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INDIAN JOURNAL
OF THE
HISTORY OF MEDICINE

VOL. 11

DEC-1957



NO. 2

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Indian Journal

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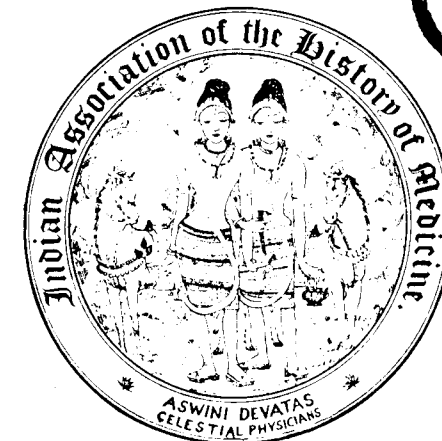
History of Medicine

Editor: D. V. SUBBA REDDY

Vol. II

DECEMBER 1957

No. 2



PUBLISHED TWICE A YEAR JUNE AND DECEMBER

FOR

The Indian Association of the History of Medicine

187, Poonamallee High Road, Madras-7 (India)

INDIAN JOURNAL OF THE HISTORY OF MEDICINE

(Vol. II, No. 2, December 1957)

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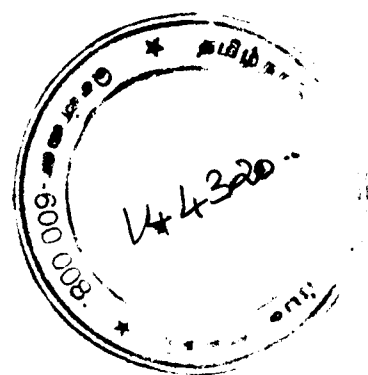
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Indian Journal

OF THE

History of Medicine

Vol. II

DECEMBER 1957

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Evolution of Medicine*

BY

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C.I.E., M.C., M.A., M.D. (cantab), F.R.C.P. (Lond.), F.R.S. (E), I.M.S. (ret'd.)

In every department of human culture a survey of its historical development is essential. This is specially so in the case of Medicine, if we are to appreciate fully its present status and seek some guidance as to its future line of advancement.

Let me say at the outset, that Medicine, is the oldest of sciences. It is as old as civilization itself. Pain, fever and death were mysteries, which excited the curiosity of man in the prehistoric days. A sick man cried for help and some means had to be discovered to relieve him of his agony and distress. The primitive man did not know anything about disease and ascribed all such phenomena to spirits of various kinds and treatment largely consisted in prayers and invocations.

Then, with the onset of early civilisation, Medicine began to make progress. These civilizations were located chiefly in four places, namely in Ancient India, Mesopotamia, Egypt and China.

I. MEDICINE IN ANCIENT INDIA, MESOPOTAMIA, EGYPT & CHINA:

A. MEDICINE IN ANCIENT INDIA

(The Ayurvedic Medicine)

The Ayurvedic medicine goes back to the days when the Aryans came to India from Central Asia about 2000 to 3000 years B. C. The early

*An Address delivered at the Joint Conference of the Association of Physicians of India, The Cardiological Society of India, The Association of Pediatricians of India and The Neurological Society of India, at Trivandrum, on 21st January 1958.

history of medicine in India, as elsewhere, is shrouded in mystery. Many of the great pioneers in this field remain unknown. It is interesting to note that the ancient compilers of medicine in India have described medicine as a gift of God. Ayurveda, or the Science of life, is said to be bestowed by Indra on Bharadwaja, who was deputed to go to him by the assembly of sages, who met in the Himalayas. Atreya the great sage probably a pupil of Bharadwaja was a teacher of medicine. Agnivesa, the distinguished pupil of Atreya, undertook the Herculean task of codifying the knowledge imparted by Artea and to arrange it in the form of a treatise, which formed the basis of *Charak Samhita*, an immortal medical classic written by Charak, one of the greatest physicians of ancient times. The other great Indian medical Classic is *Susruta Samhita*, which contains a great deal of surgery, in which the ancient Indians specially excelled. They set fractures, performed amputations, excised tumours, repaired hernias and did couching for cataract. They did the operations of lithotomy and rhinoplasty. Hygiene played a very important part in Indian medicine. The laws of Manu are important from the medical point of view, as they enjoin strict personal hygiene and frequent ablutions as the basis of religious worship. Ayurvedic medicine had reached a high level of development in the old days and Buddhism provided an added stimulus for its advancement.

India is indebted to Buddhism to a great extent for Science and culture and specially the science of medicine. The best era of Indian Medicine was contemporaneous with the growth of Buddhism. Asoka (226 B. C.) and other Buddhist Kings established public hospitals and schools of Medicine attached to them. Medicine was taught in the ancient Universities of Nalanda and Taxila and hospitals were established not only in India but also in the neighbouring countries outside. They established hospitals for animals also. This was in accordance with the injunction of Buddha, that who-so-ever-would wait on him should wait on the sick. Charak, the author of the well known Charak Samhita was the Court Physician of the Buddhist King Kanishka. Nagarjuna the renowned Buddhist sage, infused new life into the Science of Ayurveda. Even now the work on Ayurveda read by beginners, is the work of Vaghbata, a Buddhist.

It is not unlikely that Ayurvedic medicine influenced Greek Medicine. At the time of the Indian Expedition of Alexander the Great in 317 B. C. Hindu physicians and surgeons enjoyed a great reputation for superior knowledge and skill, and some of them were employed under him. There was undoubtedly close contact between India and Greece in those days, for we learn that apart from Alexander's visit Megasthenes, was sent as an Ambassador from Greece to the court of Chandragupta, the King of Magadha. He has written an interesting account of the conditions in India, which then existed. Emperor Asoka had contacts with the Kings of Syria,

Egypt, Macedonia, Ceylon and other countries, where he spread the noble teachings of Buddha. Thus our Modern medicine which is said to be the direct growth of the old Greek medicine owes much to the Ancient Ayurvedic medicine, and the humane teachings of Gautam Buddha. And further the theory of Vata, Pitta and Kafa of Ayurveda finds its equivalent in Greek Medicine in the theory of 'Humours'.

Siddha System of Medicine.—The Siddha system of medicine which is practised in South India is said to have originated in the days of Mohanjodaro, thousands of years ago, perhaps even before the Vedic period. There are about 500 Siddha medical works containing over 3000 valuable formulae. Some Siddhas visited Ceylon, China, Arabia, Persia, Turkey and other places, where they propagated this knowledge.

In the Siddha system Chemistry was developed into medical science and alchemy. Their knowledge of minerals, animals and plants was of a high order. The processes of calcination preparation of essences, extracts from minerals etc., were well known to them. They knew the uses of Mercury and Arsenic and other metals.

B. MEDICINE IN MESOPOTAMIA

Babylonian medicine—The best known medical relic of Babylonian civilization is contained in the famous laws of King Hammurabi, who reigned about 2000 years before Christ. They practised dissection of animals, and performed some surgical operations. The treatment consisted mainly in the administration of various herbs.

C. MEDICINE IN EGYPT

The Egyptians had a special God of Medicine whose name was Imhotep, which means, 'He who cometh in peace'. He was a physician to King Zoser, who lived some thousand odd years before Hammurabi of Babylon. One of the pyramids near Cairo was built by him.

There is another well known Egyptian physician of this period, whose name is *Newk-Sekmet*.

The records of Egyptian medicine are quite extensive the best known being the Ebers Papyrus found with a mummy on the banks of the Nile. It was compiled about 1,500 B. C. It is full of elaborate prescriptions. Egyptian doctors, like the old Indian doctors attached much importance to Hygiene and diet. It is said that it was the influence of the Egyptians that later led the Jews to formulate the sanitary laws that abound in the old Testament.

D. MEDICINE IN CHINA

Medicine in China was more closely identified with demons and spirits than anywhere else. Medical profession was held in high esteem, for the two earliest known doctors were emperors. These were Shen Nung, who lived about 5000 B. C. and Hwang Ti, who was born a few centuries later. Both of them wrote books which are still read in China today. Dissection was not permitted and Surgery in China was never of a high order.

After having briefly considered the state of medicine in India, Mesopotamia, Egypt, and China we now take a glimpse at Greece.

II. MEDICINE IN GREECE AND ROME:

A. MEDICINE IN GREECE

The Greeks like the Hindus believed that the knowledge of medicine was a gift of God. The early Greeks had a leader in medicine, whose name was Aesculapius. He was born in the year 1250 B. C. He had a public clinic in the famous temple of Delphi where he was said to perform miraculous cures. His daughter Hygeia was appropriately known as the Goddess of Health. The Greeks attitude to life became more and more rational and this also influenced their attitude towards disease and death. The greatest Greek Physician was Hippocrates, who is commonly known as the 'Father of Medicine'. He was a contemporary of Plato and was born in 460 B. C. He taught medicine in the medical school at Cos and also lectured and practised in Athens and other Greek cities. His teachings are contained in 'Corpus Hippocraticum' or the Hippocratic collection. This book is full of knowledge and wisdom and is as fresh today as it was, when it was written. He tried to find out the rational cause of disease, and laid stress on clinical examinations of the patient.

Empedocles, the predecessor of Hippocrates propounded the theory of elements, namely, fire, earth, air and water. Applying this idea to the human body, Hippocrates suggested that the body had four qualities known as dry, moist, hot and cold, and four humours viz., blood, phlegm, black bile and yellow bile. Derangement of one or more of these humours caused sickness and thus the problem of diseases was explained. This hypothesis is very similar to the theory of Vata, Pitta and Kafa of Ayurveda.

The greatest contribution of Hippocrates to medicine was the introduction of ethical principles. His famous oath is known all over the world and still forms the basis of ethics of the medical profession today. He had most wholesome influence on the progress of medicine. He raised medicine to the status of a science and placed it on a high pedestal by combining it with the humanities.

After Hippocrates came another great man, Aristotle, who was a pupil of Plato. He lived in the 4th century B. C. He was not a practising physician himself, but included medical science in his comprehensive studies. Like Hippocrates he insisted on the scientific method in studying matters relating to health and disease.

I have already mentioned that there was contact between India and Greece in the old days through Alexander's Indian Expedition and other ways, and Indian Medicine definitely influenced medicine in Greece.

After Aristotle the glory of Greece began to fade, and the Hippocratic tradition moved to Alexandria in Egypt, a town founded by Alexander the Great. Here a medical school was established, where the teachings were those of Hippocrates. Here the Science of Anatomy and Physiology were studied. This was made possible by the introduction of the practice of dissection of the human body.

B. MEDICINE IN ROME

By the 1st century A. D. the centre of civilization shifted from Greece to Rome. But the medicine in Rome was Greek Medicine and all the great physicians in Rome were Greeks.

Long after the death of Hippocrates, there were no genuine doctors, in Rome, Greek doctors made their first appearance in Rome about the beginning of the 2nd century B. C. In 90 B. C. Asclepiades, a Greek physician appeared in Rome. He was born in Bythnia, educated at Athens and attended the medical school at Alexandria. He quickly gained in reputation and was known as the Prince of Physicians. He counted among his friends such men as Cicero and Mark Antony. His methods were essentially Hippocratic in spirit although he proclaimed himself as opposed to Hippocrates. In treatment, he showed a marked preference for suitable diet, massage and rest and not so much for the administration of drugs. He was a keen and patient observer and was responsible for classifying diseases into acute and chronic.

The greatest figure in Greco-Roman medicine after Hippocrates is *Claudius Galen*, who was born in 131 A. D. in the town of Pergamus in Asia Minor. He studied medicine at Alexandria, which had the best medical school at the time. He also visited Greece. He realised the great worth of the teachings of Hippocrates and grasped the important fundamentals but he followed the spirit rather than the letter of Hippocrates collection.

In 162 A. D. Galen came to Rome, Marcus Aurelius was then the Emperor and Roman Civilization was at the height of its glory. Medicine in Rome had not advanced to the same extent as in Greece. There were

many sects and schools of thought. Galen soon became the most renowned physician in Rome. He wrote a great deal. During his life time he had written 500 treatises on medical subjects of which 100 have survived.

He was very fond of dissection and as the dissection of the human body was forbidden in Rome, he dissected monkeys and other animals. He tried to find the cause of every bodily function. He was truly a scientist and believed in experimental method.

Galen died in 200 A.D. It is remarkable, that his influence remained dominant in medicine during the next 1,200 years. He codified all Greek Roman medicine from the time of Hippocrates and made many contributions of his own. His writings were the standard text books in medicine for centuries. His authority remained supreme and this unfortunately served as a check to further progress.

After the Greek empire broke up as I have just said, its culture was first continued in Alexandria and then at Rome. When the Roman Empire broke up, culture disappeared from Europe, for a thousand years. Galen was the last of the Greek physicians. After the death of the Emperor Marcus Aurelius, the Roman Empire began to crumble and Rome itself became untenable. The seat of Government was transferred to Constantinople, and with it went the science of medicine. The medical schools disappeared. The Greek manuscripts were lost or destroyed. Medicine was no longer a science. For centuries it seemed as if Hippocrates and Galen had laboured in vain.

Christianity, however, had a wholesome influence and it was in the monasteries that learning survived and some part of the old Greek and Roman literature was kept alive for future generations. But they did much more than that. The monasteries offered sanctuary and hospitality to the poor, the needy and the sick. Thus the monastery also became a hospital. Under the influence of Christianity many hospitals were established. Medical science was enriched with the Christian ideal of Charity and many women as well as men devoted their lives to the relief of the sick and suffering.

III. MEDICINE IN ARABIA:

While in Europe, medicine as a science was at a standstill for centuries after the fall of Greece and Rome, the light of knowledge had not been altogether extinguished. Many of the works of Hippocrates, Galen and other Greek physicians had been safely evacuated to Constantinople, where they were carefully preserved.

From Constantinople this knowledge spread to Mesopotamia. Baghdad was the Centre of Arab culture, where an enlightened caliph, Harun-ul-Rashid, ruled. He founded a University, a hospital and a medical school.

The books of Hippocrates and Galen were translated in Arabic. A large number of doctors were trained in Baghdad. This opened up a new era in the history of medicine in Arabia, which had profound influence in India too.

The Arabs who were inspired by the teachings of the Holy Prophet Mohammed became the torch bearers of learning and culture. They realised the tremendous value of the Greek and Roman literature in Medicine, which they had acquired. They followed the old system and wrote commentaries on it. Unfortunately dissection was not permitted and surgery suffered on that account. Their most important scientific advance was in the realm of Chemistry, with which the old *Materia Medica* was considerably enriched.

Two Arab physicians were outstanding, namely, Rhazes and Avicenna. They played an important part not only in introducing Greek Medicine in Arabia but also in the revival of learning in Europe. Rhazes was born in 860 A.D. in the Persian town of Rai. He wrote a 25 volume Medical Encyclopaedia, based largely on Galen and over 200 other works. He was a very original thinker. It was he, who introduced animal gut in sutures for abdominal wounds.

The second great physician was Avicenna (Abu Ali Ibn Sina). He wrote the well known book 'Canon of Medicine' which was used as a text book in European medical schools long after the Renaissance. He made many valuable contributions to medical science. He was a theologian, philosopher, poet and scientist. His millenary (1000th birthday) was celebrated with great enthusiasm all over the world in 1956.

Then a remarkable thing happened. It must be remembered that the Muslim Empire was not confined to Arabia, Mesopotamia and Persia. It gradually spread from there to the West and the East.

And so the medical knowledge contained in the writings of Hippocrates and Galen which had come to Baghdad also spread to the West and East with the extension of Muslim influence.

On the West, it extended to Southern Spain and it was from Cordova that knowledge began to flow back into Europe. Cordova had a University in the 8th Century and in the year 1000 it had several hospitals and medical schools and many practising physicians.

The other great centre of medical learning was at Salerno in Italy, which flourished in the 13th century. It achieved a very high reputation. In the medical school here the curriculum consisted mainly of the translation

of Hippocrates and Galen and a special section was devoted to Surgery. It is interesting to note, that in 1240 Emperor Frederick II ordained in respect of the doctors trained in Salerno, that the poor shall be treated free and that doctors applying for licenses should take an oath reminiscent of the oath of Hippocrates.

Much useful work was done at Salerno in reviving the old knowledge, in the establishment of a medical library and the training of physicians. In the middle of the 13th century this school began to lose its influence.

On the East, the Muslim influence spread to Afghanistan Central Asia and India, and with it came the Greco-Roman medicine as taught and developed in the medical school at Baghdad. The Mohammadans first came to India in 711 A. D. and their visits continued for a number of centuries. Ultimately the Moghul Empire came into being with Babar as the first Moghul Emperor in the 16th century. The most notable name in the regime is that of Emperor Akbar, who ruled from 1556 to 1605, and who introduced a series of reforms, social, political and religious for which his name is famous. In India this Greco-Arabian or Unani system flourished in certain centres notably at Lahore, Lucknow, Hyderabad (Dn.), Aligarh and Delhi. There are many Unani schools in the country now, where this system is taught, and there are many Hakims who practise it.

IV. MODERN MEDICINE:

THE RENAISSANCE AND THE MODERN AGE

In Europe however a profound change took place in the 15th century when there was a transition from the Middle Ages to Modern times. The Movement consisted of a revival of learning and is known as Renaissance. It commenced in Italy and spread over the continent. It was a new spirit, a new desire for knowledge and progress, which affected every sphere of life. Unquestioning acceptance of authority, especially authority of the written word gave way to criticism and experimental enquiry, and medical science which had scarcely progressed since the days of Galen was quickly enriched by new discoveries.

The greatest character in the Renaissance was Leonardo-da-Vinci. He was primarily an Artist and Sculptor, but he contributed to every art and science, including medicine. The man however who revolutionised medicine was Andreas Vesalius, who was born in Brussels in 1514, 5 years before the death of Leonard-da-Vinci. He studied Anatomy under Jacobus Sylvius at Paris, and carried out dissection which was still prohibited by law under great difficulties. Vesalius went to Padua (in Italy) and at the age of 24 was appointed Professor of the Padua University. Here he was able to

study the structure of the human body by dissection. After 5 years of intensive labour he published one of the most famous books in Medical literature, *De Humani Corporis Fabrica*, which is described by Sir William Osler as 'the greatest book ever printed from which modern medicine dates'. It served as the basis of medical teachings for centuries afterwards.

Among the early physicians of the Renaissance, I may mention Thomas Linacre, who persuaded King Henry VIII to found the first medical association in England, namely The Royal College of Physicians of London. Linacre, who was President of the Royal College of Physicians, had studied at Padua, and so did his successor John Caius, who had met Andreas Vesalius there and brought the study of Anatomy to England.

The greatest name after Andreas Vesalius is that of William Harvey, who was born at Folkstone in 1578 and educated at Cambridge and Padua. He took his medical degree at Padua and returned to England to practise in London. The great contribution of William Harvey was his description of the circulation of Blood. He was a true scientist. He adopted the scientific method for his investigations. In 1628 he published his epoch making discovery in his famous book 'De Motu Cordis et Sanguinis' or 'On the movement of the Heart and Blood'. He died in 1657 at the age of 79. Vesalius and Harvey's work laid the foundation of Physiology and Anatomy and changed the whole basis of medical science.

Then there followed centuries of progress due to the work of reformers, who were inspired by the spirit of Renaissance.

Thomas Sydenham in London and Hermann Boerhaave in Leyden (Holland) were great teachers of clinical medicine, who stressed the need for observation and careful examination of the sick person more than anything else. On the surgical side there were William Cheselden, Percival Pott, William Hunter and John Hunter. Percussion was introduced by Leopold Auenberger, stethoscope by Laennec, vaccination by Edward Jenner. The most merciful of all discoveries was the conquest of pain and the introduction of Anaesthetics, so that surgery became painless.

The discovery of the microscope marks an important land-mark in the history of medicine. It made the discovery of micro-organisms possible. A Dutchman named Antony Van Leewenhock constructed a microscope and with it first saw the microbes. Rudolf Virchow using the same instrument found, that the human body consisted of cells and this revolutionised the science of Pathology. But the greatest scientist of the 19th century was Louis Pasteur, a Frenchman, who was born in 1822. He was not a physician, but a chemist. He discovered the true nature of the process of fermentation,

namely that it was caused by living organisms. He discovered the nature of immunity and was the first to cure people bitten by mad dogs. His work on Rabies caught the imagination of the people. His influence can be detected even today. His work on micro-organisms has laid an entirely new foundation for the practice of medicine, and surgery, and has especially made a great contribution to Preventive Medicine.

I must also mention the name of Robert Koch, a German who was born in 1843. He discovered the *Vibrio Cholerae* and the *Tubercle bacillus*. Another bacteriologist, Metchnikoff, a Russian, who came under the influence of Pasteur, discovered the body's natural armour against disease—i.e., leucocytes of the blood. His theory threw new light on the nature of the infection.

The credit for applying Pasteur's discovery of microbes in the domain of medical science goes to Joseph Lister, who was born in 1827. By using carbolic acid as an antiseptic in Operative Surgery he made surgery safe. He is rightly known as the Father of antiseptic Surgery, which has led to Aseptic Surgery in our time. Lister was a great personal friend of Pasteur.

We in the Tropics are specially interested in Tropical diseases, the commonest of which is Malaria, which directly or indirectly has been a cause of a large majority of deaths as well as disability in these regions. This disease was known to the ancients.

The cause of Malaria is a parasite which was discovered by Alphonse Laveran in 1878 and it was Sir Patrick Manson who propounded a theory, that it was conveyed from one human being to another by the mosquito. But the man who actually proved that mosquitoes were concerned in this transmission was Ronald Ross who was born in Almora in India in 1857. He was an Officer of the I. M. S. and it was while he was posted at Secunderabad in Hyderabad State (now Andhra Pradesh) that he carried out experiments on mosquitoes and proved that malaria spread by the bite of anopheline mosquito. This was a discovery of great importance.

In 1894 when Ronald Ross commenced his work, it was not known how malaria parasites passed from the sick to the healthy persons under natural conditions. Patrick Manson was a great personal friend of Ronald Ross and encouraged him a great deal in his investigations. Most of Ross's work is recorded in his letters to his friend Patrick Manson. The problem facing Ronald Ross therefore was firstly to demonstrate the existence of malaria parasites in mosquitoes which had bitten cases of malaria and secondly to find out the species of mosquitoes which was responsible for this transmission.

Ross dissected a large number of mosquitoes, which had fed on cases of malaria. He dissected them with the utmost care, and searched every bit of the insect with an oil immersion lens. It is recorded that the examination of each mosquito took about two hours and as luck would have it, he met with repeated failures.

It was at last on the 20th of August 1897, that the discovery was made. Ross called it the 'mosquito day'. He thus described his triumph:—

"I went to the hospital at 7 a.m. examined my patients and attended to official correspondence. After a hurried breakfast at the Mess I returned to dissect the cadaver (of mosquito 36) but found nothing new in it. At about 1 p.m. I determined to sacrifice the 7th anopheles of the batch fed on the 16th (mosquito 38) although my eye-sight was already fatigued. Only one more of my batch remained...Nothing. No...These new mosquitoes were also going to be a failure; there was something wrong with the theory. But the stomach tissue still remained to be examined. I was tired, and what was the use? I must have examined the stomachs of a thousand mosquitoes by this time. But the angel of fate fortunately laid his hand on my head and I had scarcely begun the search again when I saw a clear and almost perfectly circular outline before me.....".

This was the malaria parasite as Ross soon proved to the satisfaction of the whole world. He was able to show that malaria is carried by female anopheline mosquito and that the prevention of malaria can be achieved by destroying these mosquitoes and their breeding places, a piece of knowledge which has not yet been fully applied for the eradication of malaria, although there is evidence of intensification of effort in this direction in recent years.

DISCUSSION

This is just a glimpse at the history of Medicine, showing how its evolution has taken place.

We can discern roughly three stages in the Evolution of Medicine:—

- (1) The era of spirits and demons as in prehistoric times, when magicians or Medicine men constituted the oldest professional class in the evolution of Society.
- (2) The era when medicine was closely linked with Theology. This was in a way fortunate, for it is due to this relationship that medicine is still in some way connected with the Humanities and the ethical principles which guide us in our daily work are derived mainly from this source.
- (3) The era when medicine is based on Science, as is the case with Modern Medicine today.

Now in India Medicine has been practised from times immemorial. The systems which are indigenous to the soil are the Ayurvedic and Siddha both connected with Theology, which have made important contributions to medicine and surgery. Subsequently with the advent of the Muslims from Central Asia and Persia, the Greeco-Arabian system, known as the 'Unani' system was introduced. The word 'Unani' means Greek. The Greeco-Arabian medicine which is the direct precursor of the Unani Medicine, is described by Prof. Edward G. Browne as that body of Medical doctrine which is enshrined in books written in the Arabic language but which is for the most part Greek in origin, though with Indian Persian and Syrian accretions. Its importance lies not so much in its originality as in the fact that in the long interval which separated the decay of Greek learning from the Renaissance, it represented the most faithful tradition of Western Wisdom and was during the Dark Ages the principal source from which Europe derived philosophical and scientific ideas. Thus, the principal service of Islam to medicine was the preservation of the Greek culture. These two systems (Ayurveda and Unani) were taught and practised in India, when it came in contact with the nations of the West from the 16th and 17th centuries onwards.

Modern Medicine, you will appreciate has grown out of the Greeco-Roman medicine, which in its turn was influenced by Medicine in India, Egypt and Arabia. It has developed specially since the days of Renaissance in Europe so that the tremendous progress which is to be noticed today dates back to only about 300 years. This modern medicine came to India mainly through the British. During this period we see the establishment of hospitals, Medical Colleges and Schools, Research Institutes and the organisation of Medical and Health Services (Curative and preventive) both for the Armed Forces and the Civil Population.

Whatever action the different State Governments may wish to take in the matter, I suggest two things which should be adopted without delay namely:—

1. *To introduce the study of history of Medicine in our Universities and Medical Colleges.*—This should consist of a detailed and critical study of these ancient systems, and should be based on original and authoritative books and documents and other sources of historical interest.

A study of the history of medicine would show, that modern medicine is not a new thing, which has suddenly sprung up automatically with the twinkling of an eye. It is the logical outcome of the growth and evolution of the old systems of medicine. You may say that it is the

modernised version of the old Ayurvedic, Unani and Greek systems of Medicine. Medicine is universal and does not belong to anyone country. It cannot be divided into different 'systems'. It is one and indivisible.

2. *To undertake research work.*—We are fortunate that in Ayurveda Siddha and Unani Systems we have a vast treasure house of knowledge, specially of various medicinal plants. We should make use of this knowledge, and conduct investigations with modern scientific methods in regard to their pharmacology and therapeutic values. Many of these drugs need to be analysed, their therapeutic value assessed, their composition standardised and dosage fixed. Here there is a splendid opportunity for the practitioners of Ayurvedic and Unani Systems of Medicine to work in co-operation with their brethren trained in Modern Medicine with the object of discovering new remedies and in making their contribution to the advancement of medicine. The great need of the hour is intensive research on these lines. Abel once said, that 'greater even than discoveries is to keep open the way to future discoveries'. This requires something of the spirit of the Renaissance in India, which in Europe was essentially a revolt against authority, especially the authority of the written word, as a guide in knowledge. In the pursuit of truth we must look into the phenomena of nature, and not take for granted what the ancient teachers had taught and written many centuries ago. In science, we must remember, that there is a court of appeal, viz., nature, which will settle any disputes or differences of opinion by the method of observation and experiment, and opinions as recorded in books or otherwise are not the only guides.

The Pharmaceutical Enquiry Committee of which I had the honour to be the Chairman, had also strongly recommended that research work should be undertaken in drugs used in Ayurvedic and other indigenous systems of medicine. Before a drug can be used in Modern Medicine it has to pass through a number of tedious processes, namely correct botanical identification, chemical examination, pharmacological and biological assay, chemo-therapeutic and clinical tests. These investigations require team work by several groups of scientists. Some work in this field has been done, but we have hardly touched the fringe of the problem, and a vast deal still remains to be done.

In the Evolution of Medicine the sciences of Physics, and Chemistry, Anatomy and Physiology have played an important part. It is by the application of the knowledge gained by these basic sciences to problems of disease, that progress has largely taken place. I take this opportunity to make an earnest plea for the study of physiology, Biochemistry, and Biophysics as well as Anatomy, Pharmacology, Pathology and Bacteriology. These subjects definitely need encouragement. They are the very foundation

of the Medical Science. We are short of teachers in these subjects and very few of our graduates are attracted towards them. Their status should be raised and the terms of service improved.

It is also vitally important that the medical colleges should be brought in closer touch with the University departments of Chemistry and Physics as well as the Humanities.

VII. CONCLUDING REMARKS:

In drawing up our future programme, it is necessary to make a proper appraisal of our own past achievements. The future must have roots in our own past history. In spite of the numerous political upheavals, India has come down through the Ages with her intellectual health still intact, as is evident from the excellent work of this Joint Conference of Physicians, Cardiologists, Neurologists and Pediatricians. It is only natural, that now that we have achieved independence we should take keen interest in the revival of India's Art and culture, including her old achievements in the Science of Medicine. While this is all true, it is also vitally important that we should realise, that Medical Science has made great progress. Some of the advances have been of a revolutionary character, so that our efforts both in the sphere of curative and preventive medicine are more effective now than even before. This is due to the fact that all problems are considered in an objective or scientific manner, and our approach to them is through observation and experiment, methods which have indeed furnished us with a rich harvest of useful knowledge, and we should pursue them with all the zeal and resources at our command. We must remember, however, that there is no room for any element of pride here. It is one of the lessons of the history of Science, that each age steps on the shoulders of the ages that have gone before, and if today we are proud of some of our achievements, we would if we could but read the future, find much of which we would be ashamed. Doubt and modesty have never stood in the way of the progress of Science. On the other hand doubt and modesty have often proved added stimuli to further enquiry and discovery of truth.

We in India are fortunate in possessing a fine medical heritage—a heritage, which throws great responsibilities on our shoulders. Thomas Fuller once remarked, that it is the bounden duty of every one to better his heritage of birth or fortune and where the father found glass and made crystal, he urges the son to find crystal and make pearl out of it. We are lucky, that our culture is a composite one, and our medical heritage very rich and diverse, and a happy blend of the ancient and modern modes of thought. It includes ancient Hindu, Buddhist, Egyptian, Greek, Roman, Arabian and Persian contributions to medicine, as well as its modern development since the days of Renaissance with which we have been

connected owing to our contact with the Nations from the West. If Charak and Susruta, Hippocrates and Galen, Rhazes and Avicenna, Vesalius and Harvey, Pasteur and Lister were alive today, I am sure they would say, that of the crystal, which they have left to us, we should make diamond and pearl.

We must not forget to imbibe all the lofty ideals comprising devotion to duty, steadfastness of purpose, Charity, compassion and spirit of service, that they have handed down to us, apart from the knowledge of diseased conditions and their treatment. The ethical ideals which inspired them are there to inspire us today. These ideals, though old, are ever fresh and new, for the truths they embody are good for all eternity, as for instance the oath of Hippocrates and of Charaka.

Today medicine has reached a stage after a period of Evolution, when its scope is more comprehensive than ever before. It is not merely an art of prescribing pills, powders, mixtures or injections, or even performing a surgical operation when necessary. These things of course are necessary, for they are the essential part of our armamentarium. But the aim of Medicine now is to offer medical relief on the widest possible scale to every citizen in the land both domiciliary and institutional, in which all the facilities required for the treatment and prevention of disease, as well as for the promotion of positive health are provided for all, irrespective of their ability to pay for it. We also now study disease and ill health in relation to social and physical environment. In order to study the scope of medicine in any country, we must study its social cultural, economic, scientific and historical aspects. It includes the practise, teaching and research in Medicine in all its roots and branches on the widest possible scale.

Finally, I again make an earnest appeal for the study of history of medicine in our country. The task before us is to integrate the old learning with the new Science. Evaluation of past medical knowledge in the light of modern scientific methods is very essential and is bound to yield good results. For this purpose a knowledge of medical history is essential. 'The longer you can look back, the farther you can look forward' (Mr. Winston Churchill). I do sincerely hope, that adequate provision will be made in our educational institutions for the study of history of Medicine. It will give us an idea how Medicine has evolved in our country. It will give us pride in our own past achievements. It will widen our mental horizon. It will help to accelerate the progress of Medicine in our country on Scientific lines. It will be a suitable contribution to liberal education imparted in our Universities. It will help to break down barriers which artificially divide medicine into different 'systems' in India. It will bring home to us the truth, that Medicine is one Universal Science, that it knows no differences of creed, colour, language or race, and that there is a solidarity and affinity

of human intelligence beyond all limitations of time and space. And thus by emphasising the Unity of Medicine, and its essentially humanistic ideals, it will promote the cause of human welfare, mutual understanding goodwill and concord.

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Anticipation in the Rig Veda of the Tri-Humoral Pathology of Ancient Medicine

BY

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AND

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The purpose of this communication is to draw pointed attention to a stanza in the Rig Veda Samhita which appears to contain an allusion to the three bodily humors whose state of equilibrium is the criterion of normal good health. It is not claimed that the detection of this stanza in this context is either original or being made for the first time. Many Indian scholars and Sanskrit Pandits are aware of it and take it as a 'matter of course' requiring no special comment. However, many others interested in the History of Medicine in India and abroad would be desirous of knowing the precise nature of the reference made in the Rig Veda, although they might be aware of its occurrence. Even in India, among the persons interested in the History of Medicine those who have access to and ability to follow the text, and commentaries on the Rig Veda are not very many. So it is proposed in this short paper to give along with a general translation an English transliteration of the particular stanza with the prose order and word by word meaning. The authoritative version of the Rig Veda Samhita with the commentary of Sayanacarya edited by Max Muller (1890) has been followed for the text.

Transliteration of Rig Veda Samhita stanza I-3-4 (I-34-6).-- Trino Asvinā divyāni bheṣajā tri pārthivāni triru dattamadbhya : Omānam s'amyor-mamakāya sūnave tridhātu s'arma vahataṁ subhaspati.

Prose order and meaning.--Asvinā--Oh ! Aswins ; naḥ--to us ; divyāni--divine ; bheṣajā--medicines ; triḥ--three times ; dattam--were given ; pārthivāni--born of the earth ; triḥ--three times ; dattam--were given ; adbhyah--born of the sky or atmosphere or firmament ; u--from ; triḥ--three times ; dattam--were given ; S'amyoh--of Samyu (the son of Brihaspati, said to have been brought up or reared by the Aswins) ; omānum--a kind of well being or happiness ; mamakāya--to me or for my sake ; sūnave--to son ; dattam--was given ; subhaspati--keepers or protectors of good (medicines) ; tridhātu--the three humors ; s'arma--happiness or well being ; vahataṁ--give us or bring about.

General Translation.--Oh Aswins you have given to us divine medicines, thrice, medicines, of the earth, thrice, and medicines of the firmament, thrice.

For my sake bestow to my son, the kind of well being that you gave to Sanyu. Oh keepers of good (medicines) bring about the well being of the three humors.

Wilson's translation (1866).—“Thrice grant us, Aswins, the medicaments of heaven, and those of earth, and those of the firmament. Give to my son the prosperity of Sanyu. Cherishers of wholesome (herbs), preserve the well being of the three humours (of the body) ”.

Comment. - Wilson's translation (1866) generally agrees with the one made here and gives a meaning reconcilable with the word for word translation. The reference to the well being of the three humors (tridhātu) is clear and that these humors pertain to the human body is also definitely indicated.

It should have been unnecessary to raise the following further argument but for the circumstance that in Griffith's 'Hymns of the Rig Veda' (1889) he has given a rendering that goes off the mark. He translates the stanza thus:—

“Thrice Aswins, grant to us heavenly medicines, thrice those of earth and thrice those that the waters hold.

Favour and health and wealth bestow upon my son; triple protection, Lords of splendour, grant to him”.

In the translation of the first line of the stanza there is a mistaken interpretation of the word 'Adbhya' as 'those that the waters hold'. In the rendering of the meaning of the second line the words 'triple protection' and 'Lords of splendour' are mistranslations; the words 'favour' and 'wealth' are extra added meanings without corresponding text-words giving that sense; and the reference to Sanyu has been omitted altogether. Thus it is noticed that Griffith's rendering is not a reliable one. Griffith states in his preface that his “translation” is partly based on the commentary of Sayana, corrected and regulated by rational probability, context...” When an author pretends to correct the obscure meanings of words to suit his rational mind of today while translating the most ancient literary work of man on this planet, then such translation ceases to have any serious value.

On the other hand, note the frank manner in which Max Muller writes (1890) in the preface to the third volume of the first edition of the Rig Veda Samhita published in 1856:—“By far the greater part of these hymns is so simple and straight forward, that there can be no doubt that their original meaning was exactly the same as their traditional interpretation”. Regarding difficult and obscure passages he says:—“We may collect all the passages where an obscure word occurs, and we may

compare them and look for a meaning which would be appropriate to all; but the difficulty lies in finding a sense which we can appreciate and transfer by analogy into our own language and thought”.

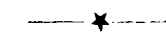
Now the question arises, is there any ambiguity in the interpretation of the word 'tridhātu'. The word 'tri' means three; there could be no doubt about it. The word 'dhātu' has the following meanings as given in a Standard Dictionary (Apte, 1922):—(1) Constituent or essential part, ingredient. (2) Primary or elementary substance. (3) A secretion, primary fluid or juice, essential ingredient of the body. (4) A humour or affection of the body (*i.e.* Vata, Pitta and Kabha). (5) A mineral, metal or metallic ore. (6) A verbal root. (7) The soul. (8) The supreme spirit. (9) An organ of sense. (10) Any one of the properties of the five elements. (11) A bone. Thus the compound word 'tridhātu' can only pertain to a concept of three fundamental ingredients of the human body. There is a living tradition in Hindu medicine from time immemorial right through the great grammarian Panini and the ancient and medieval schools of Ayurvedic medicine and philosophical thought to the living present, about understanding of this word in this sense. It is most reasonably convincing that the Rig Vedic stanza cited above refers to the three humours of the body as conceived in ancient Indian medicine.

It is not the main purpose of this communication to ramble into the question whether humoral pathology of Hippocrates was borrowed from India or postulated de novo by the ancient Greeks. The contribution from Indian and Persian sources to Greek Medicine is recognized, but regarding the amount and character of these contributions, it is not possible to speak with definiteness (Singer, 1953). However, one thing is undoubtedly clear, the humoral pathology in Ayurvedic Medicine was not borrowed from Greek contact during Alexander's invasion or at any other period, because the concept was in Indian thought from the time of the Rig Veda.

We are extremely grateful to Shri. Venkatachala Sastri, Sanskrit Pandit in the B. T. School, Adyar, Madras, for his kind help and advice in the preparation of this paper.

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Some un-known un-honoured Contributors to our Knowledge of Circulation

BY

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Dr. J. D. Latham of the University of Manchester, in a letter to Sunday Times, London, June, 10, 1957 written in connection with the centenary of the death of William Harvey, (the discoverer of the circulation of the blood) wanted to draw the attention of the people to the fact that Ibn al Nafis, an Arab physician, who died in Cairo in 1288 "discovered the essential principles of the pulmonary circulation, which he described more or less accurately, almost three centuries before any European". Dr. Latham, added, "unfortunately, the discovery was entirely ignored by later physicians of the Near East and lay dormant until stumbled upon in the early thirties."

R. H. Major, in his book "History of Medicine", writes "The absence of pores in the interventricular septum was known, long before Vesalius (and others named above). Ibn al Nafis, an Arabian Physician had made this discovery. He was Chief of the Medical service at the Mansuri Hospital in Cairo and, in his "Commentary on the Anatomy of Avicenna's Canon", remarks, in discussing the anatomy of the ventricles,

"There is no passage between these two cavities for the substance of the heart is solid in this region and has neither a visible passage, as was thought by some persons, nor an invisible one which could have permitted the transmission of blood, as was alleged by Galen". Ibn-al-Nafis goes further and declares that the blood rises in the pulmonary artery to the lungs to be mixed with air and passes to the pulmonary vein in which it is transmitted to the left cavity of the heart. "Here, we have the first clear statement of the pulmonary or lesser circulation. This remarkable observation remained unknown to the Western world for seven centuries".

In a scholarly thesis on the circulation of the blood, Dr. Syed Abdur Rahman (formerly professor of physiology and Principal of the Medical College, Hyderabad-Dn.), offers the following terse remarks about Harvey's beliefs:—

"It should be noted that, though Harvey's "De motu cordis" is a work of the highest scientific achievement, Harvey was a Galenist and Aristotelian in other ways. To him the heart still remained the seat of

inherent heat and of "vital spirits which it imparted to the arterial blood. As to the crimson colour of the arterial blood, Harvey believed that it was due to the fact that arterial blood was "thinner and lighter" than the venous blood, and this, he explained, was due to the higher pressure in the arteries. In the lungs too, the bright red colour of the blood was due to the same reason."

Dr. Rahman continues further and says, "Harvey, however, committed a grave injustice in claiming the whole of the credit for the discovery of the circulation to himself. In his "De motu cordis" he hardly even mentions the names of others who have done so much in bringing into being the conception of circulation. There is overwhelming evidence to show that Harvey was fully acquainted with the works of Cesalpinus, which were published in Venice in 1593, some four years before Harvey went to Padua. When he was accused of plagiarism by his contemporaries, he remained silent. This may indicate, as Luciani suggests, that Harvey prudently avoided a dispute in which he had much to lose and nothing to gain."

There is moreover, ample historical evidence to show that "besides Galen, his other follower—Avicenna, (980—1059) Abu Sahl Mashihi and Ali Hussain Gilani—played an important part in elucidating the circulation of the blood. Hakim Kabiruddin (the learned author of many of our current Tibbi Text Books and commentator of the Canon of Avicenna) read a paper at the 1926 session of the All India Ayurvedic and Unani Tibbi Conference, in which it was shown that, to the Arabs goes the credit of having discovered the circulation of the blood, and that the discovery is wrongly credited to William Harvey" (letter from Mr. Tahir Siddiqi published in the Statesman, 26th June, 1957).

Hakim Kabiruddin, in his brilliant Exposition in the "*Burhan*" (published in 1937), described that the heart valves and their functions have been fully mentioned, under various headings, in different reliable books on the Galenic or Unani medicine—Abu Sahl Mashihi's famous book, "*Miah-E-Mashihi*", being one of them (Manuscripts of this book are still available in several Indian libraries).

Abu Sahl Mashihi, nearly 10 centuries ago, was "the adviser, old master and companion of Avicenna, and was himself no mean physician" (Elgood's Medical History of Persia, 1951, Page 185).

Abu Sahl Mashihi's description of the valves of the heart (quoted from *Burhan*):—

1. "The orifice of the vena cavae, situated in the right auricle. Through this orifice the blood from the inferior vena cava passing through

the liver and taking with it the hepatic blood, enters into the right ventricle, where there are 3 valves (the modern tricuspid valves), the ends of which are inclined downwards, which when closing, move outwards from the cavity of the heart".

2. "And the orifice of the vessel which issued from this (right) ventricle and goes to the lungs (*i.e.* Vena arteriosa or the pulmonary artery), and through which the "smoky-vapour" (modern carbonic acid gas) from the heart goes to the lungs for being expelled out, closes from without inwards by means of certain membranes (or valves) which are situated at this orifice"—(these membranes are the modern pulmonary or semilunar valves).

3. "Fawath-ul-Abhur, the orifice of the aorta, which is connected to the left ventricle, closes from without inwards by means of these membranes (or valves) which are situated in this orifice"—(the modern aortic or sigmoid valves).

4. "And the orifice of this artery (Vena arteriosa or the pulmonary artery)—which is adjacent to the lung and which carries the special air (modern oxygen) from the lung to the heart—closes from within outwards by means of some membranes or valves"—(the modern bicuspid valves).

The following conclusions can be drawn from Mashihi's statement :-

1. That Mashihi knew fully well the action of the heart.
2. That he knew the functions of the valves of the heart; how they close and open.
3. That he knew the four passages for the outward and inward flow of the blood from and into the heart, and the course, the blood takes through these passages.
4. There is however a difference between the old expressions and the modern terminology- *e.g.* "The smoky vapour" described by Mashihi is the modern "Carbonic acid gas" or the "special air" contributed by the lungs to the blood is the "Oxygen" described by modern chemistry. This difference is only nominal, and cannot, by any stretch of imagination, be anatomical or physiological.

Alauddin Qarshi.—(the author of the Commentary on the Canon and the Mujz-ul-Qanun).—In his Commentary on the Canon, in discussing the anatomy of the Vena arteriosa (pulmonary artery, Qarshi describes in detail the four orifices of the heart, the four kinds of the vessels, and the valves of the four orifices, thus :—

"Four vessels issue from the heart (1) the Aorta, (2) Vena arteriosa of the pulmonary artery, (3) the pulmonary veins, and (4) the vena cava. Only

at the exit of the pulmonary veins (*i.e.* in the left ventricle, which receives the purified blood from the lungs) there are two membranes (bicuspid valves), and the second and the third vessels have each at their exit and outlet (at their respective orifice) three membranes (tricuspid valves)"—that is, the Aorta has at its exit a valve with three cusps (the semilunar valve); the vena arteriosa or the pulmonary artery has at its exit three membranes (the semilunar valve); and the vena cava has also at its exit three membranes (the tricuspid valve).

Ali Hussain Gilani's Statement.—"The total number of the membranes (the valves of the heart) is eleven, according to ancient physicians,—two for the pulmonary veins in the left ventricle, from which the purified arterial blood from the lungs enters the left cavity of the heart; and three each for the aorta, the pulmonary artery, and the vena cava from which the blood flowing through the right auricle of the heart, enters the left ventricle".

From the above statements of Abu Sahl Mashihi, Qarshi and Gilani, full light is thrown on the functions of the heart, the actions of the valves of the heart, the entry and exit of the blood in and out of the four vessels adjacent to the heart, and the pulmonary circulation—all of which fully correspond with the established modern view of the circulatory system.

It is also clear from these ancient descriptions that the blood from the heart goes to the lung where it is purified "the smoky vapour" or carbonic acid gas is expelled from the blood) and "Nasim" or Oxygen is absorbed in the blood, after which this purified and Oxygenated blood is returned to the heart and the heart then distributes this purified blood, through the arteries to all parts of the body.

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A Note on the origin and early days of the Grant Medical College

BY

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The Bombay Presidency was annexed to the British possessions in India in 1818. At that time the general medical practice in the Presidency was entirely in the hands of Vaidis and Hakeems as it had been for centuries and is even now in rural India. As there were no institutions for medical education either scientific or unscientific then, the practice of their profession was entirely based on their scanty and uncertain traditional knowledge gained from the experience of their fathers. An attempt seems to have been made by Government for starting a medical school in 1826, but it failed after being in existence for about six years. The Government of India had started medical colleges in Calcutta and Madras on western lines.

In 1835, Sir Robert Grant, then Governor of Bombay, directed his attention to the expediency of establishing a systematic and scientific institution in this city for imparting to the natives of the province, medical instruction of a more complete and comprehensive type than that planned in the previously abolished medical school. The various European medical officers of experience in the districts of the Presidency were consulted as regards the condition of native medical practice in the province and especially about any prejudices likely to operate as obstacles to the introduction of a better system. There were two opinions on this. Some anticipated great difficulties in the introduction of the European system on account of the local prejudices and also "questioned the aptitude of the youth of India to attain the necessary acquirements"; while others believed "it was vain to talk of prejudices on the part of the people of this country against an European system of medicine". They said "as a general principle, man in a state of suffering will court relief and accept it readily from whatever hand it comes and under whatever name it may be presented to him. The system which best cures disease and alleviates suffering, it matters not what its name may be, must be the most acceptable to people of all castes and all creeds of all countries. So long as such a healing art is taught in this place, there can be no question of the ultimate success and usefulness of such a medical school".

This discussion took about two years and by that time, the success of the Bengal and Madras medical colleges had already triumphantly exposed the fallacy of the imagined difficulties and adverse opinions expressed by some. The native medical practice was in a most degraded state and Sir Robert Grant taking this opportune moment drew up a most able minute in favour of the starting of such a medical institution, the leading idea being "to give to the people of Western India a practical and well-trained body of medical practitioners who by the skilful and conscientious exercise of the art would so recommend themselves to their countrymen as in time to take the place of Hakeems and Vaidis, who for want of adequate education, must necessarily be incompetent to exercise the healing art with safety and success".

This minute was transmitted in the middle of 1838 to Calcutta, the then seat of the Governor-General of India, for Government sanction. It was later sanctioned by Lord Auckland's Government but before this news reached Bombay, Sir Grant died on the 9th of July, 1838.

A public meeting of the citizens of Bombay was held at the end of July 1838, to mourn the death of one who had endeared himself to all by "purity of his administration, splendour of his talents, vast amount of good he had achieved, excellence of his private character, sincerity and dignity of his pity, and the very overstrained efforts under which he sank". A fund was started at this meeting for the public commemoration of Sir Robert Grant on condition that with its aid a medical college, 'so ably planned and so zealously advocated by him' should be established and that it should bear his name. Government sanctioned this proposal in due time and the foundation stone of the building was laid on the 30th of March 1843. The building was completed in October, 1845 and thus started the Grant Medical College.

Simultaneously with the plans and foundation of the College, it was also decided, with the aid of a munificent donation offered by Sir Jamshedjee Jeejabhoy, to substitute the previously existing Native General Hospital in the city, by creating a 'School of Practice' (now known as the Sir J. J. Hospital) near the college and in conjunction with it. The Professors of the Medical College were to be the medical officers of the Hospital. Its foundation stone was laid on the 3rd of January, 1843 and it was opened for the reception of the sick from May 1845.

QUALIFICATION OF STUDENTS FOR ADMISSION

In 1845 the admittance to the benefits of the College was accorded without exception of caste or creed to candidates between the ages of 16 and 20, who were of respectable connections and general

intelligence, who in addition to a grammatical knowledge of their vernacular language and of arithmetic as far as the Rules of Proportion, possessed a thorough knowledge of English so as to be able to read and write it with accuracy, fluency and facility. Each candidate was also required to present a certificate of good conduct from the headmaster of the school in which he had studied and also one expressly stating that he was possessed of the necessary information and capable of undergoing the examination proposed.

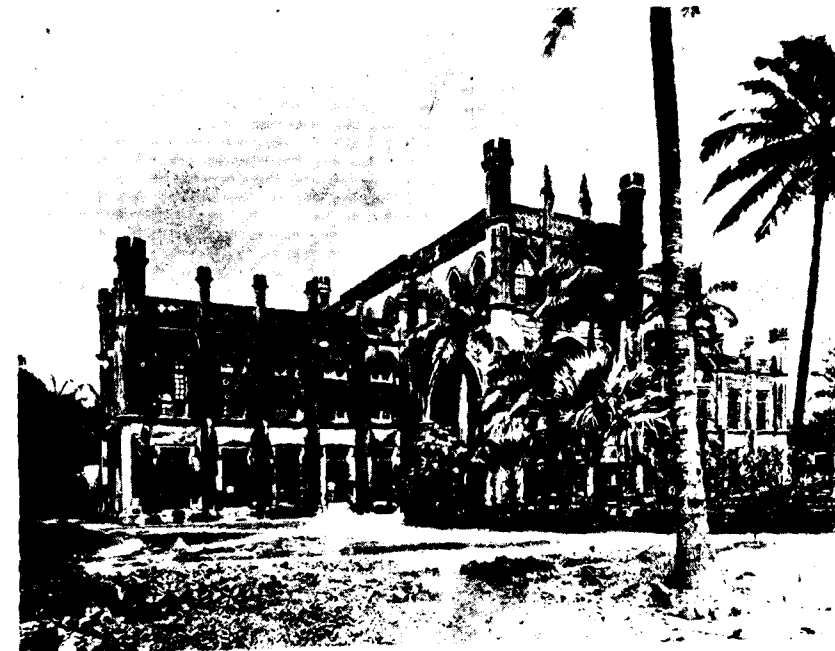
The entrance examination was conducted by the Superintendent (now called Principal) and the Professors of the College and the books selected for testing the knowledge of English were Milton's 'Paradise Lost', 'Robertson's Histories' or works of a similar classical standard.

From 1851, the following were added to the existing subjects of the entrance examination, *viz.* a knowledge of the elements of algebra, geometry and natural philosophy; and a general knowledge of the geography and history of the four quarters of the globe. A syllabus for all the subjects was also prescribed.

All this was to ensure a proper background of general knowledge on the part of the students to follow the professional subjects efficiently. The results however do not seem to have been quite encouraging, for in 1857, Dr. Morehead complaining about the defects of the preparatory education in Bombay as well as in the schools in England, says "It has kept the degree of the general profession below that which under the system of instruction and the practical advance of the college ought to have been reached."

The following year (1858) not a single student passed in the final examination and broaching the same subject again, he grumbles resignedly "In the study and practice of medical art just those very qualities of mind are demanded, the implanting and cultivation of which in early years have been neglected and untended. The keen, penetrating and ever-open eye of observation, the truthful interpretation of phenomena; the severely logical process of induction; the careful tracing of analogy; the practical art of deduction; are all equally and absolutely necessary agencies by which alone the physician can detect and unravel the obscure and complex condition of disease and devise remedial measures. It is in the proper exercise of these mental processes that we find our students so sadly deficient. Memory, cultivated at school to the neglect of the reasoning faculties, has left the healthy and independent and self-relying activity of the mind so to languish that the College Professor finds it in vain to attempt to arouse it." This is true even today and in November, 1943, the final examination results were again zero percent. The main fault seems even now to lie in the prefunctory secondary education received by our students

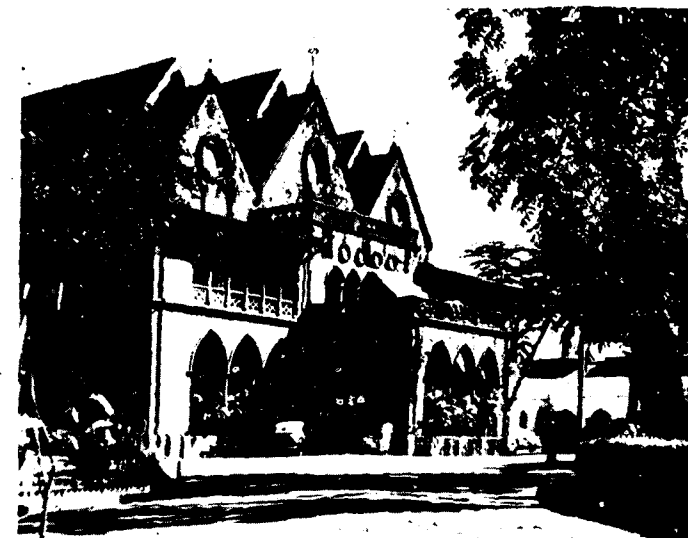
LEGENDS FOR THE PICTURES



Original building of the Grant Medical College, Bombay.
Foundation Stone laid on 30-3-1843.
Ready and occupied in October, 1845.
Started with all the original three departments of the College, *viz.*,

- (i) The Institutes and Practice of Medicine.
- (ii) Anatomy and Surgery, and
- (iii) Chemistry and Materia Medica.

Now occupied by (i) Administrative block—Principal and his office (ii) College Library, (iii) Practical Pharmacy Laboratory, and (iv) Office and Laboratory of The Chemical Analyser to the Government of Bombay.



Original building of Jamssetjee Jejeebhoy Hospital, Bombay.
Foundation stone laid on 3-1-1843.
Opened for admission of 300 patients in May, 1845.
Demolished for reconstruction.



Dr. Charles Morehead, M.D., F.R.C.S., The First Professor of "The Institutes and Practice of Medicine" (also the first Principal of the College in addition). Was Principal and Professor from 1845 to 1859. The subject "Institutes and Practice of Medicine" which he taught included the general doctrines of Physiology, Pathology, and Hygiene and Therapeutics.

LEGENDS FOR THE PHOTOS



The building as seen from the North.
The Old Military Hospital where Ronald Ross made his great discovery.



Gathering of the Pilgrims.
Group Photo of the members of the Medical Profession who paid a pilgrimage to the Laboratory where the mystery of Malaria was unravelled.

which is not suited to the training and development of their independent reasoning faculties. The remedy lies not so much in raising the grade of the admission qualifying examination to the collegiate level as in improving the primary and secondary education suitably.

This was recognised even then as the Principal reports in 1860 "However desirable collegiate instruction may be, I do not look to the college as the means for supplying students to this Institution. In no country with which I am acquainted are medical schools mainly supplied with students from collegiate institutions. We must here, as elsewhere, look to high schools and grammar schools and it is upon the improvement and extension of such seminaries in the Presidency that the success of the College must ultimately rest." In the same year, the Professor of Physiology also comments "Students of this country appear to be a little imbued with interest in the living creatures around them; hence appeals to evidence of comparative anatomy are rarely understood."

On the affiliation of the College to the Bombay University in 1860, the college entrance examination was abolished and from 1861, the Matriculation was made the obligatory qualification for admission into the college. The matriculation was a severe and exacting test of knowledge at the time.

DISCIPLINE

It seems that the attendance of students was not quite satisfactory in the beginning, for the Superintendent (now Principal) in his report for 1846 says "I find that the attendance of the students has not generally speaking been so regular as it ought to have been. On this point, I expressed to them my disappointment". The following year, however, there was some improvement and he says "... (last year) the attendance of the students had in some instances been marked by irregularity. But in making this report, I ventured to predict that the examination of the roll calls of another session would show that this irregularity had proceeded from want of reflection on the importance justly attached to regularity, as a part of academic discipline. It is with much gratification that I am enabled to state that the favourable estimation of the disposition and habits of the students on which the opinion was grounded has been fully sustained. The regularity of attendance has, without exception, been most praiseworthy..... The number of holidays recognised by the College compared with that permitted in other educational institutions was very limited: and further, there are some days in which though the course of instruction is in no degree interrupted, the students have the option of absenting themselves without incurring the penalty of being absent in the roll-calls. It has been most satisfactory to

observe that several of the students have in many instances declined taking advantage of these holidays but have preferred attending classes". It is worth comparing this state of affairs with that obtaining now, when on the slightest pretext, students clamour for and are actually granted holidays in succession, from time to time on paltry occasions.

The roll-call was taken four times daily and different certificates of attendance were given to the students at the end of the year. Thus those who had not been absent at more than 5 roll-calls during the session (June to March) were certified as having attended 'very regularly'; those who had not been absent at more than 15 rolls as having attended 'regularly'; those who had been absent at more than 15 but less than 25 as having attended 'not regularly'; those absent at more than 25 as having attended 'irregularly'; and finally those absent more than 40 as having attended 'very irregularly'. The certificates were recorded in the College.

A prize was awarded to the student whose attendance had been most regular throughout the sessions *i.e.*, to one who out of the roll-calls called for 8 months had been only marked 'absent' once and 'on leave' once.

In 1851, some rules were added which provided for the consideration and timely removal of students, whose abilities and habits of study prove such as to render it very unlikely that they should ever be able to qualify themselves for the final examination. Thus, the students were all examined at the close of each session and those of them who at the end of their second session from idleness, want of ability or other cause, evinced a want of aptitude for learning were required to withdraw from the College.

Since the affiliation of the College to the University in 1860, this desirable rule automatically dropped from application but in 1938 the University found it necessary to reintroduce its principle by restricting the passing of the First M.B.B.S. Examination, within four trials, failing which the student has to withdraw permanently from the College.

PROFESSORS AND PRINCIPAL

The College started with three Professors and twelve students. One of the Professor was also the Superintendent and each was in charge of three departments. The Superintendent was also the Professor-in-charge of (1) the 'Institutes of Medicine', (2) 'Practice of Medicine' and (3) 'Clinical Medicine'. Of the two Professors one was in charge of

(1) Anatomy, (2) Surgery, and (3) Clinical Surgery while the other was in charge of (1) Chemistry, (2) Materia Medica including Pharmacy and Elements of Botany, and (3) Medical Jurisprudence, respectively. Midwifery was also to be taught by one of these professors.

At its inception, the college seems to have been extremely fortunate in having as its head a sincere, wise, broad-eyed, liberal minded and large-hearted pioneer and guide, in the person of *Dr. Charles Morehead*, who for fifteen years as its first Superintendent and later from 1851 (when the post was redesignated) as the Principal laboured incessantly and tactfully in putting the College firmly on its feet during the first few difficult years. All along he kept only one object steadily in view and that was to so order its arrangements and progressive development as to tend to the ultimate formation of a complete scientific and practical medical school; Who dare say that his high hopes have been belied, now that we see it in its present developed form as one of the, if not the, greatest institutions of its kind in the East, thanks to the long line of his successors, who have kept on the torch lit by *Dr. Morehead*, burning brightly ever since?



APPENDIX

(i) **LIST OF STUDENTS OF THE FIRST BATCH ADMITTED TO THE
GRANT MEDICAL COLLEGE, BOMBAY, on 1st Nov. 1845.**
FREE

- (1) Bhawoo Dajee.
- (2) Manoel A. D. Carvalho.
- (3) Sebastian A. D. Carvalho.

STIPENDIARY.

- (4) Atmaram Pandurang.
- (5) Paul Frances Gomes.
- (6) Fardunjee Jamsetjee.
- (7) Ananta Chandroba.
- (8) J. C. Lisboa.
- (9) Manoel Antone D'Abrew.

(ii) **LIST OF THE FIRST PROFESSORS OF THE
GRANT MEDICAL COLLEGE, BOMBAY.**

- (1) Dr. Charles Morehead, M.D., F.R.C.S.,
Professor of "The Institutes and Practice of Medicine."
- (2) Dr. John Peet, M.D., F.R.C.S.,
Professor of Anatomy and Surgery.
- (3) Dr. Herbert John Giraud, M.D.,
Professor of Chemistry and Materia Medica.

(iii) **LIST OF PRINCIPALS OF GRANT MEDICAL COLLEGE, BOMBAY,
IN THE NINETEENTH CENTURY.**

- 1845 Charles Morehead, M.D., F.R.C.S.
1860 John Peet, M.D., F.R.C.S.
1865 Herbert John Giraud, M.D.
1865 Robert Haines, M.B. (Lond.)
1866 William Guyer Hunter, M.D., F.R.C.S.
1876 Henry Cook, M.D., F.R.C.P. (Lond.), F.R.C.S., F.G.S., F.M.S.
1886 Henry Vandyke Carter, M.D. (Lond.)
1888 Wellington Gray, L.M., L.C.H. (Dublin).
1893 George Archibald Maconachie, M.D., C.M. (Aberdeen),
M.R.C.S. (Lond).
1897 William Keith Hatch, M.D., C.M. (Aberdeen), F.R.C.S. (Eng.)

Sir William Jones (1746-1794)¹
on Ancient Indian Medicine

BY

D. V. SUBBA REDDY.

Jones, in his preliminary discourse, on the institution of the "Asiatic Society"² at Calcutta for inquiring into the History, Civil and Natural, The Antiquities, Arts, Sciences and Literature of Asia, refers to the objects of their enquiries as "*Man and Nature*". "Human knowledge has been elegantly analysed according to the three great faculties of the mind, *Memory, Reason, and Imagination*, which we constantly find employed in arranging and retaining, comparing and distinguishing, combining and diversifying, the ideas, which we receive through our senses, or acquire by reflection; hence the three main branches of learning are *History, Science, and Art*: the first comprehends either an account of natural productions, or the genuine records of empires and states; the second embraces the whole circle of pure and mixed mathematics together with ethics and law, as far as they depend on the reasoning faculty; and the third includes all the beauties of imagery and charms of invention, displayed in modulated language, or represented by colour, figure, or sound".

"Agreeably to this analysis, you will investigate whatever is rare in the stupendous fabric of nature, will correct the geography of *Asia* by new observations and discoveries; will trace the annals, and even traditions, of those nations, who from time to time have peopled or desolated it; and will

1. "He was born on 28th September 1746. His extraordinary capacities marked him out at his early age from his School fellows. He spent more than ten years at Harrow School under the masterhips of Dr. Thackeray and Dr. Sumner. He not only became a thorough classical scholar but learned French and Italian and the rudiments of Arabic and Hebrew in his leisure hours. Later, he mastered his Arabic and Persian with the help of a Syrian Mirzli. He graduated in 1768 and got his M.A. degree in 1773. He was called to the bar in 1773.

After a bright legal career, he was knighted in 1783 and was appointed as a judge of the High Court at Calcutta. The ten years from December 1783 to his death in April 1794 which he spent in India were the most important of his life. He utilised his spare time for literary pursuits. His first work in that direction was the foundation of the Bengal Asiatic Society in January 1784. His contribution to the Society's 'Asiatic Researches' mark an era in the study of the Indian Languages, literature and Philosophy.

• His translations included versions of the 'Hitopadesa', 'Sakuntala' and of some extracts from 'Vedas'.

He died at Calcutta on 27th April, 1794 in his 48th year and was buried there.

2. **Asiatic Society of Bengal.**—The Society was founded by Sir William Jones in 1784 in Calcutta, with a view for the investigation of the subjects connected with and for the encouragement of the Sciences, literatures and Arts of the Asiatics and to interpret the same to the Western people.

The Name of the Society was at first, Asiatick Society. But it was changed as Asiatic Society of Bengal, in 1851, after the starting of the Royal Asiatic Society of London. The activities of the Society were later, co-ordinated with those of the Royal Asiatic Society.

bring to light their various forms of Government, with their improvements and methods in arithmetic and geometry, in trigonometry, mensuration, mechanics, optics, astronomy, and general physics; their systems of morality, grammar, rhetoric, and alectic; *their skill in chirurgery and medicine, and their advancement, whatever it may be, in anatomy and chymistry*. To this, you will add research into their agriculture, manufactures, trade; and, whilst you inquire with pleasure into their musick, architecture, painting, and poetry, will not neglect these inferior arts, by which the comforts and even elegances of social life are supplied or improved”.

In the Second Anniversary discourse, Jones refers to “*Botany, Medicine and Chymistry*” before touching on fine arts (like Sculpture, Painting and Music) and literature and Mathematics.

“If *Botany* may be described by metaphors drawn from the science itself, we may justly pronounce a minute acquaintance with *Plants*, their *Classes, Orders, Kinds, Species*, to be its flowers, which can only produce *Fruit* by an *application of that knowledge to the purposes of life, particularly to diet, by which diseases may be avoided, and the medicine, by which they may be remedied: for the improvement of the last mentioned art, than which none surely can be more beneficial to mankind*; the virtues of *minerals* also should be accurately known. So highly has medical skill been prized by the ancient **Indians**, that one of the *Fourteen Retna's, or precious things, which their Gods are believed to have produced by churning the ocean with the mountain Mandara, was a learned Physician. What their old books contain on this subject, *we ought certainly to discover, and that without loss of time*; lest the venerable but abstruse language, in which they are composed, should cease to be perfectly intelligible even to the best educated natives, through a want of powerful invitation to study it. **Bernier**, who was himself of the *Faculty*, mentions approved medical books in **Sanscrit**, and cites a few aphorisms, which appear judicious and rational but *we can expect nothing so important from the works of Hindu or Muselman physicians, as the knowledge, which experience must have given them, of simple medicines*. I have seen an **Indian** prescription of fifty-four, and another of **sixty-six**, ingredients; but such compositions are always to be suspected, since the effect of one ingredient may destroy that of another; and it were better to find certain accounts of a single leaf or berry, than to be acquainted with the most elaborate compounds, unless they too have been proved by a multitude of successful experiments. The noble deobstruent oil, extracted from the **Eranda** nut, the whole family of **Balsams**, the incomparable stomachick root from **Columbo**, the fine astringent ridiculously called **Jarn** earth, but in truth produced by decoction of an **Indian** plant, have long been used in **Asia**; and who can foretell what glorious discoveries of other oils, roots, and salutary juices, may be made by your society? If it be doubtful whether the **Peruvian** bark be always efficacious in this country, its place may, perhaps, be supplied by some indigenous vegetable, equally antiseptic, and more congenial to*

the climate. Whether any treatises on *Agriculture* have been written by experienced natives of these provinces, I am not yet informed; but since the court of *Spain* expect to find useful remarks in an *Arabick* tract preserved in the *Escorial*, on the *Cultivation of land in that kingdom*, we should inquire for similar compositions, and examine the contents of such as we can procure.

The *sublime of science of Chymistry*, which I was on the point of calling *devine*, must be added, as a key to the richest treasuries of nature; and it is impossible to foresee how greatly it may improve our *manufacturers, especially* if it can fix those brilliant *dyes*, which want nothing of perfect beauty but a longer continuance of their splendour; or how far it may lead to new methods of *Fluxing and Compounding Metals*, which the *Indians*, as well as the *Chinese*, are thought to have practised in higher perfection than ourselves”. (Vol. III, page 14 to 16).

We may add, here, that in the memorandum written by Jones, during the voyage to India, he set down the “objects of enquiry during his residence in Asia”. This includes sixteen headings of which the eighth is “*Medicine, Chymistry, Surgery and Anatomy of Indians*”. (Vol. II, page 4).

He then suggests the plan and programme of work. “If each of us were occasionally to contribute a succinct description of such manuscripts as he had perused or inspected with their dates and the names of their owners, and to propose for solution such *Questions* as has occurred to him, concerning *Asiatick Art. Science, and History, natural or civil*, we should possess without labour, and almost by imperceptible degrees, a fuller catalogue of *Oriental books* than has hitherto been exhibited, and our correspondents would be appraised of these points, to which we chiefly direct our investigations”. (Vol. III, page 21).

In a learned address on “the Gods of Greece, Italy and India” pointing out the resemblance between the popular worship of the Old Greeks, Italians and Hindus and similarly between their religions and that of Egypt, Persia, Phoenicia, he says “Hence, **Hygeia** and **Jaso**, health and remedy, are the poetical daughters of **Aesculapius**, who was either a distinguished physician or Medical skill personified”. (Page 322, Vol. III).

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Jones, W., Works with Life, by Lord Teignmouth, Vols. II and III, Publ. John Stockdale, London, 1807.



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Dar-us-Shifa (House of Cures) Built by Sultan Muhammad Quli in 1595 A. D.

(THE FIRST UNANI TEACHING HOSPITAL IN DECCAN)

BY

D. V. SUBBA REDDY,

Professor of History of Medicine, Medical College, Hyderabad.

It was in 1951 when I was invited by the Osmania University to give Extension Lectures on History of Medicine, that I first came to know, through Mr. Bilgrami's book "*Landmarks of the Deccan*", about Dar-us-Shifa, in Hyderabad, as one of the earliest hospitals built during the Qutub Shahi period. After I came here, in the first part of 1957, as Professor of History of Medicine, I was told by the senior doctors in this city that Dr. Khursheed Hussain, Retired Surgeon, Osmania General Hospital, was very much interested in History of Medicine and had published some papers. When I paid him a courtesy call and asked for his reprints, he was kind enough to give me a reprint of his welcome address to the 16th Annual Conference of the Association of Surgeons in India, held in Hyderabad, in 1954. This little pamphlet, illustrated with pictures, giving some more information about Dar-us-Shifa, further stimulated my curiosity. After many enquiries and much correspondence, without replies, I was able, through the courtesy of Principal A. M. Siddiqui, to visit this historical monument in ruins, walk through parts of it which were safe, accessible and clean. This helped me to form an idea of the plan, size, architecture and arrangements, and to visualise the grandeur of the institution, and the lively activity, in and around it, in its hey day under the Qutub Shahi Kings.

It was not easy to get photographs of the exterior and interior of the existing structure from various angles. Dr. D. Bhasker Rao, Curator of the Anatomy Museum, Gandhi Medical College, was kind enough to take the trouble to get me some photographs, according to my instructions. With the help of these and ground plan kindly lent by Mr. Bilgrami, Retired Director of Archeology, Hyderabad State, I have attempted to prepare sketches of the frontage and the interior of the old hospital, photos of which are reproduced in this article.

It was still more difficult to collect information about Dar-us-Shifa, from the original sources, histories and chronicles of the Qutub Shahi Period. I have no doubt that a diligent search of records and manuscripts, in public libraries and private collections, will reveal more sources of detailed information, regarding physicians and other staff, diseases and their treatments, grants and endowments, etc., of Dar-us-Shifa, at different stages during the reigns of different Qutub Shahi Kings.

Dar-us-Shifa (House of Cures) Built by Sultan Mohd. Quli in 1595 A. D. 103

In this article, I wish to begin with some material which I could readily get from available local guide books in English and local histories. A few extracts are given below :

"*Dar-us-Shifa* (Hospital and Karavanserai) : Opposite the Purana Haveli (Old Palace) is a large building known by this name. It consists of a quadrangular courtyard paved with stone, having chambers for the accommodation of travellers and sick persons. It was erected by King Kuli Kutub, who maintained a staff of native physicians and hakims here to minister to the sick. The courtyard also contains the remains of a Turkish bath. The whole building is now in a very dilapidated condition. It is used as a barracks by some of the Irregular Troops. Near the entrance is a fine masjid bearing the same name and erected at the same time as the hospital". (Wilmont & Bilgrami).

"During the reign of Mohd. Quli Qutub Shah (1000 Hijri) a house with the name of Darus Shifa was built in Hyderabad City. In this house medicines were provided free to the poor inhabitants and Hakims were deputed there. There were complete arrangements for the treatment of patients and many rooms were constructed to keep the patients as in-patients". (Busthane).

"A double storeyed building with square courtyard was built in 1595 as a hospital for sick and diseased. This was also used as a residential college for imparting Unani Medical Education; attached to it there was also a caravansari and a humum. Close by, there is a mosque." (Bilgrami: "*Landmarks of the Deccan*").

* * *

To obtain more authentic or accurate details, I had to fall back on older writers and annalists, or other works in Persian or Urdu*. The relevant passages were read and translated for me by my good friend, Principal A. M. Siddiqui, to whom I am greatly indebted. The information from these sources is re-arranged and presented below :

MOHD. QULI QUTUB SHAH, THE BUILDER OF THE CITY AND THE HOSPITAL

The first hospital in the city of Hyderabad was designed and built in 1595, A. D. within a few years of the foundation of the new city of Bhagyanagar, on the banks of Musi. Sultan Muhammad Quli Kutub Shah V, (1566-1612) who ascended the throne, in 1580 A. D. and founded the city of Hyderabad in 1590 A. D. was one of the few Deccani kings who

*References : 1. *Tarikh-i-Zafra* by Girdhari Lal Ahquer, Hyderabad, 1927.
2. *Tarikh-i-Qutub Shahi*. Anonymous, Manuscript in Asafia Library.
3. *Hadiquatul Alam* by Mirza Abu Turab, Hyderabad, 1901.

thought of the welfare of the people and their civic amenities. He provided rest houses or Sarai, small and big. One of them can still be seen in Karwan Sarai, near Purana Pool, on the way to Golconda. He provided many baths, one of them was near Charminar and another near Miyan Mishk Mosque. He built a large splendid Hospital and provided it with all staff, facilities and amenities.

I. BUILDING

A hospital was built under the orders of the King, on the bank of River Musi, in an open space, outside the city, to provide fresh air. An order was also issued that no bridge or house was to be built in the vicinity of the hospital probably to keep the surrounding clean and calm. The building was a grand structure like a mansion, almost unequalled in the history of hospitals in the world. A Caravansarai, a Mosque and a Turkish Bath were also constructed near the hospital, as adjuncts.

II. STAFF

There were two types of Physicians appointed :

(1) The first category of physicians was primarily meant to look after the sick and treat them. Highly qualified physicians, well versed in treatment and experienced in the practice of medicine, and experts in the diagnosis of diseases were appointed to look after the patients. They were well remunerated and contented. The hospital did a great service to the poor and the ailing.

(2) The second category of physicians were scholars, learned in the branches of science and medicine, appointed exclusively to impart instruction in medicine to students. These scholar-physicians were given handsome pay, so handsome that they lived a care free life, without having the necessity to go out in search of patients and practice.

III. FACILITIES AND AMENITIES

The hospital was intended for two purposes :

(1) For the treatment of patients: The hospital was provided with all equipment and facilities for the proper treatment of patients. A large sum was sanctioned for the purchase of medicines and supply of proper diet to the patients. All medical attention, diet and medicines were provided free to all the patients.

(2) For imparting medical education to the youth: There were attached rooms for the classes for teaching of Unani medicine to the young pupils, with residential accommodation for students and teachers.

Let us now examine the remains and ruins of this neglected. Temple of Health and Healing.

Dar-us-Shifa (House of Cures) Built by Sultan Mohd. Quli in 1595 A. D.

LEGENDS FOR THE PHOTOS



A view of the Northern face of the Southern side of the quadrangle.

Fig. 1

A view of the interior of the Eastern wing showing the long corridor with arches, with the verandah on the inner side and open arches on the outer side. There are square compartments formed by the arches on 4 sides, with an archect roof. These areas were probably used as wards for in-patients.



Fig. 2



Some of the rooms in the First Floor are decorated with small niches and recesses in the walls. These were probably the rooms for the residence of doctors or rooms for the storage of medicines or treatment of patients.

Fig. 3

Plan of the Ground Floor. On one side of entrance are the out-patients clinic and the Dispensary, while on the other side, are the rooms intended for study and teaching (Medical School).

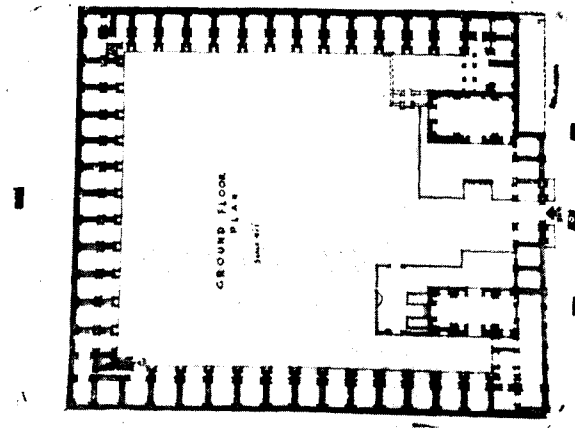


Fig. 4

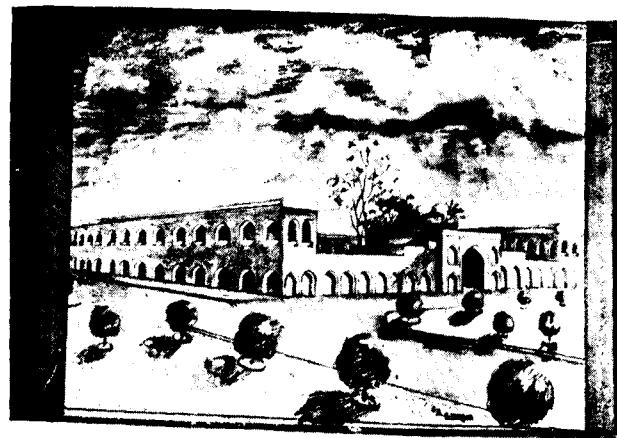


Fig. 5

Photo of a reconstructed picture of the hospital as it would have appeared before it fell into ruins.

Photo of a reconstructed picture, showing the three sides of the quadrangle, as it would have been in its original condition.

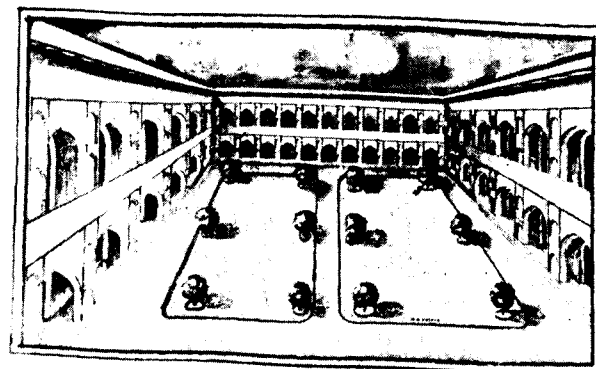


Fig. 6

Dar-us-Shifa (House of Cures) Built by Sultan Mohd. Quli in 1595 A. D. 105

(1) *Location.*—Outskirts of the city in the north-eastern sector on the bank of the River Musi, but situated on a sufficiently high level and a safe distance from flood and surrounded by open spaces and gardens.

(2) *Adjuncts.*—Mosque for prayers and for comfort to the mind, for faith and for the psychological preparation of the patient.

(b) Caravansarai, Rest-House, Hotel, Guest-House for the accommodation, or rest of patients and their relatives.

(c) *Hamum.*—Public baths for cleanliness of the body, personal hygiene, improvement of the health, and as part of treatment.

(3) *Plan of the Building.*—The main entrance faces North—probably there was a high road along the South bank of Musi, bringing people from the East and West. The northern portion, with its high archway in the centre has platforms, halls, rooms enclosures on either side. The other three sides have a double storeyed building with long halls supported by arches, dividing the halls into square areas, roughly about 15' × 15' with a continuous corridor of about 5 to 6 feet broad, running on the inner aspect throughout the length of the building. While this is the general plan on the ground floor, there are certain differences in the appearance of the arrangements between the Eastern half and the Western half of the first floor.

This structure which is more than 3½ centuries old, still exists under the name of Dar-us-Shifa (House of Cures) and the entire locality around it in the old city is still known under this name (Dar-us-Shifa). The hospital has a very massive gateway, and was a two storeyed building with a square courtyard. There were rooms for waiting, for examination of out-patients, a Dispensary, and class rooms for instructions, on either side of the entrance arch way. The Eastern portion which is still intact shows twelve plain rooms for patients, well ventilated, and with a corridor running through the whole length of the side. The Southern portion shows, in addition, some closed square rooms with decorated recesses like almirahs, shelves, niches, suggestive of apartments for medicines, doctors, special treatments etc. The Western wing also shows some alterations and differences; instead of the arch, leading to verandah there is a wall with a doorway, connecting the inner portions, with the verandah.

Time, weather and neglect or misuse have disintegrated and brought down portions of the building. The edifice deserves to be declared a protected monument by the Government, conserved and renovated as one of the precious historical legacies of the Kutub Shahi Period, and as one of the few surviving archeological evidences of the heritage, in Health and Medicine, of medieval Muslim rule in India.

Tippu Sultan's interest in Scientific instruments and Medicine

BY

Dr. D. V. SUBBA REDDY

Many readers both in India and abroad may be surprised to learn that "Tippu, the Tiger" had a brain and mind filled with a curiosity to know, enquire and investigate everything in nature, animate or inanimate and was very enthusiastic about new contrivances and contraptions. He was also greatly interested in the contemporary inventions, scientific instruments and Medicine. These aspects of his character are revealed in his letters* to various functionaries. In a letter to Monsieur Cossigny (417) he expresses his interest in a new instrument. "The Barometer which your humble attachment prompted you to send to us has been received. No doubt you will also after getting prepared despatch to us the.....of..... which you have promised to us". In the same letter, there is also another passage, inserted: "the Barometer which you sent us in charge of your Hurkdreh is in all respects very complete excepting in the article of quick silver, which owing to its oldness, does not move up and down. It is therefore returned to you and you must send us another good one in its stead that has been made in the present year". Did he expect the mercury to move up and down or show visible movement?

There is a still more interesting allusion probably not to Barometer but to the Thermometer, and also evidence of his wide knowledge of contemporary European Scientific advances and literature—in a letter to M. Cossigny (No. 420).—

Letter No. 420: "There is a book which comes from Europe, and which treats of the barometer, wherein it is written, that at certain (stated) times the quicksilver rises a certain number of degrees; and that if, at such times, a person afflicted with any one of certain (stated) disorders shall, during a paroxysm of his complaint, place his hand on the barometer, the degree to which the quicksilver may, in consequence, ascend, will indicate the state (or height) of such person's disorder. Get this (book) translated into Persian, and send it to the Presence".

He was equally eager to attract and collect at his Court artists, scientists and physicians of different schools, Races and Nationalities

*Select letters of Tippu Sultan to Various Public Functionaries. Arranged and Translated by William Kirkpatrick, London—1811.

mentioned in a letter addressed to the Raja of French (No. 338). "I frequently indulge an inclination for the arts and I am found of collecting artists together (or about me); if therefore that friend, out of his ancient regard, would despatch to me some persons skilled in every art, I should esteem it as proof of the most perfect friendship. In letter addressed to Md. Durwaish and others (No. 409) he directs them to speak to the Raja of French and through his means to procure and bring with them from Europe a skill-full physician, a Pharmacologist thoroughly acquainted with and capable of preparing every kind of medicine, known in Europe and lastly an able surgeon."

He was not only a great collector of gold and precious stones but also of manuscripts and books of all sorts as could easily be seen from the great library he had accumulated. Among the books he so collected, there were many medical classics in Arabic and Persian; and he himself encouraged and promoted the translation of some of the European classics into Persian and Urdu languages.

He had in his Court and camp many physicians, both Unani and Ayurvedic, and used to arrange medical relief to his relatives and subordinates. In a letter to Burhanuddeen (No. 30) he writes "the army of the enemy is encamped at the distance of a gun-shot from Ramdoorgh. In conjunction with Meer Kumruddeen Ali Khan, lead our victorious army against it, in such a manner, as shall break its loins, and render it incapable of facing you again. You must take fifteen days' grain with you. The aforesaid Khan is indisposed; you will therefore, despatch Kishna Pundit, the physician, attached to that dear son to administer to him. What more?". In another letter to Burhanudeen (No. 33), he says—"your letter, reporting the sickness of Meer Kumruddeen Ali Khan, and containing an application for two Yoonany (or Greek) physicians and some Telingy doctors, to attend him, has been received, and is understood. Let the said Khan be attended by the physician, Kishna Pundit, who is with you; and write to Abdul Hukeem Khan to desire he will send a doctor from thence. These two, being appointed to administer to the said Khan, must be so strictly enjoined on the occasion, that his restoration to health may speedily be effected." In a letter to Meer Kumruddeen (No. 36) he states "By the Divine favour your health is now re-established, and it is, consequently no longer proper that you should have a physician attending you, or that you should take any more medicines; let him, therefore, be sent back to Shanoor."

He also did not hesitate to suggest certain procedures and prescriptions which he found to be efficacious for some common ailments and Diseases. The following are extracts from letters which give some glimpses of the contemporary practices and Tippu's knowledge and belief in them.

In a letter to Md. Ghyas (No. 38) he advises— "What you write, regarding the variations of the temperature in your quarter, is revealed. Our physicians have thoroughly ascertained the proper mode of treating the diseases in question. The first thing to be done is, to draw off, by bleeding, all the corrupt humours; by which means, an effectual improvement will be produced in the general constitution of the patient. The body of the diseased party being thus completely brought under subjection, the next step must be to expel from it every remaining seed of the distemper, administering, in the meanwhile, whatever medicines may be found necessary. What more?" In a letter to Syed Mahommed, Kilaadar of Seringapatam (115) he writes "It has been reported to us, that Mutusuddy of Jyshe, Kishu Rao, has been bitten by a mad dog: we therefore write to desire that you will give the aforesaid (Mutusuddy) in particular charge, to the physician, Mahommed Baig, who must administer to him the proper medicines in such cases, and restore him to health. He must also be told not to let the discharge from the wound stop, but to keep it open for six months". In a letter to Eaatimady Khojeh Firasut (No. 183) he criticises the list of drugs etc. "The memorandum of medicines (perhaps some prescription) which you sent has passed under our view; but the essences, therein specified, belong to the European practice, whereas Mahommed Baig is a physician of the Greek school. The conclusion to be drawn from this is, that in omitting to insert the Greek medicines, and substituting in their place, those in use among the Europeans, you could have had no other view, than that of making a profit by the sale of the latter". In a letter to Chishty Yar Khan and Zynul Aabideen (No. 285) he sends a medicine by post with instructions. "Your letter of the 14th Behary (17th May) was received this day, and has informed us of Dowlat Khan's being ill of the stone in the bladder: we have, in consequence, sent by the post an emetic (to be taken the first day), together with (other proper) medicines for the seven subsequent days. These are all separately made up in cloth and sealed. The way of taking an emetic is this: dissolving the powder in about four tolah weight of hot water, let him swallow it. After this, whenever he feels inclined to vomit, he must drink eight tolah weight of warm water. When he has vomited five or six times, let him, after an interval of six hours, have some broth mixed with rice. In the evening, before he eats his dinner, make him take, in a little cold water, half a tolah weight of seed of flea-wort, softened with some oil of almonds. By the favor of God, in one or two vomitings, the stranguary, or obstruction of urine, will be removed."

The Sultan's anxiety for the welfare and health and happiness of his army is seen in the following letters:—

To Kumruddeen Khan (No. 69): "There are physicians attached to your Kushoon: let them be strictly enjoined to attend diligently to the care of your sick."

To Kumruddeen (No. 101): "You must dispatch Doolies to Dharwar, to bring back the wounded men who were sent thither (during the siege); in order that, being placed, together with the wounded, now with your division, under the care of their respective relations, they may be the more at their ease. The wounds of these men must also be carefully attended to, and properly treated. The army likewise, with horses, cattle etc. must be encamped in some good spot, abounding with water and grass, and where but little rain lies. Having undergone such fatigue, let them now enjoy some repose."

To Budruz Zuman Khan (No. 237): "What you write, concerning the death of five hundred Koorgs from the small-pox, is understood. The whole country (thereabouts) is covered with underwood. They (*i.e.* the Koorgs) must be kept where the climate (literally, the water and air) may best agree with them."

To Fuzi Ali Khan (No. 269): "The report which you have sent us, of the gallant conduct of our troops, and of the men wounded (in the late actions) is known (or has been considered). Let the wounded receive the compensation fixed by our regulations; and let the horses, and other property taken (from the enemy), be relinquished, according to the orders of the Sircar, to the captors (literally, to those who bring them in)."

* * *

As the editor and Translator of the letters, William Kirkpatrick observes, the Sultan has exhibited himself in some of them in the character of a physician. But is it, as Kirkpatrick observes, only due to the vanity which made Tippu desirous of appearing to know everything? May it not be, partly at least, attributed to some solicitude or enlightened self-interest, for the welfare of his loyal servants, if not due to humanity!

—★—

After this article was printed, I came across a book, "History of Tippu Sultan" by Mohibbul Hasan Khan, Bibliophile Ltd., Calcutta, 1951. While describing Tippu's dignified appearance, dress and the daily routine and character, in great detail the author briefly refers to Sultan's treatment of his officers. "The letters which he wrote to them were couched in affectionate terms. He was very solicitous for their health and if he heard their illness he prescribed medicines for them" (p. 369).

In a foot-note, the author adds, that there are many letters which show that Tippu was solicitous for the health of his officers and clerks to whom he prescribed medicines. if he was informed of their illness.

A letter giving a Report of a case of Snake Bite

SUCCESSFULLY TREATED BY A BRITISH MEDICAL OFFICER IN SOUTH INDIA IN 1798

To JAMES ANDERFON Esq., M.D.,
Physician General and etc. etc., Madras.

Sir,

I have the pleasure to send you the history of a case, which was attended with the most alarming symptoms, as a confirmation of the beneficial effects to be expected from the use of eau de luce, or spirits of hartshorn, in the bites of even the most dangerous snakes. On the 11th of this month, at half past three o'clock p.m. one of the dooly bearers of the 2d regiment of cavalry, in the act of cutting a branch of a tree, about 100 yards from my house, was bit by a snake, on the outside of the left leg, a little below the knee. He felt immediately the pain stretching up his thigh; and in the course of ten or twelve minutes he was seized with violent spasms all over his body, and fell down apparently without sense of motion. He was then brought to me, when I found all his joints quite stiff, his limbs rigidly extended, pulse hardly to be felt, and jaws fast locked. Having no eau de luce at hand, I put a tea-spoonful of hartshorn into a tumbler, with a small quantity of water; and having with difficulty opened his mouth by means of a turn-screw, I pured it in; but the power of deglutition being perfectly gone, only a very small part found its way to the stomach. In ten minutes more I repeated the draught, and again a very small quantity got to the stomach; ten minutes after I gave him another dose, when, by holding his head back, the greatest part went down; and in a few minutes he was sensibly relieved, as his joints became more pliable. I now received some eau de luce, and in about ten minutes gave him about twenty-five drops, mixed with a little water, which, by holding his head as before got all into his stomach. He now began to recover his recollection, and upon being asked, pointed that he felt a pain in his breast, and the crown of his head. Half an hour after giving the last dose, I repeated it; and in about five minutes, he was seized with vomiting, when he brought up a small quantity of green slimy matter, which seemed to relieve him greatly, for he was then able to look about him. I repeated the medicine every half hour, and after every dose he got a little better; so that at nine o'clock he was able, with a little support, to walk home from my house scarcely feeling any effect but weakness from the bite, and I saw him next morning perfectly well. During the internal exhibition of the medicine, the wound was rubbed with it, and seemingly with some good effect. The snake was not killed, so that I cannot say what species it was of; but from the violent effects produced by its bite, I have no doubt of its being a dangerous one.—I am dear sir, your most obedient servant.

William Mackintosh,

Arcot, November 13, 1798.

From Page 90-91, Asiatic Annual Register, 1798-9 Chronicle, December, Madras.

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Tercentenary of William Harvey

(Celebrated by the Indian Medical Association, Hyderabad)

Science knows no national or racial boundaries. All over the world, many countries and cities have held meetings, exhibitions, and receptions to mark the tercentenary of the death of William Harvey, one of the greatest scientists of the world. In India, the Hyderabad Branch of the Indian Medical Association arranged a meeting to celebrate the tercentenary of the death of William Harvey. The function was held in The Indian Medical Association Hall on 30th August, 1957. There was a large gathering of medical practitioners and Dr. S. Venkateswara Rao, President of the branch, occupied the chair. Dr. D. V. Subba Reddy, Professor of History of Medicine, Osmania Medical College, gave a lecture on "*The Life and Work of William Harvey*". The lecture was illustrated with 30 slides.

Dr. Reddy prefaced his lecture by tracing the history of medical thought and writings from Galen (2nd Century A. D.) upto 16th Century and then gave a brief account of the "*Life and work of Harvey and his message to the Medical Profession*".

William Harvey was born in 1578 in Fokstone, England. After studying in King's School, Canterbury, he went to Caus College, Cambridge, and took his B.A. In 1600, he proceeded to Padua, in Italy, then famous as a centre of learning, where Galileo, the Astronomer, and Fabrizio, the Anatomist, were at the height of their fame. Fabrizio wrote a book "*Valves in the Veins*" and a book on "*Generation*".

The young Englishman closely studied the ancient writers like Hippocrates, Aristotle and Galen, but also followed the new trends, developments and observations of the contemporary anatomists, on the structure of man and the development of the ovum and on circulation.

Living in Italy, he breathed the spirit of intellectual awakening in Europe and felt the inspiration of life and work of medical scientists like Vesalius and Falloppius. On returning to England, he settled down to practice in London. He became a Physician to the St. Bartholomew's Hospital and went on conducting his own investigations. His appointment, in 1616, as the Lumelian Lecturer in the Royal College of Physicians, gave him an opportunity to give lectures and demonstrations in Anatomy and it is at one of these early lectures, that he first stated briefly but clearly, his findings and views on Circulation of Blood.

After another ten or twelve years of study and investigations, he published in 1628, his great book "*De Motu Cordis*" embodying his

observations and experiments and conclusions on the movements of the heart and the circulation of blood. This publication with its new revolutionary doctrine was received with bitter opposition and severely criticised by the followers of ancient school of Galen. Harvey was dejected and disappointed with the reception of his great work and publication, but maintained his equanimity and continued his studies in comparative Anatomy and Embryology. He also wrote two essays answering the criticism of his opponents, like Riolan of Paris.

After he was appointed Physician to King Charles the First in 1631, he had to flee with the King from place to place during the Civil War. His home in London was sacked and many of his valuable collections, specimens, notes and manuscripts were stolen or destroyed. He retired in 1646 and continued his studies and researches.

When Dr. Ent, his pupil and admirer, visited him in 1650, Harvey showed his treatise on "*Generation*", a mine of observation forming the foundation of Embryology. Dr. Ent, arranged for the publication of the book.

Harvey, however, was fortunate to live to a ripe old age, by which time his views were accepted all over Europe. He was esteemed and honoured by all learned men. Eminent Anatomists and Physiologists published treatises in support of Harvey. While Harvey is given full credit for the discovery of Circulation, it must be emphasised that he was even greater as the founder of a new branch or method in Biology. He is the founder of Experimental Biology and Father of Experimental Medicine, who bids us ever:

"to search out and study the secrets of Nature by way of experiment, and for the honour of our profession to continue mutual love and affection against ourselves".

* * *

KNOWLEDGE OF HARVEY'S DISCOVERIES REACHED INDIA 300 YEARS AGO

Francois Bernier, a French physician may be considered to be one of the earliest to have brought the knowledge of the discoveries of Harvey to the notice of Indian scholars and physicians in the middle of the 17th century.

Bernier was born in 1620 in Anjou, France. He studied in Paris for some years, where his class-mate, Chapelle, introduced young Bernier to Philosopher Gassendi, one of the great intellects of Europe. Bernier attended Gassendi's lectures and became his follower.

About 1652, after a tour of Europe, Bernier went to Montpellier, where his achievements secured for him exemption from examinations in most of the subjects and the youngman was awarded the Degree of Doctor of Medicine in 1652. At that time, Harvey's discoveries were attracting much attention in Europe and especially in France.

He travelled extensively in the Middle East in the year 1655 and 1656 and reached Surat, on the west coast of India, towards the end of 1658. While travelling from Surat to Agra, the Mughal Capital, Bernier met near Ahmedabad, Prince Dara, the claimant to the Moghul throne. The Prince took him into his service as physician and was anxious to retain him. Subsequently, however, after the flight of Dara, Bernier travelled with a noble of the Moghul Court, from Central India to Agra, where he lived for some years during the reign of Aurangzeb, coming into contact with many "Omrans" and becoming popular as a physician among the Moghul aristocracy.

He moved with the Moghul army from Kashmir to Bengal. From Bengal he reached Masulipatam and then came to Golconda. He finally left Indian shores, in 1667, from Surat. He stayed for sometime in Persia and reached France in 1669, and published his famous book "*Travels in Moghul Empire*" in 1670. In this book, he writes that he was specially patronised by Danech-mend-khan, a cultured noble of the Moghul empire, and that he used to explain to his patron, and his circle of Indian scholars and pundits, about the philosophy of Gassendi and the anatomical discoveries of Harvey and Pecquet.

The above reference is of considerable interest to students of History of Medicine, for it indicates the rapid diffusion of knowledge to distant lands, within a few decades of these discoveries, even in those days of very slow transport and infrequent contact of the West with the East.

—★—

Doctors' Pilgrimage to Ronald Ross's Laboratory

What Can Hyd'bad Do To Commemorate Him?

In a small tiled building in Begumpet, near the airport, Ronald Ross toiled in the summer of 1897 and discovered that a particular type of mosquito was the carrier of malarial parasite. The centenary of the birth of Ross and the Diamond Jubilee of his great discovery, and the Silver Jubilee of his death deserve commemoration this year (1957). Ross was then a Major in the Indian Medical Service and was Medical Officer to a native regiment (19th Madras Infantry) stationed at Begumpet. The hospital contained two wards besides offices. It was here that he did his most important work, which was in addition to his duties, as regimental Surgeon. The microscope which he used was the one he himself invented and called the "Diagnostic Microscope".

For many years, the building was almost unknown to the public and the profession, till a Memorial Tablet was put up in 1935. But the date of the discovery mentioned in the tablet is incorrect. The building is now in a sadly neglected condition. This brilliant discovery is one of the few contributions to Medicine achieved on the soil of India, by an officer who was born in India, and working as an officer of the area of the old Madras Presidency. It was therefore, very laudable that the Indian Medical Association, Hyderabad Branch, arranged a pilgrimage to the hallowed scene of the discovery. In spite of the short notice, there was a representative gathering of about 50 or 60 guests, men and women doctors, Government officers and private practitioners, some accompanied by their families, who brought floral tributes, to be placed at the Memorial Tablet. This is the first time in India that such a pilgrimage was conducted to a historic building, the scene of a great medical discovery of world-wide significance.

As the main rooms in the building were locked, the visitors, in the true spirit of Ross, sat down on the steps of the Verandah and the portico, to hold a meeting to pay their homage to the great scientist, whose life and work has saved millions of lives and safeguarded the health of the world.

Dr. S. Venkateswara Rao, President, Indian Medical Association, welcomed the gathering, pointed out the importance and significance of the occasion. He requested Dr. D. V. Subba Reddy, Professor of History of Medicine, Osmania Medical College, on whose initiative this visit and function was organised, to describe briefly, what Hyderabad can do to preserve the memory of Ross and his discovery in 1897.

Dr. Reddy, gave a brief account of the life and work of Ross, in Secunderabad, and read extracts from the "Memoirs of Ross", bringing out certain salient facts and features of Ross', as a great scientist.

Ross was in Secunderabad on three occasions; first in the summer of 1893, "living in a miserable little bungalow"; a second time in the summer of 1895, dissecting mosquitoes and studying their tissues under the microscope, without satisfactory results, and finally in the summer of 1897, when he unravelled the mystery of Malaria, as "the climax of an intense drama, full of hopes and despairs, many failures and a final triumph."

"This day relenting God
Hath placed within my hand
A wondrous thing; and God
Be praised". At his command,

"Seeking His sacred deeds
With tears and toiling breath,
I find thy cunning seeds
O! million-murdering Death".

Dr. Reddy added "It is unfortunate that Dr. Ross forgot the name of the Assistant, who drew his attention to the new type of mosquito, perched on the wall, and also to the group of the same class, developed from the Larvae, hatched out in the bottle in one corner of the Laboratory. It is this class of mosquito—dapple-winged Anopheles which carried the Malaria Parasite. The Indian Medical Association should spare no pains to trace the name and ascertain the details about the life of this worthy Indian, who took a part in the great epic discovery and rescue or resuscitate him from the oblivion into which a cruel fate or official indifference has thrown him".

"The good bungalow, where he lived in 1897, about two furlongs from this building has to be located. Ross played cricket in the maidan opposite to the Mess, a little further away, and went to the "Club" in the evenings. A search has to be started for records, case sheets and photographs of Ross in the private collections and offices in Hyderabad and in the Central Records Offices in India. Photostats and microfilm copies of the letters and note books in which he scribbled down his poems, researches, and impressions, in the course of his stay in Secunderabad, have to be secured. The speaker suggested that this preliminary function may be followed up later by a collection and exhibition of all "Memorabilia" papers, records, pictures, note books and personal reminiscence of Ross by contemporary Europeans and Indians in India.

As Ross felt in writing his memoirs, it is desirable to attract the attention of the lay public—"it is they, not the doctors, who rule the

world,"—to the existence of historic building, which may be better conserved and utilised as a centre of medical research and also serve, as a worthy memorial to one of the greatest benefactors of mankind. (*Report from the Report of "Deccan Chronicle" dated Wednesday, September 11, 1957*).

* * *

Commenting on this event, and report, the Editor of the "Deccan Chronicle" threw some fresh light—"In the report it is said that Col. Ross had forgotten the name of the Hospital Assistant who helped him in his work. It was Doctor Ratnam Pillai, I.M.D. who not only drew Col. Ross's attention to the strange type of mosquito on the wall of the room but also collected from the nearest water course hundreds of "dapple-winged anopheles" and subjected them for Col. Ross's observation. He was a graduate of the Royapuram Medical School contemptuously known as "Kanjithoti hospital" medical school. He served with Indian troops in the Burmese War, won several medals for meritorious service and was promoted to the rank of Subedar Major. Though short in stature he was tall in intellectual attainments and was full of wit and humour. He spent his retired life in Secunderabad".

To editorial also appreciated the gesture of doctors in paying homage to Ross and supported the suggestion for a suitable memorial to commemorate the connection between Hyderabad and Ross's great discovery in Malaria—"Members of the medical profession in Hyderabad, not obsessed with race prejudice, paid homage to Col. Ronald Ross at his laboratory in Begumpet. A full report of the pilgrimage which the members of the IMA made the other day is published elsewhere in this issue. It shows that except for a tablet there is nothing to commemorate the great scientist who made an important discovery sixty years ago."

"The suggestion that the whole property around the laboratory should be acquired and made use of as memorial for Col. Ross will, we hope, materialise and the Andhra Pradesh Government and the lay public will whole-heartedly assist the IMA in achieving the object".

—★—

Medico-Historical Notes and News

EXTRACTS FROM RECORD OF SERVICE OF SIR RONALD ROSS SURGEON, I.M.S. AS AVAILABLE FROM HIS PERSONAL FILE.

The Editor is indebted to Major General B. M. Rao, Director, Army Medical Services, New Delhi, for taking the trouble to trace, obtain and send the following Official Records of Ronald Ross, from National Archives, Delhi.

Date and Place of birth	... 13th May 1857—Almora in Kumaon Hills, India.
Education	... Was a student of Netley School of Medicine from 2—4—1881 to 1—8—1881 and passed out 19th.
Language Examinations during service...	Passed Lower Standard Hindustani at Madras on 9—1—1882 (GOCC of 11—1—1882).
Post graduate qualification obtained during service	... Diploma in Public Health—United College of Physicians and Surgeons at London—20th December, 1888.
Courses of Instruction during service	... Course of Bacteriology under Dr. Klein, Medical Officer, Local Government Board, London—20th May 1889 to 3rd July, 1889.
Honours and Awards	... Medal and Clasp for service in Burma Campaign—1888. Parke's Memorial Prize and Medal on 20th March, 1895, for Essay on Malaria.
Campaigns during service	... Chin Luchai expedition—Burma Column 1889—1890.
Marriage	... Married to Miss R. B. Bloran at All Saints Paddington, London on 25th April, 1889.
Children	... Child Born—15th November 1891. Daughter—Sylvia Ross—15th January, 1893. Son—Ronald Campbell Ross—11th February, 1895.
2 August 1881	... Appointed Surgeon Lieutenant in IMS.
2 August 1881 to 22 October 1881	... Voyage to India.
23 October 1881 to 3 Novem. 1881	... *GDMO at Madras.
4 Novem. 1881 to 5 Septem. 1883	... GDMO, General Hospital, Madras.
6 Septem. 1883 to 12 Septem. 1883	... GDMO, Station Hospital, Bangalore.

*GDMO—General Duty Medical Officer.

13 Septem.	1883 to 31 April	1884 ...	Garrison Surgeon, Garrison Hospital, Bangalore.
1 May	1884 to 24 Septem.	1884 ...	GDMO, Station Hospital, Bangalore.
25 Septem.	1884 to 25 Decem.	1884 ...	@RMO, 1st Pioneers.
26 Decem.	1884 to 12 January	1885 ...	GDMO, Station Hospital, Bangalore.
13 January	1885 to 3 March	1885 ...	RMO of left wing of 9th Regiment, Madras Infantry and MO Station Hospital, Port Blaire.
4 March	1885 to 10 July	1886 ...	RMO at left wing of 9th Regiment, Madras Infantry at Moulmein, Burma.
11 July	1886 to 17 July	1886 ...	On Voyage.
18 July	1886 to 8 July	1887 ...	RMO at right wing and Headquarter, 9th Regiment, Madras Infantry and also in Medical Charge Station Hospital, Port Blaire.
9 July	1887 to 27 June	1888 ...	RMO, 3rd Madras LI.
28 June	1888 to 6 Septem.	1889 ...	Furlough.
21 Septem.	1889 to 14 April	1890 ...	RMO 2nd Regiment, Madras Infantry, Upper Burma.
15 April	1890 to 28 May	1890 ...	Travelling and General Duty at Madras.
29 May	1890 to 1 April	1893 ...	Garrison Surgeon, Bangalore.
2 April	1893 to 2 June	1893 ...	Furlough.
3 June	1893 to 12 Novem.	1893 ...	Medical Charge, 20th Regiment, Secunderabad.
13 Novem.	1893 to 9 Septem.	1895 ...	Travelling and Medical Charge of 19th Regiment MLI. (Secunderabad in the Summer of 1895).
10 Septem.	1895 to 26 May	1896 ...	Special deputation in connection with Cholera and Sanitation at Bangalore.*
27 May	1896 to 19 April	1897 ...	Officiating Residency Surgeon, Bangalore.
20 April	1897 to 7 October	1897 ...	RMO of 19th Regiment, Madras Infantry—(Secunderabad—Scene of his great Discovery).
8 October	1897 to 16 February	1898 ...	Officiating Medical Charge of Mewar Bhil Corps, Kherwara, Rajputana.
17 February 1898 to		...	On Special duty for the investigation of Malaria and Kala Azar.
31 July	1899	...	Retired from Service.
16 Septem.	1932	...	Died.

@ RMO—Regimental Medical Officer.

* A copy of Appreciation of service by Resident in Mysore dated 7th April, 1897 is printed below.

**PROCEEDINGS OF THE RESIDENT IN MYSORE No. 1538, DATED
BANGALORE THE 7th APRIL 1897.**

Surgeon Major Ross having left Bangalore, the Resident desires to place on record his high appreciation of the services rendered by this officer.

2. During the 18 months that Surgeon Major Ross has been connected with the Civil and Military Station he has filled the following posts.

- (1) On special duty from September 1895 to January 1896 in connection with a serious out-break of cholera with which the Sanitary Department of the municipality, as then constituted, were quite unable to cope. His instructions were to direct and enforce necessary operations with a view to quell the out-break, to enquire into the cause of the same, and to examine thoroughly the sanitary condition of the Station and the constitution of the Sanitary Department of the municipality, and submit proposals as to how these might best be improved.
- (2) On special duty under the municipality from January 1896 to 26th May 1896, in order that he might initiate the reforms proposed by him in a report he had submitted and set in proper working order a regular Health Department.
- (3) As Officiating Residency Surgeon Bangalore from the 26th May 1896 to the 29th Ultimo.

3. Surgeon Major Ross' interesting and exhaustive report on "Cholera, general Sanitation and the Sanitary Department and Regulations in the Civil and Military Station of Bangalore" was received in January 1896 and in reviewing it, Mr. Mackworth Young, the late Resident, remarked that, Dr. Ross had "discharged the duty entrusted to him in a most able and efficient manner", and he requested that his best thanks might be conveyed, "for his excellent report which will contribute largely to the welfare of the Station."

4. The main principles of that report were accepted by the Municipal Commissioners who were so assured of the soundness of the advice offered by Surgeon Major Ross, that they applied for his services in order that he might initiate the reforms advocated by him and set in order their Sanitary Department.

5. In the execution of his various and important duties, Surgeon Major Ross has never spared himself. His work throughout, in which a large measure of success has been attained, has been remarkable for the zeal, thoroughness and tact displayed, and the Resident is confident that for this work no more capable officer could have been selected.

"By Order,"

K. D. ERSKINE,

Captain, First Assistant to the Resident.

CENTENARY OF THE FOUNDATION OF PROFESSORSHIP OF MEDICAL JURISPRUDENCE IN MADRAS MEDICAL COLLEGE

The Madras Government decided in 1857 to establish a Professorship of Medical Jurisprudence in Madras Medical College, for the instruction of medical pupils in the subject. Dr. Urquhart, a private practitioner and Coroner of the City, was selected and appointed to the post by Lord Harris, the Governor of Madras. It was felt that no better selection could have been made.

—The Madras quarterly journal of Medical Sciences, April 1861, Part 4 (Medical Intelligence) pages 418-421.

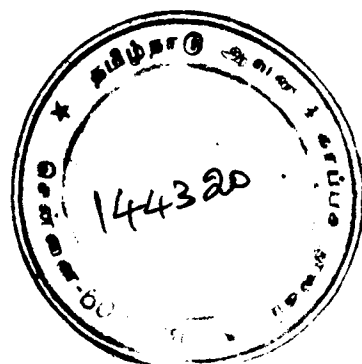
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N 57.2 Dr. DHANAKOTI RAJU, B.A., M.D., F.M.U.,

The First Indian, M.B. and M.D. of Madras University.

Dr. Dhanakoti Raju, was undoubtedly the first and the most outstanding among the Indians, who secured the medical degrees of M.B. and M.D., of the Madras University in its early days. The citizens and press of Madras in the XIX century must have been familiar with his personality and medical renown and public activities. He was an Andhra Kshatriya, domiciled in Tirunelveli. He was a Christian, and belonged to Anglican Church. He hailed from a wealthy family, who possessed lands and salt pans in his native place. He did not enter Government Service and engaged himself in private practice in Madras City. He resided in San Thome and owned many buildings, including St. Bede's College. He devoted his leisure time to reading and writing on medical subjects. Of his many books, "The elements of Hygiene" was acclaimed by his contemporaries as a very simple, but authoritative presentation of the subject, in all its aspects. It was deservedly popular, and widely read. He had wider interest, than medicine and medical practice. He was one of the earliest Indians to become a member, of the Faculty of Medicine of the Madras University. With his knowledge of sciences, coupled with rare foresight and vision, he started, as a hobby, an iron foundry, under the name "D. Raju & Co.", in San Thome and therefore deserves to be remembered also as one of the pioneers of industry in South India. He had three sons, David, Sam, and Prabhudayal, and three daughters, who were all married. His house in San Thome was adorned with a large number of portraits and photos.

Is it too much to hope that some cultured individuals, or learned Institutions, who knew Dr. Raju, or his descendents, will hunt up the materials, like old newspapers, reports, portraits or group photos, and old publications and bring out a short biography of this pioneer and pathfinder in Medical Education in South India.



INDIAN JOURNAL OF THE HISTORY OF MEDICINE

AIM AND SCOPE:

The Journal will be devoted primarily to the promotion of the study and research in the History of Medicine, including philosophical, sociological, cultural and humanistic background, as well as the changing influences and new trends. It will endeavour to bring to the notice of the cultured public and the profession, various Archeological, Epigraphical evidences, traditional lore, extracts from ancient literature, religious or secular or scientific, list of manuscripts, records of documents, old books and works of art, useful for the study of history of Medicine in India. It will collect and publish clues and traces of the influence of ancient Indian Medicine on other lands and people of ancient and medieval times. It will attempt to critically examine the influence of European Renaissance and European Medicine on the advent and growth of modern medicine in India, with far-reaching repercussions on the Indigenism and the health of India. It also aims to bring Medical Science in line with Humanism.

TO THE CONTRIBUTORS:

Contributions, review copies of books, Journals in exchange, and correspondence relating to the publication of papers should be addressed to the Editor, D. V. Subba Reddy, Professor of History of Medicine and Principal, Gandhi Medical College, Hyderabad (India). Manuscripts for publication should be typewritten in double space and should not exceed 10-12 pages of typescript (i.e. 2500-3000, words). References should be arranged alphabetically and typewritten in double space. Each reference should contain name(s) and initial(s) of author(s) and full title of the paper. Journal articles should also include name of journal, year, volume number and complete pagination in that order; with books, the city of origin, publisher, date and full pagination should be given.

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Edited by Dr. D. V. Subba Reddy, and Published by Dr. C. R. R. Pillai, for The Indian Association
of the History of Medicine, 187, Poonamallee High Road, Madras-7
Printed by R. Ravaimanickam at Ravai & Sons (Ravai Press), Madras-5.