached the threshold of medieval excellence.

Anna Domini 571, while Arab Bedouins were living a nomadic life in the midst of religious, social and ideological unrest, Muhammad (ﷺ) was born into the Hashimite clan of the tribe of Quraysh. The Byzantine world was torn apart by the religious schisms in the Christian world and Persia was paralyzed in its pagan world by its ruling dynasty. Within this ideological horizon, revelation of the Qur'an and Muhammad(ﷺ)the Messenger, proclaimed the universal truth: Oneness of God, Allah, and submission to His Will.

This was the propagating truth against pagans in the path of the life struggle between the Muslim faithful and Meccans on one hand; and, between Christian Byzantines and pagan Persians on the other. During the period of expansion with the triumphant rise of Islam and the majestic leadership of Muhammad(ﷺ)history witnessed two marvelous events of parallel destiny: while in the Byzantine world the peaceful coexistence Treaty of Heraclious of Constantinople with Persians, and his jubilant return of relics of the Holy Cross to Jerusalem was taking place, on the Arabic Peninsula Muhammad (ﷺ) was concluding the Treaty of al-Hudabiyya and receiving hommage of Meccans who by now treasured the glorious Holy Place of Islam, Kaaba.

From this perspective the historian of science looks at the rise of Arabic medicine and its golden age. At a closer look, however, the history of science is, to a large extent, the application of reason to nature. Therefore it is the history of rationalism. Medicine, within the scope of rational knowledge and as the centuries old humanitarian profession, englobes hermeneutics of science, technology and, indeed, moral and religious precepts of collective humanism.

From the visionary period of the foundation of Islam by Muhammad (ﷺ) the golden road emanating from divinity to humanity was open. By the interim of "consolidation struggle" of Islam, the drive of cultural expansion gave birth into the West European Caliphate of Ummayyad dynasty, reaching the west wing of pro-renaissance juncture. At the Eastern Mediterranean region ,the Abbasid dynasty matured the impetus of cultural continuity of traditional doctrines until the prominence of Ottoman supremacy which lived a magnificent Caliphate in Islamic culture over four centuries and whose historic destiny was closed at the Treaty of Versailles[5].

This concise outline of the cultural horizon of Islam illuminates the very foundation of medical ethics from antiquity to the modern era[6]. The Islamic sources of Byzantine and Persian substratum of post--hellenic cultural prosperity that, by genuine aspiration of Islam in learning, in establishing and advancing its aspiration of Islam in learning, in establishing and advancing its own humanity, produced a translated treasury of masterly works. And the beginning of charity hospitals and medical establishments.

The Abbasid Caliphate at Bagdad became the patron of medical scholarship; this led to the work of

translation and mastery of Greek medicine by Muslim physicians. Hunayn Bin Ishaq was the celebrated translator; al-Kindi, the great figure of the age was the philosopher of pure arab ancestry; Ibn Tabari was the author of *Firdaws* al-*Hikmah,* the first comprehensive work on medicine of the period. The light of wisdom from its birth place and from learning centers of urbanity spread all around the Mediterranean, from Bagdad to Kufa, Basra and Jabiya; from Fustat and Alexandria to Qayruvan and distant Cordova, Seville and Granada. The luminaries in medicine were al-Razi (865-925), the prince of Islamic medicine, and Ibn Sina (980-1037), The Aristotle of Islam. In the Estern Caliphate, Ibn Zahrawi (died c a 1013), Ibn Zahr, Ibn Baytar, al-Suri were the prominent physicians.

These scholars of medicine were, in the muslim orbit, the torchbearers of medical erudition, the professional expounders of the art, heirs to a spiritual brotherhood of the tradition which transcended the frontiers of religion, language and culture. In tacit indication, these learned men of the medieval Islamic world were masters of many disciples and they typified "the Renaissance Man" in the occident, in retrospect, they were faithful of Muhammad(ﷺ)preparing their exegesis to posterity.

According to *Sahih Bukhari,* beneficial medical doctrine incorporated into Sharia[7] absorbed the purest of Greek, Alexandrian, Hindu and Nestorian medicine; however its remarkable synthesis with that of Islamic tradition, was the essence, and Primum Inter Pares among the nexus of medical schools of different cultures.

It should be indicated here that the ontological essentials of *Islamic* medicine have two universal tenets intrinsic in eternal and natural laws: the first and foremost, Islamic medicine by Qur'anic canons, Ex Hypothesi, is an art conceived and predestined to Divine Wisdom. The second, the living component of the first, is the natural content (empirical and experiential), the scientific corpus of the art. They are the unique and universal characteristics of Islamic medicine.

The historian of *Tabaqat al Umam,* Abu al-Qasim, the first genuine Arab philosopher al-Kindi, the monist of reason and religion and Imam of medicine of his time Ibn Rushid (1125-1198), and Ibn Khaldun, prime protagonist of anti-hellenism in Islam and the founder of the historiography, describe in their monumental works that the Arabs, by proud tibal mode of living and by natural exigencies, have acquired and achieved outstanding conquests of science and humanities. Purposes of their literature reached its peak, their great codes of Canon Law were formulated in the path of God-Fi Sabil Allah, philosophy, natural sciences and medicine gained a rational dimension under new horizons of a self-perpetuating world view. Their scientific endeavors by way of astronomy, metereology, chemistry, botany and zoology, as well as hygiene, herbology, dietetics and hydrology to be used for husbandry, child rearing midwifery and preservation of life brought into life of Ummah, the Islamic sciences, medicine and Islamic humanities. These magnificent treasures, which opened the historical road to Islamic renaissance, were the cultural achievements of human history in the medieval era.

During the prophetic era of Muhammad(ﷺ) Ibn Kaldah, Ibn Qifti and Ibn Tambami were celebrated physicians trained at the Jundi Shahpur School. During the life of Muhammad(ﷺ)Jundi Shahpur Medical School was the foremost institution of scholarship where Greek, Alexandrian and Persian and Hindu sciences converged. However, in Muhammad's(ﷺ)period of medicine we observe that in spite of prevalent limitations in their art, reputable women acquired exceptional skill in hygiene and in the treatment

of wounds and trauma. Among them Umm Sahim, Umm Mata, Umm Atiyah were considered experts. Zaynab of the tribe of Bani Davud and Asma Bin Abu Bakre enjoyed medical fame and distinction.

This is a historical reverence of tradition in the realm of Hadith for the practice of medicine. And it was an unusual introduction of woman into the motherhood of Islamic medical historiography. In my view, it has its own exceptional significance as an edifice of Sunnah in Islamic deontology. It signifies that if the Art is accomplished by inherent merit of praxis and by its rational techniques, it is accepted by Ijma[8], the universal agreement of physicians and thinkers of Islam regardless of who performed it, whether man or woman, believer or non-believer. This was accepted by Muhammad(ﷺ)and by Ijma of the first original Islamic community. This is, I believe, one of the original sources of Islamic humanism in medicine.

In the Seventh century A.D. we observe the beginning of the formation of Islamic culture in the development of the splendor of domes of the mosques, their libraries, learning centers along with their charity hospitals where the health of the faithful was restored in Dar Ul-Islam[9]. In the path of this early urbanism remarkable Muslim hospitals, like Masjid al-Jami and madrasahs, were constructed as urban institutions to advance the medical art. In the madrasahs, theology was the prime mover of al-Ulum al-Sharia. in general and of deontology in particular.

Epoch making medical schools were numerous during the period of growth (750-850 A.D.); however, at the age of Arabic scholasticism madrasahs of Nizamiya and Mustansiriya of Bagdad and madrasahs of Dahwariya, Lubudiya and Dunaisariya of Damascus were pre-eminent eastern counterpart institutions of Andalusian-European golden age.

The first hospital (bimaristan) in Islam was established during the Ummayad period. The celebrated hospitals of the medieval era were: Bimaristan Muqtadiri and as-Saiyida in Bagdad, Bimaristan Ibn Tulun, and Adudi of Cairo, Seljuk Sultan Nuraddin Hospital in Damascus, and Sultan Salahuddin Hospital of Ayyubids dynasty. It is worth noting that the hospital at Marrakish was considered, in its time, XIII th century, to be without peer.

Hospitals in the Islamic endowment were places of glory of the Caliphates; they were benevolent health centers, places of charity as well as regal places of serence recovery. Above all, the hospital of the faithful was the place of purification as health was the halfpart of the Iman (faith). As symbolic edifices of the thankfullness of its patrons, hospitals were designed from their gardens, courtyards and fountains to their sanitary engineering and construction, to their medical departmentalizations to reflect the very essence of gratitude to Huda, the Divine Guidance. Medical art, in the life of a bimaristan, was the fulfillment of the inner dimensions of Muslim medical deontology - religious as well as medical. Subtilities in the conduct of the art, in these institutions, were a matter of customary life, in the apex of deontological hierarchy of symbolic union with the hearth and reality of fellowship.

Muslim physicians, as the functional organization of the hospitals developed, conceptualized their view of Abad al-Tib into the systematic corpus of medical deontology as they observed in the immediate experience of illness a reality in which man is being transformed into ill man. They considered that, in the process of man being ill, the genuine change was in his undifferentiated whole; this was, as called in

antiquity, a change in Materia Prima (Hayula of man, 10).

According to the Qur'anic concept, God is of an ethical nature and acts upon man in an ethical way. Accordingly, Muslims conceived that the physician, too, should and would act toward man in an ethical way. This was his conduct in the Art, with justice and righteousness toward his brethren. To do good, according to the maxim, he ought to know the essence of Primum Non Nocere, which was the timeless epitome of Usul al-Tib to understand the source of Divine Ordinance and to illuminate human decision and its norm in the conduct of the Art. This dual nature of deontological moral dichotomy was, par excellence, the most sensitive light of life, to live from within.

The offspring from the culmination and climax of tradition within the doctrine, Islam conceived that religious sciences are Umm al-Ulum (the mother knowledge) and, between natural law and eternal natural order lies the direction of the history of life where man, as diseased or healthy, is in the realm of the same doctrine, and at the same time, One Doctrine.

In retrospect and in looking at the perspective of the doctrine, Muslims - the faithful who surrendered to Divine Will by adherence to the Doctrine - observed that theory of the First Being (ontology) was revealed in Islam for the theory of right thinking (logic) and theory of right living (ethics); however, belief in the fundamental truth was that the verification of the theory of truth itself, indeed by anthropomorphic means, cannot be verified[11].

Regardless of the unverifiability of good will and of the first source of duty in the art of medicine, the historian of science, Georges Sarton, epitomized in the epigram: "Homo sum, humani nihil a me alienum puto" (to show the growth of human spirit in its natural background). Analogously this synoptic expose may be viewed as an indicator for reason d'etre of medical deontology and its humanism from the time of Alexandrian renaissance to Hellenistic science, arts and humanities; from the Renaissance of Christendom and Islamic Renaissance leading through to the problematic ethical situation in the twentieth century[12].

By proper consideration of scholasticism, it may be considered that Qur'anic teaching is destined to develop, not only as a religion, but also as a culture and a civilization. Man as Homo Socious, whether in a state of health or illness, is in the Islamic community (Ummah) Homo Religious and indeed Homo Moralis par excellence at the same time.

To observe the generative spirit in the historical processes of Islam, I wish to focus the trajectory of Islamic progress from the pre-Islamic period to the modern era of Islam, which began a half century ago. Naturally, the tribal spirit in the pre-Islamic period (jahiliyah) was primarily tribal solidarity. This meant "life-blood of pagan ethics" so called "Asabiyah"; this was loyalty to the tribal cause and the bond of kinship by blood: a most sacred duty of all duties; a remarkable valor and dignity; the embodiment of the spirit of life, the highest principle of individual and public conduct with honor; this was an absolute devotion to posterity in the purest form.

Maturing the normative value of custom[13] through tribal life experiences, the emergence of a harmonious bond of man's honor "Majd" within "ancestral-tribal honor" became time honored and an unwritten code of law. This is the sacred bond of the way of life with ancestral honor in the life of

"Ummah".

The custom derived from tribal ancestors reached, in its evolutive period of transition, a luminous file by miraculous experiences of Muhammad (ﷺ) This was the beginning proper of Islam by remarkably subtle historical phenomena of anthropomorphic nature[14].

The rigorous moral concept - that is the pre-Islamic tribal code of the highest moral ideal of the Bedouin - is the inherent concept of 'Muruwah' in 'Jahiliyah' period metamorphosed into an eternal quality of kinship by which gave supernatural life to the spirit of kinship by blood.

Considering His Mission from the ethical point of view, Muhaammad(ﷺ)indicated that He had been ordained by Divine Revelation to bring ethical meaning into the conduct of man. The moral priorities in the unity of understanding and faith, either in the essence of the Hippocratic Oath or Prophetic Mission, are authenticity in good will, reverence to duty, sentiment of peace and wellbeing and appreciation of good. By these moral priorities, to understand the articles of faith signifies, in Islam, the belief in God and life afterdeath passing through Last Judgement Day. This is in essence transcendental harmony to unite Divine Will with man's free will; and individuality with humanity. In the Islamic view of life, it is the universal will to love and to live based upon the strength and stability of Tawhid giving life and light to the spiritual wellbeing of man[15].

The path of islamic life of "Ummah" at this crucial point of understanding was consequently transformed from urbanitas to humanitas and naturally a comprehensive system of individual and public life of Arab tribes developed in the holy lands during the course of medieval centuries.

Viewing from within the deontological frame of reference, moral man (deserving the spirit of tribal solidarity by progress in nomadic life) became a professional man and assumed the moral obligation the supreme duty of his artisanal profession.

At this juncture, we observe the emergence of medical men, the physician who begins to practice developing the art of his profession within the ethico-religious concepts of the Qur'an. Accordingly, in this vein of progress, medical deontology in Islam found its inspirational source from the Qur'anic world view, from Prophet's(ﷺ) practice (Sunnah, 16) and its recorded reports 'Hadiths', from 'Sharia' and 'Usul al--Fiqh'[17]—

The ninth century Islam observes an important scholarly deontological treatise on Arabic medicine; this is the masterly work of Ishaq Ibn Ali al-Ruhawi, "Adab al-Tabib, Practical ethics of the physician".

It is with special tribute to the manuscript *Adab al-Tabib,* [18] that I wish to review the practical ethics of the Muslim physician, in regard to its impact on the history of Islamic medicine. Medical deontology, though pre-existent in its germinal form in the customs of tribal life of the Arabic world, began in the ninth century Islam as a systematic study by classic treaties of al-Ruhawi's *Adab al-Tabib*[18] the practical ethics of the physician. This is a remarkably comprehensive and eclectic book on medical ethics. It comprises a broad spectrum of ethical concerns such as loyalty and faith of the physician, dignity of the medical profession, medical training curriculum and examination syllabus, physician's self care to improve his soul and his morals, his counseling to the patients, servants and visitors.

The purpose of this deontological compendium is to preserve a high standard of medical practice under Divine Guidance; and as its author indicates, "to strengthen the soul of physician about truth and cultivate his moral character". The unique copy of this manuscript is in the library of Sultan Suleiman, the Magnificent (Istanbul, 1958, 19). The treatise appears to have been inspired by Islamic tradition. The author, Al-Ruhawi., extracts Galen's view from *On The Opinions of Hippocrates and Plato* and ar-Razi's treatise *Kitab al-Tib al Ruhani.* Al-Ruhawi emphasizes the interrelation of the spiritual and bodily physics. He sees, under the impact of ar-Razi's moral idealism and of ethics of Alı̣ Ibn Miskawaih, the objective of life in justice and knowledge, but not in usefulness. He discernes from *Kitab al-Sira al-Falsafiyah* the primary requisite of faith "with reason, soul and free will"; he sees, in the mission of physicians, analagous to that of apostles, a "teaching that which mind alone could not". He visualizes a bona fide physician and gives novel details of his personal life, his reading and his relations with the patients.

Al-Ruhawi quotes from Hippocrates that art involves three Factors; the illness, the patient and the physician whose deontology depends, according to *Adab al-Tabib* from Oath and God. He is deeply concerned with the dignity of the physician, who is as he states "highest in rank, greatest in worth and most truthful in speech". For al- Ruhawi the ideal physician is a person "whose heart is pure, his intellect is sharp and who loves good, has mercy, sympathy and chastity".

He relates the conviction that "the rank of the physician, according to his ability in the art, by the side of the king, and as the virtuous one, by the side of the people". This is a genuine aristocratic view where, indeed, deontological "Noblesse Oblige!"

We observe in al-Ruhawi's view of deontology the charactersitics of Phthagorean and Neo-Platonist world views. However, the core tenet is, beside being in harmony with the laws of the state and civic virtues, most specifically to render the divine meaning of the autonomy of the free will as deontological A Priori. Therefore, its dictum is apodictic in nature and prescribes the equal medical duty for all men.

In this synoptic presentation, perennial leitmotif of traditional medicine may be juxtaposed with the paradigm of modern medicine and bio-medical-health sciences. This is the root cause, in my view, of the paramount problematic status of western medicine today. It is, therefore, disctrible that world medicine at the threshold of current progress - down from its Hellenistic foundation to its multilayered technological status - requires, as we observe today, a critical and humanistic re-evaluation of its dontology within reguinal and global boundaries[20].

Along the broad path of the above indicated purpose, and by reason of awaking of Islam in the peaceful coexistence of ideologically divergent national entities in general and of inherent humanism of Islamic medicine in particular, I propose re-evaluation of the deontological ground, as most suitable for the systematic organization of Islamic medicine. In the face of mounting concern for the wellbeing and health of western societies, despite the acquisition of their most advanced status in the stratification of civilization, it appears that it is a timely prerequisite to put a special emphasis in medical deontology for such a re-evaluation and reorganization.

In conclusion, it would be most appropriate, I believe, to state that the cultural progress of a western

society, in dialectical doctrine, is in its system of economic determinism and political actuality. Whereas dogmatic rationalism, either in its spiritual form as in religious doctrines or in its materialistic determinism as in empirical sciences, requires a universal agreement (ijma) of world community. This should be, however, implicit in concensus and in criteria. To preserve the very essence of truth in the humanism to which the supernatural ideality of Islam is devoted - but alarmed by signs of the times - offers the PARENTS PATRIAE DOCTRINE[21] and the seminal view of SUMMUM BONUM COMMUNE[22].

The temper of the time reflects, incessantly, the inescapable realities of social life in which man in western society is living at "the sociology of shadows without metaphysics of light"[23]. and more profoundly, at the horizon of social life, he is without rays of hope for authentic brotherhood. In the shadows of this unauthentic existence[24] we witness, as a hope, the emergence of Islamic Deontology[25].

DEONTOLOGICAL PRIORITIES OF ISLAMIC MEDICINE AND OF THE MUSLIM PHYSICIAN

By virtue of its inherent adherence to the Will of Allah and to universal humanity and by its ascendance in deontology, Islamic Medicine, as a healing art and science for spiritual and corporel welfare of man, is a legacy of western civilization.

As an art, it is a corpus of genius of the Muslim physicians' work in the long course of history; as a science it is an objective inquiry within the hermeneutics and epistemology of medical sciences and of their methodology and technology.

The Muslim physician, like his fraternal colleagues of Hippocratic tradition and by omnipresence of miraculous faith in man's understanding, is guardian of the health of man and welfare of mankind.

The praxis of the Muslim physician is determined by the laws of free will and is within the apodictic boundaries of ethicoreligious principles of the Qur'an and Islamic Tradition (Hadith). The Muslim physician, therefore, believes in the sanctity of life and health as he believes in the spirit within the blood and flesh of man.

These verities cannot be made by economic determinants in the realm if Islam and in its hospitals and medical institutions. According to the divine nature of PARENTS PATRIAE doctrines of religion, medicine, justice and the sovereign state, it is a time honored truth that the life of man and his health, like faith and justice, are universal A PRIORI. The society comes into existence to perpetuate the life of man and his brothers- the Islamic society and its medical establishment in its primordial stage - however anthropomorphic it may be - finds its authentic sources in the foundation of state, mosque and charity hospital to serve man, but not the state and its institutions per se.

Viewed as such, by way of tradition, Muslim physician genuin believes in the supremacy of truth and justice, in the benevolence of state and in the humanism of the mosque. By these very reasons, he is at the core of the majestic ideal state of the art to bring life to *summum bonum commune* He believes in the deontological autonomy of medicine and in the solemn duty of the state for that which is to be accomplished.

In Islamic Medicine, to secure in society an equidistribution of health, health promotion and social welfare are reserved to the state. The state, therefore, assumes in Islam the following cardinal functions:

1. To organise medical institutions in the light of Tradition and by regulatory mechanisms - that is, free medical education, charity hospitals, uniform health and welfare insurances.

2. To safeguard the profession for proper use of its historical archive, health records along with its scientific technological enterprises

3. To preserve and enhance the prime leitmotif of medicine; namely, the autonomy of medical deon tology and its medical-jurisprudence and of medical humanism

Custom and Tradition in Islamic Usul al-Fiqh of medicine determines that in Islamic medicine the following are prohibited.

A. Euthanasia, eugenics, suicide, infanticide, abortion, sterilization, genetic engineering, sex transmutations:

B. Medical procedures and interventions which alter the autonomy of free will and the mind e.g. psychosurgery, electroshock, insulinshock, intravenous chemical hypnosis and deadly drugs;

C. Manifold content of diagnostic, therapeutic and research interventions which are degrading to the dignity and entity of man, undertaken either for scientific pursuits or for political, administrative or military purposes;

D. Purchase and selling of the medical profession and of the human body, its organs and blood.

The Muslim physician is a learned man of goodwill; he believes, with humility and determination, in medicine's magnificient task in so many different ways.

In his purity of intentions and his humanity, his service and his honorarium are the gifts of professional life; he has faith in his profession and trust in his art; his medical theories, his medical orders and prescriptions and advanced technology in his art are not *deux ex machina* for him. Man, viewed within true faith and truth in faith, in health and in illness, is a dignified entity for him. He believes in medical nosology and in disease entities as well as in man's becoming ill. In his mastery of the art, he categorically differentiates between man who becomes ill, disabled and deserving health and welfare assistance from man who wants to be ill and represents himself as such, seeking gainful assistance and selfserving purposes.

The Muslim physician above all, from the very roots of his being, lives with the mystery of his art as one being lives with another and endures life in the face of this mystery to which medicine opens itself within the uncomprehensibility of disease entities. Paradoxical antinomy though it may be, Muslim physician, in the life of reason, conceives the meaning of life as inheritor of this mystery.

May peace and serenity be in the fate of ill man and medical humanism upon his Muslim physician.

THE OATH OF THE MUSLIM PHYSICIAN

IN THE NAME OF ALLAH,
THE MOST COMPASSIONATE AND MERCIFUL,
IN TESTIMONY OF HOLY QUR'AN-THE BOOK,
THE COVENANT-TRADITION AND THE FAITH;

I, THE MUSLIM PHYSICIAN, DO FAITHFULLY SWEAR,
BY VIRTUE OF SANCTITY AND HONOR OF THE SACRED ART,
TO BE GUARDIAN OF THE HEALTH OF MAN FOR POSTERITY OF ISLAMIC LIFE, THE WELL-BEING AND PURITY OF MANKIND.

PRAISE BE TO ALLAH, THE GOD ALMIGHTY!
TRUST BE IN GOD, THE MAJESTY OF LIFE HERE AND ETERNAL!
GLORY BE TO HIM, THE CREATOR OF THE UNIVERSE!

O! LORD, THE RAHMAN, THE RAHIM,
PROTECT US, THE GUARDIANS OF HEALTH AND LIFE IN THIS STATION!
PROTECT THE ART PURE, SUBLIME AND SUPREME!

O! ALLAH, THE AKBAR AND BOUNTIFUL BENEFACTOR!

GIVE US THE STRENGTH TO BE TRUTHFUL, TO DO GOOD WITH GRACE AND MERCY IN PRESERVING THE GIFTS OF LIFE AND INTELLECT TO ENHANCE THE HEALTH OF MAN AND TO UNDERSTAND THE ART;

GIVE US NOBILITY OF MIND, PRUDENCE, AND COURAGE IN THE ART TO HEAL, TO COMFORT AND COUNSEL FOR HARMONY AND PAX PROFUNDA IN THE LIFE OF MAN AND IN SOCIETY;

GIVE US WILL AND KNOWLEDGE, VIRTUE AND REVERENCE
-WITH THY LOVE IN HEART AND COMPASSION FOR THY SERVANTS-
TO SERVE MANKIND IN HEALTH AND SICKNESS;

GIVE US UNITY AND HARMONY IN LIVING WITH OUR NEIGHBORS AND WORKING WITH ILM AL-KALAM AND ULEMA;

GIVE US THY LIGHT AND THY COUNSEL AS THOU HAST REVEALED TO PROPHET MUHAMMAD - (ﷺ)

ALLAH THE AKBAR, IN THY NAME THE RAHMAN, THE RAHIM,
OMNIPRESENT, OMNIPOTENT AND OMNISCIENT,
I DO FAITHFULLY PLEDGE TO HONOR THE SACRED ART OF MUSLIM MEDICINE. SO HELP ME ALLAH!

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PART ELEVEN

MISCELLANEOUS

Part Eleven: Miscellaneous Topics

(CHAPTER ONE)

MENTAL HEALTH AS VIEWED BY ISLAM

(Some Selected Papers - Not Presented)

1. MENTAL HEALTH IN AN ISLAMIC SOCIETY.
   Dr. Sheikh Mohammed Iqbal
2. ISLAMIC APPROACH TO HEALING.
   Dr. Taghi Modarressi.
3. ISLAM AND PSYCHOSOMATIC MEDICINE
   Dr. Mohammad Ahmed and Mrs. Nikhat Ahmed.
4. STRESS RELATED DISORDERS AND HOW THE NEW BEHAVIORAL MEDICINE CONCEPTS. REFLECT TEACHINGS OF ISLAM WITH EMPHASIS ON COGNITIVE DISCIPLINE AND SELF REGULATORY ACTIVITIES INCLUDING DAILY PRAYERS.
   Dr. Moin U.Khan and Dr. Michael S. Gaylor

MENTAL HEALTH IN AN ISLAMIC SOCIETY

Sheikh Mohammed Iqbal,

(U.S.A.)

Mental Illness and the diseases of the mind (both organic and affective) have long been identified in Quran and Hadith. Islam recognises the behavioral correlates of such diseases as well as the limited and diminished responsibility of the person infested with such disorders. History is witness to the fact that Muslim Physicians and thinkers were the first to bring the concept of mental illness out of demonology and gave it a humane treatment, while the European Christian world was still "burning the Witches" and abandoning the lunatics. For the last several centuries the Muslims have neglected this field and have been blindly following the Western ideologies and their theories which are primarily been developed in Christian Jew culture and more recently in a total non-religious environment. The Western psychology in general is contrary to the teachings of Islam. This paper discusses Islam's position on the issues of mental health and mental illness. An attempt has been made to show that the teachings of Allah and the values of Islam if followed in true spirit, can provide conflict-free, emotional stable and guilt-free individuals and a very healthy and stable society. This paper suggests to form a special committee to develop Islamic Psychology, Theory of Personality and necessary psychological tests for use in the clinical, educational and industrial use in the Islamic Ummah through out hte world.

Mental Illness and the diseases of the mind (both organic and affective) have long been identified in Quran and Hadith. These diseases are specifically mentioned in the verses of Quran. Islam recognises the behavioral correlates of such diseases as well as the limited and diminished responsibility of the person infested with such diseases.

For the last thousand years or so the Muslims have neglected this area and have blindly followed the Western concepts. In the West this field is only about two hundred years old. The Western literature of Mental Health or Mental Illness prior to the European Renaissance is full of demonology and nothing else. The contemporary psychiatry and psychology in the West is more interested in the anatomy than in the psychology, and they have studied cadavers rather than living humans.

This paper discusses Islam's position on the issue of mental health and mental illness in the light of Quran and Hadith. A review of contemporary Western literature reveals the fundamental etiology, various theories and the probably course of treatment modes of mental illness. The major etiological factors can

be summarised as follows: Guilt feelings, insecurity, mistrust, lack of personal honesty; insecure interpersonal and family relations, double standard of values, lack of values in the society, conflicting values, lack of definitive criterion of human behavior, identify, problem and the mystic nature of handling the sexual issues. It is said that the European Renaissance has discovered man. It might be true for the Western man alone.

This paper thus discusses in the light of Quran and Hadith the etiology and the very genesis of mental illness and mental health and the roots of the emotional problems. An attempt has been made to show that the teachings of Allah Subhanho Wa Taala and the values of Islam, if truly followed in their true spirit, can provide relief for all the major and minor illness and disease of the mind. A society built on the teachings of Islam is bound to be guilt-free and free from any emotional instability of the individual in a very secure society. Thus this paper emphasizes that Islam provides a universal program for the prevention of mental illness and promotes mental health for all human beings.

A quick glance on the history of mental illness one finds that in the ancient civilizations namely, the Egyptian, Greek, Roman, Persian, Indian and Chinese, the issue was dominated by theories based on demonology. The period between these ancient civilizations and the European Renaissance, there is a gap, commonly known as "the dark ages". The nomenclature "dark ages" reflects the situation in Europe between seventh and the thirteenth century A.D. but by no means expresses the state of affairs in other parts of the world, specially the Moslem civilization. During this peiod the Arabs or the Muslims have been the torch bearers of Science and Arts. Their contribution has been very significant and finally became the foundation of the modern scientific age. Many scholars particularly the Muslim recent decade have explored and written about Muslim Contributions to modern medicine, science, arts, literature and culture etc...

In brief, towards the end of the sixth century A.D. the Bedouins, seminomadic inhabitants of the Arabian desert were a barbarian people. In less than fifty years these nomades were transformed by their Prophet (ﷺ) into a unified whole. The Muslim scholars and physicians of that time were free from demonological theories which swept over the Christian world and were therefore, able to make clear cut clinical observations of the mentally ill. They were able to report the objective observations of the symptoms and for the first time reached to unbiased diagnostic work. Thus with the Islamic training the Muslim physicians provided the care and treatment of the mentally ill in a very human way contrary to the Christian way of "burning of the witches".

The purpose of Islamic system of Government and the Islamic Society (Ummah) is to provide the happiness and the highest form of wellbeing of all people, spiritually as well as materially under the Supreme Sovereinty of Allah.

In Islam, Allah is the only Supreme Ruler of the world. His law is Supreme while man is His vicegerent on earth[1]. He is the only Master to be worshipped and to be obeyed absolutely. There can be no man as master and no man as slave. Therefore, in Islam there is no absolute ruler, no absolute dictator, no masters and no slaves and thus no room for any form of tyranny. The code of conduct for the believers is enunciated in Quran as follows:

O YE WHO BELIEVE, OBEY ALLAH AND OBEY THE APOSTLE AND THOSE

CHARGED WITH AUTHORITY AMONG YOU. IF YE DIFFER IN ANYTHING AMONG YOURSELVES, REFER IT TO ALLAH AND HIS APOSTLE. IF YE BELIEVE IN ALLAH, AND THE LAST DAY; THAT IS BEST, AND MOST SUITABLE FOR FINAL DETERMINATION [2]. *(Quran, S4:V59)*

Thus a society formed of individual believers will be a harmoneously blended homogenous welfare society. Such society will be an open society but very secure for its people. This society and its all people will be guilt-free, emotionally stable having highest form of positive interpersonal relationship. The well integrated family system and caring-loving society will provide a constant and perpetual source of counselling and guidance for the individuals from birth to death.

The social, moral and religious degradation and disintegration of the family life in the West has left the individual in an isolation surrounded by the strangers. Islam, on the other hand, completely absorbs the total stranger and make him/her an integral part of the entire Muslim Society (Ummah). Thus Islam provides the individual a feeling of belongingness, not that of isolation. Islam provides an individual with his identity as human being and not just a number. The Islamic Society, thus provides the prevention as well as a cure for all the social ills and mental illness a man can have. Islam provides a perpetual source of mental health rather than mental illness.

Without going into much details, let us have a general idea about the text in the Quran and the Hadith related to the subject. Allah talks in the Quran about moral diseases and cure in several verses. He says:

O MANKIND, THERE HATH COME TO YOU A DIRECTION FROM YOUR LORD AND A HEALING FOR THE (DISEASE) IN YOUR HEARTS. AND FOR THOSE WHO BELIEVE, A GUIDANCE AND A MERCY. [3] *(Quran, S10: V57)*

The "Direction" in this verse refers to Quran itself; it is considered a sure cure to any moral or psychological disease that may afflict mankind .

IT (QURAN) IS A GUIDE AND A HEALING TO THOSE WHO BELIEVE .[4] *(Quran, S41:V44)*

There is no doubt genuine belief in Allah can be the best cure for most of our psychological disturbances. It brings peace to our hearts as one reckons to his Creator and resigns in Him.

BUT HE GUIDETH TO HIMSELF THOSE WHO TURN TO HIM IN PENITENCE... THOSE WHO BELIEVE, AND WHOSE HEARTS FIND PEACE AND SATISFACTION IN THE REMEMBERANCE OF ALLAH: FOR WITHOUT DOUBT IN THE REMEMBERANCE OF ALLAH DO HEARTS FIND SATISFACTION AND PEACE .[5] *(Quran. S13:V27-28)*

Moral disease has been frequently expressed as disease in the heart. For instance, depicting the psychological picture of the hypocrites (Munafiqeen) Allah says:

IN THEIR HEARTS THERE IS A DISEASE; AND ALLAH HAS INCREASED THEIR DISEASE; AND GREVIOUS IS THE PENALTY THEY (INCUR), BECAUSE THEY ARE FALSE TO THEMSELVES [6] *(Quran. S2:V10)*

In terms of cure and treatment of the disease, Allah says:

WE SEND DOWN (STEP BY STEP) IN THE QURAN THAT WHICH IS A HEALING

AND A MERCY TO THOSE WHO BELIVE .[7]

(Quran S17:V82)

Besides many more Quranic verses on this subject, the Hadith, as usual, gives us striking facts conceming disease and cure. Our Prophet ﷺ informed us that the general rule is that a cure to every disease, whether we are aware of it or not.

The five basic elements of Islamic Faith are generally known as the five pillars of Islam viz. Iman (faith), Salat, Saum Zakat and Haj. Each one of these has many spiritual, mental, psychological and physical benefits for the believers.The objective analysis and understanding of the philosophy and meaning of these elements further reveals that even if these were not called upon by Allah and in the name of Islam, they would, if prescribed and enforced as a mode of treatment, will produce profound effects entirely beneficial and in the direction of prevention and treatment of many psychological and physical illnessess.

Al-Quran further explained by the Hadith has repeatedly mentioned the known vs the unknown and the knowledge vs the ignorance. Now it is the responsibility of man to make the unknown known and replace ignorance with knowledge. This has been an all time challenge for mankind. Those who have accepted this challenge have mastered the time. We the Muslims have ignored it over the past thousand years of our history and as a result are laboring under the yoke of the Western Ideologies.

The need is to develop an understanding of human behavior in the scientific way and in the light of Quran and Hadith. The Muslim psychologists, psychiatrists and other health providers have to undertake a mission of developing Islamic Psychology and provide a guide line for Muslim Ummah, thereby making the unknown as known and replacing the ignorance with knowledge.

In the light of Quran and Hadith the study of human behavior as such and its application for the growth and development of a healthy society is the main purpose of divine guidance. Islam and the teachings of Allah's Apostle (ﷺ) clearly shows us the direction of study and research in the field of human behavior, both individual and groups. The stories given in Quran are the examples, explanations and indications of the deviant as well as the expected normal behavior of human beings. Thus Quran and Hadith both jointly lead us to a comprehensive study of psychology as a science.

Islam is the most natural way of life for human beings. The significance of religion in understanding of human behavior and molding the personality of human being, Brohi[8] says, "Islam has regarded religion as a methodogogy and a technique for enabling mankind to live this life (Hayatudduniyaa) ably and effectively here below on earth, to be able to win the reward of an eternal life hereafter (Akhirat). The strategy of Islam was to present the perspective in which man could discover his real place in scheme of things as also the purpose why he has been brought into being on earth. Islam invites man to understand his role on earth and helps him to fulfil the law of his own being to the end that he may be able to reap the rich harvest of eternal life".

Unfortunately, the present trends in the Western psychology is by and large countrary to the Islamic Ideology. The Muslim Psychologists trained in the Western psychology are bringing home some adverse effects and ill teachings. Badri[9] says, "Theories and practices which are largely the product of the Western Civilization of Christian and Jews have, for long, dominated the social sciences departments of

Universities in Muslim countries and the press, the radio and television have helped to establish their alien concepts among the Muslim masses".

In understanding the theories of personality presented in the Western literature and to compare it with what Islam has to offer we have to look into the nature of man, purpose of its creation and also how man has been viewed by Allah in Quran and other scriptures. In such an analysis we have to look for the relationship of various theories so far developed and the research work done to see if it can be utilized for Islamic Psychology. It is evident that some of the old concepts have been redefined in Western psychology, eliminating the religious basis and spiritual connotations. Thus we have to develop a purely Islamic (in the light of Quran and Hadith) and the scientific viewpoint in the study of the attitudes, or image of man in order to understand the human behavior.

It is a scientific fact that by merely looking at a product or machinery or watching its operation one cannot determine its optimum working capacity and criterion of performance. For such information we have to look into the operating instructions or its manual, manufacturer's specification and designer's or its creator's conceptualization of the product. The same principle applies to the study and understanding of human behavior. The present day Western psychology is primarily based on the conceptions of man developed and advanced by classical scholars (who were also human being themselves) such as Hippocrates, Plato and Aristotle followed by scores of other thinkers.

Hall and Lindzey[16] in the introduction of their book have enumerated four main sources of influence upon present day Western psychology and particularly the theories of personality. These influences are the clinical observations, Gestalt tradition, experimental psychology and the learning theories and the psychometric approach. In all these approaches there are obvious differences. Hall & Lindzey further say: "These striking differences among personality theories, however, imply that almost any statement that applies with detailed accuracy to one theory of personality will be somewhat inaccurate when applied to many other theories". It is very important to note here that none of these approaches have taken into consideration or none of these Western scholars have paid any attention to the fact that what the Creator of mankind says about His creations and how He defines the personality or the criterion of normal behavior. This spiritual or cosmic approach to the understanding of human behavior should be more objective, impartial, unbiased, valid and accurate and scientific in nature.

We all know that long before Hippocrates or Plato came on the stage to observe the human behavior, Allah taught, gave knowledge to and defined the expected criterion of human behavior. This knowledge and criterion were then repeatedly sent to mankind and they were reminded of it through various prophets and messengers such as Syedna Ibrahim, Syedna Moosa, Syedna Essa (PBUT) and many more guides and finally this message was completed through our Holy Prophet Mohammad (ﷺ) It is not understood how we can ignore the creator's instructions and guidelines and still can claim to have developed a theory of personality that could be perfect, objective & universal.

Western psychologists and scholars have stressed the importance of motivational process as crucial for the understanding of human behavior. Their concept of motivation is limited to the material wellbeing and instinctual needs of the man alone. Such formulations do not take into consideration of man's existence in the cosmos and the interacting influences. The entire structure and foundation of motivation is

changed when a Muslim submits himself to the Will of Allah. After affirmation of his Kalima his entire perspective of life, his life goals, and motivational processes are changed. His every movement is then geared to be withing the Will of Allah and for His pleasure. Further to this the motivational process is dynamically changed if the person believes in life here-in-after and the day of judgement. Allah says:

> SAY: LOG, MY WORSHIP AND MY SACRIFICE, AND MY LIVING AND MY DYING ARE FOR ALLAH, LORD OF THE WORLDS.[12]
>
> *(Quran, S6:V162)*

This is the fundamental and the basis of a Muslim's motivational process. This also provides a basic frame of reference for the development of personality and a guideline for all human behavior. Such important issue then would become the basic assumption in the development of any theory of personality or Islamic Psychology.

When faith and religion becomes a way of life for an individual or a group of people, then all the current theories of personality or group dynamics will be changed. This single important influencing factor has been ignored or at least not taken into proper consideration in the Western Psychology.

Quran provides a complete code and conduct of human behavior and the laws related to it.

The work of clinical psychologist, the experimental psychologist and that of the other Western scholars can be of some great use and may serve as an integral part of the study of whole person from Islamic point of view.

It has also been observed that the use of these tests standarized in the Western civilization when used in a different culture only bring out the racial, cultural and ethnic prejudices and biases rather than the personality characteristics or individual pathologies of the subject tested..

Before any new tests or theories are developed or any modification is made it is also necessary to find out how far the currently available tests are invalid and where they need to be changed or modified. In order to provide a reasonable answer to this question, a study was undertaken by this author in 1973[13]. This study was under taken as a pilot study in that direction with the hope that it will generate new research of pioneering significance in developing psychodiagnostic tools and treatment modalities and the relevant theories suitable for the Islamic society and culture.

So far we have discussed the need for the development of Islamic Psychology, a need for the development of Islamic theory of personality and understanding of human behavior in the light of Quran and Hadith. Another equally important and significant issue is the *criterion* of normality of human behavior. The available literature on defining normal behavior and normality is more confusing which leads us in the dark allies. The big question here is how the theories of personality and the criterion of normality developed in the non-Islamic culture can be applied in the Islamic culture (here we are not talking about the cultures of the so called Islamic countries but referring to the Islamic culture as defined by Quran & Hadith.)

To conclude we can say that the function and duty of the Muslim Psychologist would be to integrate all the available knowledge and formulate, within the framework provided by Allah, to develop Islamic Perspectives in Psychology[14]. The application of such integrated knowledge and its application in various

fields of life will lead to a universal conflict-free society. The development of Islamic Psychology would be in itself an "*Ijtehad*". It is time that the Muslim Psychologist trained in the Western Schools of thought bring up their Islamic training and knowledge, teachings and understanding of Islam, Quran and Hadith in enlarging and enriching the field of psychology. If they can do this, they would be fulfilling the Will of Allah and help put the humanity on right path - *sirat al mustaqueem*. They have to accept the cahallenge Islam is facing in the 20th Century A.D.[15].

It is now the time that the Muslim Social Scientists in general and Muslim psychologists in particular should come forward, pool their resources, knowledge and spirit and work towards the following objectives:[1] Evaluate the need of developing Islamic Psychology[2]; define the criteria of 'normality' of human behavior as applied in Islam[3]; ennunciate Islamic theory of personality based on Quran and Hadith,[4]; develop our own psychological tests for use in the clinical, educational and industrial areas of Muslim countries and the Muslim communities through out the world. This paper proposes forming a special committee of Muslim psychologists and Muslim Social scientists to work on these important issues.

May Allah be with us and guide us in the right direction.

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ISLAMIC APPROACH TO HEALING

Taghi Modarressi,

U.S.A.

For many Muslim physicians it is difficult indeed to grasp the meaning of the Islamic concept of health, illness and healing. Having been trained in the Western medical tradition, they often feel distant from their religious roots.[2] And yet the Qur'an and the authorative Hadith have provided clear instruction for physicians.

> (THE QUR'AN) IS A GUIDE AND A HEALING TO THOSE WHO BELIEVE .
> *(Qur'an, S41:V44)*

The understanding of this instruction is even more crucial for those who treat mental illness, especially if the suffering individual is a child.

This paper will examine the Islamic concept of healing and its application to the treatment of children and adults suffering from serious mental illness. Later, I will discuss in more detail the Islamic notion of the unity of Allah and His universal manifestations and how this unity influences our understanding of illness and healing. I might add that the idea of unity is applicable to the field of medicine in general and not only to psychiatry and mental health.

The present trend in Western psychiatry, particularly in American psychiatry, emphasizes not only the biological, constitutional and genetic basis of mental illness but also the motivational, emotional and cognitive factors as well[3]. Despite recent efforts to move away from the Cartesian notion of splitting the mind from body, there are still some vestiges of the Cartesian mode of thinking among many clinicians and investigators. It is not uncommon to hear of "functional" versus "organic" mental illness or to witness a controversy between those who consider biological factors and those who emphasize environmental factors as responsible for the formation of mental illness. This type of scientific splitting and fragmentation contrasts with the Islamic approach which encourages us to discover and illuminate the underlying unity and harmony in God's creation.

> AND HOLD FAST ALL OF YOU TOGETHER TO THE ROPE OF ALLAH, AND BE NOT DIVIDED AMONG YOURSELVES; AND REMEMBER ALLAH'S FAVOUR ON YOU, FOR YOU WERE ENEMIES AND HE JOINED YOUR HEARTS TOGETHER .
> *(Qur'an, S3:V103)*

In order to clearly present the Islamic concept of illness and healing, we need some general information about the views held on this subject by other religions. How do other religions interpret the mean-

ing of illness? How do they concieve of its cure? In what ways are these concepts similar to or different from the Islamic views?

Although there are many similarities among the Old Testament, the New Testament, the Qur'an and even some Western Philosophical concepts of the meaning of illness and healing there are significant differences as well. The following is a brief and admittedly oversimplified review of these concepts:

The Old Testament does not differentiate between the priest and the physician. To determine the state of his health, the leper was ordered to be examined by a priest. Islamic tradition, on the other hand, makes a clear distinction.

In Old Testament theology, the priest is instructed in detail on how to identify the characteristics of religiously unclean skin blemishes. He must determine whether the lesion is deeper than the surface of the skin, whether the hair on the lesion has become whitish or reddish, etc. The Old Testament makes it clear that "illness" is a punishment for the human's betrayal of his Creator, for his having broken his "covanant" with the Lord and obeyed and worshipped strange idols. The ritual for cleansing of the leperous emphasizes human guilt:

> "AND THE PRIEST SHALL TAKE ONE OF THE MALE LAMBS, AND OFFER IT FOR A GUILT OFFERING, ALONG WITH THE LOG OF OIL AND WAVE THEM FOR A WAVE OFFERING BEFORE THE LORD; AND HE SHALL KILL THE LAMB IN THE PLACE WHERE THEY KILL THE SIN OFFERING AND THE BURNT OFFERING, IN THE HOLY PLACE; FOR THE GUILT OFFERING, LIKE THE SIN OFFERING, BELONGS TO THE PRIEST; IT IS MOST HOLY .
>
> *(Leviticus, 14:12-13)*

Later on, in the same chapter the Lord says to Moses:

> NONE OF YOUR (AARON'S) DESCENDENTS THROUGHOUT THEIR GENERATIONS WHO HAS A BLEMISH MAY APPROACH TO OFFER THE BREAD OF HIS GOD... HE MAY EAT THE BREAD OF HIS GOD, BOTH OF THE MOST HOLY AND OF THE HOLY THINGS, BUT HE SHALL NOT COME NEAR THE VEIL OR APPROACH THE ALTER, BECAUSE HE HAS A BLEMISH, THAT HE MAY NOT PROFANE MY SANCTUARIES; FOR I AM THE LORD WHO SANCTIFY THEM .
>
> *(Leviticus, 21:17 and 23)*

Thus, according to the Old Testament, healing is the process by which the patient becomes clean again, and it is strongly linked to religious authority. Illness, therefore, is a symbol of guilt and, at the same time, of punishment. Healing is the process of restoration of the patient's moral and corporeal integrity. Perhaps it is safe to infer from this that the patient is considered conscious of his sin, that he has knowingly disobeyed his Lord, and consequently deserves punishment. In other words, the Old Testament's view of illness and healing is basically one of cause and effect, and derives from the talion law (an eye for an eye and a tooth for a tooth) in the sense that illness is seen as a direct form of punishment by the Lord.

In fact, the externally observable body parts are considered by the Old Testament as the locus of illness. These areas are symbols of man's disgrace, shame and broken promises.

The New Testament approach to the ailing individual is compassionate and forgiving. This is largely based upon Jesus's conduct and tradition. He is considered a "healer" a "resurrector" and a "physician

of souls", both by Christians and Muslims. He has particular concern for the afflicted and suffering as a metaphor for the human condition. The tradition of "healing" through the spiritual rituals of "touching" and being "touched" by the "Resurrector", the "living", the eternal" Jesus conjures up important images that are basic to the medical profession. The Christian doctrine considers illness as possession by demons and as spiritual corruption. The idea of the demon dwelling in the human soul is manifested by human indulgence in sensual pleasures. Christ offered His body as a redemption for human greed and avarice. So illness becomes a sort of dying, a loss of touch with Jesus's body.

> FOR ANY ONE WHO EATS AND DRINKS WITHOUT DISCERNING THE BODY, EATS AND DRINKS JUDGEMENT UPON HIMSELF. THAT IS WHY MANY OF YOU ARE WEAK AND ILL, AND SOME HAVE DIED .
>
> *(ICorinthians, 29)*

Jesus's body is the healer and unifier. Thus corporeal death is due to the consumption of material good without discerning the body of Jesus Christ. Death is the natural "wages of sin" and the redemptive act of Christ is overcoming death through resurrection.

> DEATH IS SWALLOWED UP IN VICTORY .
>
> *(I Corinthians, 15:54)*

In one account, the life of the Christian is considered "eternal life", and its antithesis is eternal death. The power behind eternal life, of course, is the Holy Spirit, which has been evoked through healing rituals and exorcism undertaken in the name of Jesus Christ.

There are references in the Qur'an and the authoritative Hadith that display concepts of illness and healing. In the following verse from the Qur'an, healing is equated with change in the human heart. When man returns to Allah, he finds peace and healing.

> BUT HE GUIDETH TO HIMSELF THOSE WHO TURN TO HIM IN PENITENCE- -THOSE WHO BEILEVE, AND THOSE WHOSE HEARTS FIND PEACE AND SATISFACTION IN THE REMEMBRANCE OF GOD: FOR WITHOUT DOUBT IN THE REMEMBRANCE OF GOD DO HEARTS FIND SATISFACTION AND PEACE .
>
> *(Qur'an, S13:V27-28)*

The remembrance *(dhikr)* of God is the path to satisfaction and peace. There are frequent references in the Qur'an to the "remembrance" of God:

> AND REMEMBER GOD OFTEN .
>
> *(Qur'an, S62:V10)*

And God is remembered through the citation of many names of Allah and through the profession of faith: "There is no God but Allah and Mohammad (ﷺ) is his prophet".

Although the Qur'an warns the faithful of the mischief of Satan (Shaytan) in creating corruption and disease in the world, it goes further than Christian doctrine and addresses two additional important issues. The first is man's personal participation in, and responsibility for, health and disease. The second is man's search for understanding and knowledge of God's creation, in order to give his existence a meaning.

In so far as man is responsible for his life on earth, illness is considered one form of ignorance. The basic task of the faithful is to get to know God and His creation. Creation in itself is a symbolic manifestation of God. The Qur'an clearly talks about a path and direction for those who "believe", so they

may know the truth of God. Creation is perfect: what is imperfect, painful and destructive (e.g., illness) is man's ignorance and his refusal to behold. That is why the Qur'an talks of hypocrites ("Munafiqeen") as:

IN THEIR HEARTS THERE IS A DISEASE, BECAUSE THEY ARE FALSE.

Finding God's truth, or discovering what is true and what is false, is the Muslim's salvation; it is the instrument that heals him. Thus, Islam provides a direct contact between the Divine and man. This relationship is an all-encompassing one, where man is invited to learn the truth about himself and creation. And God compassionately guides those who wish to know.

GOD TAUGHT QUR'AN THROUGH THE COMPASSIONATE . *(Qur'an, S55:V1)*

It is within this context that the Islamic concept of illness and healing is unique among religious teaching. It simply considers illness as one form of ignorance, a kind of distortion of God's work and His truth. The healing process is to learn about God's creation and truth.

The distortion, falsification and corruption of God's creation is a Satanic act, based upon the Satanic principle of arrogant rebellion against God's creation and truth. For instance, when God ordered Satan (Iblis) to worship Adam, who was God's perfect creation, Iblis refused God's command out of envy. In other words, he was obliterating God's beautiful creation. The order and beauty of creation must be unveiled. To know the work of God truly means to remember Him in praise and glory (Tasbeeh).

THE SEVEN HEAVENS AND EARTH, AND ALL BEING THEREIN, DECLARE HIS GLORY: THERE IS NOT A THING BUT CELEBRATES HIS PRAISE AND YET YOU UNDERSTAND NOT HOW THEY DECLARE HIS GLORY . *(Quran, S17:V44)*

It is with this concept of creation that the Prophet(ﷺ)has declared that there is a cure for every disease in this world. According to the authorative Hadith, given by the authority of Ibn Mass'ud, the Prophet(ﷺ) said,

"GOD HAS NOT INFLICTED A DISEASE WITHOUT PRESCRIBING A CURE TO IT, KNOWN TO WHOEVER KNOWS IT, AND UNKNOWN TO WHOEVER DOES NOT KNOW IT".

The same Hadith has been quoted by many authorities. Therefore, the Muslim patient is commanded to seek treatment to discover the cure for his ailment. In other words, to discover the truth of creation.

If we compare the Islamic notion of cure and healing with modern trends in Western psychiatry, we find that there is a surprising correspondence. Islam teaches that truth is the beauty of creation. Similarly, psychoanalysis talks about the disturbance in psychic and disease is an obliteration of the beauty of creation, homeostatic states, which is the cause of illness[5], as a symbol of this distortion and falsification. In other words, the patient disturbed by unacceptable truths about himself tries to have a false view of himself, tries to oblitrate his knowledge. This seems compatible with Islamic teachings established fourteen centuries ago.

Because of limited time, we cannot adequately examine the practical aspects of Islamic teachings regarding the treatment of adults and children suffering from serious mental illness[5]. It is sufficient to mention that modern scientific investigations of these disorders suggest that underlying psychic fragmentation and confusions are responsible for the patient's suffering. This should remind us of the Islamic call to the human spirit to consider the unity of Allah, the unity of creation and the unity of the human spirit.

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Comment:

The concept of ignorance of truth as a cause of disease cannot be generalised for somatic illness. The paper has been presented just to illustrate the view of other religions towards illness.

(Dr. Sayyad)

ISLAM AND PSYCHOSOMATIC MEDICINE

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The most important cause of morbidity today is the stress and strain of life. Not only this, but directly or indirectly the stress and strain of life. Not only this, but directly or indirectly the stress and strains of life are also one of the most important causative factors of coronary artery diseases which stands out as the number one killer of mankind today.

"We are born in pain, we die in pain and in between there are pains both psychic and somatic". One cannot avoid stress in life nor can we live without stress. It is essential for the development of human faculties. But excess of it is extremely damaging to the human body. Minimising stress within tolerable limits is the goal of modern physical and psychological therapy.

The present work attempts to analyse how best *Islamic* practices have contributed to solving the psychological problems and have helped towards a healthier living in achieving *positive health.*

Because of the limited space only the commonly practiced methods which minimise stress and bring about relaxation both physical and mental will be discussed in the light of Islam.

The following methods of relaxation have been selected for the present discussion.

1. MID-DAY NAP

A short mid-day nap (Qailulah) is a Sunnah. The value of this mid-day nap in total body relaxation has been appreciated recently by scientists.

Not only does a mid-day nap give relaxation to the body in day time but it is also very conducive to sleep at night.

Relaxing once during the day is very conducive to total relaxation - and sleep - once you crawn into bed for the night

(Kerner)

It should be appreciated that insomnia is a "powerful stressor in itself". The Sunnah of short mid--day nap may, therefore, be practiced as a remedy for sleeplessness.

Furthermore, the sunnah is not necessarily to sleep during the day but to lie down for some time to relax. This is exactly what is required for proper relaxation according to the modern scientific investigations.

2. FAITH IN THE ALMIGHTY CREATOR AND SUSTAINER

Lack of faith in the Almighty Creator is one of the theories of psychological disorders leading to psychoneurosis and psychoses. This can be understood from the knowledge of the mechanisms of development disorders.

Man is constantly exposed to stress conditions. It is not possible to avoid stress in life. One tries to adjust to the stresses of life by methods which he has learned as well as by the inherited tendencies of reactions to stress. The result of this stress adaptation interaction is a STRESS REACTION. The effect of this stress reaction will depend upon the severity on stress and on the power of adaptation of the individual to stress. If stress is mild and power of adaptation is good, the reaction results in an adjustment which is beneficial to the individual. However, if the stress is severe and adjustment poor, it results in major mental disorders (psychosis).

A person who has the faith in Allah the Almighty and He is with Him, has an intense moral support which will sustain him in the most adverse situations in life.

Hadith Sharif mentions extensively of the importance of the virtues of remembrance of Allah and the Holy Quran bears a testimony to it in the following words:

BEHOLD ITS MERIT THAT REMEMBRANCE OF ALLAH BESTOWS SATISFACTION OF HEART

It is logical to conclude that believing in one Allah as preached by Islam provides the real moral support as needed in life and bestows satisfaction of heart.

3. FAITH IN LIFE HEREAFTER AND ACCEPTING THE INEVITABLE

In the light of the foregoing discussion, it is obvious that one who believes that the troubles of this Dunia are nothing but temporary and Dunia is Fani, and there is a life hereafter, will be content with whatever he gets in this world. 'Accepting the inevitable' is an important and indispensable mechanism of psychological defence against frustration.

Those who do not have faith in life hereafter are totally deprived of this benefit. Those who believe in a temporary life hereafter will be partially deprived of this benefit and those who believe that they will get the rewards of all their deeds in the world only, should be expected to have an effect of fear rather than relief.

The faith in destiny and in the life hereafter as is preached by Islam should definitely be the most effective sustainer for anybody.

4. CARE OF NEIGHBOURS

In the so-called 'most advanced places', it is a fact that people do not know even their immediate neighbours. The scientific significance of keeping good relations with neighbours is being appreciated only recently with the observations of Hans Seley, known as the father of the science of Stress. He has concluded that the most important factor affecting mental peace is having good relations with

neighbours. In most of the religions good relations with neighbours has been emphasized. But the meaning of a neighbour and the type of relations to be kept with neighbours is very comprehensive in Islam. As for the definition of a neighbour, in Islam all persons living in the 40 houses from the houses of an individual, in all directions, are his nighbours. As regards the rights of the neighbours; these are extensive in Islam. Hazrat Gibrail stressed so much on the right of neighbours that once it appeared to Rasool (ﷺ), that neighbours may have a share in the property of a person. Thus one can appreciate the status of a neighbour as considered in Islam.

It is the faith of all Muslims that all the teachings of the Propher (ﷺ) are the best of the actions. The psychiatrist will definitely realise their significance when he will look at it in an unbiased perspective.

5. SLEEP POSTURE

The posture one adopts while sleeping reveals a lot about the personality of the person, his attitude towards life and so on.

Lying down in bed relaxes the muscles of the body and the degree of relaxation is determined by the sleep posture adopted by the person.

In the semifoetal position the person lies on his side with arms and legs partially folded. The limbs are not kept in an exactly opposed position.

In terms of physical comfort, in this position it is possible to turn from side to side without undoing the set configuration of the body position. It is supposed to be the best position in terms of physical comfort. It has, therefore, been considered as the best position for relaxation.

According to an old proverb the kings are known to prefer to sleep on their back, the rich man on his stomach and the wise man on his side.

These abovementioned observations bear testimony to the superiority of sleeping in semi-flexed position on one side.

The sleep position which was adopted by Prophet Mohammad (ﷺ) is a Sunnah and is scrupulously adopted by devout Muslims. He used to lie on his right-side with limbs slightly flexed, right hand below his cheek and facing towards Kaba Sharif. This position is similar to the semi-foetal position described above, and, obviously in the light of the existing knowledge about sleep posture, is the position adopted by a highly balanced person psychologically. It is also the best posture for relaxation, both physical and psychological. Adherence to this sleep posture should therefore, contribute a lot to total body relaxation.

SALAT AS A MEANS OF RELAXATION

In salat the person concentrates on Allah, who is not a formed object but a Light, a Noor, with all His qualities of being Rahman and Rahim. He is unlimited and will remain forever. He is the Master of the Day of Judgement, the Qeyamat, when the fate of every body will be decided. The person not only concentrates on Allah but also talks to Him in a murmuring voice, reciting His own words. The person

not only sits before Allah, but stands before Him, bows down before Him and finally prostrates before Him. Praising Him with words better than which no human mind can think of and better than which no human can utter. Finally, he recites the conversation which took place between Allah and Prophet Mohammad(ﷺ during Meraj. Obviously both in physical form and in mental state, this should be a definite improvement on the most sophisticated method of concentration devised by human mind.

From the foregoing discussion, it is obvious that scientific researches have confirmed the superiority of Islamic practices. Further researches will definitely reveal more astonishing facts regarding the superiority of faith in one Almighty Allah, faith in the eternal life hereafter and in the life style of Prophet Mohammad(ﷺ).

Anxiety and psychological maladjustments bring about a chain of metabolic changes which, in turn, produce damage in various tissues of the body - causing 'PSYCHOSOMATIC DISEASES'. These diseases are the most important cause of, morbidity and mortality of mankind today. Islamic practices bring about peace of mind and soul apart from giving physical relaxation. Undoubtedly, if one adheres to the teachings of Prophet(ﷺ)he will be greatly benefited in this life as well as in the life hereafter.

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STRESS RELATED DISORDERS AND HOW THE NEW BEHAVIORAL MEDICINE CONCEPTS REFLECT TEACHINGS OF ISLAM WITH EMPHASIS ON COGNITIVE DISCIPLINE AND SELF REGULATORY ACTIVITIES INCLUDING DAILY PRAYERS

Moin U. Khan and Michael S. Gaylor,

U.S.A.

Among the great religions of the world, Islam enjoys the distinction of being a significant name, the name that points to its very essence. The root meaning of Islam is to enter into peace and the believer is one who makes his peace with God and man.

The Holy Quran *says,*

> NAY, WHOEVER SUBMITS HIMSELF ENTIRELY TO GOD AND HE IS A DOER OF GOOD TO OTHERS, HE HAS HIS REWARD FROM HIS LORD AND THERE IS NO FEAR FOR SUCH NOR SHALL THEY GRIEVE
>
> *(Qur'an S2:V112).*

At the time when daily stress is being found to play a role in many disease processess and emphasis now being placed in Western medicine in not considering the patient as merely an organ system or cellular physiology problem but as a person, this "psychosomatic" or holistic model points to the importance that the patient's individual cognitive processes, his role in the family unit and his role in the social milieu all play important factors in ultimately determining his response to an illness process[1]. This increased awareness of the psychophysiological role that stress plays in all illness processess comes at a time when the practical aspect of psychoanalysis seem few and at a time when the potential addicting effects of tranquilizing drugs are becoming problematic. Further with the dissolution of the nuclear family as a support is an increasing tendency in Western medicine to rely on other factors to help their patient cope with stress.

The trend in the medical field to what is called behavioral medicine or stress medicine, this field emphasizes self regulatory techniques and emphasizes what the patient through daily dixipline can do himself to further his own adaptation to the stress of illness.

Among the five fundamental duties recognized by the religion of Islam, prayer undoubtedly occupies the most important position and is given great prominence in the Holy Quran.

The place of prayer in the self development of man is given such a prominence in Islam that in the call to prayer (azan) the words "come to Falah" thus showing that self development is attained through prayer and the Quran says

SUCCESSFUL INDEED ARE THE BELIEVERS WHO HUMBLE IN THEIR PRAYERS

(Qur'an, S23:V1-2)

Again, The word used for being successful is 'Alfalah' carrying the significance of full self development. Through daily 'discipline of prayer and self development, one can further his own adaptation to stress of illness. These programs stand to have three common elements. The first is an attempt to decrease psycho-physiological arousal with what has been called "relaxation response". This tropho trophic is a prayer-like activity which seems to have as common elements a mental device, a passive attitude, decreased muscle tone and a quiet environment. Indeed the similarity of these activities to prayer has been pointed out in an article called The Relaxation Response[2] and the Islamic mode of worship is calculated to concentrate attention on one object, the realization of divine presence and the ablution preceding the prayer, the reverential attitude in standing, the bowing down, the kneeling with the forehead placed on the ground and the reverent sitting posture. All help the mind to realize the divine presence as a fect and the worshipper, as it were, finds his heart's joy in doing honor to the great Master, not only with his recitation but with his whole body, adopting a reverent attitude. There is not the least doubt that the spirit of humility in man finds particular expression in the reverential posture that must be adopted in prayer. The whole prayer is a most solemn and serious affair during which the worshipper does not turn his attention to anything else, nor does he indulge in any movement which should distract his attention or disturb his prayerful attitude. The prayer is thus an undisturbed meditation on the Divine and it is for this reason that prayer is accompanied by a recitation from the Holy Quran speaking of divine love, mercy, power and knowledge. It cannot be denied that a particular posture of the body during prayer will generate in man a feeling of pride and haughtiness while another is suggestive of true humility and it is only the latter frame of mind that can bring man closer to God. If, therefore, humility is the essence of prayer, the practical posture of standing, sitting, bowing down and prostration are also essential for creating that spirit in man and any change would be a change for the worse, a change that might well bring about failure to achieve the very end for which prayer is intended.

The second element common in these programs for dealing with stress centers around positive cognitive self statements faith-like in their application, for instance, denial of possibility of dying in the coronary care unit has been associated by many researchers with an increasing apparent survival rate[3]. Much attention is being paid in these medical situations to fostering positive thoughts, faith in ultimate recovery, the impact on one's life etc., in a way that not only produces a physiological relaxation but also helps a patient to cope effectively then through denial with the realities associated with his care. In relation to this Islam does teach man to pray but prayer instead of making him idle is intended to give him strength to carry on a harder struggle in the face of disappointment and failure by turning to God who is the source of all strength. The Holy Quran teaches man to work hard for success in life and it says

THEREFORE MAN CAN HAVE NOTHING BUT WHAT HE STIRVES FOR

Qur'an S53:V39).

Thirdly, other attention is given to more overt interactional behaviors and the part they play in many chronic illness process[4]. In behavioural medicine's approach to chronic pain treatment depends not only on modifying the pain alone. Talked and thought about in a way that provides for rewarding day to day family and social responsibilities, it has also been shown that the communication and the support of the spouse at such times is one of the key determinants of a successful recovery for the treatment of a painful condition[5]. Similar to an Islamic ideal dealing with stress factors in illness and environment with not only relexation and positive cognitive framework but also one that provides social support incentive for useful, purposeful activity and one that fosters marital and family harmony and support seems to play a potentially significant role in the outcome of many illness processes.

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CHAPTER TWO

SOME ISLAMIC REFLECTIONS ON MEDICAL SCIENCES
(Some Selected papers - Not presented)

1. PROSPECTIVE POTENTIALS OF BIOSTATISTICS IN ISLAMIC MEDICAL RESEARCH.
   Mr. Kamal A. Al-Saleh and Dr. Mustafa M. Helmy
2. MEDICAL ASPECT OF THE MIGRANT MANPOWER IN ISLAMIC COUNTRIES.
   Dr. Turhan Akbulut.

PROSPECTIVE POTENTIALS OF BIOSTATISTICS IN ISLAMIC MEDICAL RESEARCH

K.A. Al-Saleh and M.M. Helmy

Kuwait

The flourishing of an extensive awareness of the need of much more scientific researches to be carried out and a far greater effort for their organization, in the scope of Islamic medicine is highly perceptible in recent years.

Analysis of the available fragmented publications on Islamic Biomedical Statistics showed that, they could aimingly be classified into three main categories.

The first group of articles, both chronographically and historically, manipulated Qur'an with statistical analysis, such as calculating the letter frequencies in different Suras and correlate with initial lettering or computing the repitition of different words or phrases in the whole Qur'an.

It is true that a good share of the quantitative mathematical spirit that permeates these studies is of greatest philosophical value.

The second approach was dependent totally on the search of statistical abstracts in Qur'an, as Apothecric and metric measures, year-measuring based on moon (Hijra) or sun (Miladii) division of inheritance and so on...

The third school-that we would encourage and vote for establishing a research workshop, deal with the philosophy and essence of Biomedical Statistics in Islam.

A striking illustration could be derived from the story of Yousuf who... depending upon dream analysis of Faroon (to him this is a given fact), planned for resources and needs (to us this is statistical expectations) and successfully distributed food for 14 years.

Similar long term planning, following the same scheme is now urgently needed to face family planning, fertility control and population explosion projects.

MEDICAL ASPECT OF THE MIGRANT MANPOWER IN ISLAMIC COUNTRIES

Turhan Akbulut,

Turkey

Taking the opportunity of 1500th anniversary of Emigration I want to analyze a problem related to migration, from the point of view of health. This is a problem which has exploited as a result of migration of workers among Islamic countries, during the last ten years. In reality, migration of workers in the world goes back to ancient times. The event of migration, usually from the underdeveloped countries towards the Western European countries and North America, is one of the most important social events in the history of Man.

The use of foreign workers by industrialized countries originated, specially, in the 19th century and expanded during the 20th after the interruptions due to the two world wars and stopped in 1973 due to the energy crises and the stagnation of the economy in the industrialized countries.

Foreign workers have come to be used for a number of reasons: the difficulty encountered in filling certain ardous or low paid jobs such as mining and building, the inadequate supply of national manpower and to a lesser degree, the particular skills offered by foreigners (for instance in agriculture, building, public work and hotels).

This demand matched with specific features in the exporting countries: manpower surplus, absence of vocational training and unfavourable socio-economic conditions.

As a result of this, migration of workers to developed countries started both from the Moslem and Christian countries. The main countries sending workers abroad were the Moslem countries such as Algeria, Morocco, Turkey, Pakistan and Christian countries such as Yugoslavia, Greece, Spain, Portugal and Italy. Generally, the flow of migration is from a country with a largely rural and agricultural economy towards an industrialized country and it generally involves adaptation to a different social, cultural and religious structures and to a different language. Consequently, manpower movement raise very important social and health problems.

FOREIGN WORKERS IN ISLAMIC COUNTRIES

In the years following the energy crises of 1973, the first measure taken by the industrialized west-

ern countries was to stop migration of foreign workers; afterwards they even looked for a way to send them back. On the other hand, some Moslem countries which were neglected or colonized for centuries, started to develop rapidly as their energy sources gained importance. So, specially Algeria, Libya, Kuwait, Arab Emirates, Saudi Arabia, Iraq, Qatar and Indonesia made great efforts for evaluating the possibilities brought by petroleum. A rapid activity showed itself mainly in the construction section. As a result of this, many construction firms and their workers moved to these countries and started to work there.

In this way, the flow of technology and manpower came to existence, from developing Moslem countries to economically more developed Moslem countries. Under the light of the painful experiences in past in the West, we believe the most important thing is to solve the possible medical problems of the people sharing the same religion which may occur during this new socio-economic movement.

MEDICAL PROBLEMS IN GENERAL

Medical problems of foreign workers affect both the countries sending workers abroad and countries receiving them. It is the classical way to gather medical problems in 3 groups[1]:

a. Imported diseases
b. Acquired diseases
c. Diseases due to the adaptation difficulties

In case of migration of workers to the western countries, the recipient countries and international organizations facing the medical problems of foreign workers have worries about imported diseases. For this reason, medical control of foreign workers must be carried out seriously in the country of origin before migration, by the medical team of the recipient countries. On the contrary, problems of the workers such as professional and social adaptation have not been dealt in depth. Only an image was given as if these problems were being solved. Most of the time, integration was thought about instead of adaptation and the tendency was to separate the young and healthy generations of various countries from their own people. We must accept that the main factor which played role in this, was the lack of experience, ignorance and lack of bargaining power of the countries of origin in the bilateral agreements.

Therefore, foreign workers must be guaranteed against working, living, social and health conditions[2].

EPIDEMIOLOGICAL INVESTIGATIONS IN MIGRATION

Unfortunately the epidemiological data, in relation with migration, are not sufficient. Even the data of industrialized countries, having a great deal of experience and possibolity, lack information. For this reason it is not possible to arrive to a conclusion with the given statistical data[3]. But we know that foreignworkers form a young generation under the age of 40. In France, for instance, 60% of the foreigners who migrate are 18-30 years old, 34% of them 31-40 years old.[4] In general, they have their families in the countries of origin[5]. This means that members of the families are separated from each other, a situation which is more obvious in Moslem countries.

FACTORS AFFECTING HEALTH

Generally, health of foreign workers is affected by the physical and social environment. It is obvious that negative effects of lodging, climate, food, water and working conditions affect health of a person.

Certainly, apart from the physical conditions, social environment has many effects on health: specially in conditions supported by psychosomatic diseases and psychosocial stimuli, these stresses play an important role. There are many investigations showing the relation between socio-psychological stresses and diseases related to them.[6,7] Each sociopsychological change is a reason for a stress as explained by Selye[8]. In the stress described by Selye, wear and tear of the organism is of great importance. Specially a foreign worker who has left his family in his native land.

It is obvious that the authorities of the countries of origin carry on their shoulders a very important task. In Moslem countries, there is no problem as far as religion and education of children are concerned and this is a comforting situation.

One of the most important subjects related to health is the possibility for the workers to use medical services of the country where they work.

In a foreign country it is difficult to learn the language. In Germany, for instance, it has been found out that in a period less than two years 55% of foreign workers were unable to talk German. Even among workers living in Germany for seven years there were those who neither spoke nor understood German. The language problem affects doctor-patient relations too[9]. In an investigation I had made in Belgium, I found out that only 60% of the Turkish workers knew where to apply in case of sickness and 84% of the workers were unable to explain themselves. 85% of the workers were explaining their problems to the physician with gestures[10]. This difficulty in treatment of specially mental diseased exists also in preventive medicine. In 1969, rate of occupational accidents among Germans was 72 in thousand and 129 in thousand among foreign workers. Death as a result of occupational accidents is four times more among foreigners[3]. We have not yet seen any statistical data showing this situation in Islamic countries. Language problem is the center of health problems. What can be done to solve it? Is it enough to give language courses to foreigners or to use interprets in the hospitals? It is difficult to answer positively this question. If this were sufficient, problems of the workers in the West should have been lessened. Therefore, there are two solutions to the problems: either the physicians and the nurses dealing with the foreign workers should learn their language or as a more radical measure the physicians and the nurses would come from the country of origin of the workers.

The pathology of the foreign workers has shown that solution of their health problems necessitates a series of social and educational measures along with particular medical precautions[11].

Above all, foreign workers are present in a certain country for economic reasons and are trying to raise the income of the country and the living standards of the inhabitants. They should not be considered as second class citizens. From this point of view, the recipient countries must try to join together the foreign workers and their own people, through the use of training programs and press. Likewise, the recommendation No. 151 accepted at the 60th General Assembly of the World Health Organisation covers these issues.

The religious affiliation between the people of Islamic countries is the most positive factor for the formation of a social mix of different communities.

Another important point is the determination of the health conditions of foreign workers upon their return. A medical examination is needed also when these foreign workers return back to their countries[13].

Consequently, foreign workers form a particular risk group. Along with the programs for the medical examination, orientation and education of the workers before their departure, periodical examinations and measures for their well-being in a foreign country are also necessary. Therefore, health level of the recipient country will be kept at a high standard as well as that of the foreign workers.

In our opinion, it is necessary to have a permanent epidemiological centre which should investigate continuously the problems of foreign workers. Thus, the physical, mental and social well-being, which all of the involved countries are aiming at, can be fulfilled.

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PART TWELVE

SEMINAR ON
CODE OF ISLAMIC MEDICAL ETHICS

Part Twelve: *Seminar on Code of Islamic medical ethics.*

CHAPTER ONE

THE ISLAMIC CODE OF MEDICAL ETHICS

REPORT ON THIRD SESSION

This session was held from 4.00 to 6.00 p.m., under Dr. Hassan Hathout as Chairman, with Mr. Mohammed Fouad Tawfiq as the moderator.

In this session Dr. Hassan Hatnout presented a draft of "A Code of Islamic Medical Ethics", before the delegates for discussion. After a brief discussion the draft code was approved.

Editors.

Kuwait Document

ISLAMIC CODE OF MEDICAL ETHICS

ISLAMIC CODE OF MEDICAL ETHICS

CONTENTS

INTRODUCTION

Current progress in medical and life sciences has acquired revolutionary features.. and heralds breath - taking developments in medical technology and human engineering. Like any force, biosciences need to be harnessed for the welfare of humanity, and be so guided as never to stray to be a destructive power, as happened to nuclear fission in the near past.

In the wake of application of modern discoveries in human reproduction, heredity, recombinant DNA and synthesis of behaviour - influencing drugs, our generation is witnessing a radical shaking of our heritage of moral values and codes of behaviour.

In an attempt to keep human knowledge on the proper track prescribed by God as HE declared Man as HIS viceroy on this planet, colonizing earth, searching for God's laws and putting them to beneficial use, this document was submitted to-the First International Conference on Islamic Medicine held in Kuwait at the onset of the Fifteenth Hijri Century (6-10 Rabie Awal 1401 : 12-16 January 1981).

The document was endorsed by that conference as the Islamic Code of Medical Ethics.

The adoption of this document by all medical bodies in the Islamic world is hoped to be an area we converge upon... in these times when there is so much that diverges us.

Every muslim doctor will hopefully find in it the guiding light to maintain his professional behaviour within the boundaries of Islamic teachings.

Medical and paramedical students should find in it a window over the future, so that they enter their professional life conversant with what to do and what to avoid, well prepared to face pressures or temptations or uncertainties.

To medical scientists it subserves the function of rudder to the ship.. directing their efforts to harness science and technology only to the welfare of humanity but not to its danger or destruction.

We are confident that nonmuslim colleagues will also see in it a reflection of what God wishes man to be, and to do.

It is in God that we trust.. and Him that we seek guidance from.

Section 1.

DEFINITION OF MEDICAL PROFESSION

• "THERAPEUSIS" is a noble Profession.. God honoured it by making it the miracle of Jesus son of Mary. Abraham enumerating his Lord's gifts upon him - included "and if I fall ill He cures me".

• Like all aspects of knowledge, medical knowledge is part of the knowledge of God "who taught man what man never knew". The study of Medicine entails the revealing of God's signs in His creation. "And in yourselves.. do you not see"?. The practice of Medicine brings God's mercy unto His subjects. Medical practice is therefore an act of worship and charity on top of being a career to make a living.

• But God's mercy is as accessible to all people including good and evil, virtuous and vicious and friend and foe — as are the rays to His sun, the comfort of His breeze, the coolness of His water and the bounty of His provision. And upon this basis must the medical profession operate, along the single track of God's mercy, never adversive and never punitive, never taking justice as its goal but mercy, under whatever situations and circumstances.

• In this respect the medical profession is unique. It shall never yield to social pressures motivated by enmity or feud be it personal, political or military. Enlightened statesmanship will do good by preserving the integrity of the medical profession and protecting its position beyond enmity or hostility.

• The provision of medical practice is a religious dictate upon the community, "Fardh Kifaya", that can be satisfied on behalf of the community by some citizens taking up medicine. It is the duty of the state to ensure the needs of the nation to doctors in the various needed specialities. In Islam, this is a duty that the ruler owes the nation.

• Need may arise to import from afar such medical expertise that is not locally available. It is the duty of the State to satisfy this need.

• It also behoves the State to recruit suitable candidates from the nation's youth to be trained as doctors. An ensuing duty therefore is to establish relevant schools, faculties, clinics, hospitals and institutions that are adequately equipped and manned to fulfill that purpose.

• "Medicine" is a religious necessity for society. In religious terms, whatever is necessary to satisfy that "necessity" automatically acquires the status of a "necessity". Exceptions shall therefore be made from certain general rules of jurisprudence for the sake of making medical education possible. One such example is the intimate inspection of the human body whether alive or dead, without in any way compromising the respect befitting the human body in life and death, and always in a climate of piety and awareness of the presence of God.

• The preservation of man's life should embrace also the utmost regard to his dignity, feelings, tenderness and the privacy of his sentiments and body parts. A patient is entitled to full attention, care and feeling of security while with his doctor. The doctor's privilege of being exempted from some general rules is only coupled with more responsibility and duty that he should carry out in conscientiousness

and excellence in observing God. "excellence that entails that you worship God as if you see Him. for even though you dont see Him, He sees you."

> *"Al-Ghazali considered the profession of medicine as (Fardh-Kifaya), a duty on society that some of its members can carry in lieu of the whole. This is natural since the need of health is a primary need and not a subsequent one. If health is seriously impaired hardly anything in life remains enjoyable.*
>
> *That it is permissible for the purpose of treatment to look at hidden and private parts of the body, derives from the rule of jurisprudence "necessities override prohibitions"... and complies with the Qoranic excuse when "compelled to do something but without ill - intention". Since the early days of Islam the Lady-Healer's corps joined the Prophet's (ﷺ) army to battle caring for the casualties and dressing their wounds on whatever part of the body. This provoked no dispute or divergence of opinion.*
>
> *To import medical expertise and to treat muslims by non - muslim physicians should be decided only by the condition of the patient and the capability of the doctor.*
>
> *Since an early time the muslim state employed christian doctors from Jundishapur and treated them very generously. In this context it is also worthy remembering that the Prophet's (ﷺ) guide on the journey of Hijra was Abdullah Ibn Uraikit, a nonmuslim, chosen by the Prophet (ﷺ) on account of his honesty and thorough knowledge of the road".*

Section 2

CHARACTERS OF THE PHYSICIAN

• The physicians should be amongst those who believe in God, fulfil His rights, are aware of His greatness, obedient to His orders, refraining from His prohibitions, and observing Him in secret and in public.

• The physician should be endowed with wisdom and graceful admonition. He should be cheering not dispiriting, smiling and not frowning, loving and not hateful, tolerant and not edgy. He should never succumb to a grudge or fall short of clemency. He should be an instrument of God's justice, forgiveness and not punishment, coverage and not exposure.

• He should be so tranquil as never to be rash even when he is right.. chaste of words even when joking.. tame of voice and not noisy or loud, neat and trim and not shabby or unkempt.. conducive of trust and inspiring of respect.. well mannered in his dealings with the poor or rich, modest or great.. in perfect control of his composure.. and never compromising his dignity, however modest and forebearing.

• The physician should firmly know that "life" is God's.. awarded only by Him.. and that "Death" is the conclusion of one life and the beginning of another. Death is a solid truth.. and it is the end of all but God. In his profession the Physician is a soldier for "Life" only.. defending and preserving it as best as it can be, to the best of his ability.

• The Physician should offer the good example by caring for his own health. It is not befitting for him that his "do's" and "dont's" are not observed primarily by himself. He should not turn his back on the lessons of medical progress, because he will never convince his patients unless they see the evidence of his own conviction.. God adresses us in the Qoran by saying "and make not your own hands throw you into destruction". The Prophet ﷺ says "your body has a right on you".. and the known dictum is "no harm or harming in Islam".

• The Physician is truthful whenever he speaks, writes or gives testimony. He should be invincible to the dictates of creed, greed, friendship or authority pressurizing him to make a statement or testimony that he knows is false. Testimony is a grave responsibility in Islam. The Prophet ﷺ once asked his companions "shall I tell you about the gravest sins?" When they said yes He ﷺ said "claiming partners with God, being undutiful to one's parents.." and after a short pause he repeatedly said "and indeed the giving of false talk or false testimony".

• The Physician should be in possession of a threshold knowledge of jurisprudence, worship and essentials of Fiqh enabling him to give counsel to patients seeking his guidance about health and bodily conditions with a bearing on the rites of worship. Men and women are subject to symptoms, ailments or physiological situations like pregnancy, and would wish to know the religious ruling pertaining to prayer, fasting, pilgrimage, family planning etc..

• Although "necessity overrides prohibition", the Muslim Physician — nevertheless — should spare

no effort in avoiding the recourse to medicines or ways of therapy — be they surgical, medical or behavioural — that are prohibited by Islam.

• The role of Physician is that of a catalyst through whom God, the Creator, works to preserve life and health. He is merely an instrument of God in alleviating people's illness. For being so designated the Physician should be grateful and forever seeking God's help. He should be modest, free from arrogance and pride and never fall into boasting or hint at self glorification through speech, writing or direct or subtle advertisement.

• The Physician should strive to keep abreast of scientific progress and innovation. His zeal or complacency and knowledge or ignorance, directly bear on the health and well-being of his patients. Responsibility for others should limit his freedom to expend his time. As the poor and needy have a recognized right in the money of the capable, so the patients own a share of the Doctor's time spent in study and in following the progress of medicine.

• The Physician should also know that the pursuit of knowledge has a double indication in Islam. Apart from the applied therapeutic aspect, pursuit of knowledge is in itself worship, according to the Qoranic guidance: "And say.. My Lord.. advance me in knowledge." and: "Among His worshippers.. the learned fear Him most".. and: "God will raise up the ranks of those of you who believed and those who have been given knowledge".

Section 3.

DOCTOR-DOCTOR RELATIONSHIP

• A doctor is a brother to every doctor and a fellow companion in the noblest mission that is a direct answer to God's commandment in the Qoran: "And help one another in charity and piety.. but help not one another in sin and rancour".

• Physicians are jointly responsible for the health care of the Nation.. and complement one another through the variety of their medical specialization be they preventive or therapeutic, in the private sector or in State employment.. all abiding by the ethics and rules of their profession.

• As a professional group in the Nation, Doctors are collectively responsible for drawing plans and taking measures and developing traditions and regulations that are necessary to enable them collectively and individually to carry out their duties as best as possible.

• Within their fraternity, a Doctor should respect his fellow Doctor in his absence. He should offer him advice and/ or help whenever sought. A Doctor shall not eat his brother's flesh by speaking ill of him from behind his back.. nor shall he pursue his shortcomings or tarnish his reputation or exhibit his deficits. He shall never extend a harming hand to his brother. This does not absolve the doctor however, from absolute honesty when giving legal testimony or aiding in the prevention of a crime: according to the dictates of the Law.

• The mutual relation between Physicians is additive and not competitive.. and collaboration in good faith for the best interest of the patient.

If more than one doctor handle the patient, medical data should not be withheld from the treating doctor(s).

These data should be conveyed in a clear lucid talk or neat legible writing.

These data should be kept in confidence, within the boundaries of the medical circle without leakage.

• If in doubt it is the duty of the Doctor (and the right of the patient) that consultation should be arranged or the case referred to a specialist. This is also inspired by the Qoranic saying: "Ask of the people who possess the message if you do not know".

The specialist will take whatever steps he deems necessary.. but he shall keep the referring Doctor informed about the current and subsequent happenings.

• It is a Doctor's duty to avail his juniors of the fruits of his experience, knowledge and acumen. He should provide for their education and training.. for "The concealer of knowledge is cursed", and because it is in answer to the rights of colleagues, patients and the profession at large from one generation to another.

> *"In this context it is worthly to remember the Prophet's (ﷺ) saying:*
>
> *"When the son - of - Adam dies he is completely cut off except from three things: a running charity, knowledge that be had taught and remains put to good use and virtuous progeny praying God for him".*

• Doctors shall be also mutually cooperative and shall promptly rally to the aid of one another if inflicted by sickness affecting a colleague or a member of his family, as well as under conditions of stress, need, disability or death.

• At this age the Doctor is hardly the individualist he was in old... for medical care nowadays is given by a team comprising — apart from the Doctor-nursing, laboratory, physiotherapy, social service and other personnel. The doctor shall foster the team spirit and perfect cooperation so that the team achieves best results in patient care.

• This code shall be binding also to all personnel of all ranks in all fields of health care.

Section 4.

DOCTOR-PATIENT RELATIONSHIP

• For the sake of the patient the Doctor was.. and not the other way round. Health is the goal and medical care is the means.. the "patient" is master and the "Doctor" is at his service. As the Prophet ﷺ says "The strongest should follow the pace of the weakest... for he is the one to be considered in deciding the pace of travel. Rules, schedules, time-tables and services should be so manipulated as to revolve around the patient and comply with his welfare and comfort as the top and overriding priority.. other considerations coming next.

• That top-priority status is conferred on the patient because and as long as he is a patient... no matter who he is or what he is, a patient is in the sanctuary of his illness and not of his social eminence, authority or personal relations. The way a Doctor deals with his various patients is a perfect portrayal of his personal integrity.

• The sphere of a Doctor's charity, nicety, tolerance and patience should be large enough to encompass the patient's relatives, friends and those who care for or worry about him.. but without of course compromising the dictates of "Professional Secrecy".

• Health is a basic human necessity and is not a matter of luxury. It follows that the Medical Profession is unique in that the client is not denied the service even if he cannot afford the fee. Medical legislature should ensure medical help to all needy of it, by issuing and executing the necessary laws and regulations.

• In Private Practice the Doctor's fees are his lawful right.. and his earnings are legitimate.. and his conscience is his censor, aware that God's eye is ever watching.

• If medical necessity or emergency, however, puts a needy person under his care, it should be the Doctor's duty to be considerate and kind, and avoid his fees-if any-being a further burden atop of the ailment. For as you give the poor it is God you are giving and alms giving is not only due on material possessions but on knowledge and skills too. The Medical Profession is fundamentally the vocation to help Man under stress and not to exploit his need.

• Fully entitled to make a decent living and earn a clean income.. a Doctor shall always honour the high standards of his profession and hold it in the highest regard, never prescribing to activities of propaganda, receiving a commission or cutting earnings or similar misdoings.

Section 5.

PROFESSIONAL SECRECY

Keeping other persons' secrets is decreed on all the Faithful... the more so if these were Doctors, for people willfully disclose their secrets and feelings to their doctors, confident of the time old heritage of Professional Secrecy, that the medical profession embraced since the dawn of history. The Prophet ﷺ described the three signs of the hypocrite as: "He lies when he speaks, he breaks his promise and he betrays when confided in". The Doctor shall put the seal of confidentiality on all information acquired by him through sight, hearing or deduction. Islamic spirit also requires that the items of the Law should stress the right of the patient to protect his secrets that he confides to his Doctor. A breach thereof would be detrimental to the practice of medicine, beside precluding several categories of patients from seeking medical help.

Section 6.

DOCTOR'S ROLE DURING WAR

• Since the earliest battles of Islam it was decreed that the wounded is protected by his wound and the captive by his captivity. The faithful are praised in the Qoran as: "they offer food — dear as it is — to the needy, orphan or captive, (saying) We feed you for the sake of God without seeking any reward or gratitude from you" . The Prophet ﷺ said to his companions : "I entrust the captives to your charity".. and they did.. even giving them priority over themselves in the best of the food they shared. It is of interest to note that this was thirteen centuries prior to the Geneva Convention and the Red Cross.

•'Whatever the feelings of the Doctor and wherever they lie, he shall stick to the one and only duty of protecting life and treating ailment or casualty.

• Whatever the behaviour of the enemy, the Muslim Doctor shall not change his course.. for each side reflects his own code of behaviour. God made it clear in the Qoran: "Let not the wrong doing of others sway you into injustice".

•'As part of the international medical family, Muslim Doctors should lend all support on a global scale to protect and support this one-track noble course of the medical profession.. for it is a blessing to all humanity if this humanitarian role is abided with on both sides of the battle front.

• The Medical Profession shall not permit its technical, scientific or other resources to be utilized in any sort of harm or destruction or infliction upon man of physical, psychological, moral or other damage.. regardless of all political or military considerations.

• The doings of the Doctor shall be unidirectional aiming at the offering of treatment and cure to ally and enemy, be this at the personal or general level.

Section 7.

RESPONSIBILITY AND LIABILITY

• The Practice of Medicine is lawful only to persons suitably educated, trained and qualified, fulfilling the criteria spelt out in the Law. A clear guidance is the Prophet's ﷺ tradition: "Who-so-ever treats people without knowledge of medicine, becomes liable".

• With the availability of medical specialization, problem cases shall be referred to the relevant specialist. "Each one is better suited to cope with what he was meant for".

• In managing a medical case the Doctor shall do what he can to the best of his ability. If he does, without negligence, taking the measures and precautions expected from his equals then he is not to blame or punish even of the results were not satisfactory.

• The Doctor is the patients's agent on his body. The acceptance by the patient of a Doctor to treat him is considered an acceptance of any line of treatment the Doctor prescribes.

If treatment entails surgical interference the initial acceptance referred to should be documented in writing, for the sake of protecting the Doctor against possible eventualities. If the patient declines or refuses the Doctor's prescribed plan of treatment, this refusal should also be documented by writing, witnesses or patient's signature as the situation warrants or permits.

• When fear is the obstacle preventing the patient from consent, the Doctor may help his patient with a medicine such as a tranquillizer to free his patient from fear but without abolishing or supressing his consciousness, so that the patient is able to make his choice in calmness and tranquility. By far the best method to achieve this is the poise of the Doctor himself and his personality, kindness, patience and the proper use of the spoken word.

• In situations where urgent and immediate surgical or other interference is necessary to save life, the Doctor should go ahead according to the Islamic rule "necessities override prohibitions". His position shall be safe and secure whatever the result achieved, on condition that he has followed established medical methodology in a correct way. The "bad" inherent in not saving the patient outweighs the presumptive "good" in leaving him to his self destructive decision. The Islamic rule proclaims that "warding off" the "bad" takes priority over bringing about the "good".

The Prophetic guidance is "Help your brother when he is right and when he is wrong". When concurring with helping a brother if right but surprised at helping him when wrong, the Prophet ﷺ answered his companions: "Forbid him from being wrong.. for this is the help he is in need of".

"In conclusion, the basic religious criteria protecting the Medical Practitioner are 1) Recognized certification 2) Acceptance of the Doctor by his patient 3) Good faith on part of the Doctor and sole aim of curing his patient 4) Absence of unacceptable fault as defined by medical by laws.

Section 8.

THE SANCTITY OF HUMAN LIFE

• "On that account we decreed for the Children of Israel that whoever kills a human soul for other than manslaughter or corruption in the land, it shall be as if he killed all mankind, and who-so-ever saves the life of one, it shall be as if he saved the life of all mankind". (Quran S 5: V 35)

• Human Life is sacred.. and should not be willfully taken except upon the indications specified in Islamic Jurisprudence, all of which are outside the domain of the Medical Profession.

• A Doctor shall not take away life even when motivated by mercy. This is prohibited because this is not one of the legitimate indications for killing. Direct guidance in this respect is given by the Prophet's ﷺ tradition: "In old times there was a man with an ailment that taxed his endurance. He cut his wrist with a knife and bled to death. God was displeased and said "My subject hastened his end... I deny him paradise".

> *"Mercy killing — like suicide — finds no support except in the atheistic way of thinking that believes that our life on this earth is followed by void. If this is sound thinking, it would have been reasonable for almost all of the human race to commit suicide and get rid of the difficulties of life... for indeed hardly a life is devoid of difficulty or pain. The claim of killing for painful hopeless illness is also refuted, for there is no human pain that cannot be conquered by medication or by suitable neurosurgery. Another category is killing to obviate the miseries presumably ensuing upon deformity. If this earns acceptance, then it will not be long until claims are made to kill the aged and unproductive members of society as a measure of combating the sequelae of population growth beyond available resources".*

• The sanctity of human Life covers all its stages including intrauterine life of the embryo and fetus. This shall not be compromised by the Doctor save for the absolute medical necessity recognised by Islamic Jurisprudence.

> *"This is completely in harmony with modern medical science which lately has embraced a new speciality called Fetal Medicine.. striving to diagnose and treat affliction of the fetus in Utero, and devise an artificial placenta to sustain fetuses aborted before viability.*
>
> *Modern permissive abortion policies are not sanctioned by Islam, which accords several rights to the fetus. There is a money ransom on abortion in Islam. A fetus has rights of inheritance and if aborted alive and dies it is inherited by its legal heirs. If a pregnant woman is sentenced to death for a crime, execution is postponed until she delivers and nurses the baby... even if that pregnancy was illegitimate. The basic right to life of the fetus is therefore self evident"*

• In his defence of Life, however, the Doctor is well advised to realize his limit and not transgress it. If it is scientifically certain that life cannot be restored, then it is futile to deligently keep on the vegetative state of the patient by heroic means of animation or preserve him by deep-freezing or other artificial methods. It is the process of life that the Doctor aims to maintain and not the process of dying. In any case, the Doctor shall not take a positive measure to terminate the patient's life.

• To declare a person dead is a grave responsibility that ultimately rests with the Doctor. He shall appreciate the seriousness of his verdict and pass it in all honesty and only when sure of it. He may dispel any trace of doubt by seeking counsel and resorting to modern scientific gear.

• The Doctor shall do his best that what remains of the life of an incurable patient will be spent under good care, moral support and freedom from pain and misery.

• The Doctor shall comply with the patient's right to know his illness. The Doctor's particular way of answering should however be tailored to the particular patient in question. It is the Doctor's duty to thoroughly study the psychological acumen of his patient. He shall never fall short of suitable vocabulary if the situation warrants the deletion of frightening nomenclature or coinage of new names, expressions or descriptions.

• In all cases the Doctor should have the ability to bolster his patient's faith and endow him with tranquility and peace of mind.

Section 9.

DOCTOR AND SOCIETY

• The Doctor is in every sense a member of Society, fully acting, interacting and caring for it. The prophet ﷺ says.. Religion is to give honest advice for God and His apostle and to muslim leaders and public.

• The Doctor's mission exceeds the treatment of disease to taking all measurs to prevent its occurrence, in compliance with the Qoranic command: "Let not your own hands push you into destruction". The hint to a "preventive" policy is evident in the saying of the Prophet (ﷺ) : "When pestilence is rampant in a locality do not go inside it.. but if you are already inside then do not come out of it".

• The Medical Profession shall take it as duty to combat such health - destructive habits as smoking, uncleanliness etc. Apart from mass education and advertence, the Medical Profession should unrelentlessly pressurize the judiciary to issue necessary legislation.

The combat and prevention of environmental pollution falls under this category.

• The natural prophylaxis against venereal diseases and the other complications ensuing upon sexual licence, lies in revival of the human values of chastity, purity, self-restraint and refraining from advertently or inadvertently inflicting harm on self or others. To preach these religious values is "Preventive Medicine" and therefore lies within the jurisdiction and obligation of the medical profession.

> *In certain developed countries gonorrhoea and syphylis have reached epidemic proportions inducing health authorities to request the declaration of a national emergency situation. Yet all medical preaching regrettably goes on the tone of: it is alright, it is no shame, it is normal, but please seek medical advice promptly if you suspect catching the disease. No pamphlet or other message over the media has dared to touch on chastity even as one of several prophylactic alternatives.*
>
> *In contrast with anti-pollution, anti-smoking, anti-saccharine anti-fat and several other anti's sexual licence has been singled out as the area where "a doctor should not moralize... but just treat";*

• The Muslim Medical Profession should be conversant with Islam's teachings and abiding by them. It should also thoroughly study at first hand the data, facts, figures and projections of various parameters actually existent in Muslim societies. Upon this should be decided what to take and what to reject from the experiences and conclusions of other societies. Reconciliation with a policy of uncritical copying of alien experience should be stopped.

• Society owes the Doctor his right to be trusted, to live comfortably, to earn an adequate income and to keep his dignity.

A Doctor should prove worthy of these rights.. or else he is vulnerable to punition.

> *"In all communities there are elements who through thanklessness, ignorance or a flare for sensationalism, attmept to tarnish the public portrait of the Medical Profession. The brunt of such cruelty falls mainly on the poor patient who has no choice but to surrender himself to the Doctor for therapy or surgery. It is mental torture then if a bad portrait of*

the Doctor was inculcated on his mind. The press in particular should consider these implications and avoid unscrutinized, wrong or slanted information. Health authorities should not refrain from taking legal action against these distorted publications, not particularly in short term defence of the Doctor but mainly for the long term security of the nation, if a Doctor behaved in an unbecoming or unlawful way, the Profession should be even harsher on him... in order to preserve the good repute of medical pratice''.

Section 10.

THE DOCTOR AND MODERN BIOMEDICAL ADVANCES

• There is no censorship in Islam on scientific research, be it academic to reveal the signs of God in His creation, or applied aiming at the solution of a particular problem.

• Freedom of scientific research shall not entail the subjugation of Man, telling him, harming him or subjecting him to definite or probable harm, withholding his therapeutic needs, defrauding him or exploiting his material need.

• Freedom of scientific research shall not entail cruelty to anmials, or their torture. Suitable protocols should be laid upon for the uncruel handling of experimental animals during experimentation.

• The methodology of scientific research and the applications resultant thereof, shall not entail the commission of sin prohibited by Islam such as fornication, confounding of genealogy, deformity or tampering with the essence of the human personality, its freedom and eligibility to bear responsibility.

• The Medical Profession has the right and owes the duty of effective participation in the formulation and issuing of religious verdict concerning the lawfulness or otherwise of the unprecedented outcomes of current and future advances in biological science. The verdict should be reached in togetherness between Muslim specialists in jurisprudence and Muslim specialist in biosciences. Single-sided opinions have always suffered from lack of comprehension of technical or legal aspects.

• The guiding rule in unprecedented matters falling under no extant text or law, is the Islamic dictum: "Wherever welfare is found, there exists the statute of God".

• The individual patient is the collective responsibility of Society, that has to ensure his health needs by any means inflicting no harm on others. This comprises the donation of body fluids or organs such as blood transfusion to the bleeding or a kidney transplant to the patient with bilateral irreparable renal damage. This is another "Fardh Kifaya", a duty that donors fulfill on behalf of society. Apart from the technical procedure, the onus of public education falls on the medical Profession. which should also draw the procedural, organizational and technical regulations and the policy of priorities.

• Organ donation shall never be the outcome of compulsion, family embarrassment, social or other pressure or exploitation of financial need.

• Donation shall not entail the exposure of the donor to harm.

• The Medical Profession bears the greatest portion of responsibility for laying down the laws, rules and regulations organizing organ donation during life or after deaht by a statement in the donor's will or the consent of his family; as well as the establishment of tissue and organ banks for tissues amenable to storage. Cooperation with similar banks abroad is to be established on the basis of reciprocal aid.

> *"Umar ibnul - Khattab, second Caliph, decreed that if a man living in a locality died of hunger being unable of self-sustenance, then the community should pay his money ransom (fidiah) as if they had killed him. The similitude to people dying because of lack of blood transfusion or a donated kidney is very close.*

Two traditions of the Prophet ﷺ seem to be quite relevant in this respect. The one is: "The faithful in their mutual love and compassion are like the body... if one member complains of an ailment all other members will rally in response. The other tradition says, "the faithful to one another are like the blocks in a whole building... they fortify one another".

God described the Faithful in the Qoran saying: "They give priority over themselves even though they are needy". This is even a step further than donating a kidney, for the donor can dispense with one kidney and live normally with the other... as routinely ascertained medically prior to donation.

If the living are able to donate, then the dead are even more so: and no harm will afflict the cadaver if heart, kidneys, eyes or arteries are taken to be put to good use in a living person. This is indeed a charity... and directly fulfils God's words: "And who-so-ever saves a human life it is as though he has saved all mankind".

A word of caution, however, is necessary. Donation should be voluntary by free will... or the dictatorships will confiscate people's organs thus violating two basic Islamic rights: the right of freedom and the right of ownership.

In the society of the Faithful donation should be in generous supply and should be the fruit of faith and love of God and His subjects. Other societies should not beat us to this noble goal".

Section 11.

ON MEDICAL EDUCATION

• Medical Education, despite being a speciality, is but one fiber in a whole mesh founded on the belief in God, His oneness and absolute ability, and that He alone is the Creator and giver of life, knowledge, death, this world and the hereafter.

• In planning the making of a Doctor,a principal goal is to make him a living example of all that God loves, free from all that God hates, well saturated with the love of God, of people and of knowledge.

• The Medical Teacher owes his students the provision of the good example, adequate teaching, sound guidance and continual care in and out of classes and before and after graduation.

• Medical Education picks from all trees without refractoriness or prejudice. Yet it has to be protected and purified from every positive activity towards atheism or infidelity.

• Medical Education is neither passive nor authoritarian. It aims at sparking mental activity, fostering observation, analysis and reasoning, development of independent thought and the evolvement of fresh questions. The Qoran blamed those who said: "As such we have found our fathers and we will follow on their footsteps".. an attitude which is only conductive to stagnation and arrest of progress.

• "Faith" is remedial, a healer, a conqueror of stress and a procurer of cure. The training of the Doctor should prepare him to bolster "Faith" and avail the patient of its unlimited blessings.

• Medical school curricula should include the teaching of matters of jurisprudence and worship pertaining to or influenced by various health aspects and problems.

• Medical School curricula should familiarise the student with the medical and other scientific heritage of the era of Islamic civilization, the factors underlying the rise of Muslim civilization, those that lead to its eclipse, and the way(s) to its revival.

• Medical school curricula should emphasize that medicine is worship.. both as an approach to belief by contemplation on the signs of God, as well as from the applied aspect by helping Man in distress.

• Medical school curricula should comprise the teaching and study of this "Islamic Code of Medical Ethics".

Section 12.

THE OATH OF THE DOCTOR

I swear by God.. The Great

To regard God in carrying out my profession

To protect human life in all stages and under all circumstances, doing my utmost to rescue it from death, malady, pain and anxiety..

To keep peoples' dignity, cover their privacies and lock up their secrets...

To be, all the way, an instrument of God's mercy, extending my medical care to near and far, virtuous and sinner and friend and enemy...

To strive in the pursuit of knowledge and harnessing it for the benefit but not the harm of Mankind..

To rever my teacher, teach my junior, and be brother to members of the Medical Profession joined in piety and charity...

To live my Faith in private and in public, avoiding whatever blemishes me in the eyes of God, His apostle and my fellow Faithful.

And may God be witness to this Oath.

PART THIRTEEN

RECOMMENDATIONS

CLOSING SESSION

(held in Fatima Mosque)

1. REPORT
   Editors.
2. RECOMMENDATIONS.

REPORT ON CLOSING SESSION HELD IN FATIMA MOSQUE

This session was held in the beautiful Fatima Mosque before the Friday Prayers from 9.30 to 10.30 a.m. under the Chairmanship of H.E. Dr. Abdul Rahman Al-Awadi, with Dr. Ihsan Dogramaci and H.E. Hakeem Mohammed Said as Co-Chairman and Dr. Ibrahim Badran as the moderator.

In this session Dr. Hassan Hathout spoke in Arabic and presented the recommendations and resolutions of the Conference which were approved unanimously for implementation. Dr. Mehdi Ben Aboud also addressed the audience in Arabic. Dr. Ahmed El-Kadi spoke in Arabic and English both. He said:

In the name of delegates who attended and participated in the First International Conference of Islamic Medicine, We shall like to extend our thanks and appreciations to the organizers of the Conference, to the Ministry of Public Health and its Minister Dr. Abdul Rehman Al-Awadi and to the dear State of Kuwait and H.H. The Amir. I should like to remind you and myself of the heavy task and responsibility on our shoulders, to restore Islam, restore Islam to our hearts and our minds, to restore Islam to our life and every thing we do and restore Islam to our sciences. Restore it until our Muslim Ummah reaches its leadership position in the world and manifests that saying "That you have been the best nation brought up to the mankind, to join justice to kill evil in the Name of Allah". I would like to remind you and myself of the importance of reviving the Islamic heritage. However, we can not live on the Islamic heritage alone and our grandfathers will not be proud of us unless we add to the heritage of new discoveries and development and achievements, what equals or exceeds the inheritage amount. I like to share with you my dream; our medicine, which is excellent and distinguished, which is unique, providing pleasure to Allah and healing to his servants, and medicine which is second to none and which is being used as guide, an example every where and to every one. This medicine will be justified to be labelled "Islamic Medicine". I remind you and myself to always remember Allah and pray to Allah the Almighty to forgive our sins, accepts our efforts and maintain us on the straight path. To repeat our thanks to our hosts and before I go, I praise Allah.

In last H.E. Dr. Abdul Rahman Al-Awadi gave his speech. He said:

Those of our brothers at this meeting, who have come to join us at this very important conference, I would like to say that it has been a great pleasure to see all of us here. I have been delighted to see our brothers in Islam joining hands, trying to raise Islam to its proper position. We know what we have done. We had a very difficult task, but all because of our true belief in the cause has been easy and simple and God has fascilitated all our efforts. No doubt we shall meet again in the future, we shall always be friends and we shall try our best to raise Islam above everything. There is a great challenge for all of us. I would like to thank you all who joining us to meet this challenge. Many people that might have followed all the details of the recommendations in Arabic. Thus I hope, will be stimulus that all of us learn Arabic language, language of the Quran, so we can communicate with each other in a much better form in the future as one Islamic nation.

Editors.

RECOMMENDATIONS

IN THE NAME OF GOD,
THE COMPASSIONATE, THE MERCIFUL

By God's grace, His help and His great care, the First International Conference of Islamic Medicine was held in Kuwait as a part of the celebrations of the State of Kuwait with the Islamic World on the occasion of the onset of the Fifteenth Century of Hijra. This conference was called by the Ministry of Public Health in collaboration with the National Council of Culture, Arts and Literature. A distinguished elect of scientists from East and West of the world rallied at this gathering proving the spirit of brotherhood within the sphere of Islam and reminding of the "oneness" of this nation which has been expressed by God in the Holy Quran:

THIS IS YOUR ONE NATION AND I AM YOUR GOD, SO WORSHIP ME

The participating scientists and scholars have spoken extensively, each within his scope, about the principal aspects of the conference which comprised researches, studies and symposia. Also, men of intellect, who attended the Conference, have shared in the comment and the constructive discussion.

The outcome of all this was a rich and fruitful collection of knowledge, which ought to be made available to all the Islamic nation and to the scientists all over the world, and it should be free from any bias, prejudice or obscurity.

The committee, which has been formed to study the proceedings of the Conference and to formulate its recommendations and resolutions, has reviewed these proceedings and studied them carefully. It came to recognize some clear facts and summarized them in the following points.

First: God sent us Islam which is a belief, a nation, a state and a culture is based on it. By virtue of Islam, this culture has existed and will continue.

Second: Islam has always been an impetus and a strong stimulus to all Muslims to acquire knowledge and to discover God's signs on earth and the hidden secrets of the universe.

The Islam clearly states that we should seek learning and knowledge regardless of any limitations or barriers. Islamic teachings have urged that we must eliminate any creature who might claim any divine authority which might render him any place in people's hearts or their minds.

Third: This Islamic foundation has provided humanity with two far-reaching benefits. The first is the conservation of the previous scientific heritage from loss and disappearance, as it had been always threatened by confiscation and burning. The second is the fulfillment of a lofty scientific edifice and the realization of new and tremendous achievements in all domains including Figh, jurisprudence, physics and chemistry . Needless to say, the sciences pertaining to medicine were one of the features of this renaissance.

Fourth: Islam has embraced non-muslims, either christians or jews and considered them citizens in the Islamic state. It has sanctified them and awarded their place by the religious rule "Like us, they have the same rights and same duties". Islamic religion is caring with all humanity, therefore it has provided them with the suitable climate which enabled the human mind to work securely for good and thus they played a greater role in the fields of translation, research and medical practice which have been an enrichment to all humanity.

Fifth: The Islamic principles of jurisprudence and worship its commands and prohibitions have, in their essence, shown either directly or through hints or by precepts, those matters which are closely related with man's physical and psychological health. They have considered both the individual and the society.

Sixth: This Islamic scientific treasure in medicine and other fields of scientific knowledge, was the spark which led Europe out of the darkness into the bright light of knowledge which was called the renaissance in Europe. More-over, European scholars had visited the Islamic world in search for knowledge, and Arab scientists had been invited to lecture in the European universities. Also, the Arabic language was being taught in Europe to facilitate acquiring Arab knowledge. It is needless to say that the Islamic nation declined when it had turned off the Islamic teachings. Meanwhile, Europe was fully occupied by translating the works of the Moslem scientists. After the introduction of printing in Europe, its main function was to publish the scientific heritage of Islam. In spite of the fact that this scientific heritage was the corner-stone of the modern western civilization, they with-held to acknowledge their gratitude.

Seventh: However, this heritage is richer than what had been discovered of it up till now, there is still more to search for and explore. It is a treasure rich with its stores and a source full of provisions. If the scientists probe deeply into it, many discoveries in the domain of modern scientific research would come to light and in this way would positively contribute to the contemporary therapeutic armamentarium that still falls short of solving many problems. The valuable researchers and studies presented in this Conference showed models of these signs and indications.

Eighth: Our modern world, with its new discoveries and the overwhelming applications in the field of life sciences, is being surrounded with very serious changes even in the behavioral traditions, moral discipline and the genuine humanistic heritage. This solemn scientific advance encloses fatal consequences unless it is oriented towards the benefit of mankind and it must be restrained against threatening humanity in its very existence . A close look in Islam with its Quran, Sunnah and its rules of jurisprudence, will clearly reveal that a code of medical ethics is enclosed within its elements. This code is warranting divine guidance without hindering the scientific advance.

According to all these considerations, the following are the recommendations and resolutions of the First International Conference of Islamic Medicine which is being held in Kuwait from 6 to 10 Rabie Awwal, 1401 H, 12-16 January, 1981.

RECOMMENDATIONS AND RESOLUTIONS

First: The Conference appreciates the good initiative of the State of Kuwait of holding the First Conference and hosting it. It has been decided that this Conference should be followed by periodic conferences where scientists and scholars could meet to present this scientific researches in the field of Islamic Medicine.

Second: The Conference calls to link the Islamic nations with their heritage and showing the way which had led in the past to this glorious advance in all fields including the scientific and medical fields. The Conference is appealing to the men of education in the Islamic World to deliberate over this aim in the educational curricula in all categories in order to achieve this objective.

Third: The Conference calls to encourage the study of the heritage of Islamic Medicine with other aspects of the scientific heritage of Islam. The Conference is appealing to all the competent authorities of culture in the Islamic world to do their best and well-coordinate in probing deeply in this heritage, restore it and procuring its treasures in order to make it available for scholars. The Conference is commending this blessed step which aims at establishing a center of Islamic Medicine in Kuwait. This centre will comprise a documentary library, well-equipped with all requisites of the scholars in this field.

Fourth: The Conference encourages the experimental, clinical and laboratory researches which would provide the modern scientific verification of our Islamic heritage. The fruits of these therapeutic and preventive researches should be made available to all humanity. The Conference is calling upon all the scientific sectors in the world and particularly Moslem scientists to support these scientific researches by giving them appropriate concern and allocating the needed budgets of equipment and supplies according to the principles of the contemporary scientific research. The outcome of these researches should be published.

Fifth: The Conference is calling upon all specialists in the history of cultures, history of science and medicine, in the whole world, to bring to light the truth about the Islamic culture and to make it clear to all people in the world. They should do this without any prejudice, distortion or denial, according to the scientific spirit and away from the general feelings which occupied the Western societies. The establishment of peace in the world, amity among peoples and mutual love among human beings, should be based on the mere truth and impartial veracity which inevitably will prevail at a time.

Sixth: The Conference appeals to all responsible for medical education to include in the curricula the study of Islam, history of Islamic Medicine and the physician's ethics advocated or recommended by Islam. The Conference considers that these ethics should be observed by all medical authorities and not the Muslim physicians only. Also, the necessary committees should be formed to determine the contents of these curricula.

Seventh: Adoption of Kuwait's document about the Islamic code of medical ethics and the oath of the doctors; it should be considered by those responsible in the Islamic world and approved by them thereby to work according to it.

Eighth: Endeavouring to form an Islamic Council includes trustworthy and competent specialists in Fiqh, medical and life sciences; this council will study the new discoveries of the scientific advance which are unclassified under any text and are uncomparable to any precedent. This will enable giving a comprehensive opinion about such discoveries with all their medical minutes and those of jurisprudence. The Council will be the reference for complicated health affairs of people and for giving legal opinions about them.

The Conference is hopeful that the State of Kuwait will take the initiative to carry out this idea and put it into effect.

Ninth: A committee has to be formed to follow up the recommendations of this Conference and to carry out them and their consequential measurements.

Tenth: The Conference thanks the State of Kuwait and the Scientific Advance Organization for awarding the scholarships and the rewards for researchers in the field of Islamic Medicine.

Eleventh: The Conference expresses his thanks to His Royal Highness, the Amir of Kuwait, for

sponsoring the Conference, and His Royal Excellency, Crown Prince and Prime Minister, for providing all the facilities which contributed to the success of the Conference. The Conference expresses its thanks to His Excellency, the Minister of Public Health, and His Excellency the Minister of State for Cabinet Affairs and President of the National Council of Culture, Arts and Literature, for adopting the idea of convening this Conference and for their efforts in planning and preparation for the Conference. The Conference expresses his thanks to the honourable man Mr. Khaled El-Marzouk, for establishing the Center of Islamic Medicine in Kuwait.

Twelfth: The Conference calls upon all the Islamic nation, both its rulers and peoples, all its classes and all those who profess Islam and adhere to it, that the onset of the Fifteenth Hijra Century would be an opportunity for them to escape back to God, to obey Him and to unite after their fragmentation.

They should restore themselves to become as God has wished them to be, the best community that has been raised up to manking which enjoins right conduct and forbids indecency.

They should abide by God's saying:

> *"AND HOLD FAST, ALL OF YOU TOGETHER, TO THE CABLE OF ALLAH AND DO NOT SEPARATE. AND REMEMBER ALLAH'S FAVOUR UNTO YOU; HOW YE WERE ENEMIES AND HE MADE FRIENDSHIP BETWEEN YOUR HEARTS SO THAT YE BECAME AS BROTHERS BY HIS GRACE; AND (HOW) YE WERE UPON THE BRINK OF AN ABYSS OF FIRE, AND HE DID SAVE YOU FROM IT. THUS ALLAH MAKETH CLEAR HIS REVELATIONS UNTO YOU THAT HAPLY YE MAY BE GUIDED".*

A SPECIAL RECOMMENDATION

The Conference expresses its thanks to the State of Kuwait for affording the opportunity of this Islamic and scientific assembly which is considered a great historical gathering.

It has been confirmed through discussions and researches presented in the Conference, the great shortage in discovering the treasures of Islamic Medicine, not only historically but also that there are so many a treasure in our heritage which has been burried and awaits rediscovery and valuation to positively contribute to the contemporary therapeutic armamentatrium that still falls short of solving many problems.

The Conference is considering the magnitude of the historical responsibility shouldered on it and understanding the urgent need to remedy this short for the sake of Islam and the whole world. Therefore, the Conference wishes to put this trust in the hands of the Kuwait Government and appealing it to shoulder this responsibility through: —

First: Adopting the establishment of an Islamic Organization in Kuwait. This organization should work independently for the sake of all humanity. It should deal with the Islamic Medicine, its heritage, its researches and its practical side. The objectives of this organization are as follows:

1. Reviving the Islamic medical sciences in the domains of heritage, scientific research, verification and applied studies.
2. Encourages the scholars in the field of Islamic Medicine by providing them with the necessary facilities to enable them in their researches, strengthening the link between them, and helping them to raise the standard of health.

3. Encourages the establishment of national organizations with the same objectives all over the world and providing them with the necessary support to fulfill their missions successfully.

4. Working to develop educational curricula particularly in the domain of medicine, in an effective system which aims at leading the Muslim youth to know about their heritage and acquainting them with the values on which Islamic culture is based. Also, acquainting them with their true religion and its tolerant Sharia.

5. Working to unify the scientific and ethical Islamic concepts of the medical profession.

Second: The Conference is commissioning H.E. Dr. Abdul Rahman Al-Awadi to represent it in shouldering this noble trust and be assisted by the Board of the Conference which consists of two Vice-chairmen and the General Moderator. They have to choose three expers to work with them. The Conference is commissioning this board to follow-up its resolutions and recommendations.

Third: The Conference is appealing to the State of Kuwait to kindly hold the Second International Conference of Islamic Medicine in Kuwait after one year.

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ANNOUNCEMENT

Upon the recommendation of the First International Conference on Islamic Medicine, the Second International Conference on Islamic Medicine will be held in Kuwait from 29th. March to 2nd. April, 1982.

The Secretariat of the Second International Conference on Islamic Medicine invites scientists and researchers interested in participating in this Conference. The theme of the Conference will cover the following aspects of Islamic Medicine.

First Aspect:

HERITAGE

Papers dealing with the Heritage of Islamic Medicine should specifically emphasise the influence that Muslim Scientists had casted on the development of *ANATOMY* and *SURGERY*. Contributions should be original, authentic and well documented with details of the reference cited. Preference will be given to areas hitherto untapped.

Second Aspect:

APPLIED RESEARCH

Applied research and studies on the effectiveness of remedies, methodologies and preparations, used for treating disease as laid down during the Islamic Era. Modern methodology and results of double blind, well planned trials with sound statistical analysis, are invited.

Third Aspect:

MEDICAL EDUCATION JURISPRUDENCE

a. Relationship of curricula of faculties of medicine and Islamic Teachings.

b. The importance of the spiritual and religious aspects in therapy.

Fourth Aspect:

PRESENT STATUS

Present situation and future prospects of Islamic Medicine.

How to Participate: —

1. Applicants should write to the Secretariat of the Second International Conference on Islamic Medicine, P.O.Box 5 Kuwait, with the following details: —

   a. Full name.
   b. Date of birth.

c. Nationality.
d. Address.
e. A resume of bio-data.
f. The Title and Scope of their Research and where the research was conducted.

2. A copy of the "Notice to the Authors", giving detailed instructions on writing format may be requested from the Secretariat.

3. The closing date is 30th. October, 1981.

4. Papers will be scrutinised by the Scientific Subcommittee of the Conference for final selection.

5. Notice of acceptance of the paper (or otherwise) will be given to the authors, well in advance.

6. Author (or one member of a team of authors) of accepted paper will be provided with travel expenses and an accommodation as guest of the Conference.

UNDER SECRETARY,
MINISTRY OF PUBLIC HEALTH
KUWAIT.

NOTICE TO THE AUTHORS

CONTENT AND PREPARATION

1. Manuscripts must be submitted:
   — An original and one copy.
   — Typewritten on one side with liberal margin for binding and spacing at top and bottom.
   — Double spaced.
   — Pages are not numbered by typewriter, only light lead pencil is used to be erased later and replaced by book serial numbers.

2. The following sections must be included: —
   — Titles of paper, name of author and country .
   — Abstract: Concise and emphasizes the thrust of work.
   — The text: including introductory paragraphs relating it to the literature and indicating the purpose and meaning of work, then the body of the text whether experiment or other study, then results and their discussion, then summary or conclusions, then references, acknowledgements and addresses including the place where the work was done.
   — Footnotes to materials in the text are indicated by super script Arabic numbers.

NOMENCLATURE and ABREVIATIONS

1. Non-proprietary names of drugs are only used. Trade names are not used in the text, but when the drug is first mentioned, a footnote may give its trade name.

2. In therapeutic trials with Medicinal plants the botanical name of the herb should be used. If it is a compound preparation, the exact formula and ratio of constituents is stated. Abbrevations used in the

controlled trials (as compound A and Z) should not be used. Only the actual chemical or botanical formulas are used.

REFERENCES

Literature citations must be numbered consecutively in order of appearance and are indicated by Arabic numbers in parenthesis as: Ahmed (1) determined..... Each reference must be numbered separately. Only literature citations can appear in references. Use footnotes for other information not appropriate for inclusion in the body of the text.

The following are forms of journal and book references: —

1. A.R. Hussein, J. Am. Pharm. Ass. Ed. 49, 235 (1960)
2. H. Gilman, "Organic Chemistry" Vol. 22, 2nd. Ed., Wiley, New York 1943, pp. 1234, 1298.

FIGURES, TABLES AND SLIDES.

1. Drawings made in India ink on plane white tracing paper. Size should be within that of the typed papers of the text. A copy of the figures must be included with the copy of the manuscript.
2. Original drawings are preferable but clear glossy photographs are acceptable.
3. Figures referred to in the text by Arabic numbers in consecutive orders, as fig: 1, fig: 2.
4. Information inside the axis of figures must be large enough to be visible when reduced for publication.
5. Do not roll or fold figures for mailing.
6. Tables referred to in the text by Roman numerals in consecutive order as Table I, Table II.
7. Slides are of 35 mm. size. Authors should mark their slide with a spot at the lower left corner on the front face to help the projectionist. Slides should be numbered in the order in which they are projected.

IMPORTANT CONDITIONS

(a) The text must be in English and Arabic.

(b) The editors reserve the right to abridge the paper for editorial reasons.

(c) The accepted papers will be published in the Bulletin of Islamic Medicine.