Chapter-II

MEDICINE IN ANTIQUITY

In ancient times, health and illness were interpreted in a cosmological and anthropology perspective. Medicine was dominated by magical and religious belief which was an integral part of ancient cultures and civilizations. Henry steigerist, the medical histories has stated that every culture had developed a system of medicine, and medical history is but one aspect of the history of culture. Dubos goes one step further and says that ancient medicine was the mother of sciences and placed a large role in the integration of early culture. Since there is an organic relationship between medicine and human advancement, any account of medicine at a given period should be viewed against the civilization and human advancement at that time, i.e. philosophy, religion, economic conditions. Form of government, education, science and aspirations of the people.

Primitve medicine

It has been truly said that medicine was conceived in sympathy and born out of necessity: and that the first doctor was the first man, and the first women, the first nurse. The prehistoric man, motivated by feelings of sympathy and kindness, was always at the behest of his kindred. Trying to provide relief, in times of sickness and suffering.

Since his knowledge was limited, the primitive man attributed disease, and in fact all human suffering and other calamities, to the wrath of gods, the invasion of body by “evil spirit “and the malevolent influence of stars and planets. The concept of disease in which the ancient man belied is known as
the “supernatural theory of disease “ As a logical sequence, the medicine he practiced consisted in appeasing gods by prayers, rituals and sacrifices, driving out “evil spirits” from the human body by witchcraft and other crude means and using charms and amulets administration of certain herbs or drugs whose effect is doubtful or nil, but hopefully harmless, may also be likened to a kind of magic ritual associated with the need to “do something“ there is also evidence that prehistoric man improvised stone and flint instruments with which he performed circumcisions, amputations and trephining of skulls. It is thus obvious that medicine in the prehistoric times (about 5000 BC) was intermingled with superstition, religion, magic and witchcraft.

Primitive medicine is timeless. If we look around the world, we find that the rudiments of primitive medicine still persist in many parts of the world. In Asia, Africa, South America, Australia and the Pacific islands, the supernatural theory of disease in which the primitive man believed is as new as today. For example, in India, one may still hear the talk of curing snake bites by “mantras”. Diseases such as leprosy are interpreted as being punishment for one’s past sins in some cultures. Although primitive man may be extinct, his progeny – the so called “traditional healers” are found everywhere. They live close to the people and their treatments are based on various combinations of religion, magic and empiricism.

**Indian medicine**

The medical system that is truly Indian in origin and development are the Ayurveda and the Siddha systems. Ayurveda is practiced throughout India. These systems differ very little both in theory and practice Ayurveda by
definition implies the “Knowledge of life “or the knowledge by which life may be prolonged. Its origin is traced far back to the Vedic times, about 5000 BC. During this period, medical history was associated with mythological figures, sages and seers. Dhanvantari, the Hindu god of medicine is said to have been born as a result of the churning of the oceans during a “tug of war” between gods and demons. According to some authorities, the medical knowledge in the Atharveda (one of the four Vedas) gradually developed into the science of Ayurveda.

In ancient India, the celebrated authorities in Ayurvedic medicine were Atreya, Charaka, Susruta and Vagbhhatt. Atreya (about 800 BC) is acknowledge as the first great Indian physician and teacher. He lived in the ancient university of Takshashila; about 20 miles west of modern Rawalpindi. Ayurveda witnessed tremendous growth and development during the Buddhist times. King Ashoka (266 BC) and the other Buddhist kings patronized Ayurveda as State medicine and establishment schools of medicine and public hospitals. Charaka (200 AD), the most popular name in Ayurvedic medicine, was a court physician to the Buddhist king, Kaniska. Based on the teachings of Atreya, Charaka compiled his famous treatise on medicine, and the Indian snakerooot was employed for centuries by the Indian physicians, before reserving was extracted from the root and found spectacularly effective in the treatment of hypertension.

Among the many distinguished name in Hindu medicine, that of Susruta, the “father of Indian surgery “stands out in prominence. He compiled the surgical knowledge of his time in his classic between 800 BC and 400 AD. Though this work is mainly devoted to surgery, it also includes medicine, pathology mainly anatomy, midwifery ophthalmology, hygiene and bedside
manners. The early Indians set fractures, performed amputations, excised tumors, repaired hernias and excelled in cataract operations and plastic surgery. It is stated that the British physicians learned the art of rhinoplasty from Indian surgeons in the days of East India Company. However, during Buddhist times; Indian surgery suffered a setback because of the doctrine of ahimsa (non-violence).

Of significance in Ayurveda is the “tridosha theory of disease “the doshas or humors are: vata (wind), pitta (galla) and kapha (mucus). Disease was explained as a disturbance in the equilibrium of the three humors: when these were in perfect balance and harmony, a person is said to be healthy. This theory of disease is striking similar to the “theory of four humors” in Greek medicine. Medical historians admit that there was free exchange of knowledge and experience between the Hindu, Arab, Persian, Greek and Jewish scholars. The Samhitas of charka and susruta were translated into Persian and Arabic about 800 AD.

Hygiene was given an important place in ancient Indian medicine. the laws of Manu were a code of personal hygiene. Archaeological excavations at Mohenjo-Daro and Harappa in the Indus valley uncovered cities of over two thousand years old which revealed rather advanced knowledge of sanitation, water supply and engineering. The golden age of Indian medicine was between 800 BC and 600 AD. During the Mogul period and subsequent years, Ayurveda declined due to lack of state support.

Medical historians admit that Indian medicine has played in Asia the same role as the Greek medicine in the west, for it has spread in Indochina,
Indonesia, Tibet, Central Asia, and as far as Japan, exactly as the Greek medicine has done in Europe and Arab countries.

Mention must be made of the other indigenous system of medicine namely Unani-Tibb and Homoeopathy, which are not of Indian origin. The Unani-Tibb system of medicine, whose origin is traced to the ancient Greek medicine, was introduced into India by the Muslim rules about the 10th Century AD. By the 13th Century, the Unani system of medicine was firmly entrenched in certain towns and cities notably Delhi, Aligarh, Lucknow and Hyderabad. It enjoyed state support under successive Muslim rules in India, till the advent of the British in the 18th Century. Homeopathy, which was propounded by Samuel Hahnemann (1755-1843) of Germany gained foothold in India during 1810 and 1839. It is a system of pharmacodynamics based on “treatment of disease by the use of small amounts of a drug that, in healthy persons, produced symptoms similar to those of the disease being treated.” Homeopathy is practiced in several countries, but India claims to have the largest number of practitioners of this system in the world.

The Indian systems of medicine including Unani-Tibb and Homoeopathy are very much alive in India even today. In fact, they have become part of Indian culture, and they continue to be an important source of medical relief to the rural population.

Chinese medicine

Chinese medicine claims to be the world’s first organized body of medical knowledge dating back to 2700 BC. It is based on two principals—the yang and the yin a negative feminine principle. The balance of these two opposing forces meant good health. Hygiene, dietetics
hydro-therapy, massage, drug were all used by the Chinese physicians.

The Chinese were early pioneers of immunization. They practiced variolation to prevent smallpox. To a Chinese, “the great doctor is one who treats not someone who is already ill but someone not yet ill” The Chinese have great faith in their traditional medicine, which is fully integrated with modern medicine. The Chinese system of “bare-foot doctors” and acupuncture have attracted worldwide attention in recent years.  

**Egyptian medicine.**

Egypt is also one of the oldest civilizations of the world around 2000 BC. A lot is known about ancient Egypt because they invented picture writing and recorded their doings on papyrus. In Egyptian times the art of medicines was mingled with religion. Egyptian physicians were co-equals of priests, trained in schools within the temples. They often helped priests care for the sick who were brought to the temples for treatment. There were no practical demonstrations in anatomy, for Egyptian religion enjoined strict preservation or embalming or mummification of the dead. Egyptian medicine reached its peak in the days of Imhotep (2800 BC) who was famous as a statesman, architect, builder of the step pyramid at Saqqara and physician. The Egyptians worshipped many gods. Imhotep was considered both a doctor and divinity. Specialization prevailed in Egyptian times. There were eye doctors, head doctors and tooth doctors. All these doctors were officials paid by the state. Homer speaking of the doctors of the ancient world considered the Egyptians to be the “the best of all”.

Egyptian medicine was far from primitive. They believed that disease was due to absorption from the intestine of harmful substances which gave rise to
putrefaction of blood and formation of pus. They believed that the pulse was “the speech of the heart”. Diseases were treated with cathartics, enema, blood-letting and a wide range of drugs. The best known medical manuscripts belonging to the Egyptian times are the Edwin Smith papyrus (3000-2500 BC), and the Ebers papyrus (1150 BC). The Edwin Smith papyrus, the oldest treatise on surgery, accurately described partial paralysis following cerebral lesions in skull fractures. The Ebers papyrus which was found with a mummy on the banks of the Nile is a unique record of some 800 prescriptions based on some 700 drugs, Castor oil, tannic acid, Opium, turpentine, gentian, senna, minerals and root drugs were used by the Egyptian physicians. A great number of diseases are reported in the papyri such as worms, eye diseases, diabetics, rheumatism, polio and schistosomiasis. Unfortunately these ailments are still present in modern Egypt.

In the realm of public health also, the Egyptians excelled. They built planned cities, public baths and underground drains which even the modern might envy. They had also some knowledge of inoculation against smallpox, the value of mosquito nets and the association of plaque with rats. Their god of health was Horus. Egyptian medicine occupied a dominant place in the ancient world for about 2500 years when it was replaced by Greek medicine.

**Mesopotamian medicine**

Contemporary with ancient Egyptian civilization, there existed another civilization in the land which lies between the Euphrates and Tigris rivers,
Mesopotamia (now part of Iraq), often called the “Cradle of Civilization”, as long as 5000 years ago.

In ancient Mesopotamia, the basic concepts of medicine were religious and taught and practiced by herb doctors, knife doctors and spell doctors – a classification that roughly parallels our own internists, surgeons and psychiatrists. Mesopotamia was the cradle of magic and necromancy. Medical students were busy in classifying “demons” the causes Geomancy, the interpretation of dreams, and hepatoscopic divination (the liver was considered the seat of life) are characteristic of their medical lore. Sumerians, Babylonians and Assyrians were the authors of a medical astrology which flourished in the whole of Eurasia. Prescriptions were written on tablets, in cuneiform writing. The oldest medical prescription comes to us from Mesopotamia, dating back to 2100 BC.

Hammurabi, a great king of Babylon who lived around 2000 BC formulated a set of drastic laws known as the code of Hammurabi that governed the conduct of physicians and provided for health practices. Doctors whose proposed therapy proved wrong ran the risk of being killed. Laws relating to medical practice including fees payable to physicians for satisfactory services and penalties for harmful therapy are contained in the Babylonian Code of Hammurabi, the very first codification of medical practice. While the code of Hammurabi reflected a high degree of social organization, the medicine of his time was devoid of any scientific foundation.
GREEK MEDICINE

The classic period of Greek medicine was the year 460 – 136 BC. The Greeks enjoyed the reputation – the civilizers of the ancient world. They taught men to think in terms of “why” and “how”. An early leader in Greek medicine was Aesculapius (1200BC). Aesculapius bore two daughters – Hygeia and Panacea. The medical historian, Douglas Guthrie 16 has reminded us of the legend that Hygeia was worshipped as the goddess of health and Panacea as the goddess of medicine. Panacea and Hygeia gave rise to dynasties of healers (curative medicine) and hygienists (preventive medicine) with different philosophers. Thus the dichotomy between curative medicine and preventive medicine began early and we know it remains true today. Hygeia (prevention) is at present fashionable among the intellectuals: but Panacea (cure) gets the cash. Aesculapius is still cherished in medical circles – his staff, entwined by a serpent, continues to be the symbol of medicine.

By far the greatest physician in Greek medicine was Hippocrates (460-370BC) who is often called the “Father of medicine”. He was born on the little island of Cos, in the Aegean Sea, about 460 BC. He studied and classified diseases based on observation and reasoning. He challenged the tradition of magic of medicine and initiated a radically new approach to medicine i.e., application of clinical methods in medicine. Hippocrates’ lectures and writings, as complied later by Alexandrian scholars in to the “Corpus Hippocratum”, encompassed all branches of medicine. This 72-volume work contains the first scientific clinical case histories. Some of the sayings of Hippocrates later became favorites with physicians, such as “Life
is short, the art (of medicine) long, opportunity fleeting, experience treacherous and judgment difficult”, and “Where there is love for mankind there is love for the art of healing”. His famous oath, the “Hippocratic oath” has become the keystone of medical ethics. It sets a high moral standard for the medical profession and demands absolute integrity of doctors. Hippocrates will always be regarded as one of the masters of the medical art.

Hippocrates was also an epidemiologist. Since he distinguished between diseases which were epidemic and those which were endemic, he was, in fact, the first true epidemiologist. He was constantly seeking the causes of disease. He studied such things as climate, water, clothing, diet, habits of eating and drinking and the effect they had in producing disease. His book “Airs, Water and Places” is considered a treatise on social medicine and hygiene. The Hippocratic concept of health and disease stressed the relation between man and his environment.

In short, the Greeks gave a new direction to medical thought. They rejected the supernatural theory of disease and looked upon disease as a natural process, not a visitation from a god of immolation. The Greeks believed that matter was made up of corresponding qualities of being cold, dry, hot and moist and were represented in the body by the four humors – phlegm, yellow bile, blood and black bile – similar to the “tridosha theory” in Ayurveda. The Greeks postulated that health prevailed when the four humors were in equilibrium and when the balance was disturbed, disease was the result. The human body was assumed to have powers of restoration of humeral equilibrium, and it was the physician’s primary role to assist in this healing process. While the humeral theory of Hippocrates was based on
incorrect foundations, the concept of the innate capacity of the body of responding to disturbances in the equilibrium that constitutes health is highly relevant to modern medicine 17.

Outstanding amongst post-Hippocratic medical centers was Alexandria’s huge museum, the first University in the world which sheltered a library containing over 70,000 books. To this house of learning came eminent men. Between 300 BC and 300AD thousands of pupils matriculated in the school to Alexandria, which replaced Athens as the world’s centre of learning. In short, the Hippocratic School inspired in turn the Alexandria school and the Arab – Persian medicine. The Hippocratic School changed the density of the medicine by separating it from magic and raising it to the status of a science. They had scientific method, although not scientific knowledge. The glorious Greek civilization fell into decay and was succeeded by the Roman civilization.

**Roman Medicine**

By the first century BC, the centre of civilization shifted to Rome. The Romans borrowed their medicine largely from the Greeks whom they had conquered. While the politics of the world became Roman, medicine remained Greek. In the political philosophy of the Romans, the state and not individual was supreme.

The Romans were a more practical – minded people than the Greeks. They had a keen sense of sanitation. Public health was born in Rome with the development of baths, sewers and aqueducts. The Romans made fine roads throughout their empire, brought pure water to all their cities through
aqueducts, drained marshes to combat malaria, built sewerage systems and established hospitals for the sick.

An outstanding figure among Roman medical teachers was Galen (130-250AD) who was born in the Greek city of Pergamum In Asia Minor (now Turkey). He was physician to the Roman emperor, Marcus Aurelius. His important contributions were in the field of comparative anatomy and experiment physiology Galen was far ahead of his time in his views about health and disease. About health he stated: “Since both in importance and in time, health may be preserved, and then how one may best cure disease” 18. About disease, Galen observed that disease is due to three factors – predisposing, exciting and environmental factors, a truly modern idea. The doctrines of Hippocrates and Galen were often in conflict since their approaches were so different – one is synthetic, the other analytic. The author of some 500 treatises on medical subjects, Galen was literally a “medical dictator “in his time, and also for a long time thereafter. His writings influenced European medicine. They were accepted as standard textbooks in medicine for 14 centuries, till his teachings, and views were challenged by the anatomist, Vesalius in 1543, and the physiologist, William Harvey in 1628, almost 1500 years after his death.

**Middle ages**

The period between 500 and 1500 AD is generally known as “Middle Ages”. With the fall of the Roman Empire, the medical schools established in Roman times also disappeared. Europe was ravaged by disease had pestilence: plague, smallpox, leprosy and tuberculosis. The practice of medicine reverted back to primitive medicine dominated by superstition and
dogma. Rejection of the body and glorification of the spirit became the accepted pattern of behavior. It was regarded as immoral to see one’s body: consequently, people seldom bathed. Dissection of the human body was prohibited. Consequently there was no progress of medicine. The medieval period is therefore called the “dark Ages of Medicine” a time of great strife, of socio-political change, of regression and progression.

When Europe was passing through the Dark Ages, the Arabs stole a march over the rest of civilization. They translated the Greco-Roman medical literature into Arabic and helped preserve the ancient knowledge. Borrowing largely from the Greeks and Romans, they developed their own system of medicine known as the Unani system of medicine. They founded schools of medicine and hospitals in Baghdad, Damascus, Cairo and other Muslim capitals. The Arabs lit a brilliant torch from Grecian lamps, said Osler. Leaders in Arabic medicine were the Persians, Abu Becr (865-925) also known as Rhazes: and Ibn Sina (980-1037) known as Avicenna to the western world. Rhazes was a director of a large hospital in Baghdad and a court physician as well. Noted for keen observation and inventiveness, he was the first to observe papillary reaction to light: to use mercurial purgatives: and to publish the first known book on Children’s diseases. However the work most highly regarded today is his book on smallpox and measles which he distinguished clinically. Avicenna was an intellectual prodigy. He compiled a 21-volume encyclopedia, the “Canon of Medicine”, which was to leave its mark on medical theory and practice. He was responsible for elevating Islamic medicine to its Zenith in the Middle Ages. The greatest contribution of Arabs, in general, was in the field of pharmacology. Seeking the “elixir of life”, they developed pharmaceutical
chemistry, introducing a large number of drugs, herbal and chemical. Pioneers in pharmacology, they invented the art of writing prescriptions, an art inherited by our modern pharmacists. They introduce a wide range of syrups, oils, poultices, pills, powders, alcoholates and aromatic waters. The words drug, alcohol, syrup and sugar are all Arabian\textsuperscript{20}. The golden age of Arabic medicine was between 800-1300 AD.

During the turbulent middle ages, Christianity exerted a wholesome influence. The spread of Christianity led to the establishment of hospitals. Early medieval hospitals rarely specialized in treatment of the sick. Usually the sick were received for the purpose of supplying their bodily wants and catering to their spiritual needs. The first hospital on record in England was built in York in 937 AD. With the growth of medicine, a chain of hospitals sprang up from Persia to Spain – there were more than 60 in Baghdad and 33 in Cairo. Some hospitals, like Cairo’s Al Mansur had separate departments for various diseases, wards for both sexes, fountains top cool fever patients, libraries, musicians and story tellers for the sleepless.

During the middle ages, religious institutions known as “monasteries” headed by monks, saints and abbots also came up. These monasteries admitted men and women from all ranks including kings and queens. They not only helped preserve the ancient knowledge but also rendered active medical and nursing care to the sick.

\textbf{II. DAWN OF SCIENTIFIC MEDICINE}

The period following 1500 AD was marked by revolutions political, industrial, religious and medical. Political revolutions took place in France and America, people claiming their just rights. The industrial revolution in
the West brought great benefits leading to an improvement in the standard of living among people. With advancing degrees of civilization, medicine also evolved.

**Revival of Medicine**

For many historians, the revival of medicine encompasses the period from 1453-1600 AD. It was an age of individual scientific endeavor. The distinguished personalities during this period were: Paracelsus (1493-1541) who revived medicine. He was born at a time, “when Europe stretched her limbs after a sleep of a thousand years in a bed of darkness”. Labeled genius by some and quack by others, Swiss-born Paracelsus publicly burnt the works of Galen and Avicenna and attacked superstition and dogma and helped turn medicine towards rational research. Fracastorius (1483-1553) an Italian physician enunciated the “theory of contagion”. He envisaged the transfer of infection via minute invisible particles and explained the cause of epidemics. Fracastorius recognized that syphilis was transmitted from person to person during sexual relations. He became the founder of epidemiology. Andreas Vesalius (1514-1564) of Brussels did lot of dissections on the human body and demonstrated some of Galen’s errors. He raised the study of anatomy to a science, and has been called “the first man of modern science”. Vesalus’ great work Fabrica became a classic text in medical education. What Vesalius did for anatomy, Ambroise Pare (1510-1590), a French Army surgeon did for surgery and earned the title, “father of surgeon”. Pare advanced the art of surgery but John Hunter (1728-1793) taught the science of it. In 1540, the United Company of Barber Surgeons was established in England, which later became the Royal College of Surgeons. Another great name in clinical medicine is that of Thomas
Sydenham (1624-1689), the English Hippocrates who set the examples of the true clinical method. He made a differential diagnosis of scarlet fever, malaria, dysentery and cholera. Sydenham is also regarded as the first distinguished epidemiologist.

The 17th and 18th centuries were full of even more exciting discoveries, e.g., Harvey’s discovery of the circulation of blood (1628), Leeuwenhoek’s microscope (1670) and Jenner’s vaccination against smallpox (1796). However, the progress in medicine as well as surgery, during the 19th century would not have been possible but for Morgagni (1682-1771) who founded a new branch of medical science, pathologic anatomy.

**Rise in public health**

The above events led to the birth of public health concept in England around 1840. Earlier, Johanna Peter Frank (1745-1821) a health philosopher of his time, conceived public health as good health laws enforced by the police and enunciated the principle that the state is responsible for the health of its people. The Public Health Act of 1848 was a fulfillment of his dream about the state’s responsibility for the health of its people.

Cholera which is often called the “father of the public health” appeared time and again in the western world during the 19th century. An English epidemiologist, John Snow, studied the epidemiology of cholera in London from 1848 to 1854 and established the role of polluted drinking water in the spread of cholera. In 1856, William Budd, another pioneer, by careful observations of an outbreak of typhoid fever in the rural north of England concluded that the spread was by drinking water, not by miasma and sewage gas. These two discoveries were all the more remarkable when one considers...
that the causative agents of cholera and typhoid fever were not identified. Then came the demand from people for clean water. At that time the Thames was both a source of drinking water and the depository for sewage. A comprehensive piece of legislation was brought in to force in England, the Public Health Act of 1875 for the control of man’s physical environment. The torch was already lit by Chadwick, but the man who was actually responsible more than any other for sanitary reforms was Sir John Simon (1816-1904), the first medical officer of health of London. He built up a system of public health in England which became the admiration of the rest of the world. This early phase of public health (1880-1920) is often called the “disease control phase”. Efforts were directed entirely towards general cleanliness, garbage and refuse disposal. Quarantine conventions were held to contain disease.

The development of the public health movement in America follows closely the English pattern. In 1850, Lemuel Shattuck (1793-1859), a bookseller and publisher, published his report on the health conditions in Massachusetts. Like Chadwick’s report it stirred the conscience of the American people to the improvement of public health. France, Spain, Australia, Germany, Italy, Belgium and the Scandinavian countries all developed their public health. By the beginning of the 20th century, the broad foundations of public health – clean water, clean surroundings, wholesome condition of houses, control of offensive trades, etc were laid in all the countries of the western world. After the first World War, there were three particular newcomers to the public health scene – Yugoslavia, Turkey and Russia. These three countries in 1920 presented the typical picture of the underdeveloped world. Today they are quite advanced in public health.
While public health made rapid strides in the western world, its progress has been slow in the developing countries such as India where the main health problems continue to be those faced by the western world 100 years ago. The establishment of the WHO providing a Health Charter for all people provided a great fillip to the public health movement in these countries.

**Germ Theory**

For long, man was groping in darkness about the causation of disease. Several theories were advanced from time to time to explain disease causation such as the supernatural theory of disease, the theory of humors by Greeks and Indians, the theory of contagion, the miasmatic theory which attributed disease to noxious air and vapours, the theory of spontaneous generation, etc. The breakthrough came in 1860, when the French bacteriologist Louis Pasteur (1822-1895) demonstrated the presence of bacteria in air. He disproved the theory of “spontaneous generation”. In 1873, Pasteur advanced the “germ theory of disease”. In 1877, Robert Koch (1843-1910) showed that anthrax was caused by bacteria. The discoveries of Pasteur and Koch confirmed the germ theory of disease. It was the golden age of bacteriology. Microbe after microbe was discovered in quick succession – gonococcus in 1847; typhoid bacillus, pneumococcal in 1880; diphtheria bacillus in 1884, and so on. These discoveries and a host of others at the turn of the century marked a turning point in our aetiological concepts. All attention was focused on microbes and their role in disease causation. The germ theory of disease came to the forefront, supplanting the earlier theories of disease causation. Medicine finally shed the rags of dogma and superstition and put on the robes of scientific knowledge.
Birth of preventive medicine

Preventive medicine really dates back to the 18th century. It developed as a branch of medicine distinct from public health. Curiously, it came into existence even before the causative agents of disease were known. James Lind (1716-1794), a naval surgeon advocated the intake of fresh fruit and vegetables for the prevention of scurvy in 1753. Edward Jenner (1749-1823) of Great Britain, a pupil of John Hunter, discovered vaccination against smallpox in 1796. These two discoveries marked the beginning of a new era, the era of disease prevention by specific measures.

Preventive medicine got a firm foundation only after the discovery of causative agents of disease and the establishment of the germ theory of disease. The latter part of the 19th century was marked by such discoveries in preventive medicine as Pasteur’s anti-rabies treatment (1883), cholera vaccine (1892), diphtheria antitoxin (1827-1912), etc. A further advance was the elucidation of the modes of disease transmission. For example, in 1896, Bruce, a British Army Surgeon, demonstrated that the African sleeping sickness was transmitted by tsetse fly. In 1898, Ross demonstrated that malaria was transmitted by the Anopheles. In 1900, Walter Reed and his colleagues demonstrated that yellow fever was transmitted by the Aedes mosquito. With the knowledge derived from bacteriology, it became possible to control disease by specific measures such as blocking the channels of transmission, e.g., quarantine, water purification, pasteurization of milk, protection of floods, proper disposal of sewage, destruction of insects and disinfection. The development of laboratory methods for the early detection of disease was a further advance. In its early years, preventive medicine was equated with the control of infectious diseases.
modern concepts of primary, secondary and tertiary prevention were not known \textsuperscript{25}.

III.MODERN MEDICINE

The dichotomy of medicine into two major branches namely curative medicine, and public health/preventive medicine was evident at the close of the 19\textsuperscript{th} century. After 1900, medicine moved faster towards specialization, and a rational, scientific approach to disease. The pattern of disease began to change. With the control of acute infectious diseases, the so-called modern diseases such as cancer, diabetes, cardiovascular disease, mental illness and accidents came into prominence and have become the leading causes of death in industrialized countries. These diseases could not be explained on the basis of the germ theory of disease, nor treated with “magic bullets”. The realization began to dawn that there are other factors are causes in the aetiology of diseases, namely social, economic, genetic, environmental and psychological factors which are equally important. Most of these factors are linked to man’s life style and behavior. The germ theory of disease gave place to newer concept of disease – “multifactorial causation”. In it was, Pettenkofer of Munich (1819-1901) who first mooted the concept of multifactorial causation of disease but his ideas were lost in the bacteriological era. The concept of multifactorial causation was revived by epidemiologists who have contributed significantly risk factors” in the aetiology of disease \textsuperscript{26}.
NOTES AND REFERENCES:

19. Ibid.
21. Ibid.
24. Ibid.
25. Ibid.
26. Ibid.
Chapter - III

THE GROWTH OF HEALTH DEPARTMENT

Since the assumption of the government by the British, the surgeon to the Mysore Commission was stationed at Bangalore and had in charge of the Bowring Hospital, the leper hospital and a lunatic Asylum, as well as the general control of vaccination, while another medical officer was superintendent of the central jail and has the supervision of the Petta dispensary.¹

There was a civil surgeon at the head quarter of each of the other two divisions, who was also the superintendent of the local jail and inspector of all medical institutions within the limits of the division. The Deputy Surgeon-General, Indian medical department of Mysore and Ceded district personally inspected the institution at Bangalore and others which happened to lie in the routes of his official tours². He also acted as sanitary commissioner and Registrar of vital statistics.

During the year 1868, the Medical Department was attached to the commissioner office which consisted of 12 apothecaries and 23 drefers³. Among these, 10 apothecaries and 10 Defers were drawn from the Madras Government on temporary basis. It was difficult task for the state medical establishment for adjusting Madras Medical men in the department due to language problem³. To tide over these problem liberal scholarships were provided for native students who were undergoing medical training in Bombay and Madras Medical colleges.