

It serves as a source of inspiration too :

"The medicine in India, if it does not equal the best achievements of the race, at least nearly approaches them and owing to the wealth of knowledge, depth of speculation and systematic construction, takes an outstanding position in the history of Oriental medicine"

- S.C. Seal 1971.

- * The concept of Public health is as old as the Indus Valley Civilisation - 2800 to 2500 B.C.
- * Health and disease have been given comprehensive definitions.
- * The code of Manu (Upanishadic period - 600 B.C.) laid down guidelines for personal and public health.
- * The Buddhist period (600 B.C.) brought in an humane approach to the developing science and art of healing.
- * The Hospital concept of health care emerged during 300 to 200 B.C.
- * Patanjali compiled his YOGA SUTRAS (300 B.C.) to help evolve the spiritual dimension to the physical and mental dimensions of health.
- * Veterinary medicine and the use of census for health care evolved.

"We would soon find that scientific medicine has a philosophy also. We too look at the human body as a microcosm in the midst of the macrocosm. The same elements that constitute the organism are found in the outside world, and the same physico-chemical forces are acting in both. The physician thus trained would have a much clearer idea of the task of medicine and of the part he is called upon to play in society"

- Siegrist 1946

In ancient India, a physician graduated to his profession through one of the following procedures :

- he learnt the art and science of medicine from a teacher as his apprentice;
- he joined a Gurukula, a residential school situated in the forests away from the crowded habitations;
- he enrolled himself as an understudy at the University of Taxila, or Kasi (Varanasi/Benares) or Nalanda.

Some of the characteristics of these Universities were,

- 1) students come these seats of learning from all over the country and also from foreign lands,
- 2) the selection of students was rigid,
- 3) all the prevailing arts and sciences of the age were taught here by eminent teachers of the times,
- 4) those seeking instruction in medicine were exposed to the exact sciences like mathematics, algebra and trigonometry; the arts like music and dance; the budding fields of Astronomy and Astrology, in addition to the Philosophical thought of the age,
- 5) the studies were sponsored by the king and the rich of the area who sent their own children to these centres for a well rounded education,
- 6) great importance was attached to the personal and moral qualities in both student and teacher, (Refer Texts)
- 7) the instruction was to the individual, and the limited number of students attached to a teacher lived with the teacher during their studies as part of his household.

- * The objective of education was not merely to prepare the student to earn a livelihood, but also to infuse into him a strong desire to lead a good and virtuous life.
- * Fitness of the student wishing to learn was a preliminary to initiating him/her to studies.
- * The initiation or Opanayana ceremony was then performed, where the student took an oath which would be honoured during the studies. (Refer Text)
- * The course usually lasted six years, or more, if required, when prescribed texts were learnt and practical training imparted.
- * Mastery in all fields of knowledge was considered essential to pass the final tests.
- * This was followed by the Convocation ceremony (Samvartana) and Registration with permission to practice from the King.
- * Quackery was recognised and condemned.
- * The qualities of teacher as well as taught were laid down. (Refer Text)

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qualities to it, but no one could persuade the physician: nevertheless, he was a good physician.

As I had brought a large supply of tobacco and pipes, I sent some to several of the nobles, while others sent to ask for some: indeed, all, without exception, wanted some, and the practice was introduced. After that the merchants began to sell it, so the custom of smoking spread rapidly. His Majesty, however, did not adopt it.

Āin-ul Mulk Hakim Shams-ud-din Ali Sherazi. He was the grandson of Jalāl-ud-din Mahmood-bin-Asad Siddiqui Dawa'i. He was born and brought up in Shiraz and had his education under the famous scholars of the time. Then he went to Mecca where he met Mirzā Aziz-ud-din who brought him to India. Akbar made him one of his courtiers. According to *Muntakhāb-ut-Tawarikh* of Badā'uni, "He bore the name Dawa'i and besides a high rank, a noble disposition."

He was a learned physician and expert surgeon. Eye diseases and eye operations were his speciality.¹¹

In AD 1563, he had the honour of treating the Emperor's shoulder wound which was caused by an arrow shot by Qutlugh Faulād, when the Emperor, after a hunt, was passing through the Chaupar Bazar riding on an elephant. Āin-ul-Mūlk extracted the arrow which had gone upto nine inches deep in the shoulder. The wound healed in a week's time.¹²

Hakim Āin-ul-Mulk Shirazi composed the following four medical works: (1) *Alfzual Adviyya*, (2) *Jam-i-ul-Atibbā*, (3) *Sabah-i-Sitta Rishidi*, and (4) *Fāwaid-ul-Insān*.

There is a Persian manuscript entitled *Zia-ul-Uyoon*, a treatise on ophthalmology by Hakim Dawa'i who was probably the Āin-ul-Mulk Sherazi.¹⁶ In this treatise, he lists as follows the qualities that are essential for a physician:

1. His body should be proportionately built. Proportionate body is the sign of moderate temperament. Often, a person of moderate temperament performs perfect actions.
2. He should be ignious because the diagnosis of eye-diseases is delicate and difficult.
3. He should have completed the course (of study) and become a master in the art of medicine by serving the aged and truthful men of the art.

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4. He should have carried out practical work while he was in their service.
5. His hands should be soft, deft and suitable for the handling of delicate operations, such as that of the panus, pterygium and cataract etc., otherwise, he will commit blunders on account of fear and lack of experience.
6. It is essential that he should be strong-minded and kind so that he may look after the body of the patient as it is his own and treat him with as much kindness as possible.
7. It is also essential for the physician not to mention the faults of patient near him.
8. The physician's dress should not be red and white in colour but it should be blue or green or yellowish black.
9. The eyes of the physician should be free from external and internal diseases, in order that he may notice the hidden diseases of the eye, such as cataract and its different kinds, and the dilatation and contraction of the eye etc.
10. He should not look with disdain at the patient who is suffering from much excess of dirt, ulcers and tears in the eye.
11. He should not treat the weak and poor people only for the sake of remuneration.
12. He should never reveal his greed before the people because the absence of greed in him will raise his prestige and he will become renowned and the public will have faith in him.
13. Of course, he may expect payment or reward for his treatment from the kings, his courtiers and the rich men.
14. But his main aim should be to restore their lost health but not gaining of the wealth for himself. For, if his aim is to make money, his treatment would not bring good result, God know better.

Āin-ul-Mulk Sherazi was a constant companion of the Emperor in the capital and during various royal tours and military campaigns. In addition to his medical duties, he also played a prominent role in various political missions and was therefore granted the rank of *Faujdarī*.

In the ninth year of Akbar's coronation, he was deputed to deliver the Emperor's injunction to Chinghiz Khān at Ahmedābād where the latter had spread much terror. The mission was successful.

In the seventeenth year of coronation, he was sent with the Emperor's conciliatory letter to Itimād Khān of Gujarāt; this was successful.

Medical Education

Before a student took up medical training, he was supposed to have been well grounded in the preparatory subjects, about which *al Malaki*¹ of al Majūsi states as follows :

If one wishes to reach the highest level of preparation for practicing medicine, he should study books of logic and the four principal branches of knowledge [the quadrivium] : arithmetic, geometry, astronomy and music. Inasmuch as logic balances our reasoning and straightens our dialectic approach and utterances and is useful in every field of knowledge, so are the four principal sciences.

Al-Zahrāwi (d.c. 1013), an eminent surgeon of the Western Kaliphate in *al-Tasrif* says that "when of age, each child should be sent to a *kuttāb* (elementary school) under the direction of a good, gentle and compassionate tutor for *Qurān* and religious teaching and the study of Arabic syntax, reading, writing and grammar. Thereafter, the child should be sent to another tutor for the learning of arithmetic and geometry, then astronomy and music. After doing well in these courses and passing the examinations, the child should study logic and philosophy. Thereafter, he should specialize in one of the other sciences such as the healing art."

It was held desirable, that a medical student should also know geometry in order he might know the shapes of wounds, "for round wounds heal with difficulty, polygonal with ease", astronomy so that he might know the lucky and unlucky quarters of the moon, and music in order that he might appreciate the subtleties of the human pulse.

A young student began his medical studies in one of the three ways. First, he apprenticed himself to a well-known practitioner; those who had a close relation, a father or an uncle in practice, usually made their studies under him. This was the method adopted in the well-known families of physicians like Bakhtishū, Qurrah and Zuhr.

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Secondly, there were the private medical schools run by eminent physicians, for example, that of Yuhannā ibn Māsawayh, al-Rāzi, Maslamah al-Majriti in Spain, Abd'al-Rahim al-Dakhwar etc. Thirdly, in schools attached to hospitals in big cities.³

As an introduction to the subject, the *Masā'il* of Hunayn, the *Mansūri* of al-Rāzi and *al-Malaki* of al-Majūsi were taught and then gradually other texts were added, for example, *Sixteen treatises of Galen*, *al-Hāwi*, *Qānūn*, *Hundred Chapters* of Abu Sahl and *Thesaurus* of Sayyid Ismail al-Jurjani.

Many of the teachers composed books specially meant for the students. Al-Majūsi, in the introduction to his *al-Malaki*, outlined eight rules to be kept in mind by the author while preparing a book. These are : -

To make clear the author's objectives and motives for writing it; to explain the benefits that can be derived from reading it; to have a title relevant to the subject matter; to spell out methods, concepts and doctrines adopted by the author; to name the author; to give the author's competence, to explain contents and validity of his writings and to have proper organization.⁴

The most important part of the training was the clinical instruction at the bed-side of the patient.

Al-Majūsi states :

And of those things which are incumbent upon the student of this art, are that he should constantly attend the hospitals and sick-houses; pay unremitting attention to the conditions and circumstances of their inmates, in company with the most acute professors of medicine and enquire frequently as to the state of patients and the symptoms apparent in them, bearing in mind what he has read about these variations, and what they indicate of good and evil. If he does this, he will reach a high degree of this art.

Therefore it behoves him, who desires to be an accomplished physician, to follow closely these injunctions, to form his character in accordance with what we have mentioned therein, and not to neglect them. If he does this, his treatment of the sick will be successful; people will have confidence in him and be favourably disposed towards him, and he will win their affection and respect and a good reputation; nor will he lack profit and advantage from them...⁵

In addition, discussions and seminars were held wherein the teachers participated. Herein, while the students who attended gained practical hints, the teachers themselves won praise or ridicule according to the knowledge they possessed.

Those who wished to practice surgery were bidden also to attend at a hospital where well-known surgeons operated, and to be constant in their reading and in their attendance at operations.

Like the surgeons, the ophthalmologists had to undergo a further examination. A certain number of physicians gave up practice and took to teaching or possibly added tutoring of the sons of their patron to their duty of treating the household. Teaching was considered a very honourable profession.

Most students from well-to-do families took up general medicine aiming at becoming physicians to a governor or a local nobleman or even to the Caliph or the Shah himself.

In medical teaching, great stress was laid on ethics. Al-Majūsi recommends to the physicians adherence to the Hippocratic Oath. He urged the physician to be honest, skilled, resourceful, kind and compassionate, to shun evil and cling to what is good. During his visits, the physician's only aim should be to relieve the patient's suffering and to care for and promote his health and general condition without divulging the patient's secrets. The physician should abstain from over-drinking, refrain from vices, and care for the sick by regular hospital visits. In doing so, he will gain a good reputation and the respect of all concerned."

Quackery

In every civilization at all times, while on the one hand, ethical and professional medicine has been practiced, on the other, unethical medicine and quackery have had their sway among the ignorant and the less-informed. This was so in the Arab empire also. Al-Rāzi and Ibn Sinā both wrote vehemently against it. Al-Rāzi noted down the various practices that the quacks performed and warned the general public against them. Writing about quacks and their practices in Baghdād, he stated :

There are so many little Arts used by Mountebanks and pretenders to physic, that an entire treatise, had I a mind to write,

would not contain them; but their imprudence, and daring boldness is equal to the guilt and inward conviction they have of tormenting and putting persons to pain in their last hours, for no reason at all.

Now some of them profer to cure the falling sickness, and thereupon make an issue in the hinder part of the head, in the form of a cross, and pretend to take something out of the opening, which they hold all the while in their hands. Others give out that they can draw snakes or lizards out of their patients' noses, which they seem to perform by putting up a pointed iron probe with which they wound the nostril until the blood comes; then they draw out the little artificial animal composed of liver etc.

Some are confident they can take out the white specks in the eye. Before they apply the instrument to that part, they put a piece of fine rag into the eye and taking it out with the instrument, pretend it is drawn immediately from the eye. Some again undertake to suck water out of the ear which they fill with a tube from their mouth and hold the other end to the ear; and so spurning the water out of their mouths, pretend it came from the ear.

Others pretend to get out worms, which grow in the ear, or roots of the teeth. Others can extract frogs from the under part of the tongue; and by lancing make an incision into which they clap in the frog and so take it out.

What shall I say of bones inserted into wounds and ulcers, which after remaining there for some time they take out again? Some, when they have taken out a stone from the bladder, persuade their patients that there is still another left; they do this for this reason to have it believed that they have taken out another.

Sometimes, they probe the bladder, being altogether ignorant and uncertain whether there be a stone or not. But if they do not find it, they pretend at least to take out one they have in readiness before, and show that to them.

Sometimes they make an incision into the anus for piles, and by repeating the operation bring it to a fistula or an ulcer, when there was neither before. Some say they take phlegm, of a substance like unto glass, out of the penis or other part of the body, by the conveyance of a pipe which they hold with water in their mouths.

Some pretend that they can contract and collect all the floating humours of the body to one place by rubbing it with winter cherries which causes a burning or inflammation; and then they expect to be rewarded as if they had cured the distemper; and

after they have supplied the place with oil, the pain presently goes off.

Some make their patients believe they have swallowed glass, so taking a feather, which they force down the throat, throw them into a vomiting which brings up the stuff they themselves had put in with that very feather. Many things of this nature do they get out, which these imposters with great dexterity have put in, tending many times to endangering the health of their patients, and often ending in the death of them.

Such counterfeits could not pass with discerning man, but that they did not dream of any fallacies, and made no doubt of the skill of those whom they employed; till at last when they suspect, or rather look more narrowly into their operations, the cheat is discovered.⁷

According to al-Rāzi

Many a quack is experienced in the treatment of a single complaint, or two or three, according to his practice, or because he has seen the treatment of an intelligent physician. Ignorant people, therefore, think that he has equal dexterity in everything and entrust themselves to him. It is a great mistake to think that because he has a genuine remedy for one complaint, he has one for all. I have myself learnt remedies from women and herbalists who had no knowledge of medicine.⁸

The following story is interesting because it contrasts the duly qualified physician and the quack. In a certain town there were two doctors—one of supreme merit and the other, although of not inconsiderable repute, little if anything more than a charlatan and quack. It chanced that the king's daughter became seriously ill. The two doctors were summoned to the palace and the king asked the first physician what he recommended. The good physician expressed his honest and capable opinion concerning the case and stated that a certain medicine contained in the imperial stores would restore the princess to health. "But," said the good doctor, "I am old and weak in sight, and I fear I could scarcely be able to find it, even were I permitted to make a search for the medicine." Then the other doctor volunteered to make the necessary search. This was permitted, with the result that, not knowing anything about the matter, he selected a drug which was a deadly poison. No sooner had the princess swallowed the draught than she dropped dead on the spot.

In consequence of this terrible result, and in full accord with the usual Eastern custom, the careless quack was compelled to drink the remainder of the drug with the inevitable sequel that he just as rapidly passed out of the picture.⁹

In his treatise *Upon the Circumstances which Turn the Head of Most Men from the Reputable Physicians*, al Rāzi lists the factors which influence people to turn away from intelligent and learned physicians and place their trust in imposters :

If he inspects the urine or feels the pulse, he is supposed to know what the patient has eaten and what he has been doing. This is lying and deception and is only brought about by trickery, by artful questions of speech through which the senses of the public are deceived. Many hire men or women to find out all the circumstances of the patient, and to report what is told by neighbours and by servants.¹⁰

Another circumstance that leads to the contempt of legitimate physicians is that many diseases are but slightly removed from the border-line of health and are thus difficult to recognize and cure, whereas highly serious ones may externally appear trivial. When a layman with a border-line sickness sees that a physician is in doubt concerning his diagnosis or cure, he interprets such doubt as positive evidence that the physician is ignorant of even simple things and therefore will understand still less of more severe illnesses. This is a false analogy, for the symptoms of such diseases are actually less obvious because there is only slight deviation from the normal and cure is more difficult because no drastic remedies are indicated. The heart of man is further turned down from the capable physician and towards fools because the ignorant and woman sometimes succeed in curing complaints where this has not been done by the most famous physicians.¹¹

The causes are manifold : luck, opportunity etc. Sometimes the qualified physician effects an improvement which is not, however, yet visible; the patient is then placed under another doctor who rapidly brings about a cure and obtains the entire credit. If drastic measures are employed without knowledge and they are successful, their effects are plainly visible and are considered to be the result of great dexterity. If however, they are unsuitable, they kill suddenly or lead the patient into danger. The public, nevertheless, applauds the sudden and visible effects and neglects those who do not adopt such measures; it talks much of the wonderful cures and forgets or conceals the failures.

The benefits of medicine may also be lessened through the fear that even experienced physicians have for drastic measures where they forsake the usual remedies and, if the patient be a king or an eminent, well-known man, suffering from a serious hidden or doubtful complaint upon which physicians' opinions are divided, then the practitioner abandons strong remedies or even all medicine and employs foods of various kind in order to avoid the wrath of princes or the hate of mankind.

It appears that even the legitimate Arabian physicians did not at all times refrain from devious and publicity-gathering conduct. Thus, on one occasion, a man fainted in the street close to a physician of undoubted reputation. The physician, using his cane as a cudgel and summoning the bystanders to follow his example beat the sick man upon the soles of his feet and upon his body, until he was aroused somewhat. Thereupon others were encouraged and followed the physician's example. When the sick man, miraculously and finally came back to senses, everyone among the assembled praised the cleverness of the doctor.¹²

Al-Rāzi wrote that thousands of physicians, for years, have laboured on the improvement of medicine; he who reads their writings with assiduity and reflection, discovers in a short life, more than if he should actually run after the sick a thousand years. However, he cautions, that "reading does not make physician, but a critical judgment and the application of known truths to special cases" does.¹³

REFERENCES

1. *Al-Malakī*, Ch III
2. *Al-Tasrif*, second book
3. S. Hamarnah, *op.cit.* p. 56
4. *Ibid.*, p. 51
5. *Al-Malakī of al-Majūsi*, 1, 2
6. *Ibid.*, 1, 1 and 2
7. *Al-Mnsuri*, 7, 27, quoted by Elgood C., *op.cit.*, p. 252, 253
8. Quoted by Gordon B.L., *Medieval and Renaissance Medicine*, Pater Owen London, 1959, 162.
9. *Ibid.*, p. 125.
10. *Ibid.*, p. 160.
11. *Ibid.*, 160, 161.
12. *Ibid.*, p. 125.
13. *Ibid.*, p. 163.

information'. It was a specialized learning directed to the attainment of a higher state of being. So this wisdom was guarded zealously and communicated sparingly. Furthermore, possession of such a wisdom was one of the most valuable possession of a family heritage. It was passed on to the sons or to the most deserving pupil and in this way prestige of a learned family was kept intact from generation to generation.

The *Code of Manu*, *Manu Smṛti* lays down guidelines for the conduct of students as follows:⁸

An Aryan must study the whole Veda together with the *Rahasyas (Upaniṣads)*, performing at the same time various kinds of austerities and the vows prescribed by the rules [of the Veda].

In the eight years after conception, one should perform the initiation [*Upanayana*] of a Brahman; in the eleventh year after conception [that] of a Kshatriya, but in the twelfth [that] of a Vaiśya.

Having performed the [rite of] initiation, the teacher must first instruct [the pupil] in the rules of personal purification, of conduct, of the fire-worship [fire-sacrifice], and of the twilight [morning and evening] devotions.⁹

Let the Aryan who has been initiated, [daily] offer fuel in the sacred fire, beg food, sleep on the ground and do what is beneficial to his teacher, until [he performs the ceremony of] *samavartana* [the rite of returning home].

The student who has been initiated must be instructed in the performance of the vows [acts of discipline, *vrata*] and gradually learn the Veda, observing the prescribed rules.

... a student, who resides with his teacher must observe the following restrictive rules, duly controlling all his organs, in order to increase his spiritual merit.

Everyday, having bathed and being purified, he must offer libations of water to the gods, sages and manes, worship [the images of] the gods, and place fuel on [the sacred fire].

Let him abstain from honey, meat, perfumes, garlands, substances [used for] flavouring [food], women, all substances turned acid, and from doing injury to living creatures.

From anointing [his body], applying collyrium to his eyes, from the use of shoes and an umbrella (or parasol), from [sensual]

desire, anger, covetousness, dancing, singing and playing [musical instruments].

From gambling, idle disputes, backbiting and lying, from looking at and touching women and from hurting others. Let him always sleep alone.

Let him fetch a pot full of water, flowers, cow dung, earth, and *kuśa* grass, as much as may be required [by his teacher], and daily go to beg food.

He who performs the vow [of studentship] shall constantly subsist on alms [but] not eat the food of one [person only] (i.e., he will not beg always from the same house); the subsistence of a student on begged food is declared to be equal [in merit] to fasting.

Let him not pronounce the mere name of his teacher [without adding an honorific title] behind his back even, and let him not mimic his gait, speech, and deportment.

By censuring [his teacher], though justly, he will become [in his next birth] an ass; by falsely defaming him, a dog; and who lives on his teacher's substance, will become a worm, and he who is envious [of his merit] an insect.

The teacher, the father, the mother, an elder brother must not be treated with disrespect, especially by a Brahman though one may be grievously offended [by them]. The teacher is the image of Brahman, the father the image of Prajapati [the lord of created beings], the mother the image of the earth, and an elder brother the image of oneself.

Of him who gives natural birth and him who gives [the knowledge of] the Veda, the giver of the Veda is the more venerable father; for the birth for the sake of Veda [ensures] eternal [rewards] both in this [life] and death.

REFERENCES

1. *Taittirya Upaniṣad*, edited with the commentary of Śaṅkara. Arandasrama Sanskrit Series, fifth edition, Poona, 1929.
2. *Bṛhadāraṇyaka, Upaniṣad*, translated and edited by O. Bohtlingk, Leipzig, 1889.
3. *Chāndogya Upaniṣad*, translated and edited by O. Bohtlingk, Leipzig, 1889.
4. *Muṇḍaka Upaniṣad*, I. 1. 3.

PROFESSIONAL ETHICS IN ANCIENT INDIAN MEDICINE¹

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In all ancient civilisations, the medical man enjoyed an exalted position. His superior knowledge, moral behaviour, and sympathetic service made him an indispensable personality. At the royal court he was the king's preceptor, minister, friend and guide, all in one. In the society he was the leader, who could advise and guide the people to prosperity and happiness. In all these activities, he acquitted himself worthily because his science had taught him to live nobly and serve all beings with kindness and compassion. Ancient medical systems of almost every country and clan had formulated their own ethical code—a set of rules of right conduct. These were in turn based upon philosophical and religious beliefs, customs, traditions—etc. Every scientific doctrine had a silver lining of philosophy and this philosophy shaped the ancient physicians into efficient healers, good administrators and more than all—ideal men. They were more divine than human in their quality and conduct, attaining even Godhood in real life.

With the emergence of 'scientific medicine' in Europe, as an after effect of the Renaissance, a great change took place. The philosophical fever of ancient medicine and other sciences came to be considered as irrelevant, useless and as hindrance to progress. Science soon parted company with ethics and philosophy with the hope

that the benefits shall be greater and more valuable than ever before.

But contrary to expectation, the results of this divorce were more to the degradation of man. Cheap materialism replaced noble spiritualism, money dislodged morality, and ethical codes became deadwood. However wonderful the technological progress and its benefits, they had not brought peace and happiness to the human heart. Scientists forgetting the higher values of life have begun to aspire for immediate material gains. Compassion for all beings, sympathetic service to the needy, and many more such humane qualities which the ancients valued most have been cast to the winds.

The modern medical man who has studied the scientific benefit of philosophy is slowly becoming a poor caricature of a 'healer'.

Recent surveys of crime carried out in some advanced nations have revealed a shocking fact, that the medical men are on the upper rung of the crime ladder, with high percentage of alcoholics, killer drivers, adulterers and what not. From the rank of the Grand Vazir to that of a criminal, from philosopher to sinner it is a great fall indeed, a slow but inevitable fall from the Olympian heights to pacific depths.

Should this degradation be allowed further to tarnish the high ideals of medical

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examination. The pupil and the preceptor, then, swore before the sacred fire, the former to submit wholeheartedly to the master and the latter to teach the pupil to the best of his knowledge, lest evil may befall him. The pupil stayed with the teacher under the same roof and learnt the science. Theoretical and practical training were given; the student followed the teacher to the forest in search of herbs, to the sick man's house to study diseases and their treatment and to the wide world to learn etiquette and manners. The teacher-student relationship was intimate and affectionate, yet rigid and disciplined. Paternal care combined with the watchful eye, moral and noble behaviour of the teacher moulded the novice into an efficient physician, an ideal man and a model for others in the society.

Ethics of Professional Conduct:

Having taught the science thoroughly, the teacher administered an Anushasana oath to the disciple, which contained many dos and don'ts to be followed strictly during his professional career. Charaka Samhita contains one such Anushasana—the *Atreya Anushasana* - (7th Cent. B. C.) predating the famous Hippocratic oath by two centuries. This oath not only bears valid testimony to the high level of professional ethics in ancient India but stands preeminently suitable for universal adoption by present day medicine.

The oath can be summarised thus:

If thou desireth success, wealth and fame as a physician in this life and heaven after your death,

1) thou shall pray for the welfare of all creatures; day and night thou shall endeavour to relieve their suffering with all thy heart and soul,

2) thou shall not injure nor desert thy patient even for the sake of thine own life or living,

3) thou shall enter the patients house after due permission accompanied by a person known to him, bent of head and shall conduct thyself with utmost care and caution,

4) once inside the house thou shall devote thy senses, mind and speech entirely to the patient, his ailments and things concerning him but shall not let them go astray,

5) thou shall keep all information about the patient secret and shall not offend him by revealing it to others,

6) even if the patient's life were closing up, thou shall not announce it either to him or to his relatives in a manner as would injure their feelings.

7) no offering of any kind, reward, present, catables, etc., shall be accepted by thee without the permission of the head of the family especially from the ladies with the knowledge and consent of their masters,

8) thou shall conduct thyself dignified, respect the traditions and customs of the house, speak moderately, gently and rightly,

9) listen to and act suitably even to others, if it be for the benefit of the patient,

10) boast not thy knowledge though possessing it,

11) thou shall be clean and modest in thy attire and appearance,

12) thou shall not commit adultery even in thought,

13) thou shall not covet others' possessions, and shall exercise restraint on thy desires,

14) thou shall not associate with sinners, drunkards, criminals and the mean nor shall act as their abettor,

15) reside not in places of ill-repute nor visit them.

16) harbour not jealousy towards elders, other physicians and respectables; regard them, consult them at times of doubt,

It is not merely to restore health and promote health and natural strength. He who bestows health and relieves the pain is worthy of every kind of worship and all the fruits of righteousness shall accrue to him.

22) Physician by relieving the suffering obtains heaven without performing sacrifices.

23) Practising the profession on the principles of philosophy of life, looking after the health of the deserving and the needy, showing kindness and compassion to all beings is the *Dharma* for the medical man: accepting from the rich just enough money to meet the minimum needs, his life and dependents is the *Artha*; respecting the elders, scholars, professional brethren and nobles and receiving honours from them, winning the love and affection of all by sympathetic service is the *Kama*; by practising thus the physician is sure to attain salvation *Moksha*.

Ayurveda further envisages that the medical man should spend the last years of his life in the pursuit of emancipation: to prepare himself to reach heaven. He is advised to gradually minimise contact with society, devote all his time to study and teaching, practice yoga, conquer his mind and senses, concentrate on higher goal, cut once just enough to sustain life, pray for the well being of all creatures, not to be carried away by desires and emotions, and lead a simple but noble living like the sages of yore.

It should not be used as a commodity, but should be used as a service.

It is a quadri-faceted, comprehensive care and attention to the patient and the physician (C. S. 1/9-26)

It is a merchandise and casting away

This is how Bharadvaji, Atreya, Agniveeda, Divodasa, Sushruta, Charaka, Nagarjuna and Vagbhata lived in India. So did Inhotep, Akhetamenon, Hippocrates, Avicenna, Celani and Galen. Great men of medicine of present times like Pavlov, Osler, Schweitzer, Carrel, were - equally philosopher scientists who substantiated the ancient truth that sciences should merge with ethics and philosophy to bring peace and happiness to man. It is strict adherence to medical ethics that can make an efficient physician, an ideal man as well.

Modern medical education shall certainly derive benefit by incorporating ancient Indian wisdom to achieve ideal relationships between the teacher and the pupil, physician and patient, physician and society and above all science and life.

REFERENCES

1. Charaka Samhita (C. S.) Ed. Jadavaji Triumbei Acharya Nirnayasagar Press, Bombay-1941.
2. Sushruta Samhita Ed. (S. S.) Jadavaji Triumbei Acharya Nirnayasagar Press, Bombay-1931.
3. Asthanga Hridaya (A. S. H.) - Ed. Annamoreswar Kunte Harishastri Paralkar, Nirnayasagar Press, Bombay-1939.
4. Charaka Samhita (C. S.) English Translation - Vol I. P. M. Mehta et al. Gulab Kunverba Ayurvedic Society Jamnagar 1949.
5. Surgical Ethics in Ayurveda - G. D. Singhal B. U. at Banaras-1971.

Rao, M. N. — History of Public Health in India. Published by M. S. Rao, Kankinada, Andhra Pradesh, 1960.

Reddy, D. V. S. — Glimpses of Medicine in the age of Ramayana, Indian Medical Research Vol. 43, No. 1, 1943.

Reddy, D. V. S. — Glimpses of Health and Medicine in Mauryan Empire. Osmania University, Hyderabad, India, 1956.

Reddy, D. V. S. — Western Epitomes of Indian Medicine. Osmania University, Hyderabad, 1965.

Report of Simon Commission, Government of India, 1930.

Report of Simon Commission of Whitley Commission, Government of India, 1930.

Report of Simon Commission, — of the Sanitary Commissioner with Government of India 1964 onwards. Government of India Press, Calcutta.

Sand. René — Advances in Social Hygiene. Staples Press London, 1957.

Seal, S. C. — Text Book of Preventive and Social Medicine, Allied Agency, Calcutta, 1971.

Seal, S. C. — History of Medical Education in India. Indian Journal of Public Health Inaugural Issue, Indian Public Health Association, 1956, Calcutta.

Seal, S. C. — Health of India Souvenir, Indian Public Health Association, Calcutta, 1956.

Sigerist, Henry E. — A History of Medicine, Volume II, Oxford University Press, Oxford, 1961.

Sigerist, Henry E. — Medicine and Human Welfare, Yale University Press, Yale, New Haven, 1941.

Sinha, K. P. — Mahabharat the Great Indian Epic. Calcutta, 1929.

Smith, V. A. — Asoka the Buddhist Emperor of India. Oxford University Press, Oxford, 1909.

Shyamasastry, R. — Kautilyas Arthashastra, 2nd Edition. Translated by Wesleyan Press, Madras, 1923.

Tewari, T. R. — Contributory Health Service Scheme, Government of India. Souvenir XIVth World Health Assembly, Swasth Hind, New Delhi, 1961.

Wilder, Alexander — A Brief Outline of Medical History referred by D. V. S. Reddy in his book on "Western Epitomes of Indian Medicine, Osmania Medical College, Hyderabad, 1966.

World Health Organisation — First Ten Years' Report, WHO Geneva.

Yoga System of Patanjali — English Translation by J. H. Wood, Harvard Medical Centre, Cambridge, Mass, 1914.

REFERENCES:

- (1) Henry E. Siegrist - Report of the Health Survey and Development Committee (Bhore Committee)
Vol III - Appendix 47. page 209/212/
- (2) S.L. Bhatia 1977 - A history of medicine with special reference to the orient. - Preface p viii-ix.
- (3) O.P. Jaggi 1981 - Medicine in Medieval India (History of Science & Technology in India Vol. 8) - p 98
- the advent of Unani Medicine in India.
- (4) S.L. Bhatia - The Medical Heritage of India. p.2
- (5) O.P. Jaggi - INDIAN SYSTEM OF MEDICINE - Vol IV
- (6) O.P. Jaggi - SCIENCE IN ANCIENT INDIA Vol II ^{p-86}
_{p-3}
p-152.

(7) History of Medical Teaching in India from the Pre-literacy Period up to Modern Times .. Dr. J.N. Banerjee
The Indian Journal Of Medical Education Jan 1966 Vol. V No. 2

(8) Dr.S.C. Seal A Short History of Public Health in India
Indian Journal Of History of Medicine Vol XVI Dec 1971 No.2

(9) Towards Social Relevance Dr. Ravi Narayan

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- X The oath of initiation Chakke-Santak
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- ③ Ethics of professional conduct From Ayurvedic literature (T)
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- ④ Qualities of a Physician Sankhi (T)
 Zia-ul-Uloom (Uloom) - Urdu Text (T)
- ⑤ Instructor vs students (T)

4. Lessons from History

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LESSONS FROM HISTORY AND CULTURE:

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LESSONS FROM HISTORY, CULTURE, AND TRADITION

Culture and Tradition reflect the stronger and persistent influences of the past on human behaviour. They could help understand the present better and provide pointers for the future.

"The history of medicine is both history and medicine. It is a historical discipline like the history of art or the history of philosophy. It helps to give us a more complete picture of the history of civilization, because it is obviously not unimportant to know what diseases affected the people in the past, what they did ^{not} protect and restore their health and what thoughts guided their action.

But the history of medicine is also medicine. By analysing developments and trends it permits us to understand a situation more clearly and to act more intelligently. We all know that success or failure of our medical work depend not only on the scientific knowledge we possess but also on a great variety of other non-medical factors, on economic, social religious, philosophical, political factors that are the result of historical developments. Unless we are aware of them and understand them many of our efforts will be wasted".

Siegrist

History provides an essentially broad-based perspective to any branch of study. The progress of Medical history is seen to pass through the following phases :

- the mendicants accompanying the wandering tribes,
- its initial association with religion and magic,
- its evolution with development of Philosophical thought and the rise of new faiths,
- its written history compiled in extracts of the Vedas,
- the evolution into formalised systems like Ayurveda and Siddha,
- the introduction of Unani or the Islamic system of medicine with the early muslim conquerors, and
- the coming of the Europeans to India with the European system of medicine.

When our medical heritage is looked at dispassionately and critically - not to prove a point or pat ourselves on the back - it is an invaluable teacher. One can learn the dynamic process of development with all its economic, social, political, religious and philosophical implications, and appreciate the role of medicine and health in this milieu.

Supportive to page (1)

- ✓ a) Siegrist's article - Bhoré committee report - (complete article)
Vol III Appx 47.
- ✓ b) History of Med. teaching in India from the Pre-litarcy period up to Modern times (whole article)
- Dr. J.N. Banerjee - IJME Jan 66 Vol V no. 2
- c) A history of Medicine with special reference to the orient. - S.L. Bhatia
Preface - page viii & ix - to be crossed.
p-4 "Religion & Magic" para to be typed out.
- d) Medicine in Medieval India. OP. JAGGI.
(History of Science & Technology in India Vol-8.
p-98 "The advent of Unani Medicine in India"
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No. 2

A Short History of Public Health in India

by

Dr. S. C. SEAL*

1. Early History

Prior to the advent of the British the modern system of medicine was not known in India but the idea of public health even in its present connotation was not absent in the country, for the concept of health is as old as the Vedas (6000 B.C.), one of its important component being Ayurveda. At this time, the causes of disease being little known or mysterious, the emphasis was on the maintenance of health and prevention of disease and so evolved one of the best treatises in Hygiene ever written namely, Manu's Laws of Personal and Community Hygiene. These laws had the religious sanction and were therefore widely practised and were handed down from generation to generation ever since. It was the Hindu philosophers who realized that for the emancipation of the soul that reside in the body, both body and mind should be kept in perfect healthy condition. According to them the ideal mode of living was to devote oneself to the preservation and promotion of health in which nutrition, evacuation, exercise and rest were perfectly balanced. It was, however, a regimen for individual health taking age, sex, constitution and seasons into careful consideration.

Sigrist in his Clarke lecture in 1952 observed "Hygiene played a very important part in antiquity, at least among the upper leisure classes." Another origin of the concept of hygiene is to be sought in ancient culture. "Whosoever entered the temple of God was to be clean. He had to be cleanly dressed in spotless clothing." Similarly it was declared that individuals became unclean during menstruation, child birth, by contact with a dead body or by having a disease like leprosy. Thus "we see that the concept of *contaminatio* was religious long before it was medical. It had great hygienic consequences: forcing people to be clean physically."

The Ayurvedic System:

Although the early beginnings of Ayurveda is shrouded in the mist of antiquity the development of this system was coeval with the evolution of the Indian civilization and culture. Thus leaving aside its legendary origin this system had already attained a high stage of develop-

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ment during the period of Panarava Atreya (1500 B. C.) when knowledge flowing from different specialised fields of fundamental and applied sciences were already integrated, generalized and principles enunciated. This the concept of man in its entirety—physical, chemical, biological including psychological and spiritual, that composes him—became the basis for study of medicine, and by this time the medical science had already developed eight specialized branches namely: (1) Internal medicine (Kayachikitsa); (2) Paediatrics (Kaumarabhritya); (3) Psychotherapy (Bautavidya); (4) Oto-rhino-laryngology (Shalakyā tantra or Urdhanga chikitsa) (5) General Surgery (Shalya chikitsa); (6) Toxicology (Agada tantra); (7) Rejuvenation and Geriatrics (Rasayana); and (8) Science of Virility (Vajikarana).

A good training on basic subjects such as, anatomy including dissection and physiology (Sharira vrtti), etiology (koti), pathogenesis and pathology (Vyadhi), therapeutics (Karma), Objectives (Karya), climatology (Kala) pharmacology (Karma), medical and surgical procedure (Vidhi), and qualifications and equipments of physicians (Kartu) formed the essential ingredients of the study and practice of medicine. In common with the philosophy of natural sciences—Samkhya, Yoga, Nyaya and Vaisheshika—the study of Ayurveda also was based on rigid scientific methodology represented by Pratyaksha or direct observation, Anumana or tasting of the validity of observed fact with instrumentality of induction and deduction, Yukti or analysis of the outcome of Anumana with reasoning and lastly Aptopadesha or testimony of experts and also the utilization of statistics and Pramana (evidence) to determine truthful knowledge.

The Yogic System:

The yogic system of India handed down from Patanjali's Yoga sutra was meant for production and maintenance of both physical and mental health. It has stood the test of time and is being successfully revived now in many parts of the world.

Paediatrics in India:

India had the first manuscript on the management of children many years before the birth of Christ. Kashyapa Tantra had a chapter on Kaumara Bhritya i. e., service to children. This is perhaps the first record of paediatrics anywhere in the world. This was followed by Sushruta who wrote a chapter of Kaumata Bhritya in the second century A. D. about the time Soraneus in Greece wrote his treatise.

From the history of medicine by Max Neuburger Playfair (1910) referred to the definition of health given by the Indian treatise as "Health is an expression of a normal composition of and a normal quantitative relation in the elementary substances, if these or the primary constituents are deranged, abnormally increased or decreased disease ensues," and that of Disease as "due to natural causes such as faulty mode of life, or nourishment, climate and weather, psychical affection heredity, poison, plagues, or supernatural influences like wrath of God, or demons and Karma (errors in previous existence)." It is thus seen that long before Hippocrates, the naturalistic origin of disease was conceived by the Indian sages except that it was partially vitiated by the inclusion of supernatural influences and karma. In Max Neuburger's language, "The medicine in India, if it does not equal the best achievements of the race, at least nearly approaches them and owing to the wealth of knowledge, depth of speculation and systematic construction, takes an outstanding position in the history of oriental medicine."

In the treatment with drugs and non hygienic rules to the exercise, rest sex is religious grounds a ger, three distinct ones, namely, (i) Vedic—between 10th and 1 and dating perhaps 731 hymns, prayers, ing, worms, and all fear, recovery of vi child and relief, fro

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In the treatment of diseases hygiene and diet were considered at least of equal importance with drugs and more strictly therapeutic measures. Assiduous personal cleanliness and social hygiene rules to the smallest details such as, the type of food to be consumed, regulation of drinks, exercise, rest sex habits, clearance of bowels and prophylactic measures were advocated on religious grounds and religion and medicine were in complete accord. (According to Nauburger, three distinct epochs of Medicine could be discerned before the advent of the western system namely, (i) Vedic—upto 800 B. C.; (ii) Brahministic—in the middle ages; and (iii) Arabic—between 10th and 17th centuries. Atharva Veda which deals with Ayurveda (science of living), and dating perhaps earlier than 1200 B. C. is a source of archaic medical history. It contains 731 hymns, prayers, incantations or chantings to protect people from scabies, withered lightning, worms, and all other kinds of diseases, to provide for the welfare and long life, freedom from fear, recovery of virility, love of girl and husband, fecundity, successful pregnancy and a male child and relief, from insanity and other diseases.)

2. Sanitation and Community Health

As to the community health the idea of sanitation and cleanliness for the maintenance of health also developed very early in India, as revealed by the archaeological excavations of Mohenjo Daro (Sind) and Harappa (Montgomery) in the Indus valley as far back as 3000 B. C. These planned cities had well-laid out streets, 30-40 ft. wide, supplied by feeder streets, by lanes and cleaned by house and underground drains. A large number of houses had wells, bath rooms, soak-pits etc. and latrines were fairly common. There was a public bath with many rooms, platforms, staircases and swimming pool. Houses were provided with windows for ventilation. There were well-laid markets and granaries. In short, there was some sort of municipal administration, a system which continued to exist in the old cities and towns in India, e. g., Varanashi, Ujjain, Prayag, Ayodhya and others. (The period between 1400 and 1000 B. C. is considered to be the era of literary lore and Hindu Medicine. The Ayurveda dealt with compatibility of males and females in marriage, division of life span into four distinct periods namely, childhood (Balya-wastha) youth (Yuvavastha) or active age, retiring age (Proubhavastha) and old age (Vridhha-wastha) and rules to guide the healthy growth of an individual. Emphasis was laid on normal and mental health. Nani Samhita prescribed rules and regulations for personal health (Brahma-charyya), dietetics and maternity through the creation of delivery huts (Atorpiha), natal and postnatal practices. He also laid down rules of public health (Community hygiene) and also prescribed punishment for infringement of rules except by old persons, pregnant mothers and infants who were only to be reprimanded. Manu's regulations also threw light upon the ethics of ritualistic purity and among persons to be avoided during offerings to God were physicians (presumably because they handled infected patients) and any one suffering from elephantiasis, epilepsy or leprosy.)

3. Epics and Puranas

The two great epics of India—the Ramayana and the Mahabharata, also give advice, instructions and injunctions necessary for the maintenance of public health and sanitation. In Shanti Parva it is stated that the king should protect the kingdom by employing 72 kinds of treatment for the body. In Valmiki's Ramayana Rama enquires of Bharata whether he is protecting and supporting children and the aged people, mothers and physicians.

The Hindu Medicine reached its peak during the period between 600 B. C. and 200 A. D. Buddhism and Jainism predominated over Brahminism and the religious preachings included the

ment of providing food, medicine and nursing to the sick and the sufferers. It is during this period that medical education was introduced in Taxilla and Nalanda leading to the title of *Bracharyya* and *Pranavisharad*. Restrictions over medical oaths, binding the students to the rules of personal hygiene, prevention of transmission of infection and obligations to teachers and patients of both sexes were enforced.

4. Public Health in Mauryan Empire

The first great empire in India was born only in the 4th century B. C.—the Mauryan State—as a vast centralized state run on dictatorship. We know about this state from (i) fragments of ancient Greek treatise on India; (ii) *Arthashastra* of Kautilya, and (iii) testimony of the edicts of Asoka and contemporary Buddhist literature. Megasthenes who was sent by Seleucus as ambassador to the Court of Chandragupta Maurya gave a description of the healing art as it was taught and practised. In his version the learned men belonging to the highest caste were guardians of public health, and next in honour to ascetic teachers stood the physicians who applied philosophy to study the entire man and cured diseases by diet rather than by medicine. They forewarned the multitudes at the beginning of each year about weather, epidemics and forecasting of rains, diseases and future. Megasthenes also refers to six committees in charge of the cities, one of which was in charge foreigners whom they were ill and sent physicians to attend them. Another concerned itself with births and deaths (vital statistics) and a third one to antenatal care given to the pregnant women who were placed under the care of old and learned men. Thus social and preventive medicine in some form was in actual practice at the time, which the modern physician has yet to learn.

5. Kautilya Arthashastra

It is interesting to note that Kautilya in his *Arthashastra* gave not only elaborate details regarding the principles of hygiene for the royalty and royal household (baths, dressing, toilet, mental and social hygiene, eugenics, royal kitchen, domestic hygiene, sick room and labour room etc.) but also laid down rules and regulations that can now be grouped under the heading "Health and welfare of the common people." There were orphanages where food was given and children were educated, infirmaries and poor houses for the aged, the infirm and the afflicted. *Nursus* (*Matrikas*) were appointed from amongst slaves, labourers and old prostitutes (Book II, Ch. 27). Work was provided for widows, cripples and old women. The health of the workers was protected, child labour was discouraged and provision was made for maternity benefits to female slaves and labourers. Full facilities, concessions and aids were afforded during confinement of needy pregnant women, and their infants were carefully nursed. Drugs were well classified and preserved in a herbarium and cultivation of drugs was encouraged.

There were also good arrangements for promoting general sanitation by providing pure water, drains for houses and employment of scavengers for sweeping the thoroughfares of the city. There were strict rules and regulations for prevention of nuisance, pollution and adulteration of food stuffs, for protection of cows and inspection of slaughter houses, for control of prostitution etc., all indicating early attempt to introduce something like the Public Health Act. There were strict rules for notification of disease and secret treatment by physician and master of the house. Punishments were prescribed for infringement of these rules. Carelessness or neglect or inefficiency on the part of the physician in the treatment was regarded as assault or violence and was punishable. Clear instructions were laid down for lay out of towns (Town

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Planning) and roads for different purposes, separation of certain quarters for specific trades and occupations and even fixing of locations for the burial and cremation grounds. Every house was to be provided with water course and a dung hill between homes, adequate intervening space was to be left and definite traditional rules for house-building. Owners of houses had to avoid whatever was injurious for health and for the public.

Kautilya also mentioned about 8 kinds of natural calamities like fire, famine, flood, epidemics, snakes, tigers and demons. The king and the State were expected to protect people against these dangers. There were strict rules to prevent fire and public buildings were provided with means of protection. During famines, the king or the state was to help his subjects to grow grains wherever water was available, permit people to hunt and fish and also supply the needy with seeds and provisions. Snakebites were very common and a separate branch of science, under the name Sarpavidya developed. Alexander was supposed to have employed such physicians for his own army. Epidemics or Maraka was also taken care of by the state. To ward off demons there were purificatory ceremonials and sacred magic by persons called Bhutavidya (doctors for removing demons).

Census Operations :

The census operation was well developed and used to be operated by Sthanik (District Officer) through Gopas (Village Officer). It compares well with modern census, the items of information collected being number of houses (tax and non tax paying), age, sex, quota, caste and occupation of persons, number of slaves, labourers, cowsheds, bined and quadruped animals.

Forensic Medicine :

There was also a high standard of medical jurisprudence (Forensic Medicine) which dealt with inheritance and disage, testamentary capacity of idiots, mopechs, deformed, lunatics, lepers, blind, deaf and dumb, lame etc., defamation and testimony of physicians, laws for teaching striking, hunting and creating wounds, for abortion and infanticide, marriage and remarriage of both male and female, divorce, adultery, marital offence including rape and bestiality, homosexuality etc. Besides these there were laws for examination of suicide deaths by postmortem examination called 'Judicial Surgery.' For all these crimes varieties of punishment were prescribed. This forensic medicine also had chapters on toxicology and poisoning and even elaborate description of chemical warfare, air-raids and incendiary attacks by employing birds.

Veterinary Medicine :

Raising of cattles was the most lucrative property in ancient times. The kings and the rich also maintained elephants, and horses which needed treatment for their ailments. So some sort of veterinary medicine also developed on the basis of empiricism and practical experience.

6. Hospital Service in India

Kautilya mentions about hospitals in India in the 4th Century B. C. i.e., before Asoka. The plan was to build hospital near the Fort which was regularly visited by the king. Privilege and concessions were given to the sick, afflicted helpless pilgrims, ascetics, labourers and also to persons suffering from hunger, thirst, deformity and disease. About this time there were physicians ranking among scientists, scholars and counsellors who were attached to the sovereign, his court

and warriors, while the ordinary subjects continued to have recourse to private physicians or healers or to priests, exorcisers or appliers of leeches. The first inspiration for organising public service was given by Gautam Buddha (5th Century B. C.) whose son Rakul and later King Asoka (3rd Century B. C.) constructed hospitals for men, women and animals for the first time in the history of the world, and also introduced nursing service long before the establishment of Christian churches and appearance of Florence Nightingale in the field. It is said that during this period the king of Ceylon appointed a public physician for every 10 villages and Buddhist monks to study medicine to practise in a charitable capacity.

Hospitals and Health Services in Buddhist India :

Hospitals and dispensaries were the first organised health service for the care of the sick in India during Buddhist era. The Buddhist literature, particularly Mahavamsa, mentioned that during the King Asoka's regime the system for the caring of the sick. Both men and cattle, had been brought into practice everywhere and at places where the useful healing herbs were wanting he caused them to be imported and cultivated, and employed medical men to give treatment.

Seven hundred years after Megasthenes Fa-Hien, a Chinese traveller visited India and found the hospital system of Asoka in full activity. "The nobles and the landholders had founded hospitals in every city," he declared. "In these the poor of all countries, the destitutes, the cripples and the diseased may repair for shelter. They receive every kind of requisite help gratuitously. Physicians inspect their disease and order for them, according to the cases, food and drink, decoctions and medicine—in fact, everything which may contribute to their benefit. When cured they depart at their own convenience."

In the year 648 A. D. another Chinese pilgrim, Hsuen-tsang visited India and found the country abounding with hospitals or "house for doing good." These houses entertained widows and orphans and distributed food, drink and medicine to the poor and the sick. Hospitality was carried out in the full sense of the term making guests of "the poor, lame, halt and blind" who could give no recompense, as well as of the sick and the injured that needed a physician.

Following this, records were very scrappy or missing. Between 101 and 77 A. D. King Dattagamin, in the First Century A. D., King Nighevasa of Kashmir, in the 4th Century A. D., King Buddhadeva and in the 7th Century A. D. King Harsha of India were known to have established hospitals with medicine, physicians and staff for providing relief to the suffering population. As mentioned earlier Hsuen-tsang and also I-tsing who visited India in the 7th Century A. D., during the glorious reign of the King Harsha, had given account of hygiene, sanitation and medical practices of the time. Since a considerable part of the Sanskrit treatise on medicine were carried away to Tibet, China and Eastern Turkistan, it is quite likely that some of the lost history relating to the development of public health in India could be reclaimed by a close search and study of the Tibetan, Chinese and Indonesian source material. During the 12th Century A. D. Parakrama Bahu opened a hospital with many hundreds of rooms and was provided with male and female attendants, good treatment and good food. Thus the few hospitals that were developed in the pre-Christian and early Christian era gave free treatment but it is not known whether a typical dispensary system was maintained as in the present day. This progress suffered a complete set back following the occupation of India by the Moslems. Health care or rather

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7. Introduction of Western Medicine :

In the early part of the 17th Century the first seed of western medicine was brought to the court of Jahangir by Sir Thomas Roe, laying the foundation of the East India Company. In the meantime western doctors also percolated into India with the Portuguese governors and a few doctors were also employed by the foreign missionaries centres and the Indian chiefs and medical advisors. But those in early employment in the court of Indian rulers were French and also Dutch, Italians or Armenian doctors. Thus the doctors trained in western medicine started to come in larger numbers when the East India Company began its empire building operations. A few also came to India for private practice and later absorbed in service. By the middle of the 18th Century the recruitment of ship's Surgeons by the East India Company led to the establishment of civil and military medical services and in turn to the training of assistants and dressers mainly to protect the health of the British army and the Europeans.

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8. Training in Western System of Medicine :

(In the early part of the 19th Century the Quarantine Act was promulgated in 1825 and the first institution for training the local inhabitants in European system of medicine was started in 1825 and was known as the Calcutta Native Medical Institute. In a small hospital with 30 beds and outdoor clinics were attached to this institute, followed by the establishment of the Calcutta Medical College in 1835 for a full-fledged training of Indians in western medicine. The same year a school was established in Madras. The other institutions that followed were the Grant Medical College, Bombay in 1845, Hyderabad Medical School in 1846, Madras Medical College in 1950 and Lahore Medical College in 1860. (For other details see " Medical Education in India " by Soal, 1956).

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9. The first seed of Public Health Administration in India on modern lines :

The first seed of Public Health Administration in India was sown in 1859 when the political administration of the country was taken over from the East India Company by the British Crown. A high death rate among the Europeans drew the attention of the British Parliament and this led to the establishment of a Royal Commission to enquire into the reasons of such heavy mortality amongst both military and civil population. This Commission in their report in 1863 suggested the appointment of a Sanitary Commission of five persons each in Bengal, Bombay and Madras. These commissioners stated their operations in 1864 in the above three Presidencies to improve the health, primarily of the military and secondarily of the civil population.) The Commission of Bengal and Madras proposed an immediate formation of Public Health Service in India, to maintain the health of the army and that of the general population by preventing epidemics, construction of drainage system and provision of water supplies. Those proposals were not made effective for several years till in 1869 a Sanitary Commissioner and a Statistical Officer were appointed by the Government of India for the Presidency Provinces as well as the North Western Provinces, Oudh, Punjab, the Central Provinces and Burma. Their duties were purely advisory.

10. Public Health Acts :

Between 1873 and 1886 several important Acts of public health bearing were passed. The Bengal Birth and Death Registration Act in 1873, followed by the Bengal Vaccination Act 1879, the first Indian Factories Act in 1881, the Bengal Municipal Act in 1884. The Local Self Government Act was promulgated in 1885 under the seal of the Late Queen Victoria. It created local bodies as the seed of autonomy to the people and the public health services were left to them as one of their responsibilities without any financial assistance. In 1886-88 the Medical Act was passed and the post of Sanitary Commissioner with the Government of India was merged with that of the Director General, Indian Medical Service. The first Pasteur Institute for the treatment of Rabies was founded at Kasauli by public donation and it started functioning from 1900. Subsequently Bacteri Institutes were established at Connor (South India) in 1907 and at Shillong, in 1917 at Calcutta and Bombay in 1924.

Plague broke out in epidemic form in different parts of India starting from Calcutta in 1896 and Bombay in 1896 causing great havoc. This revealed the utter inadequacy and deficiencies in the health organisation, and necessitated the appointment of a Plague Commission. The report of this commission in 1904 led to the revival of the office of the Sanitary Commissioner with the Government of India, an office which since 1888 had been merged with that of DGIMS. His duties were mainly to advise the Government on Sanitary matters and to direct research. The Sanitary Commissioners of the provinces were also made the Independent heads of the Public Health Department and were allowed to communicate their views directly to the Government and not through the Surgeon General or Inspector General of the province. At this time the Govt. of India had practically the full control over provincial governments in the matter of public health.

The Birth, Death and Marriage Registration Act was passed in 1896 and the Epidemic Diseases Act in 1897. By this Act of 1897 the Magistrate declares a disease rising in epidemic form and empowers the health authorities the right of entrance to any premises and to remove the patient to a hospital and to take any other measure to control the epidemic. The year 1897 is particularly notable for the epoch making discovery of mosquito as the vector of transmission of malaria by Sir Ronald Ross at Calcutta.

11. Laboratories for Medical Research :

In 1899 the Plague Research Laboratory under Dr. W. M. Haffkine was established. This Laboratory was renamed as the Bombay Bacteriological Laboratory in 1906 and finally as the Haffkine Institute in 1926.

Manufacture of drugs was the greatest handicap of India. The first pharmaceutical enterprise was founded at Calcutta in 1901 by Sir P. C. Ray in collaboration with others as a pioneering venture under the name Bengal Chemical and Pharmaceutical Works Ltd. In 1903 the second provincial Public Health Laboratory was established at Madras under the name 'The King Institute of Preventive Medicine', for bacteriological, serological and pathological work, manufacture of lymph vaccine and other immunising agents and to conduct public health laboratory tests such as examination of food, water, milk, drugs etc.

In 1904 following the report the Plague Commission the Central Research Institute, Calcutta was established to give a practical shape to the conduction of medical research in India. This

was followed by the establishment of the Central Malaria Bureau in 1909 at Karnal (Punjab) by Sir Richard Christopher. This Institute was renamed as the Central Malaria Organisation in 1921, and as the Malaria Institute of India, Delhi, in 1938 and now it has been transformed into National Institute of Communicable Diseases since 1963.

In 1911, the Indian Research Fund Association was established for the promotion of medical research in India. In 1948 this organisation was renamed as the Indian Council of Medical Research as a registered body under the Regulations of Societies Act XXI of 1860.

12. Public Health Policies Since 1912

In 1912 the Government of India created a new department to deal with Education, Health and Lands. Each province was authorised to select its own Sanitary Commissioner (later called Director of Public Health) and a Deputy Sanitary Commissioner and also a district and municipal health officer graded according to qualification. The Government of India also declared that while the general responsibilities and direction of the policy of public health must remain with the Central Government, detailed control and executive action should be left to the provincial governments. Option was also given to the provinces to decide whether these health-officers should form provincial cadre or remain under the local authorities (Municipalities and District Boards). The World War I prevented its implementation except very partially. In 1916, Indian Medical Degrees Act was passed for regulating the use of medical degrees for registration and practice. In 1917, the first pioneering venture in the production and antibacterial vaccines was started at Calcutta by the Bengal Immunity & Co. At the termination of the World War I, the national movement for granting self-government gained fresh momentum and as a result the British Government promulgated the 1919 Reforms Act which changed the situation. By this Act the Government transferred the responsibility for local medical and public health administration to the Provincial Governments. Popularly elected ministers responsible to the legislatures for the transferred subjects namely, Health, Education, Agriculture etc were keen to develop these services as much as funds permitted. Finance was, however, a reserved subject. There was some expansion of the public health activities in the provinces. The City and District Municipalities Act containing the legal provision for the advancement of Public Health under the local authorities in several provinces was passed. The quality of work suffered from the weak control of the local bodies and also due to the absence of any coordination of policies among the various provinces and the centre.

13. International Health Relations and Quarantine

The Government of India reserved the right to deal with only few matters like quarantine and pilgrim traffic outside India and international health relationship etc. However, there was very little consultation between the provinces following the above reforms and this lack of coordination of policy no doubt proved rather detrimental to the development of public health in India.

From the available records it appears that quarantine was first introduced in Bombay in September, 1800. Whole time Port Health officers for Ports of Calcutta and Bombay were appointed in 1875 and 1884 respectively. Till 1919 Port Health Organisation were under the provincial control. The Central Government, however, exercised a good deal of control over training of quarantine regulations and their practice. Although the latter took it over in 1919

under the Government of India Act 1919, the Provincial Governments continued to administer the subject on agency basis. The Central Government took over the quarantine administration of the Ports of Bombay and Calcutta in 1937, Cochin and Visakhapatnam in 1938, Madras in 1940 and Kandla in 1946. Quarantine administration of the minor ports are delegated to the respective government. That of five international air ports viz., Bombay, Calcutta, Madras, Palam and Tiruchirappalli is directly controlled by the Central Government. The Indian Air Craft (Public Health) Rules 1954 and the India Port Health Rules 1955 are based on the International Sanitary Regulation and the government of India's reservation thereto. By mutual agreement, no quarantine instructors are appointed to traffic between India and Pakistan or between India and Nepal. Special precautions are taken to prevent entry of yellow fever in India by a antimalaria measures and strict quarantine measures. Yellow fever is also a notifiable disease in all the Indian States. Regulation also demand compulsory inoculation of yellow fever vaccine for those visiting and passing through African endemic countries.

14 Special institutions and extension of health services and research :

In 1920, the School of Tropical Medicine was established by the then Government of Bengal through the efforts of Sir Leonard Rogers, an important step in the advancement of Tropical Medicine and in improving the quality of medical personnel and services. During the next five years several Acts were passed namely, the Bombay Maternity Benefit Act in 1920, the Indian Red Cross Act in 1922, the Indian Mines Act, the Cantonment Act and the Workmen's Compensation Act between 1923 and 1924, all for the welfare of the workers. In 1926 the Kalaazar Commission was established for the study of Kalaazar, an expanding disease, for finding out the mode of transmission, better treatment and control measures. In 1929, the Nutrition Research gained a firm footing in India with the establishment of the Nutrition Research Institute at Coonoor under the Indian Research Fund Association. This institution has been transferred to Hyderabad since 1960. Till 1929 there was practically no public health service worth the name for the rural areas of India which accommodate 80 percent of her population. A comprehensive rural health schemes for Bengal had been proposed by the Late C. R. Das and it was accepted by the then Government of Bengal in 1927. According to this scheme a Public Health Circle in each thana (Police Station) area was inaugurated in 1929 as the first attempt to extend public health facilities to the rural population. It provided a sanitary inspector and a medicine center mainly to control epidemics, to carry out immunisation work and to improve collection of vital statistics. The cost was met by the State Government. In Bengal, Health officers and Sanitary inspectors were also appointed in the districts and municipalities. They were employees of the local bodies although the government provided part of their salaries. But relinquishment of government control over local bodies as in Bengal during the early phase of the scheme proved unwise. In fact, in other provinces the cadre of district health officers was provincialised and the services of the latter were lent to the District Boards and subjected to transfer from the place to place. It would have been wise also for the Government of Bengal to centralise all welfare activities for a given period.

15. The Simon Commission :

One important event of 1930 was the enquiry by the Simon Commission. This Commission remarked "the results of the legislative and administrative action taken in accordance with the scheme of the reforms was in effect to deprive the Ministers of the Local Self-Government of

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powers which were essential if they were to perform their tasks successfully. We have heard the criticism that the only effective powers possessed by the Provincial Governments namely, those of suspension and dissolution, calling for less drastic treatment and we think that the criticism is well founded." It therefore recommended that whatever form of system of Government should eventuate within the next few years there should be a strong central Board of health to coordinate public health matters throughout the whole of India. The Provincial Governments were given advice and grants of money to increase staff both at the headquarters and at the periphery.)

16. Royal Commission on Labour and Drug Enquiry Committee :

(The same year (1930) the Royal Commission on Labour in India known as the Whitley Commission was appointed to advise on the measures for improvement of health and living conditions of workers. The Government of India also appointed a Drug Enquiry Committee under Col. Ram Nath Chopra to go into the question of adulterated and substandard drugs being sold in the market and to recommend ways and means to control the menace to public health.

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17. Training in Public Health :

(In 1933, the All-India Institute of Hygiene and Public Health was established for facilitating training of public health workers in India, with the aid of the International Health Division of the Rockefeller Foundation of New York.) The Indian Medical Council Act was passed the same year to standardise medical education in India and to develop reciprocity with the British Medical Council and similar councils of other countries.

18. Government of India Act, 1935 :

The Government of India, on the occasion of the Silver Jubilee of King George V granted further reforms under the Government of India Act 1935. In this Act the health activities were to be brought under three lists viz., Federal, Concurrent and Provincial (State), under the control of Central, Central cum-Provincial and Provincial Governments respectively. Only the provincial portion was operative from 1937 and the federal portion was left in abeyance. During this year several model health units were also started with the aid of the Rockefeller Foundation on experimental basis. The results obtained in this experiment formed the basis of the Shore Committee's recommendation for providing health services in the rural areas through health centres.)

In the Indian Independence Act of 1947 the same categories of classification continued and the present constitution which came into force from the 26th January 1950 retained the principles of these three lists with some changes in the general pattern of distribution of functions.

19. Other Public Health Institutions :

The same year (1937) three important institutions were started in Calcutta: (1) Bio-chemical Standardisation Laboratory was established at the All-India Institute of Hygiene and Public Health, Calcutta, as the nucleus of the Central Drugs Control Laboratory and its further expansion after the passing of the Drugs Act in 1940 and Drug Rules in 1945; (2) the Indian Institute of Medical Research was inaugurated at Calcutta with the support of eminent Indian

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National leaders such Acharya Roy, Tagore, Malavva, Raman and others as the first non-official power to make medical research institution in India. This institute was later taken over by the Council of Scientific and Industrial Research in 1950 and renamed it as the Indian Institute of Biochemistry and Experimental Medicine: (3) The Bengal Immunity Research Laboratory at the first of its kind in India was started at Calcutta with the object of conducting scientific research as applied to drug industry.

20. Central Advisory Board of Health:

In 1937, the Central Advisory Board of Health was constituted with the Public Health Commissioner as its Secretary and with representatives from the provinces and Indian Princely States as members and was vested with the function of coordinating health services in the provinces and the centre, though only in advisory capacity.

21. Comprehensive Public Health Act:

There was no comprehensive Public Health Act for the whole of India till this time. To overcome this drawback (Madras was the first province to pass the Madras Public Health Act in India in 1939. The period between 1939 and 1946 was greatly disturbed by the 1st World War which also involved India.

22. Health Survey and Development Committee (Bhore Committee):

During this period, however, an important development took place. In 1943 the Government of India appointed a Health Survey and Development Committee under the Chairmanship of Sir Joseph Bhore to prepare a future plan for health service in India. The report which is unique of its kind, was published in 1946. During the same period Professor Agharkar made an enquiry regarding the possibility of a social security plan for the people of the country. In 1940, another important advancement was made by the inauguration of the Tata Memorial Cancer Hospital in Bombay as a private venture for the treatment of Cancer cases in India which was severely lacking.

23. Environmental Hygiene Committee, Employees' State Insurance and other Acts:

In 1947 India attained independence. This year the Asian Labour Conference was held at Delhi which passed a resolution to establish social security service as an essential condition for building up a democratic society. The Indian Nursing Council Act was passed and the Biochemical Standardisation Laboratory was converted into Central Drugs Control Laboratory. In 1948, the Employees' State Insurance Act was passed by the Central Government and the report of the Environmental Hygiene Committee under the Late Dr. B. C. Dasgupta as Chairman was published. The Indian Pharmacy Act and the Dentists' Act were also passed. In the same year the World Health Organisation came into existence and produced the Magna Charta for Health, with India joining as a member State.

24. Indian Constituent Assembly:

The Indian Constituent Assembly adopted the Constitution for India on the 26th November 1949. According to the Article 246 of the Constitution 3 lists namely List I (Union) List II (State) and List III (Concurrent) were made out covering all health subjects among other things.

power to make Laws on any health subject included in the Union list was vested in the Council of Ministers, the State List in the legislatures and the concurrent in the Parliament and State legislatures.

The Article 41 of the Constitution declares "The State shall within the limit of its economic capacity and development make effective provision for securing the right to work, to education and to people's assistance in case of unemployment, old age, sickness and disablement and in other cases of undeserved want."

The Article 42 of the Constitution declares "The State shall make provisions for securing just and humane condition of work and for maternity relief."

25. WHO Regional Office at New Delhi:

In 1949 New Delhi was selected as the Centre for establishing the WHO Regional office for the South East Asian Countries, which facilitated direct communication with WHO on health problems and assistance needed for the purpose. The next year the Planning Commission was set up by the Government of India and the Central Food Technological Institute was established at Mysore to deal with the different aspects of food science and food technology. In 1951 the Central Drug Research Institute, the first of its kind in India, was opened at Lucknow (U.P.) under the administrative control of the Council of Scientific and Industrial Research.

26. Central Council of Health & Planning Commission:

To facilitate coordination of health policies between the Central and the State Governments the Central Council of Health was statutorily constituted in 1952 with the Union Minister for Health as Chairman and the Health Ministers of the States as its members. They meet at least once a year. The resolutions which are of advisory nature are communicated to the Central and State Governments for implementation and new plans are prepared and are submitted to the Planning Commission for inclusion into the Five Year Plans.

27. Five Year Plans and Rural Health Services:

The operations of the Employees' State Insurance Scheme was started in Delhi and Kanpur in 1952 and in the same year the first Five Year Plan was presented to Parliament by the Prime Minister and the Rural Community Development Programme was started all over the country. This was followed by non-intensive drive for covering the entire community with rural health centres under the name Primary Health Centre, to be reinforced by at least 3 sub-sidiary health centres, under each C.D.P. unit. One of the deficiencies in India was the absence of facilities for intensive virus research work. This gap was filled in 1952 by establishment of the Virus Research Centre at Poona under the joint auspices of the Indian Council of Medical Research and the Rockefeller Foundation of New York. Also the first Indian Cancer Research centre was inaugurated in December of this year at Bombay at the Tata Cancer Hospital, mentioned earlier.

28. Other Developments:

In 1953 the Model Public Health Act Committee was appointed by the Union Ministry of Health to draw up a model comprehensive Public Health Act to bring together all the existing legal provisions and enactments and also to add new provisions including the recommendations of

the Environmental Hygiene Committee for better and more effective public health administration all throughout the country. The following other programmes were also started during the year namely, the National Extension Service Programme, the Rural Health Service Scheme to provide integrated health services in the rural areas and the National Malaria and Typhoid Control programme. The Family Planning Research Programme Committee was also formed and the Central Institute for Research in Indigenous system of Medicine was established at Jamnagar by the Government of India during this year.

29. Contributory Health Service Scheme :

In 1954 the Contributory Health Service Scheme (later known as the Central Government Health Service) was instituted for all Government employees and their families in Delhi and New Delhi areas. The All India Institute of Mental Health was inaugurated by Raj Kumari Amrit Kaur at Mysore for improvement of mental health in India. In 1955 the Food and Drug Adulteration Act came into force and the Central Leprosy Teaching and Research Institute comprising the Lady Willingdon Leprosy Sanatorium at Tirumani and the Silver Jubilee Children's Clinic at Saidapet was established by the Government of India at Chingleput, Madras.

30. Central Health Education Bureau and Indian Public Health Association :

In 1956 the report of the Model Public Health Act Committee was published for circulation and obtaining opinion of the States and for final approval of the Parliament. But this has not so far materialized. The same year for fulfilment of the objectives of social medicine the Union Ministry of Health established the Central Health Education Bureau at New Delhi with charges for establishing health museums, film strip production and training in health education etc. for the advancement of the public health in India in its various aspects including public health education. Indian Public Health Association was inaugurated at Calcutta by the Union Health Minister Raj Kumari Amrit Kaur in September, 1956.

31. Indigenous systems of Medicine and Mudaliar Committee :

In 1957 the Government of India appointed an advisor for the Indigenous system of Medicine in the Central Ministry of Health and constituted Advisory Committee on Ayurvedic, Unani and Homeopathic medicines to advise the Government on research schemes and other matters related to the development of the above systems. In 1959 the Central Health Service Scheme for Medical personnel was sanctioned by the Government after the approval of the Parliament. A second Health Survey and Development Committee was formed under the Chairmanship of Sir Lakshmanaswami Mudaliar to review and report on the health services and health planning in India. This report was published in 1963.

32. Central Bureau of Health Intelligence, Family Planning and Expansion of Central Health Ministry :

In 1961 the Central Bureau of Health Intelligence was established in the Directorate General of Health Services, New Delhi to collect and disseminate all types of health objectives in the country and to prepare the annual reports. Between the years 1956 and 1966 the Central Ministry of Health and Family Planning started several field projects of Urban Community Development a counterpart of the Rural C. D. Projects in different States in India. In 1968, the Union

Ministry of Health was renamed as the Central Ministry of Health, Family Planning, Works, Housing and Urban Development with necessary expansion of functions and cabinet ranking of the Minister-in-charge. During this year three regional centres at Lucknow, Bombay and Calcutta were established for the first time for training in Urban (Municipal) Administration. In 1969 the following items of works were transferred to this Ministry.

1. Urban Development including slum clearance schemes.
2. Town and country planning and matters relating to the Calcutta Metropolitan Planning Organisation.
3. Scheme of large scale acquisition, development and disposal of land in Delhi, and Delhi Development authority, Improvement Trusts, Metropolitan of Delhi and Co-ordination of Work in respect of the master plan.
4. Administration of Delhi Development Act 1957.

33. Indian Medical and Health Services :

During the same year the Ministry of Home Affairs notified that the Indian Medical and Health Services had been constituted with effect from February 1969 along with rules for recruitment in the service. Only the senior categories of personnel in the Central Health Services would be absorbed and would also include all medical and public health posts at the district level and above under the State Government, and similar posts under the Central Government besides a small number of junior level posts.

The above accounts of the development of health activities in India do not record developments of public and private hospitals, dispensaries, clinics, sanatoria, nursing and maternity homes, now numbering several thousands, as well as of the colleges and institutions. Some of these and the list of international organisations providing assistance to health work in India have been described in a separate chapter of the book entitled "Public Health Administration in India" by the author.

BIBLIOGRAPHY

Achar, S. T. — Paediatrics in India. Souvenir, XIVth World Health Assembly, Swastha Hind, New Delhi. 1961.

Archaeological Survey of India — Annual Reports 1923—24 to 1928 - 29 Government of India Press, New Delhi.

Banerjee, D. N. — Antiquity of Hindu and Greek Medicine, Medical Bureau, Calcutta, 1941.

Bhore, Sir Joseph — Report of Health Survey and Development Committee Government of India Press, New Delhi, 1946.

Buller, G. — The Laws of Menu. Clarendon Press, Oxford, 1936.

Centenary of the Medical College of Bengal (1834—1934). Calcutta Medical College, 1935.

- Central Advisory Board of Health — Publication Division, Government of India, 1941.
- Chopra, Sir B. N. — Report of the Drug Enquiry Committee, Government of India Press, 1935.
- Constitution of India — Publication Division, Government of India, 1952.
- Chattopadhyaya, S. C. — *Charitra Chikitsa O Sanskriti*, Columbia University Press, 1900.
- Dasgupta, B. C. — Report of Environmental Hygiene Committee, Oct. 1949. Government of India Press Simla, 1950.
- Dasgupta B. C. — Report of the Committee for Drafting Model Public Health Act, 1955. Arjuna Press, New Delhi.
- Datta, P. C. — Medical Relief in India. D. M. Library, Calcutta, 1946.
- Datta, P. C. — Social Medicine — D. M. Library, Calcutta, 1948.
- Dwarkanath, C. — Indian System of Medicine. Souvenir XIVth World Health Assembly, Swasth Hind, New Delhi, 1961.
- Employer's State Insurance Scheme — Report of the E. S. I. corporation, 1952.
- Family Planning — First Report, Government of India Press, New Delhi, 1956.
- MacKay, E. — Early Indian Civilization, 2nd Edition, London, 1943.
- Madras Public Health Act — 1939. Government of Madras, 1940.
- Masander, H. C. Pancher, B. D. — *Vedic Aqs*, London, 1951.
- Blair Hutton, E. — *The Sacred Books of the East* — Gautham & Apastamba. Translated by Chanchala Press, Osnard, 1942.
- Meddialar, Sir Lakshmaneswami — Report of the Second Health Survey and Development Committee, Government of India, 1961.
- Mahua, R. — Report of the Indian Plague Commission Part I. Government of India Press, Simla, 1898.
- Pandit, C. G. — Medical Research in India. Souvenir, XIVth World Health Assembly. Swasth Hind, New Delhi, 1961.
- Playfair, Ernest — Translation of History of Medicine by Max Neuburger. Referred by D. V. S. Reddy in his book on "Westen Epitomes of Indian Medicine. Osmania Medical College, Hyderabad, 1966.
- Proceedings of the World Health Assembly — 1948, World Health Organisation, Geneva. of the XIVth World Health Assembly, W. H. O., Geneva.

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* THE MEDICAL HERITAGE OF INDIA *
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by S. H.

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As we look back and make a careful study of the past cultural achievements of our country, we realise how fortunate we are in having such a splendid heritage, a heritage which is so broad based, that it covers a vast field of human thought and a speculation, including religion, philosophy, literature, Science and Medicine. The study of Indian history and culture is of great importance. It should be a part of the equipment of all our educated alumni. We should be aware of our cultural heritage. Today we shall confine ourselves to the consideration of our Medical Heritage.

The Science of Medicine, like other Sciences, was carried to a very high degree of perfection by the ancient Hindus. Their great powers of observation, generalisation and analysis combined with patient labour in a country of boundless resources, whose fertility for herbs and plants is remarkable, placed them in an exceptionally favourable position to prosecute their studies of Medicine.

The Ayurveda, or the Science of Life, is the oldest system of Medicine in the world. The study of its history is rather difficult, as there is lack of information regarding dates, places and authorship etc. India, unlike China, enjoys a unique position, in that India instead of being isolated culturally and scientifically as was the case with China, has been freely exchanging its knowledge for centuries with other countries. According to Professor Wilson, "In ancient India, the Hindus kept pace with the most enlightened nations of the world, attaining as thorough a proficiency in Medicine and Surgery as any people whose achievements are recorded. There is evidence, that it was common practice amongst the ancient Aryans to migrate to different lands, such as Persia, Arabia, Egypt, Babylonia, Greece and even Scandinavia, carrying with them their vast knowledge and experience". In those days, the practice of Medicine was a prerogative of the priestly class, but they displayed a high standard of surgical and therapeutic skill.

Ayurvedic Medicine goes back to the days, when the Aryans came to India from Central Asia about 1000 to 1500 years B.C. Even in the Prevedic period as indicated by the excavations at Mohenjodaro and Harappa, hygiene and sanitation had reached a high level of development, for one finds the existence there of open streets, drains, baths and wells in the inhabited area.

The early history of Medicine here as elsewhere is shrouded in mystery. It is interesting to note, that the ancient compilers of Medicine in India have described Medicinē 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 great teacher of Medicine. Agnivesa, the distinguished pupil of Atreya, undertook the Herculean task of codifying the knowledge imparted by Atreya, and to arrange it in the form of a treatise, which formed the basis of Charak Samhita, the 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 were pioneers in doing plastic surgery, and did Rhinoplasty. Hygiene played a great 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.

Atreya was the first systematic teacher of Medicine. There is evidence to suggest, that he taught Medicine in the 8th century B.C. before the time of Buddha and prior to the establishment of the University of Taxila. Atreya stands first amongst the teachers of Ayurveda and is often referred to as the Father of Indian Medicine. According to him "All suffering, whether of the body or of the mind has for its basis ignorance; all happiness has its foundation in pure scientific knowledge.

In Surgery, Susruta is rightly regarded as the "Father of Indian Surgery". He obtained his knowledge from Dhruvantri, the patron saint of Surgery. Susruta became the head of the departments of Medicine and Surgery at the Great University of Varanasi, but he assigned a somewhat higher place to Surgery, regarding it as the first and the highest division of the healing art. He however says, that "both Medicine and Surgery must go hand in hand, for he who only knows one branch of the art of healing is like a bird with one wing".

Ayurvedic Medicine is based on the humoral theory of Vaata, Pitta and Kafa. Vaata, Pitta and Kafa are the supporters of the human body. They together contribute all the nutrition fluids derived from Solid, liquid and gaseous food materials

ingested by the human organism. They are, therefore, called the Supporting Dhatus (Poshaka Dhatus).

Vaata, Pitta and Kapha are considered the most essential factors in the constitution of the human body. When they are in equilibrium, the body is healthy. But any variation in them or vitiation of any one of them causes ill-health or disease.

INFLUENCE OF BUDDHISM:

Ayurvedic Medicine had reached a high level of development in the old days, and Buddhism provided an added stimulus to its advancement, especially in the establishment of hospitals. The Buddhistic period represents the era of rational or scientific Indian Medicine. It began with Gautam Buddha about 600 years B.C. By denouncing various sacrificial rites, and the system of caste, and by extolling the qualities of mercy, love, kindness and goodness as stepping stones to peace - Nirvana, Gautam Buddha was able to change the entire face of the Art of healing. Although magic spells and miraculous cures, were practised at the time, the individual efforts of great teachers of Medicine and Surgery, were successful in uplifting the ancient Medical Science of India to a high level of proficiency. The ancient Universities of Taxila and Malanda became famous for their teaching of Medicine, Surgery, Philosophy, Mathematics, religion and other arts and Sciences under the guidance of eminent teachers.

Establishment of Hospitals: During the reign of Chandra Gupta (324 - 300 B.C.) special attention was paid to the establishment of hospitals and dispensaries and for enforcing rules of sanitation. Ashoka (272 - 232 B.C) who was a sincere follower of Buddha took active part in this campaign. In Ashoka's rock edict No. 11 it is inscribed as follows:

"Everywhere in the Dominions of King Priyadarai, Beloved of the Gods, and likewise in the bordering territories such as those of the Chodas and Pandyas as well as of the Satiyaputra and the Keralaputra as far south as Tamraparni, and in the territories of the Yavana King Antiyoka and also the kings who are the neighbours of the said Antiyoka - everywhere king Priyadarai, Beloved of the Gods, has arranged for two kinds of medical treatment, viz., Medical treatment for men and medical treatment for animals. And, wherever there were no medicinal herbs beneficial to men and animals everywhere they have been caused to be imported and planted. Wherever there were no roots and fruits, everywhere they have been

caused to be dug and trees have been caused to be planted for the enjoyment of animals and men".

Jaevaka was the most famous physician in Buddha's time in the 6th century B.C.

ANCIENT INDIAN HOSPITALS.

The Chinese Pilgrim Fa-Hien, who visited India in the time of Emperor Chandragupta states:

"The elders and gentry of these countries have instituted in their capitals free hospitals, and higher come all poor or helpless patients, orphans, widows and cripples. They are well taken care of, a doctor attends them, food and medicine being supplied according to their needs. They are all made quite comfortable and when they are cured they go away". Fa-hien also mentions "Houses of charity on the road-side where rooms, couches, beds, food and drink are supplied to travellers, while the rich and prosperous inhabitants, vying with one another in the practice of benevolence and righteousness establish in the cities houses for dispensing charity and medicines".

It is interesting to note that some of the religious and charitable endowments of Southern India were made for the establishment of Schools, which were equipped with a hostel for the residence of students, and also a hospital. The hospital attached to the schools was known as Veera-Solan and was provided with 15 beds. The staff and establishment for the school-hospital and hospital comprised one physician in whose family, the privilege of administering medicines was hereditary, one surgeon two servants, who fetched drugs supplied fuel and did other services for the hostel and the hospital.

The private charities of the day were also applied for the establishment of maternity homes.

SPREAD OF HINDU MEDICINE IN FOREIGN COUNTRIES.

Tradition says, that many illustrious men from Greece and other foreign countries visited India, and took back with them the Hindu Sciences and introduced them in their schools. Alexander the Great is said to have taken with him some Indian Physicians after his Indian Campaign being attracted by their successful cures of snake bites. The Buddhist monks, who were sent out to foreign countries by Ashoka, preaching Buddhism, practised Medicine as part of their humanitarian task. They studied medicine along with philosophy and fortified their spiritual ministry by relieving the sufferings of people.

It is interesting to see how Buddhism spread to China, and Ayurvedic Medicine went there along with it.

Buddhism was transplanted from India into China about 67 A.D. Emperor Ming Ti (58 - 76 A.D) of the Eastern Han sent an embassy of six-hundred men to India to ask for Buddhist Books and teachers. This action was the outcome of a dream, which the Emperor had in which he saw a gold image of Buddha, who demanded to be worshipped in China. The messengers left the capital (Ho-Yang, now known as Honan-fu) in 67 A.D. They travelled across central Asia, until they reached Khotan. The embassy brought back with it images of Buddha, Buddhist scriptures, and two Buddhist monks, Kasyapa Matunga and Goberana from India. Gradually Buddhism gained a strong hold until the Tang Dynasty, when it enjoyed the greatest prosperity. As the result of the frequent pilgrimages made by enthusiastic Chinese Buddhists to India, and the arrival of many Indian monks in China, the Art, Science and other phases of Indian Culture, including Medicine, exerted a profound influence on the life and thoughts of the Chinese people. The views about the etiology and Pathology of diseases were affected by Buddhist ideas. "Humanity suffers from two kinds of afflictions, physical and mental. For physical ailments the drugs of Men Ch'iao will be effective, but for mental afflictions nothing but Buddhist medicines is required" (Wong and Wu). Buddha is said to have told Chi FO: "You go and heal his body first, I will come later to treat his mental suffering". It seems, that faith-healing, hypnotism, auto-suggestion and other psychotherapeutic measures mostly originated from Buddhism. Out of this arose the art of meditation, a system of mental exercise, which aims at developing the mind to a state of mental repose or relaxation.

Let us briefly consider the Ethical principles laid down in Ayurveda.

ETHICAL PRINCIPLES.

To begin with, in admitting students to the study of Medicine, as much importance was attached to the moral fitness as to the intellectual and physical fitness of the pupils, for it was considered axiomatic in those days, that moral excellence was the basis of all true education, including medical education. The object of education was not merely to prepare the student to earn a livelihood, but also to infuse into him a strong desire to lead a good and virtuous life. Further, there was very intimate contact between the teacher and the student, so much so, that

during the period of education the teacher was actually regarded as a father. The students were carefully selected for admission. It was laid down, that before a student was admitted, he had to undergo a period of probation for six months to one year. If after this the teacher was satisfied as to the character and intellectual capability of the student, he was allowed to proceed further and continue his studies. Says, Vagbhata in Astang Samgraha:

"A disciple who is capable and possessed of modesty, purity and austerities and who has served a probationary period of six months should be taught as long as he gains perfection in the theory and practice of the Science"

INITIATION CEREMONY:

A special initiation ceremony was held, when the student commenced his medical studies. I shall describe in some detail the Oath of initiation as given in (1) Charak Samhita.

Charak Samhita:

The teacher instructed the disciple in the presence of the sacred fire, Brahmans and physicians, saying:

"Thou shalt lead the life of a bachelor (Brahmschari) grow thy hair, and beard, speak only the truth, eat not meat, eat only pure articles of food, be free from envy and carry not arms.....

"Thou shalt dedicate thyself to me and regard me as thy chief. Thou shalt be subject to me and conduct thyself for ever for my welfare and pleasure. Thou shalt serve and dwell with me like a son Thou shalt behave and act without arrogance, and with care and attention, and with undistracted mind, humility, constant reflection, and with ungrudging obedience. Seeing either at my behest or otherwise, thou shalt conduct thyself for achievement of thy teacher's purpose alone to the best of thy abilities.

"If thou desirest success, wealth and fame as a physician and heaven after death, thou shalt pray for the welfare of all creatures.

"No offering of gifts by a woman without the behest of her husband or guardian shall be accepted by thee. While entering the patient's house thou shalt be accompanied by a man, who is known to the patient, and who has his permission

to enter and thou shalt be well clad and bent of head, self-possessed and conduct thyself after repeated consideration. Thou shalt thus properly make thy entry. Having entered, thy speech, mind, intellect and senses shall be entirely devoted to no other thought than that of being helpful to the patient and of things concerning him only.

"The peculiar customs of the patient's household shall not be made public. Even knowing that the patient's span of life has come to its close, it shall not be mentioned by thee there, where if done so, it would cause shock to the patient or to others.

"Though possessed of knowledge, one should not boast very much of one's knowledge. Most people are offended by the boastfulness of even those, who are otherwise good and authoritative".

On the completion of the initiation ceremony, the student was designated as a Brahmchari and he retained this title till the end of his student life. During his student life, he was specially instructed to observe celibacy, not to carry weapons, not to indulge in rebellious or immoral acts. According to Kasyapa, he was advised as a Brahmchari to keep a liberal and receptive mind and make his contributions to the growth of knowledge and progress generally.

THE CONVOCATION OR SAMANTANA CEREMONY.

After the conclusion of studies, the young physician was advised according to Charak Samhita as follows:

"Having finished his studies and permitted to leave the school, he should go about wearing white garments with clipped hair, with undeluded mind and with his eyes looking straight before him. He must be genial and take initiative in conversation. He must never resort to the patient's house uninvited. Having entered, he must scrutinise the prognostic omens. He should not turn his gaze on anything else in the house but the patient. He should not make his entry into a house without announcing himself. He should not broadcast the secrets or the shortcomings of the patient's household. He should withhold from the patient the untoward prognostic signs, that he may have perceived. He should continually offer consolation to the patient.

He should not administer the medicine in the wrong order, nor should he delegate the responsibilities to another. He should make an altogether novel combination and administer it. He must be versed in the knowledge of characteristics of constitutions, drugs, disease and age. He should always be equipped with the store of fumigating drugs, eye-salves and other medicines. He should not incur the hostility of other members of his profession. In co-operation with them, he should prepare the medications. He should be given to speech that is bold, unambiguous, prompt, vivid, charming, gentle, persuasive, comprehensive, non-contradictory and righteous. For indeed, the physician who desires the well-being of people enjoys happiness in this world as well as in the other".

These oaths formed the basis of Ethics of the Physician.

Registration:

After finishing one's medical education, one had to obtain the permission of the King to start one's professional career. This was the practice in ancient India. This is what Sushruta says:-

"Having studied the Science, having fully grasped the meaning, having acquired practical skill and having performed operations on dummies, with ability to teach the science, and with the King's permission, a Physician should enter into his profession".

Sushruta Samhita.

This was done to protect the people from quacks and charlatans.

Bhukracharya also states positively that without the permission of the King, no physician should be allowed to treat.

Ayurveda is deeply rooted in the soil of India and a large majority of the people still seek comfort from it. It has largely contributed to our cultural heritage.

UNANI SYSTEM OF MEDICINE.

Apart from the Ayurvedic, the other old system of Medicine in vogue in the country is the Unani. The word Unani means Greek. This is the old Greek Medicine, which had reached a very high stage of development. The rational attitude towards life, which the Greeks acquired also influenced their attitude towards disease and death. The greatest of the Greek Physicians was Hippocrates, who is known as the Father of Medicine. He was a contemporary of Plato, and lived from 460 BC to 357 BC. His teachings are contained in the Corpus Hippocraticum. His great achievement consisted in having dissociated Medicine from Theology and magic. He laid stress on the clinical examination of the patient more than anything else. He introduced ethical principles in the practice of Medicine. I am sure, you all know the Hippocratic Oath. He raised Medicine to the status of a science, and placed it on a high pedestal by combining it with the humanities.

By the first Century of the Christian era, the centre of civilisation had shifted from Greece to Alexandria and then from there to Rome. But medicine in Rome was Greek Medicine, and all the great physicians in Rome were Greeks. The greatest name in Grecko-Roman Medicine after Hippocrates was Claudius Galen (131 AD to 200 AD) whose influence remained dominant in Europe for 1200 years. He codified all medicine of the time and made many contributions of his own. When Roman Empire broke up, its culture disappeared from Europe for a thousand years. But many of the medical works of Hippocrates, Galen and other Greek physicians had been safely evacuated to Constantinople. From others, the knowledge spread to Arabia, Mesopotamia and Persia.

Medicine in Persia and Arabia was partly Greek and partly Indian. According to Professor Browne, "Arabian Medicine is that body of scientific or medical doctrine, which is written in Arabic language, but which is for the most part Greek in its origin, though with Indian, Persian and Syrian accretions, and only in a very small degree the product of the Arabian mind". Its importance lies not in its originality but in the fact, that in the long interval which separated the decay of the Greek learning from the Renaissance it represented the most faithful tradition of ancient wisdom and was during the Dark Ages the

principal source from which Europe derived such philosophical and scientific ideas, as she possessed. This medicine developed in Persia and Arabia, particularly under the enlightened patronage of the Abbasid Khalifas of Baghdad in the 8th and 9th centuries A.D. There are two great names of eminent physicians of this period, namely Rhazes and Avicenna, who played an important part not only in introducing Greek medicine in Arabia, but also in the revival of learning in Europe. The principal service of Islam to Medicine was the preservation of the Greek culture.

It was this system which came to India with the advent of Mohammedans. During the reign of the Moghul emperors it reached the height of its glory. There were many distinguished Hakims, who taught and practised it in many parts of the country, namely Lahore, Delhi, Agra, Lucknow, Calcutta, Hyderabad and other places.

Emperor Akbar collected at his court many distinguished hakims (physicians) such as Hakim Abdul Fatch Gilani, Hakim Futfullah Gilani and Hakim Anul-Wal Siraji. According to the advice of Hakim Abdul Fatch Gilani, many hospitals were established in the kingdom. An account of these is given in Akbar Nama (Vol. 2, p. 3) Munshi Lalchand has referred to these hospitals in his history of Agra.

After Akbar, when Emperor Jehangir ascended the throne, he issued the following proclamation at the time of his coronation in 1014 H.E.

"In all big cities, hospitals should be established for the treatment of the sick and the expenses for running these hospitals will be paid by Government".

Emperor Shah Jehan followed the example set by his predecessors and made special efforts to establish hospitals. He established one hospital behind the Jamaai Masjid at Delhi in 1060 H.E. to which he appointed some well-known Hakims.

Emperor Aurangzeb also established several hospitals in his kingdom.

Among the very able Unani physicians during the Moghul period, Hakim Ali Gilani occupies a high rank. He wrote a very fine commentary on Avicenna's Canon of Medicine. Among others, I may mention the names of Hakim Hasan Gilani, Hakim Sanaulah Khan of Farrukhabad and Hakim Mohammad Akbar, Arzani, who wrote an important book on medicine.

During the Moghul period many books were written on Unani Medicine. The well-known book Madanuchifa Sikarshahi contains commentaries on Unani Medicine and incorporates many useful things from Ayurvedic Medicine. Special attention was paid to the medicinal herbs in India and books written on them. Medical schools for giving instruction in Unani medicine were established at Lahore, Delhi, Agra, Lucknow and Hyderabad (Deccan).

At Lucknow Mirza Ali Khan Sahib ranked high. He was the physician of King Shah Gaziuddin-Hyder of Oudh. It is recorded that he was known by the title "Hakim-ul-mulk". Hakim Abdul Aziz established in Lucknow the well-known institution known as Tak-mil-u-Fibb.

There were some well-known hakims in Lahore, Bhopal and Rampur. In Delhi, the name of Hakim Ajmal Khan is well-known, and in Hyderabad (Deccan) Mir Fazal Ali Khan. There were also Hakim Ahmed Syed Amrohi, who was the Director of Medical Services in the Deccan, and Hakim Mohammad Abdul Aziz Khan Sahib, who was physician to H.H. Mir Mahboob Ali Khan Asafjah, and Hakim Syed Altaf Hussain Sahib, who was also appointed as the Director of Medical Services.

It is to be observed, that as the Mohammedans in Baghdad had absorbed Greek as well as Ayurvedic medicine. In India too, they adopted Hindu sciences and art, including Hindu medicine to a great extent. They translated many sanskrit and Hindi books into Persian. They paid the same attention to Ayurvedic medicine as they did to Greek medicine at an earlier period. So the Unani Medicine which is practised today is a blend of both Greco-Arabian and Ayurvedic medicine.

Unani Medicine, like Ayurveda, is also based on the Humoural Theory. According to it, the world consists of two types of matter, gross and subtle. The gross matter comprise Earth, Water and Air, while the subtle matter consists of Energy and Soul. For the medical men energy is of importance and it is symbolized by fire. All the elements interact with each other. In the human body four humours are produced, namely, Khoon, Sajra, Souda and Balgham. These are responsible for the replacement of tissues wear and tear and for supplying energy to the body. When the humours become abnormal, they cause ill

health. There is a view, that under certain circumstances ufoonath may be caused due to these humours, which may result in diseased conditions. Ufoonath means the occurrence of changes leading to lowered resistance.

There were schools of Unani medicine at Lahore, Delhi, Agra, Lucknow, Hyderabad (Deccan) and other places. It came in contact with Ayurvedic medicine, from which it imbibed many important ideas about diagnosis and treatment.

MODERN MEDICINE.

The modern system of medicine which developed during the Renaissance in Europe was introduced into India as a result of our contact with the Western nations, especially the British. During this period Medical Services were established for the Armed Forces as well as for the Civil population. Medical Colleges and Medical Research Institutes were started and measures introduced for the prevention of infectious diseases, and the promotion of public health and hygiene.

CONCLUDING REMARKS:

This is the story of our Medical Heritage, which is of a diverse nature. We are a nation, possessing a culture which is composite in nature, and History teaches us that we have a special genius for bringing about integration and synthesis of different ideologies. We should try to synthesize all that is best in our ancient Medical Heritage and Modern Medical Science.

For the knowledge and appreciation of our medical heritage the study of the History of Medicine is vitally important. It is specially helpful at the present day. This study helps us to absorb the high standard of ethics laid down in the past, to respect the antiquity of the art of healing, to inspire us with a love of our profession, and to appreciate and admire our past traditions. All this will be a source of inspiration to us in carrying out our daily task. It will help us to imbibe the essential quality of humility and moderation, while considering the advancement in medicine, which is taking place in our times. And what is most vital, it will stimulate our general culture by reviving a closer relationship with History, literature, art and general science. As Bussey (1922) says "In the first flush of omulnce and success there is no state of mind so difficult to

to maintain, or so necessary for future services as humility". This position will be rectified by the study of History, and by the appreciation of our splendid medical heritage.

Further it will also help us to realise that Medicine, like any other Science such as Physics or Chemistry, is one and indivisible. It does not admit of any division into so called "Systems". This Science is universal in its scope, and outlook, and many countries both in the East and the West have made and are making contributions to it. It is also vitally important, that we should realise that Medical Science has made great strides during the last 300 years and some of the advances have been of a revolutionary character, so that our efforts in the sphere of curative and preventive medicine are more effective now than ever before. This is due to the fact, that all problems are considered in an objective 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.

This is just a brief account of our past medical heritage. It is primarily based on the ancient Hindu medicine which had advanced a great deal in the past. Subsequently to it were added Unani Medicine and the Modern medicine. If Charak and Susruta, Hippocrates and Galen, Rhazes and Avicenna, Pasteur and Lister, were alive today, they would have advised us to continue the task which they had commenced and make further contributions to the Art of Healing. They would also impress upon^{us} the necessity of dedicating ourselves to this Science with a spirit of service. In this context, I earnestly wish you, my friends, the best of luck and success in the task that lies ahead.

S. L. Bhatia

REFERENCES.

1. Bhatia S.L.: The Renaissance and the Evolution of Medicine. Armed Forces Medical Journal, India, Vol. XXI No.1 January 1965
 2. Bhatia S.L. Warfare and the Art of Healing. Indian Journal of the History of Medicine. Vol. X No.2 December 1965.
 3. Bhatia S.L. Science and the Humanities. Orient Longmans Ltd., 1962.
 4. Bhatia S.L. The Medical Heritage of India. Souvenir of All India Medical Conference, Bangalore 1957.
 5. Chemin Wong K and Wu Lien Teh: History of Chinese Medicine. The Tientsin Press Ltd., Tientsin, China 1932
 6. Lakshmi Pathi A: Ayurveda Siksha. A Text book of Ayurveda Vol.I Section I. Historical Background. 1944
 7. Lakshmi Pathi A: Ayurveda Siksha. A Text Book of Ayurveda. Vol.IV Principles of Pathology. 1946.
 8. Sircar D.C: Inscriptions of Ashoka. The Publications Division, Ministry of Information and Broadcasting, Government of India, Delhi 1957.
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RENAISSANCE AND THE EVOLUTION OF MEDICINE *

Major General S. L. BHATIA, I.M.S. (Retd.)

I consider it a great honour to have been invited to deliver the Silver Jubilee Oration on the occasion of the Silver Jubilee Celebrations of the Indian Association of the History of Medicine here in Madras. I am sincerely grateful for this. It is a great pleasure for me to be with you all and to meet so many old friends. At the outset may I say, that on behalf of the Association of History of Medicine, Bangalore, as its President, I have great pleasure to convey to you, our sincere greetings on this auspicious occasion. We offer hearty congratulations to you all for the excellent work done, and pray, that God may grant you all the best of luck and success in the task that lies ahead.

I have selected the subject of "the Renaissance and the Evolution of Medicine" for the Oration, as I thought that on this historic occasion, a subject of that sort would be appropriate.

During the period 1500 to 1700 A. D. a change took place in Europe, which divides the medieval from modern times. It is called the Renaissance. It was a gradual change. An atmosphere, which was hostile to free enquiry, gave place to one in which science could live and flourish. During the early middle ages, the church was the sole repository of culture. At that time, the greatest need of the European society was spiritual uplift, rather than intellectual development. Under the circumstances, the Christian church with its spiritual appeal made a wonderful contribution. The growth

of the christian virtue of compassion towards the sick and suffering led to new departures in Medicine, particularly in nursing the sick, and erecting hospitals for their care and treatment. There was, however, absolute suppression of experimental science and independent enquiry.

The influence of Renaissance has been described by Castiglioni, the medical historian, in the following words :—

"In this marvellous period of Renaissance, which marks the return to the ancient concept of Hellenism, in Philosophy as in Art, in Medicine, as in Literature, vivid sparks emerged from the forge in which the new forces of the world were being tempered. Disencumbered from the rigid structure of scholasticism, the horizon revealed the striking profile of the new science, founded on the free, critical and individualistic, philosophy of Hippocrates, and nourished by the new investigations and gifted observations of the men of the Renaissance, guided no less by ancient traditions than by the firm desire to engrave deeply their own record in the pages of History".

The 16th Century may be regarded roughly as the first stage when a change was noticeable, although some indication of the change had occurred in the previous century. The close interrogation of nature which was to lead to the development of modern science

* Oration delivered on the occasion of the Silver Jubilee celebrations of the Indian Association of History of Medicine at Madras Medical College on Friday 16 February 1973.

had begun. Painters examined the human frame, and surgeons dissected it. Verrochi, the sculptor was also an Anatomist. The discovery made by Copernicus, a Polish astronomer, that the earth revolved round the sun, steadily gained adherents. A new culture, lay in its outlook and aristocratic in origin, for it chiefly grew in the courts of Italian rulers, spread widely through the invention of printing. As Professor H. A. L. Fisher, the Oxford Historian, says:

“During the Renaissance, Europe turned away from the vast literature of commentaries and glosses which the pedants of the later middle ages had inscribed in letters of opium on tablets of lead”.

There was a spirit of adventure abroad. The Portuguese conquered Ceuta on the African coast in 1415, and then Vasco da Gama set sail on 8th July 1497 and by circumnavigation of Africa arrived at Calicut in India on 20th May 1498. Christopher Columbus, the Genoese sailor, discovered in 1492 the new world beyond the Atlantic. The Mediteranean ceased to be the centre of civilized world. By degrees Europe began to cater into the new phase of its existence, which is distinguished by the establishment of colonies and empires beyond the ocean, and by the gradual spread of European culture and influence throughout the habitable globe. In this adventure at first Portugal and Spain, and then the Netherlands, France and England took an active part.

The discovery of the new world coinciding with the printing, taught, that ‘Truth’ as Roger Bacon said, “is the daughter not of authority, but of time”. Thus mankind acquired a new attitude towards knowledge. Authority no longer went unchallenged. The past was no longer supreme and generations grew up, for whom ‘Truth’ was not

necessarily all that was given in ancient books, but something which should be ascertained by direct objective study and observation.

Under such circumstances, when Europe was kindled by new knowledge, and new outlook, there came Protestant Reformation. This was a challenge to the Roman Church. As a result of this, a religion widely held and strongly entrenched in the social and political tradition of Western Europe was challenged by new spiritual forces, and over a large part of Europe it was compelled to accept defeat. Views of life based on freedom of thought and upon the right of the individual conscience came into prominence, which in the long run transformed the institutions of Europe and shaped the life of the modern world. Never was the human mind so widely and sensibly affected as in the 17th and 18th centuries as the result of the Renaissance.

From the point of view of evolution of Medicine, the period which is of the greatest interest to us in the middle of the 16th century. It was then, that the Medici, who stood close to the people and understood their needs, were established in Florence. The Protestant Reformation was steadily spreading. Martin Luther was preaching his doctrines. The Art was flourishing. The artists like Raphael, Michael Angelo and Titian were infusing the new spirit. The new learning was everywhere working like leaven. The old Universities were expanding and new ones were springing up everywhere. Nicholas Copernicus had laboured hard to study the ancient science of astronomy. The art of printing was steadily contributing its share of pouring forth the means of knowledge.

The Renaissance produced the double phenomenon of a return to the classic past, and revival of the dignity of the individuality

of the human being, in addition to the critical spirit springing up in the Arts, Science and Literature. There was a desire for the freedom of thought and expression.

The Christian view point, which considered disease as the punishment for sin, gave way to the old Hellenic conception according to which disease is a disharmony in the body, which nature should cure. The sentiment which made it a sacrilege to dissect dead bodies, as they were considered impure, gave place to the thought that by the actual study of the human body itself could one know its perfect beauty. So there was intensive study of it.

This renaissance appeared in different ways in different countries. In Germany and the North, Luther and Paracelsus appeared on the scene. In Italy it was pivoted on men like Machiavelli and Guicciardini, profound historians and politicians of the age. In medicine, it was in Anatomy that the revolution was brought about by Andreas Vesalius. The University of Padua was closely associated with it.

(1) ANDREAS VESALIUS (1514-1564)

It was under such circumstances, that in the year 1543, the printing press of J. Oporinus in Basel published a book "Fabrica Humani Corporis", the structure of the Human body, by Andreas Vesalius, which has been described by Sir William Osler as "*The greatest book ever printed from which modern medicine dates*". It served as the basis of medical teaching for centuries afterwards.

Who was Andreas Vesalius? He was a Belgian born at Brussels in 1514. His father was apothecary to Charles V. His mother was probably of English extraction. When still young, he was interested in anatomy and dissected animals like mice, rats, cats and dogs. The young Vesalius went to school at Louvain and afterwards entered the Univer-

sity there. In 1553 he went to study medicine at Paris. Here he worked under two eminent teachers, namely Jacobus Sylvius and John Guinterius of Andernach. Sylvius at that time had already achieved great reputation, and drew students from all parts of Europe. The teaching of Sylvius, however, still chiefly consisted of reading of the books of Galen. Occasionally the body of a dog or a corpse from the hospital was brought into the lecture room, and barber attendants were employed to dissect them for demonstration to the students. Sylvius himself did not do the dissection. Vesalius was not satisfied with this; and one day, he put the ignorant barbers on the one side and himself completed the dissection.

He says :-

"My study of anatomy would never have succeeded, had I when working at medicine at Paris been willing that the viscera should be merely shown to me and to my fellow students at one or another public dissection by wholly unskilled barbers, and that in the most superficial way. I had to put my hand to the business".

Vesalius assisted Guinterius in preparing his book *Institutiones Anatomicae*.

In those days, complete dissection of the human body was impossible, as it was prohibited by the Church. Vesalius used to visit the burial ground attached to the Church of Innocents in Paris, and there he studied bones of the human body for many hours. He also went with another fellow student to another burial ground on what is now "*Les Buttes Chaumont*" to study the bones.

After three years he went from Paris back to Louvain, where he continued to study anatomy. In 1537 he went to Venice and the same year he was given the Doctorate of Medicine by the University of Padua. Padua was au

enlightened seat of learning and it was here that Galileo Galilei (1564-1642) worked with his telescope, which he had designed, and thus laid the foundation of a new era of experimental scientific studies. Vesalius was appointed Professor of Anatomy and Surgery there in 1537, and was entrusted with the duty of conducting dissections. He began to teach anatomy in his own way. He did dissection with his own hands, and ultimately taught only what he could himself see in the structure of the body of man, and not what Galen had written. In Padua the church was not so strong as in Paris, Louvain or in Spain. Here he was able to get dead bodies for dissection. In 1542 after 6 years hard work, he wrote 'Fabrica Humani Corporis' (Structure of the Human Body) illustrated with many diagrams, which was published by Oporinus in Basel in 1543. It contains description of the structure of the human body as he had himself seen. The Artist Johann Stephen Van Calcar, a countryman of his, made all the illustrations in this book.

This book 'Fabrica Humani Corporis' is the beginning not only of modern Anatomy, but of modern medicine as well. It was a great landmark in the history of medicine. The subsequent history of Vesalius is rather tragic. His book raised a great storm. After publication of the Fabrica, Vesalius, who had already lectured at Bologna and Pisa, returned to Basel, where he prepared a skeleton, which is still preserved. A number of editions of this book appeared.

Sylvius, his former teacher, opposed him, while Realdus Columbus and other Anatomists also attacked him.

Under these unhappy circumstances, he left Padua and became Court Physician to Emperor Charles V at Madrid in 1546, and subsequently to his successor Philip II in 1556. Here, he had no opportunity to pursue his anatomical studies. In 1563, he undertook

a pilgrimage to Jerusalem. On his return journey, his ship was wrecked at Zante, and he was stricken by a severe illness, probably typhoid, and he died in 1564. He was scarcely 50 years old at the time.

The achievements of Vesalius in Anatomy were truly great. His book *De Humani Corporis Fabrica* is a document of the highest rank in the history of medical science. Vesalius occupies a foremost place in the history of Medicine both as an inaugurator of the science of Anatomy and also as the founder with William Harvey of modern medical science based on facts rather than tradition.

In addition to Andreas Vesalius, there were some other pioneers, namely Galileo, William Harvey, Leonardo da Vinci, Thomas Linacre, Thomas Sydenham and Paracelsus, who ushered in the new spirit of enquiry in the field of Medicine. We shall briefly consider their contributions.

(a) GALILEO GALILEI (1564-1642)

He was essentially a mathematician. His influence on medicine was indirect, as he laid great stress on exact measurement. For sometime he studied medicine at Pisa, but after a time he gave this up, and stuck to astronomy and mathematics. He constructed the telescope, and also a primitive microscope which assumed great importance in the study of medicine.

William Harvey was greatly influenced by the experimental spirit practised by Galileo.

(b) WILLIAM HARVEY (1578-1657)

William Harvey was born in Folkstone in April 1578. He joined Conville and Caius College, Cambridge in 1593, and obtained his degree in Arts in 1597. The following year he left England to study medicine at Padua, which was a great seat of learning in those days. He spent about 5 years there, and in 1602 received the degree of Doctorate

of Medicine there. On his return to England, he was awarded the degree of Doctorate of Medicine by the University of Cambridge. He set up his practice at St. Bartholomew's Hospital. He was then developing his ideas, by actual experiment, regarding the movements of the heart and of the blood. In 1621 his book *exercitatio Anatomica de Motu Cordis et Sanguinis in Animalis* was published. He attained great fame and favour at the Royal Court and became physician to King Charles I. In 1646, he retired into private practice. In 1651, he published his treatise, "De Generations Animalium", and on 3rd June 1667, he died and thus ended a life remarkable for its achievements and its effects on further progress of medicine.

His great achievement was the demonstration of the circulation of blood by means of vivisection and ocular inspection, which he described in his famous book "*Exercitatio Anatomica de Motu cordis et Sanguinis in Animalis*" (1628). He gave a clear conception of the work of the auricles and ventricles, with their respective valves. He gave a truer conception of the pulmonary circulation and of general circulation than was ever grasped before. He conjectured that in the tissues blood passed from arteries into veins. The existence of capillaries was not known at that time. This knowledge came subsequently with the discovery of the microscope. I shall quote Harvey's own words:

"I frequently and seriously be-thought me, and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be effected, and the like; and not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other hand becoming ruptured through the

excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins, and so return to the right side of the heart; I began to think whether there might not be a motion, as it were in a circle. Now this I afterwards found to be true; and I finally saw, that the blood forced by the action of the left ventricle into the arteries was distributed to the body at large, and its several parts, in the same manner as it is sent through the veins and along the vena cava, and so round to the left ventricle in the manner already indicated, which motion we may be allowed to call circular".

Harvey's idea was that blood in the body moves in a circle. This was confirmed again and again subsequently by new facts which were discovered. Harvey says:

"Since all things, both arguments and ocular demonstration, show "that the blood passes throughout the lungs and heart by the action of the ventricles, and is sent for distribution to all parts of the body, where it makes its way into the veins and pores of the flesh, and flows by the veins from the circumference on every side to the centre, from the lesser to the greater veins, and is by then finally discharged into the vena cava and right auricle of the heart, and this in such a quantity or in such a flux and reflux, thereby the arteries hither by the veins, as cannot possibly be supplied by the ingesta, and is much greater than can be required for mere purposes of nutrition; it is absolutely necessary to conclude that the blood in the animals body is impelled in a circle, and is in a state of ceaseless motion, that this is the act of function which

the heart performs by means of its pulse; and that it is the sole and only lead of the motion and contraction of the heart".

The greatest name after Andreas Vesalius is that of William Harvey. He was a true scientist. He adopted the scientific method for his investigations. The work of Vesalius and Harvey laid the foundation of anatomy and physiology, and changed the whole basis of medical science.

(c) LEONARDO DA VINCI (1452-1519)

He was one of the greatest artists, who was a harbinger of the Renaissance. He was a great genius who combined in himself the qualities of an artist and a scientist, including sculptor, architect, geologist, physicist, mechanical engineer and a biologist. It is said, that "his was the grandest effort ever made by any man to explore and interpret the universe". He was the initiator of the new era in anatomical and physiological studies. Leonardo performed many dissections on the human body. He had a marvellous anatomical technique. He used injections into the veins, liquid wax in arteries and made gross serial sections to study structures of the body and above all drew beautiful diagrams of the appearances he observed. He studied muscles and bones, made sections of the brain, traced the cerebral veins, and other aspects of anatomy.

Although he showed accomplishment in the subject of anatomy and wrote down all that he had done, his work did not attract much attention at the time.

(d) THOMAS LINACRE (1460-1524)

Thomas Linacre was born at Canterbury in 1460. He was a Greek scholar. On the advice of his friend William Tilling of Solbing, he went up to Oxford and joined Canterbury Hall, afterwards known as Christchurch,

and studied classics. At the age of 24 he went to Italy and visited Florence, where he met Lorenzo the magnificent. He then returned to Oxford and took up the study of Medicine, so that eventually he became a great classical scholar and a physician. From King Henry VIII he obtained letters patent for the establishment of body of picked medical men, which later became the Royal College of Physicians of London. This College, was empowered to examine and to issue license to physicians and to decide who should be allowed to practise medicine in the City of London and its immediate neighbourhood. The first president of the Royal College of Physicians was Thomas Linacre himself, a very suitable person for that position. He died in 1524.

(e) THOMAS SYDENHAM (1624-1689)

He was a great clinician, and paid great attention to the observance of signs and symptoms of disease. He gives very vivid descriptions of many ailments, which are as accurate as those of Hippocrates. In fact he was a great exponent of the Hippocratic method. He introduced the use of iron in cases of anaemia, of cinchona bark from Peru in Malaria, and of mercury in syphilis. His appearance at this juncture was very opportune, when physicians were deeply immersed in various theories and philosophical speculations.

(f) JOHN CAIUS (1510-1573)

He was one of the founders of Gonville and Caius College, Cambridge. He went to Padua to study medicine. After his return to England from Padua in 1546 he was appointed Reader in Anatomy to the Guild of Barber-Surgeons, and held this post till 1563. He succeeded Linacre as the President of the Royal College of Physicians, and also became Master of Gonville and Caius College, Cambridge. He was a prolific writer, and raised the status of the medical profession.

(g) PARACELSUS (1493-1541)

There was increasing tendency during the Renaissance for the authors to write in their own language (French, German, English and Italian) then in Latin. This helped to get men's minds away from scholasticism and turn them towards realities and facts of life. There were four great leaders of the 16th century who helped the advance of medicine, namely Paracelsus, Vesalius, Harvey and Pare. Paracelsus - (Theophrastus Bombast Von Hohenheim) (1493-1541) was the most original medical thinker of the 16th century. He was a native of Switzerland (Finsiedeln, near Zurich) and was the son of a learned physician, with whom he began to study medicine. He got his doctor's degree at Ferrara (1515) and also acquired knowledge of alchemy and astrology from the bishops and abbots. He taught medicine at Freiburg and Strasburg (1535). In 1527, he was appointed Professor of Medicine at Basel. He was a devoted follower of Hippocrates and strong opponent of Galen. It is said, that he began his campaign of reform by burning the work of Galen and Avicenna in a bonfire, and lecturing in German out of his own experience. He was a picturesque man. He was one of the alchemists, but he also enquired into the properties of metals, nature of drugs, vegetable and mineral, and their actions as remedies in disease.

IV The Early Microscopists

The microscope which was first invented by Galileo was not very effective. But it was subsequently developed with a compound system of lenses, and was an invention of the first magnitude in the progress of medicine. In this connection, I shall refer to Malpighi and Van Leeuwenhoek.

(a) MALPIGHI (1628-1694)

Marcello Malpighi was a Professor at Bologna University. He is famous for his

observations on capillary circulation in the lungs of the frog. This added the missing item in Harvey's otherwise complete account of circulation of blood. He was also a pioneer in the study of embryology and made contributions to the subject of the development of the vascular and central nervous systems.

(b) VAN LEEUWENHOCK (1632-1723)

He was a Dutchman, who developed the microscope and confirmed Malpighi's observations in capillary circulation. He demonstrated the movement of blood corpuscles in their passage through the capillary network of a tadpole's tail. He was an expert in grinding lenses and his microscope was superior to any invented so far. From the medical point of view his most important discovery was that of bacteria and protozoa. His observations on micro-organisms link up eventually with the brilliant researches of Pasteur and ultimately with the bacteriological discoveries of the 19th and 20th centuries. Thus we see that no one in science of medicine works alone, isolated, as it were, from the past and future. We are all constituents of a team work on a vast scale.

V The Study and Practice of Medicine in the Renaissance

During the Renaissance, the study and practice of medicine passed steadily from the hands of the clergy to the lay people. There was great improvement in the economic and social position of the physicians. The physicians received their education generally in the Universities. The Universities in Italy were at the height of their fame in the 16th century. Of these Padua, was the best, and attracted students from Germany, England, Belgium, Holland, Poland, Hungary etc. Here there was complete religious freedom. Many famous Europeans, as I have mentioned, studied at that University, namely

Copernicus, William Harvey, Caius and so on.

The teaching in the 16th century was still of the classic type. They all read Galen and Avicenna, but new orientations made their headway. Public dissections were practised, and gradually the teachers did their own dissections instead of asking their barber assistants, to do it. The first anatomical theatre was built at Bologna and the second at Padua by Fabricius. The teaching of Pathology also began in this century in Padua.

Military medicine occupied special attention. Military hospitals were established at several places. The great progress in surgery in France is due to Ambroise Pare, who was a Military surgeon. The increased use of firearms gave an impetus to the development of surgery.

The physicians during the Renaissance became scholars. Prior to this in the middle ages most medical practitioners consulted astrology. Empiricists, charlatans, barbers and farriers flourished in Europe. But now a change took place. Now the great physicians were well versed in classical literature and were humanists and very respected members of society.

The history of Renaissance is closely connected with art. Anatomical progress was undoubtedly to a large extent to the part played by the artists. I have referred to the work of Leonardo da Vinci in the respect. There was also Michaelangelo, who was a pupil of Realdo Colombo. This anatomical plates in Vesalius's book were drawn by Calcar, who was a pupil of Titian. Raphael himself was a great student of anatomy.

VI The Renaissance and Modern Age

Thus we see that in Europe a profound change took place in the 15th and 16th

centuries, when there was a transition from the middle ages to modern times. The Renaissance commenced in Italy and spread over the continent of Europe. It was a new spirit, a new desire for knowledge and progress, which affected every sphere of life. Unquestioning acceptance of authority, the authority of the written word, gave way to criticism and experimental enquiry, and medical science which had scarcely progressed since the days of Hippocrates and Galen was quickly enriched by new discoveries.

Then there followed centuries of progress due to the work of reformers, who were inspired by the spirit of the 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 anaesthetics, so that surgery became painless.

The discovery of the microscope, as I have mentioned, marks an important landmark in the history of medicine. It made the discovery of micro-organisms possible. 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 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 specially made a great contribution to preventive medicine. Pasteur died in 1895.

I must also mention the name of Robert Koch, a German, who was born in 1843. He discovered the cholera vibrio 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 to 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 times. Lister was a great personal friend of Pasteur. I may narrate the following incident which is well-worth recording:

The scene was Paris (1892) the occasion the seventieth birthday of Louis Pasteur. Amid tumultuous applause France's greatest scientist was escorted to the platform by the President of the Republic. Many were the orations that followed: and extravagant the praises; but none of these could have meant more to Pasteur, than this simple tribute from an Englishman:

Lord Lister said:

"Truly there does not exist in the wide world an individual to whom medical science owes more than you".

It was not the words that mattered, but the man who spoke them. "The future asserted Pasteur in reply will belong to those,

who have done most for suffering humanity. I refer to you, my dear Lister". Lord Lister died in 1912.

VII Introduction of Modern Medicine in India

This took place as the result of our contact with the nations of the West. Prior to this we had the Ayurvedic and Unani systems of Medicine, as I have already mentioned. They still prevail.

(a) THE PORTUGUESE

For the discovery of the sea route to India, Vasco da Gama sailed from Portugal on 8th July 1497. His expedition consisted of 4 ships. After navigating round the Cape of Good Hope he reached Calicut (in India) on 20th May 1498. This was followed by other expeditions. In due course the Portuguese established a hospital at Goa. One outstanding medical personality of the early days here is Garcia da Orta, who was a doctor of Medicine of the University of Alcalá and Salamanca, and for sometime Professor of philosophy in the University of Lisbon. He came to Goa in 1534 and practised as a physician there for nearly 30 years. He was a great botanist and wrote a book on "Conversations about herbs and drugs". He died in 1570. The instruction in medical science was first started in Goa in 1687. This continued for many years. This was probably the first institution in Asia, where modern medicine was taught. It was remodelled by Dr. Lima Leitao in 1819 and eventually became the "Escola Medico-Cirurgica" of Nova Goa in 1842. It trained doctors not only for Goa but also for other Portuguese colonies overseas.

(b) THE FRENCH also established hospitals in Pondicherry and other colonial possessions. But the main contribution to the introduction of modern medicine in the entire country was made by the British.

(c) THE BRITISH: The first fleet of the East India Company under the command of Captain (later Sir James) Lancaster set out for the East in December 1600 with four ships. Each ship carried "Surgeons Two and a Barber". These "Surgeons Two and a Barber" were the pioneers who brought Western medicine to India. They constituted the origin of what subsequently developed into the Indian Medical Service, to which I had the honour to belong.

The history of the I. M. S. dates back to 1612, when it was started by the East India Company under John Woodall as the first Surgeon General. Under him medical Officers (mainly civilian) were recruited. Subsequently when the company found it necessary to maintain a regular body of troops in India they commenced employing military surgeons from 1745 onwards. It was not until 1764 that these surgeons were organised into a regular establishment of the company's armies. Thus the Bengal Medical Service was formed in 1764, the Madras Medical Service in 1767, and the Bombay Medical Service in 1779, for the three Presidency armies of Bengal, Madras and Bombay. The head of the Presidency Medical Services were called the Head Surgeons, and they controlled the civil and military needs. In 1825, the post of Inspector General was created in Bombay and Madras. In Bengal a Physician General was appointed in 1842. In 1857 this post was designated as Director General. The three medical services were in due course, combined into one medical service in April 1896, under the Surgeon General to the Government of India. This designation was later changed into Director General, I. M. S.

The Indian Army Medical Corps which was created by the amalgamation of the I. M. S., I. M. D., and I. H. C. in 1943 was redesignated "Army Medical Corps" on

26th January 1950. The achievements of the Corps since World War II have been very considerable. In 1949 the post of Director General, Armed Forces Medical Services was created as the coordinating head of the Medical Services of the Army, Navy and Air Force.

Prior to the introduction of modern medicine in India, the Ayurvedic and Unani Systems of medicine were taught and practised. This was the case during the Moghul period. During the British regime, the spirit of the Renaissance came to India from Europe, and medical research was also taken up, and many important contributions were made by the workers here. I shall refer to one contribution only which will serve as an example of what was done.

We in the Tropics are specially interested in tropical diseases, the commonest of which is malaria, which directly or indirectly has been the 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 Indian Medical Service, and it was while he was posted at Secunderabad in Hyderabad State, and later in Calcutta that he carried out experiments on mosquitoes and proved that malaria spread by the bite of anopheline mosquitoes. This was a discovery of vital importance. Sir Ronald Ross died in 1932. I had the opportunity of seeing him when he came to Cambridge in my student days (1912) and gave a lecture on the part played by mosquitoes in the spread of malaria.

For further history of modern medicine, I need not detain you much longer. Medicine has made great strides in the 19th century, but the progress in the first half of the 20th century has taken place with a rapidity which was undreamt of before. We should recollect, that after centuries of guess work, we gained in the short period of about 20 last years of the 19th century a fair knowledge of the precise cause of gonorrhoea (1879), malaria 1878, pneumonia (1880), typhoid (1880), Tuberculosis (1882), cholera (1883), diphtheria (1880), Malta fever (1889) and other diseases. There is the discovery of X-Ray and Radium, the conquest of Yellow Fever, the discovery of Vitamins, Insulin, Sulphonamides, Penicillin and other Antibiotics. In this battle against suffering and disease, workers in all parts of the world are participating. Medicine in the truest sense of the word is becoming universal, and in this process the World Health Organisation and other International bodies are making a valuable contribution.

VIII Concluding Remarks

In conclusion I may say, that during Renaissance, enormous progress was made. There was rapid evolution of medical thought. The rigid Aristotelian system was replaced by Neo-Platonism. The scholarship advanced quickly, especially in the sphere of observation and experiment. There was a return to the Hippocratic concept of disease. At the same time, as the result of the work of Leonardo, Vesalius, William Harvey, Fallopius and Cesalpino, Anatomy and Physiology advanced as basic sciences. But the most important gift of Renaissance was that of Humanism, consisting in the study of the patient, his behaviour when affected by disease and the investigation of the phenomena of disease by objective methods, a concept interpreted in its most representative form by Paracelsus. This

applies to both medicine and surgery. Fracastorius introduced new concepts in the field of epidemic diseases. The establishment of the experimental method by the scientific work of Galileo and others gave a new impulse to the naturalistic concept of the Universe.

Finally on making a broad survey of the History of Medicine one is reminded of the following words of Walter Moxon :

“ A Golden thread has run throughout the history of the world, consecutive and continuous, the work of the best men in successive ages. From point to point it still runs, and when near you feel it as the clear and bright and searchingly irresistible light, which Truth throws forth when great minds conceive it. (Walter Moxon, *Piloceus Senilis and Other papers*, 1887, p. 4).

REFERENCES

- Bhatia S. L. — Commemoration Address on the Unity of Medical Science, delivered on the occasion of the Silver Jubilee Celebrations of the Government College of Indian Medicine, Madras, 20th January 1950.
- Bhatia S. L. — History of Medicine with a special reference to India — An address delivered at the Government Tibbia College, Hyderabad, 13th October 1957.
- Bhatia S. L. Sir Ronald Ross — Presidential Address delivered on the occasion of the Ross Centenary Celebrations at Hyderabad, 13th October 1957.
- Bhatia S. L. — Greek Medicine in Asia. The Indian Institute of World Culture, Bangalore (1958).
- Bhatia S. L. — The Renaissance and the Evolution of Medicine. *Armed Forces Medical Journal*, 21 1 (1964).
- Castiglioni Arturo — A History of Medicine, Alfred A. Knoff, New York 1941.
- Donald McDonald, Surgeons Two and a Barber — History of Indian Medical Service (1600 — 1947) Williams Heinemann (1950).
- Fisher H. A. L. — A History of Europe — Edward Arnold & Co., London 1932.
- Garrison Fielding H. — An Introduction to the History of Medicine — 4th Edition W. E. Saunders & Co. Philadelphia and London (1929).
- Osler Sir William Bart — The Evolution of Modern Medicine, New Haven, Yale University Press, (1943).

HISTORY OF PREVENTIVE & SOCIAL MEDICINE:

The goal of Medicine is to keep Man adjusted to his environment as a useful member of Society, or to readjust him as the case may be.

Society sets standards not only for the amount of knowledge that a physician should possess, but also for his behaviour, through certain regulations, Further the society took over certain medical functions, which individual physicians could not carry out by themselves. And so, the sanitation of dwelling places and protection against epidemic diseases ~~xxxxx~~ became administrative functions of the state. It is found, that with the evolution of Medicine the field of public health widened considerably. This was the case with the care of tuberculosis, mental and indigent patients etc. This also gave use to the establishment of many hospitals, where indigent patients were treated free of charge. With the onset of the Industrial Revolution from the beginning of the 19th Century a number of new medical problems arose. The workers had to be protected against new health hazards. While industry developed, medicine progressed. As Henry Sigerist, the medical historian says:-

"Society has become increasingly aware of the economic burden of illness. Health conditions have improved tremendously but we have the knowledge enabling us to improve them still more. We still have in every country countless cases of unnecessary illness, and many premature deaths. Social planning is necessary in the medical field just as much as in other human activities" -

In the ancient ~~xxx~~ days medicine was closely related to religion. Most ancient religions, demanded that when a man enters a temple he should be clean. Although the cleanliness was taken in a spiritual sense, it had great hygienic influences. These precepts are very clearly defined in Leviticus, as part of the old Testament.

Uncleanliness was considered contagious. By touching an unclean person one becomes impure one's self. Even a woman during her menstrual periods and child birth was considered unclean. When in the middle ages leprosy became widespread, and the physicians were unable to control it, it was the Church that fought the disease by applying the rules ~~x~~ laid down in Leviticus. Lepers were isolated everywhere. The same method of prevention was employed, when plague broke out.

Thus it was through religious ordinances that Preventive Medicine had its commencement.

Hygiene in Ancient days

Even in the Early days, Sushrita emphasised the importance of cleanliness of both body and spirit. The disinfecting virtues of water were fully realized. Outbreaks of epidemic diseases have been attributed to unpleasant seasons, to the floating of minute unpleasant, poisonous particles in the air and to the unrighteous conduct of people - Earthquakes, famines etc. were described by Sushrita as the usual precursors of dangerous epidemics such as plague etc.

The hygiene directions as given in Ayurveda are both a matter of religion & medicine. According to this they advocated getting up early in the morning before sunrise, the first duty is to answer nature's call, then to cleanse one's teeth and to have a bath. Physical exercise gives activity, strength, good digestion and reduction of fat. Suitable diets were prescribed for different seasons of the year for it was strongly ~~advised~~ advised that for reasons of health one should suitably adjust oneself to the change of climate by appropriate diet, sleep, work etc.

Even the people of the ancient Indus Valley Civilization had the same idea of essential hygienic requirements in dwelling houses. As the excavations of Lothal show the houses had paved baths connected with brick paved drains. The drains were built to carry sewage. Later soakage pits were provided. The pits had holes at the bottom to soak away the water while the solid sewage was collected and removed to prevent blockage of the drains.

The Egyptians also showed progress in the realm of Public Health.- They built planned cities, public baths, and underground drainage systems. Egyptian Medicine occupied a dominant place in the ancient world for about 2500 years when it was replaced by greek Medicine.

The Greeks made a great contribution to the introduction of Hygiene. Health then was regarded as the highest good and their ideal man was the harmonious man; who was perfectly balanced, both bodily and mentally. They placed great emphasis on rest, diet, graduated exercises and baths in treating disease rather than on undue medication. The greatest

Greek physician was Hippocrates often described as the Father of Medicine. He stressed the importance of Preventive Medicine as distinct from curative medicine. His book Air, water and place is considered a masterpiece for he stressed the importance of the environment on the health of the country.

But it was due to the Romans that public health was developed. Although they their Medicine mainly from the Greeks after conquering them, they were a more practical minded people than the Greeks. They made fine roads throughout the empire and passed laws that the dead should be buried outside the town. Water was brought to Rome by means of aqueducts - They established public baths and every house had its own water cistern.

was an ~~amazing~~ outstanding physician of the time and contributed much to our understanding of epidemics. He observed that disease was due to 3 factors - predisposing factors, existing factors, and environmental factors, a truly modern idea. With the onset of the Renaissance, there was great revival of the ancient Greek ideals. The hygienic conditions during the middle ages was appalling. There were epidemics of plague, small pox, diphtheria etc. During the 18th Century a change took place, and hygiene was greatly improved. These improvements were due to the change in political conditions, and the philosophy of time which resulted in the French Revolution.

It was during this time that important advances were made. James prevention of Scudvey, and Edward Jenner's prevention of small pox revolutionised the concept of preventive medicine. A new era was born, an era of specific disease prevention. Ramazzini early in the 18th century inaugurated the study of occupational diseases and became the father of occupational medicine, while Mendel F founded the science of genetics.

Health problem due to Industrialization:

In the beginning of the 19th century there was the onset of the Industrial revolution. Health conditions were very unsatisfactory. When Cholera broke out in ~~1830~~ 1830, there was awakening of public conscience and a great demand for improving sanitary conditions - A commission was established in England in 1843 to study the sanitary conditions of the country and this led to the introduction of the Public Health Act of 1848. From England, the Hygienic movement spread all over the world.

International Health:

The of the International Health work may be traced back to the 14th century, where seaports in the Adriatic introduced first quarantine as a protection against plague imported by ships. Venice set up a quarantine station called a Lezarette at the beginning of the 15th Century. Soon other countries followed suit. This practice caused many inconveniences.

In 1851 an International Sanitary Conference was held in Paris and it was at this time that an International Industrial Exhibition was organised in London. It was shown that although much industrial progress had been made, people lived under most unsanitary conditions. Thus the Conference in Paris commenced a new Era in promoting International Health conditions. Several medical Associations were formed and the First International Medical Congress was held in Paris in 1867 when Listers work on Antisepsis was announced.

It was the beginning of the 20th century in 1903 which marked the turning point in the Scientific study of the epidemic diseases like Cholera, Plague, yellowfever etc. It was at this time that it became clear that the country has a direct responsibility for the health of the individual. Mother and child health services were initiated, School health services were developed concurrently gradually the idea grew that every healthy individual was a community asset and every sick person a community liability.

The health organisation of the League of Nation was established in 1923 and in 1948 it was replaced by the WHO. These organisations were mainly responsible with the task of helping countries with information, technical skill and assisting of the national staff in dealing effectively with the health problems of the country. Help to eradicate small pox, tuberculosis, Malaria etc was also given.

Growth of Preventive Medicine:

In the 18th century two discoveries marked the beginning of a new era, the era of disease prevention by specific measures - a naval officer who advocated the intake of fresh fruits and vegetables for the prevention of Scurvy in 1753 and Edward Jenner who discovered vaccination against small pox 1796.

The discoveries of Louis Pasteur and Robert Koch laid the foundation of Preventive Medicine - Pasteur's work led Lister to his great discovery of Antisepsis - During the 19th and early 20th century disease agents were discovered one after another in rapid succession. The 'Germs' theory of disease was firmly established and Medicine shed the rags of superstition and speculation once and for all having put on the shining robes of scientific knowledge. In the wake of these discoveries, the concept of disease prevention by specific measures gained momentum. Pasteur's discovery of enteric vaccines led others to undertake research in immunology - Anti-diphtheria and anti-tetanus sera were soon perfected. During ~~the~~ World War I, Almuth Wright's antityphoid vaccine was found to be very effective. Soon a number of ~~the~~ other prophylactic vaccines were discovered.

Preventive Medicine did not confine itself to vaccines and sera. Discoveries in the field of nutrition, the role of vitamins, minerals, proteins and other nutrients in the prevention of disease and promotion of health came to be recognised between the 2 World Wars.

In the 1950's the concept of primary and secondary prevention came into existence. In the meantime the discovery of sulphanamides, antibiotics, insecticides, etc have all enriched preventive medicine. Sulphanamides and antibiotics have cut down the mortality roles of many infectious diseases. The knowledge of insecticides has brought about fundamental changes in the control of borne diseases.

The concept of disease prevention gave birth to a new concept of disease eradication and today we no longer talk of prevention but of eradication of Malaria, Small pox etc.

Preventive Medicine is now taking into its field degenerative, neoplastic and metabolic diseases, industrial accidents and disabilities, mental illness and genetic diseases. There are no specific weapons against these diseases and so preventive medicine now relies heavily on periodic health exams, routine clinical exams, screening tests and health education of the people.

Preventive Medicine x is currently faced with the problem of "Population explosion", a problem of its own creation owing to the successful control and for eradication of many communicable diseases and improvements in the standards of , Family Planning hitherto considered immoral and irreligious, gained recognition as a Family Welfare Programme, and an essential community health service. During 1960-70 many countries liberalized their abortion laws.

Socialization of Medicine

Over the years Medicine has developed into a trade, sometimes a bad trade purchased by the patient and sold by the Physician - with the new scientific discoveries, Medicine has become highly specialized and the cost of medical care has increased more rapidly than the purchasing power of the people. Charitable institutions have played a ~~mak~~ notable role in providing medical care to the poor. Socialization of Medicine was thought to be the right method of providing adequate health facilities to all.

Germany was the first to institute compulsory sickness insurance in 1883. This was not complete socialization of Medicine but a start in that direction. Russia was the first to socialize medicine and give its citizens a constitutional right to all health services. Great Britain passed a National Health act in 1946. In India the Employees State Insurance Scheme (1948) is a step towards socialization of Medicine.

Socialism treats Medicine as public service and so from a private ownership medicine is becoming a social institution.

The scope of Medicine has broadened considerably in recent years and the terms Public Health, Preventive and Social Medicine are slowly being replaced by the term Community Medicine which deals not with individuals but the health needs of the entire community.

Session I

Dr. Manuel Fernandes

Primitive Medicine to
Community Health.

Primitive Medicine

Egyptian Medicine

Indian Medicine

Chinese Medicine

Greek Medicine

Roman Medicine

Middle Ages

Revival of Medicine

Rise of Public Health

Changing concepts of

Growth of Prev. Medicine

Socialization of Medicine

Session II

Dr Dara Amar

Concept of Health

Definition,

Aspects - physical, mental
social spiritual

Positive Health.

Spectrum of Health

Determinants of Health

Heredity

Environment

Ways of living

Economic Status

Health Services

Indicators of Health

=

Session - III

Dr. Narasimha
Murthy

Levels of Prevention

- | | |
|--------------------------|-------------|
| 1. Health Promotion | } Primary |
| 2. Specific Protection | |
| 3. Early Diagnosis & Rx | } Secondary |
| 4. Disability Limitation | |
| 5. Rehabilitation | } Tertiary |

Primary Prevention

Secondary "

Tertiary "

Screening for Disease
Objective

Type & Criteria

Session IV

Dr. Ravi Narayan

Health in Developed and
Developing Regions.

- Development
- Characteristics of Developed
and Developing Regions
- Socio economic
- Demographic
- Health
- Changing Patterns of Disease
- Health Priorities

RENAISSANCE AND THE EVOLUTION OF MEDICINE
SILVER JUBILEE ORATION DELIVERED
BY MAJOR GENERAL S.L.BHATIA, IMS (RETD)
ON THE OCCASION OF THE SILVER JUBILEE CELEBRATIONS
OF THE INDIAN ASSOCIATION OF HISTORY OF MEDICINE
AT MADRAS MEDICAL COLLEGE
ON FRIDAY THE 16TH FEBRUARY 1973

RENAISSANCE AND THE EVOLUTION OF MEDICINE

I consider it a great honour to have been invited to deliver the Silver Jubilee Oration on the occasion of the Silver Jubilee Celebrations of the Indian Association of the History of Medicine here in Madras. I am sincerely grateful for this. It is a great pleasure to me to be with you all and to meet so many old friends. At the outset may I say, that on behalf of the Association of History of Medicine, Bangalore, as its President, I have great pleasure to convey to you, our sincere greetings on this auspicious occasion. We offer hearty congratulations to you all for the excellent work done, and pray, that God may grant you all the best of luck and success in the task that lies ahead.

I have selected the subject of "the Renaissance and the Evolution of Medicine" for the Oration, as I thought that on this historic occasion, a subject of that sort would be appropriate.

During the period 1500 to 1700 A.D. a change took place in Europe, which divides the medieval from modern times. It is called the Renaissance. It was a gradual change. An atmosphere, which was hostile to free enquiry, gave place to one in which science could live and flourish. During the early middle ages, the church was the sole repository of culture. At that time the greatest need of the European society was spiritual uplift, rather than intellectual development. Under the circumstances, the christian church with its spiritual appeal made a wonderful contribution. The growth of the christian virtue of compassion towards the sick and suffering led to new departures in Medicine, particularly in nursing the sick, and erecting hospitals for their care and treatment. There was, however, absolute suppression of experimental science and independent enquiry.

The influence of Renaissance has been described by Castiglioni, the medical historian, in the following words:-

"In this marvellous period of Renaissance, which marks the return to the ancient concepts of Hellenism, in Philosophy as in Art, in Medicine, as in literature, vivid sparks emerged from the forge in which the new forces of the world were being tempered. Discumbered from the rigid structure of scholasticism, the horizon revealed the striking profile of the new science, founded on the free, critical and individualistic, philosophy of Hippocrates, and nourished by the new investigations and gifted observations of the men of the Renaissance, guided no less by ancient traditions than by the firm desire to engrave deeply their own record in the pages of History".

The 16th Century may be regarded roughly as the first stage when a change was noticeable, although some indication of the change had occurred in the previous century. The close interrogation of nature which was to lead to the development of modern science had begun. Painters examined the human frame, and surgeons dissected it. Verrochi, the sculptor was also an Anatomist. The discovery made by Copernicus, a Polish Astronomer, that the earth revolved round the sun, steadily gained adherents. A new culture, lay in its outlook and aristocratic in origin, for it chiefly grew in the courts of Italian Rulers, spread widely through the invention of printing. As Professor H.A.L. Fisher, the Oxford Historian, says:

"During the Renaissance, Europe turned away from the vast literature of commentaries and glosses which the pedants of the later middle ages had inscribed in letters of opium on tablets of lead".

There was a spirit of adventure abroad. The Portuguese conquered Ceuta on the African coast in 1415, and then Vasco da Gama set sail on 8th July 1497 and by circumnavigation of Africa arrived at Calicut in India on 20th May 1498. Christopher Columbus, the Genoese sailor, discovered in 1492 the new world beyond the Atlantic. The Mediterranean ceased to be the centre of civilized world. By degrees Europe began to enter into the new phase of its existence, which is distinguished by the establishment of colonies and empires beyond the ocean, and by the gradual spread of European culture and influence throughout the habitable globe. In this adventure at first Portugal and Spain, and then the Netherlands, France and England took an active part.

The discovery of the new world coinciding with the printing, taught, that 'Truth' as Roger Bacon said, "is the daughter not of authority, but of time". Thus mankind acquired a new attitude towards knowledge. Authority no longer went unchallenged. The past was no longer supreme and generations grew up, for whom 'Truth' was not necessarily all that was given in ancient books, but something which should be ascertained by direct objective study and observation.

Under such circumstances, when Europe was kindled by new knowledge, and new outlook, there came Protestant Reformation. This was a challenge to the Roman Church. As a result of this, a religion widely held and strongly entrenched in the social and political tradition of Western Europe was challenged by new spiritual forces, and over a large part of Europe it was compelled to accept defeat. Views of life based on freedom of thought and upon the right of the individual conscience came into prominence, which in the long run transformed the institutions of Europe and shaped the life of the modern world. Never was the human mind so widely and sensibly affected as in the 17th and 18th centuries as the result of the Renaissance.

From the point of view of Evolution of Medicine, the period which is of the greatest interest to us in the middle of the 16th century. It was then, that the Medici, who stood close to the people and understood their needs, were established in Florence. The Protestant Reformation was steadily spreading. Martin Luther was preaching his doctrines. The Art was flourishing. The artists like Raphael, Michael Angelo and Titian were infusing the new spirit. The new learning was everywhere working like leaven. The old Universities were expanding and new ones were springing up everywhere. Nicholas Copernicus had laboured hard to study the ancient science of Astronomy. The art of printing was steadily contributing its share of pouring forth the means of knowledge.

The Renaissance produced the double phenomenon of a return to the classic past, and revival of the dignity of the individuality of the human being, in addition to the critical spirit springing up in the Arts, Science and literature. There was a desire for the freedom of thought and expression.

The Christian view point, which considered disease as the punishment for sin, gave way to the old Hellenic conception according to which disease is a disharmony in the body, which

nature should cure. The sentiment which made it a sacrilege to dissect dead bodies, as they were considered impure, gave place to the thought that by the actual study of the human body itself could one know its perfect beauty. So there was intensive study of it.

This renaissance appeared in different ways in different countries. In Germany and the North, Luther and Paracelsus appeared on the scene. In Italy it was pivoted on men like Machiavelli and Guicciardini, profound historians and politicians of the age. In medicine, it was in Anatomy that the revolution was brought about by Andreas Vesalius. The University of Padua was closely associated with it.

(1) ANDREAS VESALIUS (1514-1564)

It was under such circumstances, that in the year 1543, the printing press of J. Oporinus in Basel published a book "Fabrica Humani Corporis", the structure of the Human body, by Andreas Vesalius, which has been described by Sir William Osler as "The greatest book ever printed from which modern medicine dates". It served as the basis of Medical teaching for centuries afterwards.

Who was Andreas Vesalius? He was a Belgian born at Brussels in 1514. His father was apothecary to Charles V. His mother was probably of English extraction. When still young, he was interested in Anatomy and dissected animals like mice, rats, cats and dogs. The young Vesalius went to school at Louvain and afterwards entered the University there. In 1533 he went to study medicine at Paris. Here he worked under two eminent teachers, namely Jacobus Sylvius and John Guintericus of Andernach. Sylvius at that time had already achieved great reputation, and drew students from all parts of Europe. The teaching of Sylvius, however, still chiefly consisted of reading of the books of Galen. Occasionally the body of a dog or a corpse from the hospital was brought into the lecture room, and barber attendants were employed to dissect them for demonstration to the students. Sylvius himself did not do the dissection. Vesalius was not satisfied with this; and one day, he put the ignorant barbers on the one side and himself completed the dissection.

He says:-

"My study of Anatomy would never have succeeded, had I when working at medicine at Paris been willing that the Viscera should be merely shown to me and to my fellow students at one or another public dissection by wholly unskilled barbers, and that in the most superficial way. I had to put my hand to the business".

Vesalius assisted Guintericus in preparing his book Institutiones Anatomicae.

In those days, complete dissection of the human body was impossible, as it was prohibited by the Church. Vesalius used to visit the burial ground attached to the Church of Innocents in Paris, and there he studied bones of the human body for many hours. He also went with another fellow student to another burial ground on what is now "Les Boutes Charent" to study the bones.

After three years he went from Paris back to Louvain, where he continued to study Anatomy. In 1537 he went to Venice and the same years he was given the Doctorate of Medicine by the University of Padua. Padua was an enlightened seat of learning and it was here that Galileo Galilei (1564-1642) worked with his telescope, which he had designed, and thus laid the foundation of a new era of experimental scientific studies. Vesalius was appointed Professor of Anatomy and Surgery there in 1537, and was entrusted with the duty of conducting dissections. He began to teach Anatomy in his own way. He did dissection with his own hands, and ultimately taught only what he could himself see in the structure of the body of man, and not what Galen had written. In Padua the church was not so strong as in Paris or Louvain or in Spain. Here he was able to get dead bodies for dissection. In 1542 after 5 years hard work, he wrote 'Fabrica Humani Corporis' (Structure of the Human Body) illustrated with many diagrams, which was published by Oporinus in Basel in 1543. It contains description of the structure of the human body as he had himself seen. The Artist Johann Stephen van Calcar, a countryman of his, made all the illustrations in this book.

This book 'Fabrica Humani Corporis' is the beginning not only of modern Anatomy, but of modern medicine as well. It was a great landmark in the history of medicine. The subsequent history of Vesalius is rather tragic. His book raised a great storm. After publication of the Fabrica, Vesalius, who had already lectured at Bologna and Pisa, returned to Basel, where he prepared a skeleton, which is still preserved. A number of editions of this book appeared.

Sylvius, his former teacher, opposed him, while Realms Columbus and other Anatomists also attacked him.

Under these unhappy circumstances, he left Padua and became Court Physician to Emperor Charles V at Madrid in 1546, and subsequently to his successor Philip II in 1556. Here, he had no opportunity to pursue his anatomical studies. In 1563, he undertook a pilgrimage to Jerusalem. On his return journey, his ship was wrecked at Zante, and he was stricken by a severe illness, probably typhoid, and he died in 1564. He was scarcely 50 years old at the time.

The achievements of Vesalius in Anatomy were truly great. His book De Humani Corporis Fabrica is a document of the highest rank in the history of medical science. Vesalius occupies a foremost place in the history of Medicine both as an inaugurator of the science of Anatomy and also as the founder with William Harvey of modern Medical Science based on facts rather than tradition.

In addition to Andreas Vesalius, there were some other pioneers, namely Galileo, William Harvey, Leonardo da Vinci, Thomas Linacre, Thomas Sydenham and Paracelsus, who ushered in the new spirit of enquiry in the field of Medicine. We shall briefly consider their contributions.

(a) GALILEO GALILEI (1564-1642)

He was essentially a Mathematician. His influence on Medicine was indirect, as he laid great stress on exact measurement. For sometime he studied Medicine at Pisa, but after a time he gave this up, and stuck to Astronomy and Mathematics. He constructed Telescope, and also a primitive microscope which achieved great importance in the study of medicine.

William Harvey was greatly influenced by the experimental spirit practised by Galileo.

(b) WILLIAM HARVEY (1578-1657)

William Harvey was born in Folkstone in April 1578. He joined Conville and Caius College, Cambridge in 1593, and obtained his degree in Arts in 1597. The following year he left England to study medicine at Padua, which was a great seat of learning in those days. He spent about 5 years there, and in 1602 received the degree of Doctorate of Medicine there. On his return to England, he was awarded the degree of Doctorate of Medicine by the University of Cambridge. He set up his practice at St. Bartholomew's Hospital. He was then developing his ideas, by actual experiment, regarding the movements of the heart and of the blood. In 1628 his book exercitatio Anatomica de Motu Cordis et Sanguinis in Animalis was published. He attained great fame and favour at the Royal Court and became physician to King Charles I. In 1646, he retired into private practice. In 1651, he published his treatise, "De Generationis Animalium", and on 3rd June 1667, he died and thus ended a life remarkable for its achievements and its effects on further progress of medicine.

His great achievement was the demonstration of the circulation of blood by means of vivisection and ocular inspection, which he described in his famous book "Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalis" (1628). He gave a clear conception of the work of the auricles and ventricles, with their respective valves. He gave a truer conception of the pulmonary circulation and of general circulation than was ever grasped before. He conjectured that in the tissues blood passed from Arteries into Veins. The existence of capillaries was not known at that time. This knowledge came subsequently with the discovery of the microscope. I shall quote Harvey's own words:

"I frequently and seriously be-thought me, and long revolved in my mind, what might be the quantity of blood which was transmitted, in how short a time its passage might be effected, and the like; and not finding it possible that this could be supplied by the juices of the ingested aliment without the veins on the one hand becoming drained, and the arteries on the other hand becoming ruptured through the excessive charge of blood, unless the blood should somehow find its way from the arteries into the veins, and so return to the right side of the heart; I began to think whether there might not be a motion, as it were, in a circle. Now this I afterwards found to be true; and I finally saw, that the blood forced by the action of the left ventricle into the arteries was distributed to the body at large, and its several parts, in the same manner as it is sent through the veins and along the vena cava, and so round to the left ventricle in the manner already indicated, which motion we may be allowed to call circular".

Harvey's idea was that blood in the body moves in a circle. This was confirmed again and again subsequently by new facts which were discovered. Harvey Says:

"Since all things, both arguments and ocular demonstration, show "that the blood passes throughout the lungs and heart by the action of the ventricles, and is sent for distribution to all parts of the body, where it makes

its way into the veins and pores of the flesh, and flows by the veins from the circumference on every side to the centre, from the lesser to the greater veins, and is by then finally discharged into the Vena Cava and right auricle of the heart, and this in such a quantity or in such a flux and reflux, there by the arteries hitaer by the veins, as cannot possibly be supplied by the inesta, and is much greater than can be required for mere purposes of nutrition; it is absolutely necessary to conclude that the blood in the animal's body is impelled in a circle, and is in a state of ceaseless motion, that this is the act of function which the heart performs by means of its pulse; and that it is the sole and only aid of the motion and contraction of the heart".

The greatest name after Andreas Vesalius is that of William Harvey. He was a true scientist. He adopted the scientific method for his investigations. The work of Vesalius and Harvey laid the foundation of Anatomy and Physiology, and changed the whole basis of medical science.

(d) LEONARDO DA VINCI (1452-1519)

He was one of the greatest Artists, who was a harbinger of the Renaissance. He was a great genius who combined in himself the qualities of an Artist and a scientist, including sculptor, architect, geologist, physicist, mechanical engineer and a biologist. It is said, that "his was the grandest effort ever made by any man to explore and interpret the universe". He was the initiator of the new era in anatomical and physiological studies. Leonardo performed many dissections on the human body. He had a marvellous anatomical technique. He used injections into the veins, liquid wax in arteries and made gross serial sections to study structures of the body and above all drew beautiful diagrams of the appearances he observed. He studied muscles and bones, made sections of the brain, traced the cerebral veins, and other aspects of Anatomy.

Although he showed accomplishment in the subject of Anatomy and wrote down all that he had done, his work did not attract much attention at the time.

(e) THOMAS LINACRE (1460-1524)

Thomas Linacre was born at Canterbury in 1460. He was a Greek scholar. On the advice of his friend William Tillinz of Selbing, he went up to Oxford and joined Canterbury Hall, afterwards known as Christchurch, and studied classics. At the age of 24 he went to Italy and visited Florence, where he met Lorenzo the Magnificent. He then returned to Oxford and took up the study of Medicine, so that eventually he became a great classical scholar and a physician. From King Henry VIII he obtained letters patent for the establishment of body of picked medical men, which later became the Royal Colloge of Physicians of London. This Colloge, was empowered to examine and to issue license to physicians and to decide who should be allowed to practice medicine in the City of London and its immediate neighbourhood. The first President of the Royal Colloge of Physicians was Thomas Linacre himself, a very suitable person for that position. He died in 1524.

(f) THOMAS SYDENHAM (1624-1689)

He was a great clinician, and paid great attention to the observance of signs and symptoms of disease. He gives very vivid descriptions of many ailments, which are as accurate as those of Hippocrates. In fact he was a great exponent of the Hippocratic method. He introduced the use of iron in cases of Anaemia, of Cinchona bark from Peru in Malaria, and of Mercury in Syphilis. His appearance at this juncture was very opportune, when physicians were deeply immersed in various theories and philosophical speculations.

(g) JOHN CALUS (1510-1573)

He was one of the founders of Gonville and Caius College, Cambridge. He went to Padua to study medicine. After his return to England from Padua in 1546 he was appointed Reader in Anatomy to the Guild of Barber-Surgeons, and held this post till 1563. He succeeded Linacre as the President of the Royal College of Physicians, and also became Master of Gonville and Caius College, Cambridge. He was a prolific writer, and raised the status of the Medical profession.

(h) PARACELSUS (1493-1541)

There was increasing tendency during the Renaissance for the authors to write in their own language (French, German, English and Italian) than in Latin. This helped to set men's minds away from scholasticism and turn them towards realities and facts of life. There were four great leaders of the 16th century who helped the advance of medicine, namely Paracelsus, Vesalius, Harvey and Pare. Paracelsus - (Theophrastus Bombast Von Hohenheim) (1493-1541) was the most original medical thinker of the 16th century. He was a native of Switzerland (Finsiedeln, near Zurich) and was the son of a learned physician, with whom he began to study medicine. He got his doctor's degree at Ferrara (1516) and also acquired knowledge of alchemy and astrology from the bishops and abbots. He taught medicine at Freiburg and Strassburg (1535). In 1527, he was appointed Professor of Medicine at Basel. He was a devoted follower of Hippocrates and strong opponent of Galen. It is said, that he began his campaign of reform by burning the works of Galen and Avicenna in a bonfire, and lecturing in German out of his own experience. He was a picturesque man. He was one of the alchemists, but he also enquired into the properties of metals, nature of drugs, vegetable and mineral, and their actions as remedies in disease.

IV. THE EARLY MICROSCOPISTS

The Microscope which was first invented by Galileo was not very effective. But it was subsequently developed with a compound system of lenses, and was an invention of the first magnitude in the progress of medicine. In this connection, I shall refer to Malpighi and Van Leeuwenhoek.

(a) MALPIGHI (1628-1694)

Marellio Malpighi was a Professor at Bologna University. He is famous for his observations on capillary circulation in the lungs of the frog. This added the missing item in Harvey's otherwise complete account of circulation of blood. He was also a pioneer in the study of Embryology and made contributions to the subject of the development of the vascular and central nervous systems.

(b) VAN LEEUWENHOEK (1632-1723)

He was a Dutchman, who developed the Microscope and confirmed Malpighi's observations in capillary circulation. He demonstrated the movement of blood corpuscles in their passage through the capillary network of a tadpole's tail. He was an expert in grinding lenses and his microscope was superior to any invented so far. From the medical point of view his most important discovery was that of bacteria and protozoa. His observations on Micro-Organisms link up eventually with the brilliant researches of Pasteur and ultimately with the bacteriological discoveries of the 19th and 20th centuries. Thus we see that no one in science of medicine works alone, isolated, as it were, from the past and the future. We are all constituents of a team work on a vast scale.

V. THE STUDY AND PRACTICE OF MEDICINE IN THE RENAISSANCE

During the Renaissance, the study and practice of medicine passed steadily from the hands of the clergy to the lay people. There was great improvement in the economic and social position of the physicians. The physicians received their education generally in the Universities. The Universities in Italy were at the height of their fame in the 16th century. Of these, Padua was the best, and attracted students from Germany, England, Belgium, Holland, Poland, Hungary etc. Here there was complete religious freedom. Many famous Europeans as I have mentioned, studied at that University, namely Copernicus, William Harvey, Galen and so on.

The teaching in the 16th century was still of the classic type. They all read Galen and Avicenna, but new orientations made their headway. Public dissections were practised, and gradually the teachers did their own dissections instead of asking their barber assistants, to do it. The first Anatomical Theatre was built at Bologna and the second at Padua by Fabricius. The teaching of Pathology also began in this century in Padua.

Military Medicine occupied special attention. Military Hospitals were established at several places. The great progress in surgery in France is due to Ambroise Pare, who was a Military Surgeon. The increased use of firearms gave an impetus to the development of surgery.

The Physicians during the Renaissance became scholars. Prior to this in the middle ages most medical practitioners consulted Astrology. Empiricists, Charlatans, Barbers and Ferriers flourished in Europe. But now a change took place. Now the great physicians were well versed in classical literature and were Humanists and very respected members of society.

The history of Renaissance is closely connected with Art. Anatomical progress was undoubtedly due to a large extent to the part played by the Artists. I have referred to the work of Leonardo da Vinci in this respect. There was also Michelangelo, who was a pupil of Realdo Colombo. The anatomical plates in Vesalius's book were drawn by Calcar, who was a pupil of Titian. Raphael himself was a great student of Anatomy.

VI. THE RENAISSANCE AND MODERN AGE

Thus we see that in Europe a profound change took place in the 15th and 16th centuries, when there was a transition from

the Middle Ages to Modern times. The Renaissance commenced in Italy and spread over the continent of Europe. It was a new spirit, a new desire for knowledge and progress, which affected every sphere of life. Unquestioning acceptance of authority, the authority of the written world, gave way to criticism and experimental enquiry, and Medical Science which had scarcely progressed since the days of Hippocrates and Galen was quickly enriched by new discoveries.

Then there followed centuries of progress due to the work of reformers, who were inspired by the spirit of the 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 Auenbærer, 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, as I have mentioned, marks an important landmark in the history of medicine. It made the discovery of micro-organisms possible. 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 influence can be detected even today. His work on microorganisms has laid an entirely new foundation for the practice of Medicine and Surgery and has specially made a great contribution to Preventive Medicine. Pasteur died in 1895.

I must also mention the name of Robert Koch, a German, who was born in 1843. He discovered the Cholera Vibrio 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 to 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 times. Lister was a great personal friend of Pasteur. I may narrate the following incident which is well-worth recording:

The scene was Paris (1892) the occasion the seventieth birthday of Louis Pasteur. Amid tumultuous applause France's greatest scientist was escorted to the platform by the President of the Republic. Many were the orations that followed; and extravagant the praises; but none of these could have meant more to Pasteur, than this simple tribute from an Englishman:

Lord Lister said:

"Truly there does not exist in the wide world an individual to whom medical science owes more than you".

It was not the words that mattered, but the man who belated to those, who have done most for suffering humanity. I refer to you, my dear Lister". Lord Lister died in 1912.

VII. INTRODUCTION OF MODERN MEDICINE IN INDIA

This took place as the result of our contact with the nations of the West. Prior to this we had the Ayurvedic and Unani systems of Medicine, as I have already mentioned. They still prevail.

(a) THE PORTUGUESE

For the discovery of the sea route to India, Vasco da Gama sailed from Portugal on 8th July 1497. His expedition consisted of 4 ships. After navigating round the Cape of Good Hope he reached Calicut (in India) on 20th May 1498. This was followed by other expeditions. In due course the Portuguese established a hospital at Goa. One outstanding medical personality of the early days here is Garcia da Orta, who was a doctor of Medicine of the University of Alcala and Salamanca, and for sometime Professor of Philosophy in the University of Lisbon. He came to Goa in 1534 and practised as a physician there for nearly 30 years. He was a great Botanist and wrote a book on "Conversations about Herbs and Drugs". He died in 1570. The instruction in Medical science was first started in Goa in 1687. This continued for many years. This was probably the first institution in Asia, where modern medicine was taught. It was remodelled by Dr. Lima Leitao in 1819 and eventually became the "Escola Medico-Cirurgica" of Novo Goa in 1842. It trained doctors not only for Goa but also for other Portuguese colonies overseas.

(b) The French: also established hospitals in Pondichery and other colonial possessions. But the main contribution to the introduction of modern medicine in the entire country was made by the British.

(c) The British: The first fleet of the East India Company under the command of Captain (later Sir James) Lancaster set out for the East in December 1600 with four ships. Each ship carried "Surgeons Two and a Barber". These "Surgeons Two and a Barber" were the pioneers who brought Western medicine to India. They constituted the origin of what subsequently developed into the Indian Medical Service, to which I had the honour to belong.

The history of the I.M.S. dates back to 1612, when it was started by the East India Company under John Woodhall as the first Surgeon General. Under him medical Officers (mainly civilian) were recruited. Subsequently when the company found it necessary to maintain a regular body of troops in India they commenced employing Military Surgeons from 1745 onwards. It was not until 1764 that these surgeons were organised into a regular establishment of the company's Armies. Thus the Bengal Medical Service was formed in 1764, the Madras Medical Service in 1767, and the Bombay Medical Service in 1779, for the three Presidency Medical Services were called the Head Surgeons, and they controlled the civil and military needs. In 1825, the post of Inspector General was created in Bombay and Madras. In Bengal a Physician General was appointed in 1842. In 1857 this post was designated as Director General. The three medical services were in due course, combined into one medical service in April 1896, under the

Surgeon General to the Government of India. This designation was later changed into Director General, I.M.S.

The Indian Army Medical Corps which was created by the amalgamation of the I.M.S., I.M.D., and I.P.C. in 1943 was redesignated "Army Medical Corps" on 26th January 1950. The achievements of the Corps since World War II have been very considerable. In 1949 the post of Director General Armed Forces Medical Services was created as the coordinating head of the Medical Services of the Army, Navy and Air Force.

Prior to the introduction of Modern Medicine in India, the Ayurvedic and Unani Systems of medicine were taught and practised. This was the case during the Mughal period. During the British regime, the spirit of the Renaissance came to India from Europe, and medical research was also taken up, and many important contributions were made by the workers here. I shall refer to one contribution only which will serve as an example of what was done.

We in the Tropics are specially interested in Tropical diseases, the Commonest of which is Malaria, which directly or indirectly and has been the 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 pronounced 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 Indian Medical Service, and it was while he was posted at Secunderabad in Hyderabad State, and later in Calcutta that he carried out experiments on mosquitoes and proved that Malaria spread by the bite of anopheline mosquitoes. This was a discovery of vital importance. Sir Ronald Ross died in 1932. I had the opportunity of seeing him when he came to Cambridge in my student days (1912) and gave a lecture on the part played by mosquitoes in the spread of malaria.

For further history of Modern Medicine, I need not detain you much longer. Medicine was made great strides in the 19th century, but the progress in the first half of the 20th century has taken place with a rapidity which was undreamt of before. We should recollect, that after centuries of guess work, we gained in the short period of about 20 last years of the 19th century a fair knowledge of the precise cause of Gonorrhoea (1879), Malaria 1878, Pneumonia (1880), Typhoid (1880), Tuberculosis (1882), Cholera (1883), Diphtheria (1880), Malta Fever (1889), and other diseases. There is the discovery of X-Ray and Radium, the conquest of Yellow Fever. The discover of Vitamins, Insulin, Sulphonamides, Penicillin and other Antibiotics. In this battle against suffering and disease, workers in all parts of the world are participating. Medicine in the truest sense of the world is becoming universal, and in this process the World Health Organisation and other International bodies are making a valuable contribution.

VIII CONCLUDING REMARKS

In conclusion I may say, that during Renaissance, enormous progress was made. There was rapid evolution of medical thought. The rigid Aristotelian system was replaced by Neo-Platonism. The scholarship advanced quickly, especially in the

sphere of observation and experiment. There was a return to the Hippocratic concept of disease. At the same time, as the result of the work of Leonardo, Vasalius, William Harvey, Fallopius and Cesalpino, Anatomy and Physiology advanced as basic sciences. But the most important gift of Renaissance was that of Humanism, consisting in the study of the patient, his behaviour when affected by disease and the investigation of the phenomena of disease by objective methods, a concept interpreted in its most representative form by Paracelsus. This applies to both medicine and surgery. Fracastorius introduced new concepts in the field of epidemic diseases. The establishment of the experimental method by the scientific work of Galileo and others gave a new impulse to the naturalistic concept of the Universe.

Finally on making a broad survey of the History of Medicine one is reminded of the following words of Walter Moxon:

"A Golden thread has run throughout the history of the world, consecutive and continuous, the work of the best men in successive ages. From point to point it still runs, and when near you feel it as the clear and bright and searchingly irresistible light, which Truth throws forth when great minds conceive it. (Walter Moxon, Pileocercus Senilis and Other papers, 1887, p.4).

S.L. Bhatia.

REFERENCES

1. Bhatia S.L. Commemoration Address on the Unity of Medical Science, delivered on the occasion of the Silver Jubilee Celebrations of the Government College of Indian Medicine, Madras on 20th January 1950.
2. Bhatia S.L. History of Medicine with a special reference to India - An address delivered at the Government Tibbia College, Hyderabad (Dn) on 13th October 1957.
3. Bhatia S.L. Sir Ronald Ross. Presidential Address delivered on the occasion of the Ross (Centenary Celebrations at Hyderabad (Dn) on 13th October 1957)
4. Bhatia S.L. (1958 Greek Medicine in Asia. The Indian Institute of World Culture, Bangalore.
5. Bhatia S.L. The Renaissances and the Evolution of Medicine, Armed Forces Medical Journal Vol XXI No.1 (1964).
6. Castiglioni Arturo - A History of Medicine, Alfred A. Knoff New York 1941.
7. Donald McDonald. Surgeons Two and a Barber - History of Indian Medical Service 1600 - 1947 - Williams Heineman (1950).
8. Fisher H.A.L (1932) A History of Europe - Edward Arnold & Co., London 1937.
9. Garrison, Fielding H. (1929) An Introduction to the History of Medicine - 4th Edition W.E. Saunders & Co. Philadelphia and London.
10. Osler, Sir William Bart. (1943). The Evolution of Modern Medicine, New Haven, Yale University Press.

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FIVE HISTORICAL
PHARMACIES

John Bell's Pharmacy, Oxford Street, London : c.1820

Hispano-Mauresque Pharmacy : c.1790

Italian Pharmacy : Seventeenth Century

English Pharmacy : c.1680

Arab Pharmacy

The Wellcome Historical Medical Museum
The Wellcome Building, Euston Road, London, N.W.1.

DRUG JARS, and the various appliances used by the drug-sellers of former days, have long been fascinating objects to modern collectors of antiques and of specialised examples of the ceramic art. Even a single drug jar of choice design and workmanship is an object of great beauty, and in the Museum gallery may be seen some specially selected examples. There are, however, very few museums anywhere in the world where more than one or two examples of the same type can be seen together. Hence very few people realise the vivid impression of rich colours which must have been experienced by the customers who visited the pharmacies in former days. Among the attractions of the Wellcome Historical Medical Museum are reconstructions of the five historical pharmacies which are described in this leaflet. Dating from the seventeenth, eighteenth and nineteenth centuries, they present a fascinating contrast to their modern counterparts.

ITALIAN PHARMACY: SEVENTEENTH CENTURY

The design of this pharmacy is based on the layout and furnishing of the Pharmacy of the famous Hospital of the Santo Spirito at Rome, which is still in use. All the furniture and fittings of the reconstructed pharmacy are of Italian origin, most of them dating from the seventeenth century or earlier. The very handsome pharmacy counter, with its inlaid figures, was made in Italy during the seventeenth century. The drug jars are products of many famous Italian maiolica potteries. Although the majority are of seventeenth-century workmanship, some of the most beautiful were made in the late sixteenth century. A few were probably made in the eighteenth century, but they follow seventeenth-century designs. The beautiful figure in the niche in the background should be especially noted. It is the work of an Italian woodcarver of the sixteenth century, and represents either the Madonna or, more probably, St. Catherine of Alexandria.

HISPANO-MAURESQUE PHARMACY: *circa 1790*

So far as the furnishings and fittings and most of the woodwork are concerned, this is a genuine Andalusian pharmacy of the end of the eighteenth century. In 1928 Sir Henry Wellcome purchased the whole of the woodwork and contents of the Pontes Pharmacy in

Granada. This shop was said to have been continuously used as a pharmacy since 1492; but not unnaturally changes in the layout and contents had gradually occurred during the intervening period, and in 1928 these had been practically unaltered since the close of the eighteenth century. On the doors of the large cupboard are four painted representations of Adam, Solomon, Theophrastus (c. 380–287 B.C.), the Greek father of botany, and Dioscorides (1st cent. A.D.), the father of materia medica. On the panels of the smaller cupboards are painted portraits of Albrecht von Haller (1708–77), the great Swiss savant and physiologist; Hermann Boerhaave (1668–1738), great Dutch physician and the first to teach clinical medicine in the modern sense; Antoine Baumé (1728–1804), the French chemist and pharmacist; Robert Morison (1620–83), the Scottish botanist who was physician to Charles II and held the Botany Chair at Oxford; George Louis Leclerc, Comte de Buffon (1707–88), the great French naturalist; and José Quer y Martínez (1695–1764) author of *Flora Española* (6 vols. 1762–84) and first Director of the Botanical Gardens in Madrid. Note should be made of the fine run of hand-painted drug jars of unusual type and all in the same style, which fill most of the shelves. On the shelves in the left foreground is a fine selection of jars made of Hispano-Mauresque lustre ware. Note should be made of the portrait in the left background. It is of Gabriel Martín de Otero, Doctor of Pharmacy, 'visitor and founder of this shop'. The date—1790—on the portrait can just be made out. No further information is extant regarding this man, but he presumably purchased the shop about that time.

ENGLISH PHARMACY: circa 1680

This pharmacy has been reconstructed from various sources. Owing to lack of space it has not been possible to reconstruct an entire shop. The front of the shop is, however, shown as it would have appeared, together with sufficient of the interior to give some indication of the probable contents. The interior contains drug jars of the period made of London delftware. (Many further examples of English delftware and of its Dutch counterpart may be seen in the Museum.) In the window of the shop is hung a pill-tile in monochrome bearing the arms of the Society of Apothecaries of London. These tiles were sometimes used for rolling pills, but those bearing

the Society's arms were possibly used as signs hung in the windows of pharmacies as trade signs and to indicate the fact that the owners were members of the Society. This example dates from about 1700. (An example of the very rare tiles bearing the Society's arms in polychrome is shown in the Museum.)

ARAB PHARMACY

This is a reconstruction using genuine Arab material, and shows an Arab pharmacy as it might have existed some centuries ago, and equally as it might be found today. The structure, fittings and contents are all of Arab workmanship. The craftsmanship should be noted, especially the ceiling, the inlaid mother-of-pearl work, and the glass mosaic work of the windows. The decoration of some of the cupboards is not simple carving, but consists of inlaid work and the intricate interlocking of individual pieces of wood. Even the copying of this work would be beyond the capabilities of most craftsmen today.

JOHN BELL'S PHARMACY

This well-known pharmacy, formerly situated in Oxford Street, London, was founded in 1798 by John Bell (1774-1849), the father of Jacob Bell (1810-1859), founder of the Pharmaceutical Society of Great Britain. The old front of John Bell's pharmacy in Oxford Street was dismantled in 1909, and was acquired by Sir Henry Wellcome. Some of the contents of the windows had previously been purchased. The original shop-front is here rebuilt, and in the limited area available an attempt is made to give an indication of the contents of an English chemist's shop and of its windows, using contemporary material, about the middle of the nineteenth century.

Coloured postcards of the pharmacies are on sale in the Museum.

The Wellcome Historical Medical Museum is open to the public from 10 a.m. to 5 p.m., Monday to Friday, and 9.30 a.m. to 4.30 p.m. on Saturdays.



12th Programme on

MEDICAL AUDIT

August 16-18, 2004

Programme Director
Dr. P.H. RAO



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for 23/6

Administrative Staff College of India

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PROGRAMME OVERVIEW

With rapid advances in medical science and technology, hospital service are becoming more and more complex and also competitive. On one hand awareness and expectations of consumers are increasing and on the other the number of health care managers realizing the need for improving the Quality of Care is growing. It is important to make the health care provider effective, economical, and accountable. Health Managers need an enabling system to ensure that people associated with delivery of health care at different levels are able to monitor, evaluate and account for their work themselves, and thus provide quality care to patients on an ongoing basis.

Medical Audit facilitates in-house assessment of current medical practices, comparing them with set standards on medical care, and suggest changes for implementation leading to improvement of the quality of services provided.

PROGRAMME OBJECTIVES

The main objective of the programme is to empower health care providers with practical and implementable knowledge and methodology to implement medical audit.

PROGRAMME CONTENTS

- ◆ Introduction to Quality of Care
- ◆ Medical Audit - definition, scope, framework and organisation
- ◆ Management of patient, clinical and financial data for objective evaluation
- ◆ Components of Medical Audit
 - Morbidity audit, mortality audit, tissue audit, infection control/audit, prescription audit, equipment audit, cost audit, material management/audit etc.
- ◆ Implementing Medical Audit
- ◆ Critical Paths

WHO WILL BENEFIT ?

- ◆ Hospital administrations, Medical Superintendents from Central, State, Public Sector hospitals
- ◆ Hospital Managers from corporate and voluntary hospitals
- ◆ Programme Managers from NGOs involved in the delivery of health care
- ◆ Other health care managers and researchers interested in Quality of Care and related issues.

WHAT WILL YOU GAIN ?

INDIVIDUALS

- ◆ Appreciate the importance of Quality of Care and understand the role of Medical Audit in improving Quality of Care.
- ◆ Familiarity with Systems Framework for conducting Medical Audit.
- ◆ Understand different components of Medical Audit and its implementation.
- ◆ Knowledge of relevant legal aspects and ethical issues.

Organisational Sponsorship is Essential.

ORGANIZATION

Human resource who appreciate and understand the scope and applicability of Medical Audit. They will be invaluable in improving Quality of Care provided by their organisations by means of Medical Audit.

PROGRAMME DURATION AND VENUE

The programme will be held at ASCI Center for Management Education (CME), College Park Campus, Banjara Hills, Road No. 3, Hyderabad. The programme will be held from August 16-18, 2004.

PROGRAMME FEE

The programme fee is Rs. 15,000/- only. It includes the cost of board and lodging charges, fee for instruction and courseware. The crossed demand draft should be made out in favour of "Administrative Staff College of India", Hyderabad. The College is exempt from income tax, therefore, please do not deduct tax.

PROGRAMME DESIGN

The programme pedagogy emphasizes participatory learning approach. It includes lectures, discussions, group work, exercises and case studies. The participants are encouraged to share their experiences. A step-by-step approach will be adopted to enable the participants to attempt Medical Audit as a method of practical management in their organisations.

IMPORTANT DATES

Last date for receiving nominations August 2, 2004

Last date for withdrawing nominations August 9, 2004

CERTIFICATE OF PARTICIPATION

The college issues a certificate of participation on conclusion of programme.

Programme Director

DR. P.H. RAO, M.Pharm, Fellow (IIMB)

Holds a doctoral qualification in Health Management from nation's premier management institution, Indian Institute of Management, Bangalore. He has extensive experience in designing and conducting Management Development Programmes for programme managers, trainers and other professionals from health and family welfare services. He was trained in Indonesia on Quality improvement in Health Care and Advances in Health Communication and Advocacy at JHU/CCP, Baltimore, USA.



ASCI Campuses



Administrative Staff College of India

Bella Vista

Raj Bhavan Road, Khairatabad,
Hyderabad - 500 082.

Tel : 2331 0952



Administrative Staff College of India

College Park Campus

Road No. 3, Avenue No. 8,
Banjara Hills, Hyderabad 500 034.

Tel : 2335 1514



Administrative Staff College of India

New Delhi Centre

C-24, Institutional Area, South of IIT
Behind Qutub Hotel, New Delhi 110 016

Tel : 2696 2204

For further details, please contact :

Dr. P.H. RAO

Programme Director

E-mail : drphrao@asci.org.in

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Programmes Officer

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Programmes Officer

ADMINISTRATIVE STAFF COLLEGE OF INDIA

Bella Vista, Raj Bhavan Road, Khairatabad,
Hyderabad - 500 082, India.

Telefax (Programmes Office) : 0091-40-23324365

Phone : 0091-40-23310952, Cable : BELLAVISTA

Fax : 0091-40-23312954

Please visit us at :

www.asci.org.in

Conference registration

Registration fees are inclusive of conference material, lunch and tea/coffee for the three days of the conference.

Registration fees for participants from India and other SAARC countries are Rs 500 if paid before July 31, 2005 and Rs 800 thereafter.

Registration fees for participants from other resource-poor countries are: US\$ 25 if paid before July 31, 2005 and US\$ 40 thereafter.

Registration fees for participants from the rest of the world are US\$ 75 if paid before July 31, 2005 and US\$ 100 thereafter.

Accommodation

For outstation participants, accommodation at the venue (YMCA International Guesthouse, Mumbai Central) is available in double occupancy rooms for Rs 1,000 per day per person in air-conditioned rooms, and Rs 500 per person per day per person in non-air-conditioned rooms (both inclusive of breakfast and dinner).

Conference Coordinator

Amar Jesani

Secretariat

Anant Bhan, Nabhajit Roy, Sandhya Srinivasan

Please send abstracts/concept notes and all inquiries to: bioethics2005@yahoo.co.in

For updates see www.issuesinmedicaethics.org

Contact address:

National Bioethics Conference
IJME c/o CSER, Candelar, 4th Floor, 26 St. John Baptist Road, Bandra (W), Mumbai 400 050 INDIA.
Tel.: (91 22) 2640 6703, Fax: (91 22) 2667 3156

Collaborating organisations

- Tata Institute of Social Sciences, Mumbai
- Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum
- Sama, New Delhi
- National AIDS Research Institute, Pune
- MASUM, Pune
- LOCOST, Baroda
- Lokmanya Tilak Municipal General Hospital and Medical College, Sion, Mumbai
- KEM Hospital/GS Medical College, Mumbai
- Jasiok Hospital, Mumbai
- Institute of Legal Medicine, Chennai
- Independent Ethics Committee, Mumbai
- Gujarat Institute for Development Research, Ahmedabad
- Forum for Medical Ethics Society, Mumbai
- Christian Medical College, Vellore
- Centre for Studies in Ethics and Rights, Mumbai
- CEMAT, Mumbai
- All-India Institute of Medical Sciences, Delhi

Organising Committee

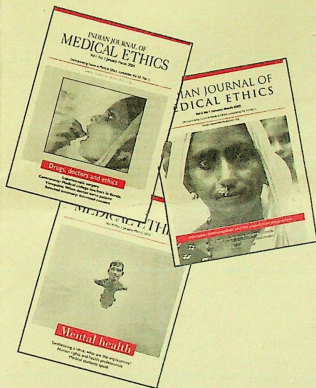
Ramesh Awasthi, Sunita Bandewar, Shalini Bharat, Sujit Chandy, Suneeta Krishnan, K Mathiharan, Neha Madhiwalla, Sanjay Mehendale, Sanjay Nagral, Anita Pitre, Mala Ramanathan, K Srinath Reddy, H B Sarojini, S Srinivasan, Avinash Supe, Urmila Thatte, Leela Visaria, Jagruti Waghela.

The First NATIONAL BIOETHICS CONFERENCE

Indian Journal of Medical Ethics

November 25, 26 and 27, 2005

YMCA, Mumbai Central, Mumbai, INDIA



Ethical challenges in health care: global context, Indian reality

- Ethical challenges in HIV/AIDS
- Ethics of life and death in the era of hi-tech health care
- Ethical responsibilities in violence, conflict and religious strife
- Ethics and equity in clinical trials and other issues

IJME First NATIONAL BIOETHICS CONFERENCE

The *Indian Journal of Medical Ethics* completed 12 years of publication in 2004. During these years, it has contributed to and benefited from the emergence of bioethics as a distinct discipline in India.

IJME hopes to build upon this relationship through the National Bioethics Conference. The conference aims to establish a regular platform for coming together, sharing experiences, and fostering cooperation among individuals, organisations and institutions concerned with bioethics in India.

Conference theme and focus sub-themes:

Bioethics in India has developed in response to multiple influences. The community health movement has demanded universal access to basic health services and offered a critique of professionalisation, mystification and bureaucratisation in health care. The patients' and consumers' rights movement has drawn attention to commercialisation in health care and medical malpractice. The movement for rational therapeutics and drug price controls has analysed the conduct of the pharmaceutical industry and doctors' prescription practices. The women's movement has exposed the politics of population control and documented ethical violations in contraceptive trials. While these and other significant movements emerged from the specific political reality of India, they were - and still are - also a response to global changes in the health sector. The process of opening up the economy for global capital, the accelerated development of the corporate health sector, the phenomenal increase in cheap drug trials, the decline of the public health sector and the rise in inequities - all these have complex national and global

interconnections. Further, in India, they are strongly associated with an increase in violence, conflict and fundamentalism. **It is in this general context that one must view the emerging ethical challenges in health care.**

Focus sub-themes: Within this broad theme providing the framework to deliberations at the conference, in-depth discussions will be held on the following focus sub-themes.

- ♦ **Ethical challenges in HIV/AIDS:** The advancing epidemic of HIV/AIDS and the extremes of cultural, religious, professional and other social responses to it have posed severe ethical challenges in clinical practice, research, public health and health policy. Stigma and discrimination in social and occupational settings, and the intervention of people living with HIV/AIDS in defence of their human rights, have shaped both the ethical challenges and the response of health care providers.
- ♦ **Ethics of life and death in the era of hi-tech health care:** The increased investment in hi-tech health care has posed ethical challenges in public policy, resource allocation and addressing inequity. It has also highlighted ethical complexities in specific areas such as organ transplantation, artificial reproduction, euthanasia, palliative care and the use of sex selection technologies.
- ♦ **Ethical responsibilities in violence, conflict and religious strife:** What are the tensions between health professionals' religious, caste, ideological and other affiliations and their professional obligations, and how may they be resolved? The subject of health professionals' ethical responsibilities in conflict situations is crucial,

as is the question of researchers' ethical responsibilities when undertaking studies in such situations.

- ♦ **Ethics and equity in clinical trials and other issues:** This section will include presentations on issues related to the growth of clinical trials in developing countries. This section will also take up papers on issues not covered in the other themes.

While the conference is planned to cover these sub-themes, submissions will be accepted on other subjects as well.

Cross cutting themes: Each sub-theme will be discussed in the context of clinical practice, research and public health. Discussions will also be informed by several cross cutting themes such as equity and access, culture and religion, laws and regulations, provision for ethics reviews and consultations, and so on.

Structure of the conference

The conference will be structured around morning plenary sessions with presentations by experts; parallel sessions for each focus sub-theme; and late afternoon/evening satellite sessions consisting of lectures, discussions, role-plays (such as mock ethics review boards or clinical consultations), films and cultural events.

The last date for sending abstracts is June 30, 2005. Writers will be informed of the programme committee's decision by **July 31, 2005.**

MP-4.



Nomination Form

(To be filled in by the Nominee)

Nominee's
Photograph
to be affixed
here

Please return the completed form, along with the demand draft towards programme fee to:

Programmes Officer, Administrative Staff College of India
Bella Vista, Raj Bhavan Road, Hyderabad-500 082

LATEST BY: August 2, 2004

Phone: 23310952; Telefax: (Programmes Office) 0091-040-23324365
Fax: 0091-040-23312954; Email: poffice@asci.org.in
Website: <http://www.asci.org.in>

Twelfth Programme on MEDICAL AUDIT

Period	August 16 to 18, 2004
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Nominee's Personal Information

Name (Mr./Mrs./Ms./Er./Dr.)			
Designation			
Date of Birth		Age	
Organisation			
Address			
Phone(s)	Business		Home
Fax			
E-mail			

Nominee's Academic Information (Graduation onwards only)

Title/Degree	Institution	Year	Subject

Nominee's Experience - Present Organisation

Position	Reporting to	Responsibility	Years

Nominee's Experience - Previous Organisation(s)

Organisation	Position	Reporting to	Responsibility	Years

Present Training Programme

What does the participant expect to learn?

What does the participant expect to contribute to the learning process?

Health of the Nominee

Good	Specify chronic ailments if any
------	---------------------------------

Date

Signature of Nominee

(To be filled in by the Sponsor)

Sponsoring Organisation : Business Information

Name				Sector	
Address					
Phone(s)				Fax	
E-mail					
Range of Products/ Services					
Size (Rs. in Lakhs)	Revenue		Asset Base		Employees

Programme fee payable to Administrative Staff College of India

Amount of Payment		Mode of Payment (DD/Ch)	
Instrument Number		Date of Instrument	
Name of the Bank			

Date :

Signature of Sponsoring Authority

Name :

Designation :



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email: poffice@asci.org.in; URL: http://www.asci.org.in

Dr. P. H. Rao
Fellow (IIMB)
Programme Director

June 4, 2004

TWELFTH MANAGEMENT DEVELOPMENT PROGRAMME ON MEDICAL AUDIT

August 16 to 18, 2004

Dear Sir/Madam

I am happy to inform you that ASCI, *The College for Practicing Managers*, is offering the Twelfth Management Development Programme on "Medical Audit" from August 16 to 18, 2004. I am enclosing herewith a brochure giving details of the programme for your information. A nomination form is also enclosed for your use.

Our earlier programmes on Medical Audit were attended by health professionals from central, state governments and local bodies, private and corporate hospitals, NGOs and others. I am enclosing a list of participating organisations for your perusal. **The Seventh Programme was organised exclusively for the "Maharashtra Health Systems Development Project", in September 2002 at Khandala. The Eleventh Programme was organized exclusively for the Orissa Health System Development Project at Hyderabad from March 4 to 6, 2004.**

Feedback from the earlier participants indicate that it will be useful to send a team of administrator, nursing superintendent and a member of medical records, who are likely to be involved in the Medical Audit process in the organisation.

As the last date for receiving nominations is August 2, 2004, you are requested to send the nomination form at the earliest, so that we can reserve the number of seats required by your organisation. The total number of seats is restricted to 25 to facilitate close interaction and better learning.

We look forward to the nominations from your organisation. You are welcome to call or write to me in case you need more information about the programme.

Thanking you,

Cordially yours,

P. H. Rao

- Encl: a) List of participating organisations of the earlier programmes
b) Brochure & Nomination Form

PROGRAMME ON MEDICAL AUDIT

Organisations participated in the earlier Programmes

Government of India and Government Undertakings

1. BHEL Hospital, Hyderabad
2. Heavy Water Plant Hospital, Department of Atomic Energy, Andhra Pradesh
3. Konkan Railway Corporation, Navi Mumbai
4. Directorate General-Medical Services (Air), Air HQ, New Delhi
5. Ordnance Factory, Varangaon
6. Planning Commission, GOI, New Delhi
7. NTPC, New Delhi
8. Western Coalfields Ltd, Nagpur
9. Safdarjung Hospital, New Delhi
10. Survey of India, Dehradun
11. GJ Hospital, Port Trust, Vizakhapatnam
12. HWP Hospital, Khammam, AP
13. BHEL Hospital, Bhopal.
14. Northern Coal Fields Ltd., Singrauli, M.P.
15. Directorate General of Health Services, New Delhi
16. Sail Hospital, Durgapur, West Bengal
17. ESIC Model Hospital, Hyderabad
18. Singareni Collieries, Kothagudem, A.P.

Health System Development Projects and State Governments

1. AP Vaidya Vidhan Parishad, Hyderabad
2. Punjab State Health Systems Corporation, Chandigarh
3. Orissa Health Systems Development Project, Bhubaneswar
4. West Bengal Health Systems Development Project, Kolkata
5. UP Health Systems Development Project, Lucknow
6. Maharashtra Health Systems Development Project, Mumbai
7. Department of Public Health and Family Welfare, Madhya Pradesh
8. Department of Health & Family Welfare, Rajasthan
9. Department of Health & Family Welfare, Himachal Pradesh

Local Bodies

1. Municipal Corporation of Hyderabad, Andhra Pradesh
2. Municipal Corporation of Delhi, New Delhi
3. Bangalore Mahanagar Palike, Bangalore

Private & Corporate Hospitals

1. KEM Hospital, Pune
2. Prince Alykhan Hospital, Bombay
3. Shankar Nethralaya, Chennai
4. SDA Hospitals, Hosur
5. Advanced Medicare & Research Institute, Calcutta
6. Poona Hospital & Research Centre, Pune
7. P.D. Hinduja Hospital, Mumbai
8. Dhanvantri Hospital, UPPC Nagar, Auraiya
9. Bhailal Amin General Hospital, Vadodara
10. PSB Hospital, Coimbatore
11. BKTPP Hospital, Calcutta
12. Dhirubai Ambani Hospital, Maharashtra
13. Jagadguru Sri Shivarathreeswara Hospital, Mysore
14. Puri Sadar Hospital, West Bengal
15. Tata General Hospital, Mannur, Kerala
16. Orange City Hospital & Research Centre, Nagpur, Maharashtra

17. Kasturba Gandhi Hospital, Delhi
18. JW Global Hospital & Health Centre, Mount Abu
19. Medwin Hospital, Hyderabad
20. Apollo Hospital, Hyderabad
21. Apollo Hospital, Chennai
22. Max Healthcare Ltd, New Delhi
23. The BD Patil Parsee General Hospital, Mumbai
24. National Institute of Ophthalmology, Pune
25. Peerless Hospital and B.K. Roy Research Center, Kolkata
26. Sri Jayachamarajendra General Hospital, Arsikera, Hasn District, Karnataka
27. Lokamanya Medical Foundation, Pune
28. The B D Petit Parsee General Hospital, Mumbai
29. Tata Main Hospital, Jamshedpur
30. Tapadia Diagnostic Center, Hyderabad
31. K G Hospital, Coimbatore
32. BKF - Chande Nephro - Urology Center
33. Ashwini Kidney and Dialysis Center, Nagpur
34. Goodricke Group Hospitals, Calcutta & Jalpaiguri
35. Tinplate Hospital, Jamshedpur
36. Kamineni Hospital, Hyderabad

Medical College/Training Institutes

1. Gandhi Hospital, Secunderabad
2. Gandhi Medical College, Hyderabad
3. Guru Tej Bahadur Hospital, New Delhi
4. Sri Ramachandra Medical College & Research Centre, Chennai
5. Dr Panjabrao Deshmukh Medical College, Amravati
6. Vinayaka Mission Medical College and Hospital, Pondichery
7. Post Graduate Institute of Medical Education and Research, Chandigarh
8. Nizam's Institute of Medical Sciences, Hyderabad
9. Urban Health Research and Training Institute, Bangalore
10. St. John's Medical College Hospital, Bangalore
11. NIMHANS, Bangalore
12. Al - Ameen Medical College Hospital, Bijapur
13. Amrita Institute of Medical Sciences, Kochi
14. Dr P D Medical College, Amravati
15. Dr R P Medical College Hospital, Dharmasala, H.P.
16. AIIMS, New Delhi
17. L.V. Prasad Eye Institute, Hyderabad
18. Kasturba Medical College Hospital, Manipal

NGOs & Others

1. Parivar Seva Sanstha (PSS), New Delhi
2. Aware Hospital, Hyderabad
3. Rubber Board, Kerala
4. Family Planning Association of India, Mumbai
5. Christian Medical Center, Pittapuram, A.P.