

History of Medicine

Histoire de la Médecine

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Many physicians find it hard to co-ordinate on a rational basis the ancient Iranian and Greek System, with the principles and practice of modern medicine.

We however, believe that it is not impossible to do so.

Avicenna

THE «PRINCE OF PHYSICIANS» INTRODUCED.

Out of a great many ancient Iranian writers, we are naming below a few of them who have written extensively on medicine and other scientific subjects:

- (1). Sheikh-ul-Reis Abu Ali Sina (known in Europe as AVICENNA), Author of «QANOON» and «SHAFI» etc.
- (2). Mohammed ben Zacharia Razi, Author of «HAWIYE KABIR» which is like an encyclopedia of science. He wrote two hundred other books mostly on medicine.
- (3). Ali ben Abbas Majousi Ahwazi, Author of «KAMIL-US-SANAYE».
- (4). Ibn-i-Rabban Tabari, Author of special writings in medicine.
- (5). Sheikh Daoud Antaki, Author of «TAZKARAYE ANTAKI».
- (6). Syed Ismail Jorjani, Author of «ZAKHIRAYE KHARAZMSHAHI» and several other books on medicine.

One thousand years ago a great philosopher and physician named Sheikh-ul-Reis Abu Ali Sina (known in Europe as AVICENNA) appeared in the East whom the late H. G. Wells has called the *prince of physicians*. Avicenna was endowed with a keen sense of understand-

ding, judgement, intellect and penetration coupled with his extensive knowledge of scientific subjects of his time. One of his books called "SHAFĀ," (which means Cure) deals with various scientific subjects, and another book of his called "QĀNOON," (which means Law) deals with medicine. Since the year 1200 A. D. the above books as well as those written by other Islamic authors were translated from Arabic into Latin by Christian scholars. The demand was so great that by the middle of thirteenth century almost all of the important Arabic texts were translated into Latin. At the end of the thirteenth century Christian personages such as:

Albert the Great (the great philosopher and theologian of Germany, 1193-1280)

Roger Bacon (the English philosopher and writer, 1314-1384)

Raimond Lulle (writer and chemist of Spain, 1315-1335) admitted the superiority of Islamic knowledge and public instruction.

Books written by Islamic writers (mostly of Iranian origin) were taught for several centuries at European universities. In medicine, learned men in Europe were making good use of "QĀNOON," of Avicenna up to eighteenth century. But from the middle of the eighteenth century due to progress made in science by Europe, drastic changes have been made in the ancient system of medicine. Since then the medical profession has departed from Avicenna's methods.

One of the most important and significant qualifications of Avicenna was that he was well-versed in different branches of science. It may be argued that in those days the scope of human knowledge being limited it was possible for any one to acquire a collective knowledge of all of the different branches of science. With the information that will be given hereafter on the current specialization methods and on the various lines of ancient medicine we will endeavour to prove that the acquirement of full knowledge that was

within the domain of Avicenna was beyond the talents of ten intellectual persons put together, not only so today, it was the same in ancient times. In all past history we have not more than three persons exceptionally gifted with all scientific knowledge of their times, namely:

ARISTOTLE (Greek),
 FARABI (Iranian), and
 AVICENNA (Iranian).

Today, however, with the vast development of knowledge the possibility of acquiring it fully is out of question and the more the knowledge increases the more the lines of specialises increase, nevertheless it is being felt lately, that an attempt should be made to unify scientific knowledge otherwise the whole structure would fall.

Dr. Alexis Carrel the famous French research scholar (holder of the Nobel Prize as well as several other important prizes) writes in his book called «L'Homme, cet inconnu» from which we feel tempted to translate the following:

«Going to extremes in the matter of specialisation has its drawbacks.

We know that physicians today, select a small part of the body and specialise in it. If they attend only to a small part they may become unmindful of the other parts of body to such an extent that a full recognition of the part in which they have specialized would not be possible.»

George Sarton writes in his book called «The Life of Science» (p.124) as follows:

«The unification of knowledge is more necessary as knowledge becomes more complex and specialized. If nobody had the courage to attempt it, the scientific world would soon become a new Tower of Babel. There are already too many specialists who know they are doing hardly more than bees do. They work faithfully in their little corners, and their work is very useful. But science is far more than the sum of their fragmentary efforts. The growth of science is essentially an organic growth. That means that at least a few people must take the trouble to digest and assimilate the whole of it, in order to co-ordinate and to unify it. They may err, nay, they are bound to err ever and anon; but when one will err, the next one will go straight. It is so that everything progresses.»

«If encyclopedic efforts were abandoned, the amount of scientific facts and little theories might go on increasing indefinitely, but science would perish. The same is equally true of every human activity. Everywhere synthetic and centripetal endeavors must counterbalance the more special and centrifugal ones, lest the whole fabric of life be ruined and fall to pieces. Business men, for instance, have a very clear notion of this, and in proportion as they standardize and specialize their industries, they are careful to provide co-ordinating agencies to keep the complete body together.»

The above idea that has now dawned upon twentieth century is the same that was actually practised one thousand years ago by Avicenna. He arrived at the above conclusion by reason of his insight and collective knowledge of all branches of science. He established the requisite inter-dependence of various branches of knowledge and this unifying influence and inter-relationship predominates in all of his writings.

For example: If we take into consideration the reciprocal effect of astronomy and knowledge of heavenly bodies, on medicine we can realize the influence of moon and other stars on earth's economy including within it the physiological and pathological states of human body and the course which disease takes. Studies of European scientists as they progress, are conformable in various ways to the above facts.

We wish to discuss in detail as to how Avicenna was able to dominate the world of knowledge for many centuries. We shall deal with some of the diseases and their past medical history extending over several centuries including the time during which a difference of opinion arose among the physicians in Europe with that of Avicenna's, as well as the gradual changes that have taken place in the opinions expressed by medical men under the influence of scientific progress. We shall finally, attempt at checking up and co-ordinating the latest theories with those postulated in Avicenna's «QANOON», and we shall base our findings on scientific grounds and positive facts.

We have no bias and no desire to force others to our way of thinking. We believe that during the past centuries it was bias and unreasonable insistence on the part of some physicians in Europe that has caused a deviation in the practice of medicine to the detriment of the best interests of humanity.

We solicit all learned people, physicians and research scholars alike to judge fairly and impartially the points raised herein before forming their judgment on whether we are right or wrong.

I. ASTHMA.

A medical student or a young physician unaware of the history of gradual evolution of medicine will get deeply impressed by the advances and progress of knowledge in this age. He is liable to think that the knowledge of the physicians of one thousand years ago (such as Avicenna's) was nothing as compared with the knowledge the world now has, for instance, about asthma. He is likely to come to the conclusion that whatever European scholars write about asthma is the sum total of all that is actually required to be known about that disease i.e. allergy, allergens, disorders of the Autonomic Nervous System (sympathicotonia, vagotonia, amphotonia), subseptibility of tissues and biological conditions precipitation resulting in respiratory uricacidemia.

He knows about medicines now widely used in the treatment of asthma, such as adrenaline, ephedrine and other sympathomimetics and parasympathomimetics etc. He believes that all of such discoveries were made exclusively in the twentieth century, and that they were not known at all even in the nineteenth century, to say nothing of the time during which the Iranian physician, Avicenna, lived one thousand years ago.

But when we come to analyse the above it appears that such things were known and spoken of though in different language and terms, in the ancient times and that they were used successfully in therapeutics.

If we take into consideration the risk and injury involved in treating patients resulting from the deviation from ancient methods of treatment which point is now being realised, we find that supremacy of knowledge claimed by physicians today in the treatment of asthma, is on the whole very insignificant over what the ancient Iranian physicians of one thousand years ago possessed. To illustrate the point we

have chosen one of the most important discussions that has always formed the subject of careful research and which is equally important today viz the *mechanism of dyspnea in asthma*.

The reason for our selecting dyspnea is that the main symptom in asthma consists of paroxysms of breathlessness, and therefore, the treatment of asthma is essentially based on treating dyspnea.

Before the seventeenth century European physicians held the same opinion as Gasien and Avicenna did on dyspnea and, therefore, the treatment of asthma was the same as practised by ancient physicians. But from the seventeenth century onwards some of the European formed a different opinion. After a good deal of controversial discussion the old conception was discarded and alterations made in treatment of asthma.

We would like to discuss Avicenna's method and will base it on authenticated publications acceptable to all physicians. We list them as follows:

1. Encyclopédie Médico-Chirurgicale.
2. Traité de Médecine: Tome V.
3. Collection de Pathologie Médicale, by Bezanson and other writers, Vol. III, 1949 Edition.
4. Dictionnaire Encyclopédique des Sciences Médicales.
(published at the end of nineteenth century as an encyclopedia in 100 Volumes, by Dechambre and 179 other physicians of France).
5. «QANOON» of Avicenna (from the standpoint of co-ordinating the new system of medicine with the ancient Iranian & Greek system).

We will give Avicenna's opinion on the mechanism of dyspnea as well as the opinion of modern physicians. We will talk about the theories which physicians in Europe have suggested during the past few centuries.

In the seventeenth century, two different theories were advanced as to the cause of dyspnea in asthma.

One set of physicians followed Galien and Avicenna, basing their logic on the «THEORIE HUMORALE». They believed that the appearance of Asthma was due to the presence of thick viscid mucus in the chest that filled the bronchioles and impeded respiration, thereby causing dyspnea.

The other set of physicians, however, believed in the «THEORIE NERVEUSE». They thought asthma was caused by spasm and contraction of the bronchi, the blood vessels and nerves of the lungs and respiratory muscles.

It should be recalled that Avicenna had spoken of both of these varieties, but he considered mucus to be the more important than spasm. The real reason for the difference of opinion arising among the European physicians was that each set derived its theory from one of the two varieties spoken of by Avicenna. Each set of physicians tried to propagandize a theory of its own and excluded the theory advanced by the other set, while both of their theories were covered by the varieties of dyspnea already diagnosed.

Leading the opponents of the mucus theory was a physician and chemist from Belgium, named Van Helmont who lived in the seventeenth century. By that time it was the opinion of Galien and Avicenna that held sway with medical men in general. Van Helmont was the foremost in revolting against Galien and Avicenna. He repudiated the theory of mucus in asthma.* He declared that dyspnea was caused by the contraction of lung «pores». At great pains to defend his view, Van Helmont found himself faced with the opposition of other scholars of his time, and wrote almost in despair as follows: «*Que dieu, s'ecrit-il, soit juge entre moi et les humoristes*».

Let us try to find out how Van Helmont arrived at the conclusion that contraction of lung «pores» causes dyspnea. It seems that Van Helmont received the cue from Avicenna and called in his own. If we refer to «QANOON» we find Avicenna discussing the varieties of asthma as follows:

*We may also mention that two centuries before Van Helmont, i. e. in the fifteenth century a German physician & chemist by name Paracelse was generally opposed to the theory of humours postulated by Avicenna. When invited to teach medicine by the local municipality of his town, Paracelse commemorated that start of his teaching in the medical school by burning before his pupils and audience the books written by Galien and Avicenna. This orthodox passion play of his caught the imagination of other physicians. Since then the foundation of medical science has gradually altered in Europe.

«asthma is also sometimes caused by the dryness and constriction of lung within itself, although this condition is not so frequently met with.»

By constriction of lung within itself Avicenna meant what is now identified and termed as «spasm». This would indicate that Avicenna not only believed that it was the presence of viscid mucus in the bronchioles that caused dyspnea in most cases; it was spasm also that could in some rare cases cause dyspnea.

We might explain that circular fibres in the bronchi and bronchioles were not discovered in the seventeenth century and that the word «spasm» as we term it today was likewise unknown. Van Helmont uses the expression contraction of lung pores which is a rendering of Avicenna's own description of constriction of lung within itself.

We are surprised at Van Helmont opposing Avicenna so violently as he did, and his making use of Avicenna's theory of mucus repeatedly by stating that dyspnea was due to viscid mucus in the bronchi and bronchioles. Van Helmont has mentioned this in making a comparison of asthma with epilepsy, which comparison also he has taken from Avicenna. In proof of the above, the reader is referred to page 745 of Dechambre's dictionnaire, which is translated as follows:

Van Helmont has written about asthma and compared it with epilepsy but he has borrowed the comparison from Avicenna, and believing that asthma was in most cases caused by disturbances in bronchi and bronchioles due to presence of thick and viscid mucus, Van Helmont has pointed out a similarity of asthmatic attacks to those of epilepsy.

The above clearly shows that the undue insistence and opposition of Van Helmont to a scientific theory of Avicenna was unsound. It could only be attributed to his pride, selfishness and greed for fame. Unfortunately such an obstinate opposition from some learned quarters during the past few centuries has created immense difficulties in the way of students and increased risks in treating diseases.

Nobody can deny the fact that science is progressing. Each day something new is discovered. Human thought is gradually developing and knowledge and experience are growing more than ever before. In the past knowledge has occasionally remained stagnant with some nations or even turned downgrade. But it has been able to revive and follow its ascendant course.

It is necessary for the progress of scientific knowledge and solving

nature's problems that scholars should have an open mind. They should not show bias or become hostile to others, otherwise it would distract them and retard the progress by occupying them in fruitless discussions. Such a state of affairs is allowed to go on indefinitely would certainly result in subjecting the sick to still greater sufferings.

To prove what we have written above, we are preparing a summary of the controversies on dyspnea in asthma that have been going on during the last four centuries:

Seventeenth & eighteenth centuries. Throughout the seventeenth and eighteenth centuries a number of physicians in Europe held the same opinion as did Galien and Avicenna on the mechanism of dyspnea. They attributed it to the presence of thick viscid mucus in the bronchi and bronchioles. The most important men in this group were:

Bree, Sydenham, Sylvius, Riviere, Hellerius, and Fernel.

Some others, however, influenced by Van Helmont, thought that spasm was the cause of dyspnea. Baglivi and Willis etc. belong to this group.

We are making a comparison of the opinion of a physician who is opposed to the ancient method, with that of another physician who is in favour of it:

(1). Baglivi of Italy, in opposing says:

«The ancient physicians were making mistakes in the treatment of asthma because they were unaware of the existence of spasm in this disease, and modern physicians have proved that the cause of disease was not in the presence of viscid mucus in the lungs, but in the muscles of the thorax and diaphragm or muscular fibres that comprise the lung tissue.

(Please see page 745 of Dechambre's dictionnaire).»

(2). Bree of England who was in favour of the opinion held by ancient physicians wrote in the year 1797 in his book called «A Practical Inquiry on Disordered Respiration» which we are translating from a French text, as follows:

The appearance of dyspnea in asthma is a sort of nature's defence in an attempt to relieve the respiratory tract of a noxious matter, the same as tenesmus and spasm of urinary bladder and intestines do to rid them of their harmful contents. The irritant matter is, however, present even before the time that an asthmatic attack starts and that the appearance of asthma principally serves the purpose of removing the offending matter.

Nineteenth century. In the nineteenth century that can be rightly called the age of fast progress of knowledge and the appearance of great scholars and geniuses, the physicians are still divided in their opinions.

Trousseau, one of the most famous physicians of the nineteenth century seriously defended the spasm theory. He inherited asthma and therefore, had an ample opportunity for studying it deeply. Trousseau writes in the second volume of his book called «Clinique Médicale de l'Hôtel Dieux», Vol. 2, page 483, which is translated as follows:

For what reason do they reject the existence of spasm in the muscles of respiratory tract, when they admit its presence in other parts of the body which are anatomically similar in structure? For what reason do they refuse to accept the spasm of bronchi when no body can refuse spasm of urinary bladder, intestines, stomach and ureters?

Opposed to Trousseau, there was another learned man in the second half of the nineteenth century by name Parrot. To form an idea of the high position this man held in the medical profession, we refer to the exact description which he has given of the clinical signs in asthma in the year 1865. His views still hold good in spite of a lapse of ninety years, which fact is corroborated by the New Medical Pathology.

Parrot was opposed to the spasm theory. He says that although the presence of non-stripped muscular fibres around bronchi and bronchioles implies that their contraction may cause some narrowing of the tubes in dyspnea yet he is not so sure about it. With experiments conducted by physiologists on large-sized animals it was demonstrated the contraction of muscular fibres did not narrow the bronchi and bronchioles. Parrot writes at some length on asthma in the dictionnaire of Dechambre from which we are translating below:

We reject the theory of spasm because it is neither visible nor audible and no convincing reason is given for its existence. We prefer to have some tangible and visible proof over everything else that may be based on pure imagination.

From the foregoing it is clear that the difference of opinion between the physicians and scholars in respect of the mechanism of dyspnea still remain unsolved in the twentieth century.

By giving some thought to this intricate subject, however, we

can realise that from the middle of nineteenth century European physicians (influenced by the high personality of Trousseau on the one hand, and the discovery of non-striped muscular fibres around bronchioles by Reissessen on the other) have preferred the theory of spasm over the theory of obstruction of bronchioles by thick, viscid mucus. In the early part of the twentieth century everybody talked of spasm of Reissessen's non-striped fibres and respiratory muscles, and in all classic texts also, spasm was mentioned as the cause of dyspnea in asthma.

We further refer to *Internal Pathology*, by Dieulafoy, Vol. 1, 1920 Edition, page 241, wherein the writer states.

Today it is believed that asthmatic attacks are caused by spasm but scholars are not of the same opinion as regards the location of spasm. Some think it is located in the muscles of bronchi and that the contraction of bronchi impedes respiration. Others say that this is not so and think that spasm is produced by the extrinsic inspirator muscles.

There is a third group, however, who believe that the above two suppositions can be brought together, that at any rate the spasm appears in the extrinsic and internal muscles of the respiratory tract.

With this last statement perhaps, all differences and discussions can be resolved. But what about the theory of Galien and Avicenna? Why wipe these two names out of the pages of world's history? It is nothing but selfish pride based on progress of science, that has poisoned the minds of some scholars to such an extent that they care not look back ten centuries and ponder over the theory of Avicenna. They are inclined to discard it as something old and worn out, devoid of all practical value from the scientific standpoint.

George Sarton, Professor of History, Harvard University, points out in his book called *The Life of Science*, page 134, as follows:

«The whole of past history is there to testify that contemporary judgments are always precarious».

It may be mentioned, however, that some research workers and specialists do realise in the twentieth century, that in spite of the existence of spasm in causing dyspnea, the presence of inflammation and especially the thick viscid mucus in the bronchioles should not be overlooked, and that the significance of mucus is sometimes greater than that of the spasm itself.

We are now coming to the modern school of thought in medicine, so that we may prove the mistakes made by physicians at the end of nineteenth century and in the beginning of twentieth century, who saw nothing but spasm in ^edyspnea:

(1) Page 254, Vol. 3 of *Pathologie Médicale*, by Bezançon and others, 1949 Edition, states as follows:

Up to some years ago it was thought that dyspnea in asthma was caused only by spasm of respiratory muscles. Today we do not consider it to be due to spasm alone. It is also due to the inflammation of bronchial mucus membrane and the presence of mucus in the respiratory tract.

(2). Page 263, of *Pathologie Médicale*, Bezançon writes again:

Up to now no attention has been paid to the question of mucus in asthma. Only the bronchial spasm is thought to be the cause, whereas mucus is there as a factor that causes dyspnea, and in chronic cases the importance of mucus is by far greater than that of spasm.

(3). Page 257, of the above book again has it:

Ancient physicians fully appreciated the importance of mucus in asthma and it is also proved today that in some cases thick viscid mucus entirely blocks the respiratory tract. The blocking of bronchioles by mucus was pronounced in most autopsies of asthmatic subjects.

(4). Page 228 of the above book reads:

A prominent symptom in asthma is the excessive secretion of mucus and although the secretion is composed of mucus in all of the bronchial diseases, the quantity and significance of mucus is greater in asthma than in any other bronchial disease.

(5). Professor Perrault writes in his *Encyclopédie Médico-Chirurgicale*, 1952 Edition, as follows:

«We must be fully cognizant of the fact that in serious cases of asthma, the question of bronchial spasm is of secondary importance. It is inflammation of the bronchial mucus membrane with excessive mucus that blocks the tubes »

It is evident from the above extracts from modern books on medicine that the truth and significance of Avicenna's theories and researches are being confirmed again but without due credit being given to Avicenna himself.

Let us ponder over the result of discarding Avicenna's theory of mucus and its substitution by that of spasm which European physicians have done during the last two centuries.

If a theory is devoid of any tangible result for the better or worse, we can have nothing to say about it no matter if it is right or wrong. But when it is put to test in treating a disease it is then that its merits and demerits are made known. Although the exact appreciation of the results may take considerable time yet research men will all the same be able to draw up their own conclusions for or against it.

We have already pointed out that Avicenna and his followers believed that asthma was in most cases caused by the presence of mucus in excess and that the paroxysm of laboured breathing was an attempt on the part of nature to get rid of mucus from the chest. On this basis it was that the ancient physicians aimed at regulating the humour of mucus temperamentally by means of dietic measures and appropriate medicines suited to individual needs so that a recurrence of the attacks of dyspnea could be avoided. This in itself was a highly specialized process that needed deep study. But from the time the theory of mucus has been discarded the basis of treatment in asthma has changed entirely.

European physicians believing in the spasm of Reissessen's fibres and in the contraction of respiratory muscles to be the cause of dyspnea and other symptoms of asthma, now aim at relaxing the spasm and muscular contractions. They are for this reason prescribing antispasmodics, nervous sedatives, narcotics and hypnotics such as belladonna, jusquiame, atropine, morphine and other opium derivatives, bromides and gardenal etc. And in the twentieth century, adrenaline and ephedrine and other sympathomimetic and parasympathomimetic drugs have been freely used and regarded as the sheet-anchor for the treatment of asthma.

With the advantages inherent in the theory of mucus over that of the spasm, which fact is again brought to light now, we may take it for granted that the use of the above-mentioned drugs is harmful and even dangerous for the following reasons:

(1). Perrault of the Medical College of Paris discusses in his *Encyclopédie Médico-Chirurgicale*, 1952 Edition, the seriousness of asthma and cautions us before everything else against the use of opium

derivatives. Because, according to him, these drugs increase the risk of asphyxiation by preventing expectoration of the thick viscid mucus from the bronchi. He insists on this point. But physicians in Europe are still prescribing opium preparations (including morphine) for their narcotic and sedative effects on nerve centres, to relax spasm in all cases of asthma.

Dieulafoy and other european physicians have written in their classical writings published up to the middle of twentieth century, recommending subcutaneous injections of morphine, and even Parrot at the end of nineteenth century suggested the use of opium in the form of extract, tincture, syrup etc. in asthma. Parrot mentions that these medicines have been used since the time of Flyer, Cullen and Willis, all of them famous apostles of the theory of spasm.

By giving serious thought to the theory of mucus, physicians are now realising the damage done by using opium, preparations and Perault again warns us as follows:

Has it not been brought to light that all in fatal cases of asthma death was caused by the use of opiates?

(2). Among the most famous anti-asthmatic drugs are the sympathomimetics and parasympathomimetics such as belladonna, atropine, jusquiame, and particularly adrenaline and ephedrine. These drugs act by relaxing the bronchial spasm rapidly and dilating the tubes. They have like morphine gradually filled prescriptions for treating asthma, from the time that theory of spasm has replaced the mucus theory. They are now widely known and accepted as the specific for asthma, especially ephedrine. Physicians are unhesitatingly prescribing them, in spite of the fact that during the last several years abundant proof has been forthcoming that by their pharmacodynamic toxicity and ill-effects these drugs have the same disadvantages which morphine possesses of drying up and thickening the mucus.

From the beginning of twentieth century the casualties caused by excesses in using the above-mentioned drugs in the treatment of asthma, have by far exceeded all previous record. They relax the spasm no doubt, but by their secondary effects they promote thickening and hardening of the viscid mucus present in the bronchi and bronchioles

and obstruct its removal. The duration of the disease is prolonged; they increase its severity and even prove fatal.

We further wish to refer to some extracts from following books that have been published of late:

(1). *Traité de Médecine*, Vol. V, 1940 Edition (page 232) states:

As we know, asthma appears in cases suffering from instability of the autonomic nervous system. Research workers have lately discovered that excessive adrenaline increases the instability of the above system which in turn predisposes the patient to further paroxysmal attacks of asthma.

(2). *Pathologie Médicale*, by Bezançon, Vol. III, 1949 Edition: (page 298) in dealing with the harm that adrenaline and ephedrine do, makes it clear that these drugs owing to the vaso-motor and cardiac disturbances which they create and, by drying up the mucus and retarding its expectoration, result in prolonging asthma; in fact they produce asthma themselves.

(3). *Encyclopédie Médico-Chirurgicale* writes on asthma as follows:

One of the complications of asthma that requires special attention particularly in protracted cases or, when it is accompanied by a large quantity of mucus in the chest, is the weakening of heart. Asthma always weakens the heart and a weak heart in turn becomes a hindrance to the treatment of a asthma. A vicious circle is thus set up. Excessive ephedrine also weakens the heart (it seems that this is due to contraction of cardiac arteries - please see Arnoson's Therapeutics, Vol. II, Page 768). Improvement is thus delayed and the duration of treatment prolonged rendering the condition of the patient still more serious.

(4). For reasons given above, the excessive use of adrenaline and other similar drugs admittedly produce grave risks. It has become a fashion now to prescribe them excessively, and the casualties therefrom in asthma have also increased by leaps and bounds in these last years. This is corroborated by Bezançon when he writes on page 243 of his *Pathologie Médicale*, as follows:

It seems that for some years past the casualties in asthma have increased and it is probable that the cause of increased deaths lies in the excessive use of adrenaline and ephedrine.

(5). *Traité de Médecine*, Vol. V, (page 215) has it:

From the time that adrenaline and other similar drugs are used in excess, casualties in asthma have also grown considerably because they cause dilatation of arteries and increase the amount of mucus in the bronchi, and the viscid mucus blocks the respiratory tubes.

The above implies that casualties in asthma in ancient times were much less than at present, because the ancient physicians studiously avoided using harmful drugs, and that these new chemical of world fame are responsible for increased number of deaths among asthmatic patients.

(6). *Traité de Médecine*, Vol. V, 1950 Edition (page 232) gives us an idea of the extent to which the above drugs are used, as follows:

We know some asthmatic patients who have used several litres of adrenaline in a period of a few years.

(7). *Médico-Chirurgicale* writes as follows:

Before a physician has time to visit the patient he often prescribes stimulant and sympathomimetic drugs.

While on this subject of the harm being done by sympathomimetics and parasympathomimetics in asthma, we may recall that there are several crude drugs that act exactly like adrenaline and ephedrine. They have similar properties. But the ancient physicians fully conscious of their toxicities abstained from prescribing them in asthma just as they avoided opium and its preparations for their ill-effects which we have already pointed out:

(N.B. We might also mention here that opium was sparingly used by some ancient physicians in isolated cases of asthma in which its use had proved beneficial, quite contrary to the general use which this drug has been put to by euroPean physicians during the Past few centuries).

(8). Avicenna writes on this subject in his «QANOON», as follows:

It is imperative that the drugs we prescribe should liquefy the mucus. They should be able to «prepare» it for exPulsion from the body, It is for this rea on that we are abstaining from prescribing things that dry uP and or thicken the mucus.

Under the circumstances, opium, jusquiame and mandragora were not included in the prescriptions written by ancient physicians and their use was thus prohibited by Avicenna.

N. B. Jusquiamine of which the derivatives are hyoscyamine, atropine and scopolamine.

Atropa mandragora or mandragore is called <mehr-giah> in Iranian.

Manadragorine contains hyoscyamine and hyoscyne.

All of the above drugs are antispasmodics and parasympathomimetics. They dry up the mucus, thicken and turn it viscid, the same as adrenaline and ephedrine do.

From what we have endeavoured to bring to your attention as above, we think that we have proved the extent to which the ancient Iranian physicians were keen and accurate in their diagnosis, and that they were fully aware of the medicinal qualities of the drugs and used them successfully in therapeutics.

Further discussion on asthma will follow in next issue.