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MEDICINE—A TECHNOLOGY OR A PROFESSION*

BY

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I am gratefully conscious of the signal honour done to me and to my country by the Programme Committee in extending an invitation to me to speak on "Medicine—A Technology or a Profession" at the First World Conference on Medical Education, in its inaugural session. I should like to take this opportunity of conveying to this Conference a message of good will and friendship from the people of Pakistan in general and medical educationists in particular.

The status of medicine as a profession is not only extremely well founded but is a matter of universal acceptance. To those who are not perhaps conversant with modern trends the theme of my talk and the priority accorded to it in such a high-level Conference might appear paradoxical. Keeping in view, however, the changing times, the propensities of the people, the rapid diversification of the profession, and the tendency amongst the politicians and administrators, who have relegated to themselves the responsibility for planning health relief and who are graciously inclined to place us in a class of highly trained technologists and regard

our education as purely vocational, no time will be lost in taking stock of the situation and making readjustments, wherever indicated, so as to safeguard the noble heritage of medicine in the precincts as conceived and elaborated by generations of savants and of practitioners of the healing art.

Literally speaking, "profession," according to the Oxford English Dictionary, implies an occupation in which one professes to be skilled and which one adopts as a means of living; it is a specialized knowledge pertaining to an art or a science, being applied to the affairs of others on a basis of recompense. Technically, a body of persons engaged in a particular calling could be said to be occupied in that profession. Thus defined, engineers, teachers, smiths, carpenters, cobblers, etc., could all be designated as professionalists. In practice, however, these vocations are named crafts or technical callings, and not professions. Only three vocations have, however, been granted that status—namely, Divinity, Law, and Medicine. Are there any reasons to restrict the word "profession" to these vocations only? I think there were, and still are, good reasons for doing so, as we shall see hereafter.

Technology may be defined as a systematized or scientific study of the practical or industrial arts, while medicine is a specialized knowledge, and its practice is concerned with the cure, alleviation, and prevention of disease in human beings and with the restoration, preservation, and, lately, with the advancement of health—that is, improvement of future generations of man.

Aspects of the Problem

Naturally the relationship between the practitioners of medicine and the other sections of society is the problem under consideration rather than the intrinsic nature of medicine itself, although the latter cannot be ignored altogether, for the basic nature of the subject has a determinative effect on this relationship.

Science means learning or knowledge. Medicine is not a science in the sense that it is a compendium of factual knowledge about health and disease. The matter is far more comprehensive. It is a systematized knowledge of the human body in health and disease, but it also takes into account the environment and conditions under which man lives. This is only one aspect of the problem; the other is the sociological side of medicine, which is so intricate, so vast and comprehensive, that it actually embraces almost every sphere of human activity.

The vast and imposing structure of modern medicine is perhaps one of the greatest triumphs of the human mind. To comprehend its development, both scientifically and sociologically, the evolutionary history of modern trends should prove useful, inasmuch as it will enable us to appreciate the steady and methodical progress of medicine as an ideology. It must also be appreciated that the evolution of a point of view has always been through a succession of transitions; the ideas of to-day are merely precursors of those of to-morrow. Fundamental ideas undergo a gradual maturation, until we arrive at natural laws. It must be stressed, however, that even these natural laws are not incontrovertible truths. "If a scientific man has not learnt heresy he has learnt nothing," was said by Mian Afzal Husain¹ in his presidential address in the First Science Conference held at Karachi in 1949.

The close and intimate relationship between the advancement of medicine and the advancement of

*An address given in the plenary session of the First World Conference on Medical Education on August 24.

human civilization needs no comment. All phases of human activity—progress and setbacks, poverty and wealth, trade and crafts, arts and literature, poetry and philosophy, laws and social customs, economic strifes and wars—have been interlinked with the healing art, whether it was in the guise of magical rites or in the garb of religious practices, astronomical juggleries, or supplications to natural phenomena, Hippocratic rationalism or monkish or Brahminical dogmatism, speculative philosophies or scientific discoveries. Psychological maladjustment, major or minor, fixed or ephemeral, obvious or dubious, almost universally affects the human race. Has the world known a higher suggestive agent than medicine for such affections?

Nations have risen and fallen, wars and revolutions have come and gone, civilizations have appeared, matured, decayed, and died; but that noblest expression of human aspirations to deliver men from physical and moral disabilities has maintained its unity of purpose throughout the ages. While fully appreciating the fact that the medicine of to-day is very much different from the medicine of yesterday, it has divided and subdivided into innumerable subsections, each subsection being a colossal thing in itself; but, even as such, each is served by an arterial stem, which, like the human body, draws its nutriment and force from the heart; in the case of medicine this heart being humanitarian considerations, self-effacement, and sacrifice. Such a conception is included in the word "profession." If medicine becomes a technology then it is a machinery, a power without a soul, its sinews being steam and iron, not blood and heart. With this brief introduction let us delve into the wisdoms of the bygone ages and see if we can find something there for our guidance.

Early Needs of Man

Let us for a moment consider the earliest settlement of man on earth, of which naturally there are no records. After human beings had firmly established themselves on the earth as a separate and distinct species, their immediate and urgent requirements would have been food and water. They would have tended to group together, community life offering better chances of survival. As suitable places became available the nomadic life would have gradually tended to take the shape of small settlements. The need for succour in inexplicable afflictions created deities; the need for succour in injuries and illness produced medical men; and need for settlement of disputes established rules of conduct—i.e., law. This, then, was the beginning of the three professions, Divinity, Medicine, and Law.

We are now in a position to study the latter phases of the development of human society, of which meagre records are available. It should be remembered, however, that there has been a lapse of untold centuries between the two epochs.

The word religion here has been used in a collective sense. In ancient times the gods, the demons, magics, astrology, supernatural and subtle forces, good and evil spirits, were all jumbled together, worshipped and invoked whenever a calamity, drought, disease, death, or any other misfortune confronted men. Gradually a group of people took to the art of communicating with the subtle beings and warding off their baneful influences. They were the wise ones—namely, the religious-cum-medical men. To practise their art these people must have needed authority. It was necessary to inspire awe and respect into their charges. To that end they had to adopt peculiar costumes and imposing practices. The life of early settlers on earth was thus enveloped in mysticism and blind faith. But it must not be assumed that it was all valueless jugglery. Unmask the witch doctor and you will find a really intelligent and

clever physician. His methods may be empirical, but enveloped and deeply hidden in his symbolical and mystic practices you will find a kernel, a sizeable kernel of truth, gleaned and nurtured by generations of wise observation and experience. Merger of medicine and religion was inevitable. Medicine aetiologically involved knowledge of malignant and beneficial forces. Treatment, besides exhibition of pills and potions and dressing of wounds, entailed propitiation of those forces. The major portion of religion was propitiation, through ritual incantations and sacrifices. The two practices were so much akin in their objective—the warding off of evil—that their amalgamation was a foregone conclusion. The result was that medicine began to lose contact with the forests and the fields, and along with religion began to enter sanctuaries, and for centuries to come these constituted its abode and its nursery.

So far we have been discussing the probable course of the development of medicine and its practice in prehistoric times. The earliest records of civilization that flourished are to be found around the valley of the Tigris and the Euphrates; the Nile; along the shore of the Mediterranean; the valleys of the Indus and the Ganges; and the Yang-tse-kiang and Hoangho, in China.

Religion and Medicine

The earliest civilizations about which records exist are the Sumerian, the Akkadian, and the Babylonian, the Egyptian, the Greek, the Persian, the Indian, the Chinese, and the Arabic. In this context the impacts of the great religions on medicine have also to be borne in mind. At the height of the Babylonian civilization, medicine definitely began to take a scientific turn, and a dissociation between religion and medicine was largely effected. Egyptians were the first to lay the foundations of socialistic medicine. Laws were extant which covered every aspect of Egyptian life from birth to death, diet, dwellings, sex—in fact, nothing was left out. Just as for other sections of society, the status as well as the practice of medicine was well defined by regulations. As physicians their technical talent was held in high esteem, not only in Egypt but also in the neighbouring countries. Homer² in his *Odyssey* terms them as men "with knowledge beyond all men." Specialization in various branches of medicine was placed on a firm footing. Medical men were paid by the State or the community; private practice was not allowed. Hospitals and sanatoria were annexed to temples but were administered separately. The formulation of laws of public health and their practice were functions of the medical man.

The next era which has an important bearing on the subject under deliberation is the dawn of great religions in Mesopotamia. The new religion did not aim at a federation of the extant deities, in place of that it advocated a single God, conceived in perfection and endowed with supreme power, exercising his authority through his apostles over the creation below. The system had many advantages, but it had disadvantages also. The advantages were mostly social. It led to a levelling up of society. The world and its good things ceased to be a monopoly of the selected few, particularly when these few had become so vainglorious and self-centred that common folk counted worse than flies. The disadvantage was that it led to the virtual death of the scientific attitude to life. Over hill and dale, in solitude and in company during night and day, people hankered after the truth. Metaphysics became the order of the day.

To the hand of the diver
The gains of the tide,
To the eyes of the bridegroom
The face of his bride,
To the heart of the dreamer
The dreams of his youth,
For me, O my Master,
The rapture of Truth.—SAROJINI NAIDU³

Even whatever progress had been made by the Babylonians, Assyrians, and the Egyptians was destroyed deliberately, and, so far as they could manage, completely—of

course with the proverbial best of intentions. The Jewish medicine was theurgic in nature, God being the source of health as well as disease. The concept of life was teleologic. In spite of the dominance of priesthood the ancient empirical medicine, however, continued to thrive.

Indian Medicine

In ancient India medicine constituted a part of religion. *Sushruta Samhita*⁴ is the most representative book of Ayur Veda, or Hindu Medicine. A study of this work unmistakably reveals the high premium that was placed on the selection of students for entry into the precincts of this sacred knowledge. Ethical standards, laid down both for the teacher and for the taught, constitute gratifying reading. Only a brief presentation of the initiation of a student to the study of medicine can be given here.

Samhita lays down special qualifications for taking up a medical career. It says, "He should be of tender years, born of a good family, possessed of a desire to learn, strength, energy of action, contentment, character, self-control, a good retentive memory, intellect, courage, purity of mind and body, and a simple and clear comprehension. . . ."

It lays down rigid ethical standards both for the teacher and for the student. The preceptor addresses the student at the time of the initiation in the following words :

"Thou shalt renounce lust, anger, greed, ignorance, vanity, egoistic feelings, envy, harshness, niggardliness, falsehood, idleness, nay all acts that soil the good name of a man. . . . If I, on the other hand, treat thee unjustly even with thy perfect obedience and in full conformity to the terms agreed upon, may I incur equal sin with thee, and may all my knowledge prove futile, and never have any scope of work or display. . . ."

Having read this it hardly leaves any room for comment on the expectations of society from a medical man and of the status of the medical profession in ancient India. Medical man was accorded the status of Devtas, or God-like man.

Greek Medicine

Now we come to a period and a country whose medical development has left a lasting effect on the medical concepts and medical practice of the world. I refer to Greek medicine. In the early Hellenic medicine we still find the priest clinging on to medicine. As time passes, medical development gradually but with certainty takes a scientific turn. There are some new developments also—a philosophy, a system of deductive logic and speculative reflections to explain away natural phenomena associated with medicine. All the practices of ancient medicine prior to this period were purposeful and practical in nature—that is, were designed to get rid of or ward off impending evils. No heed was given to the basic phenomena, particularly in relation to cause and effect. A study of the relationship between the microcosm and the cosmos led to a rich and colourful speculative philosophy. The requisites of scientific development are freedom of thought and freedom of action. In ancient Greece religion was there, but it had not taken the shape of shackles and taboos; political ambition and motivation had not yet learnt to utilize religion or medicine as a means to their ends. Criticism and contradictions of well-established and current notions were tolerated. Human thought and activity were not directed and confined to narrow impervious channels, which later the great religions contrived to inflict on the freedom of human thought, any deviation from which surely and unerringly led to inquisitions and the scaffold. In the days of Homer, medicine had established itself as a noble art. A physician, in the words of the great poet, was "a man who was worth more than many others."⁵

With regard to ethical standards, the Hippocratic Oath cannot only stand repetitions but, in the interests of ethical standards of our own times, its enunciation from time to time should act as a sort of "lest we forget." I feel it will do the profession immense good if it is included in the

curriculum of medical studies. Hippocrates (460–355 B.C.) taught that a physician should be modest and dignified. He should be serene and tranquil. His judgments should be based on knowledge and not on superstitions. A physician's religion was his loyalty to the interests of his patients and his faith, search for truth pertaining to disease. Medicine for the sake of medicine without any magical alloys and religious amalgams, divorced from dogmas and based on observation with a philosophic outlook, and meant for the service of afflicted humanity, as an end in itself, without reference to conceptions of divine intervention, should constitute an article of faith for a physician.

Thus we find the cult of medicine based on foundations as firm as the rocks. Priestly medicine did not die out, and shall survive so long as superstition and weakness balk the spheres of human activity. Hippocrates and his school, however, succeeded in fairly establishing an art which could and did exist as an honourable and revered profession without religious or magical embellishments.

Contribution of Rome

The next great civilization, that of the Romans, although it produced little new, did contribute immensely in another direction—namely, consolidation of the gains made so far.

A perfect system of hygienic legislation was established. The medical profession was accorded a definite status recognized by the law. Physicians constituted an esteemed class; they were recipients of the highest State dignities and held socio-political and administrative posts of a high order. Medical schools were granted official recognition. It was during the Roman Empire that legal medicine came into being.

At this time an event transpired which brought about an upheaval involving almost a major portion of the known world. I refer to the advent of Christianity. For the faithful, Jesus Christ was the physician for both the body and the soul. Medicine thus again became theurgic. The saints or the holy relics began to attract pilgrims, mostly sick people in large numbers. To house and look after them special buildings called Hospitalia were allocated.⁶ Priesthood had succeeded in establishing itself in a very dominating position. This dominance was not confined to the Christian world alone. Usurpation of authority was a universal trait with the priesthood. This state of affairs could not last for ever. There were protests against it in Europe as well as in Asia.

A reorientation of the social structure took the shape of Islam in Asia. According to the Islamic faith, Mohammed was the last of a chain of prophets through whom God had been conveying his messages to the creation below. Islam definitely and clearly discouraged the formation of priestly castes. "There is going to be no monasticism in Islam," declared Mohammed. Thus at one stroke the age-old grip of the priesthood on medicine came to an end. This in my opinion constitutes the greatest contribution of the Arabist period to the development of the medical profession. Ethical standards were raised; registration and conferment of degrees after education in colleges were started. Hygienic measures of a far-reaching nature, regulating the entire life of the people, were introduced and enforced. During the Renaissance and the post-Renaissance period, and even today, the practice of medicine is practically a true copy of the traditions set up by the Arabs. With regard to ethical standards, two examples from the Arabist period should clarify the position. Bu Ali Sina (Avicenna, 980–1037) in his autobiography writes: "At first I treated patients not for fees but for my own instruction. During this period of my studies I never passed the whole night in sleep, nor passed a whole day in any occupation but study. Whenever I met an obscure point, it was my custom to perform a total ablution and then proceed to a mosque, where I prayed to God to grant me comprehension and unlock for me the gates of difficulty." When Hunayn Ibn Ishaq (Johanitus Onan, 807–877) refused to oblige Caliph Al-Mutawakkil by concocting a poisonous draught to free him of one of

his enemies, the physician was interrogated to find out what enabled a humble physician to disdain alike the pleasure and the wrath of the caliph. Hunayn replied, "It is my religion and my profession."

Contributions of the Profession to Society

On the corner-stone of Hoff Hall⁷ of the Medical Field Service School, U.S.A., the words of Jeremy Taylor (1613–67) are engraved: "To preserve a man alive in midst of chances and hostilities is as great a miracle as creation." In the day-to-day life of a medical man there is a definite and continuously operating humanitarian bias. This attitude towards others stands out in marked contrast with some vocations that are organized round utter selfishness and self-aggrandizement. In other walks of life there undeniably have been men and women who have made sacrifices, but such instances have been purely individualistic. In medicine this phenomenon pervades the entire profession. Mostly this characteristic has manifested itself in person-to-person relationship, but in some cases, by nature imbued with a sense of fellow-feeling which vibrates violently and incessantly with every twang of pain in others, it has assumed the shape of social reforms.

Medical men naturally were the first to become cognizant of the social, cultural, and environmental factors responsible for disease. How much the industrial revolution, reforms for the elimination of overcrowding and slums, improvement of factory conditions, drainage and town planning, maternity and child welfare schemes, pure water supplies, control of food and drugs, prevention and control of preventable diseases, owe to the efforts of the medical profession needs no recapitulation. In their selfless endeavours and self-effacing sacrifice for an ideal against heavy odds, who can say they have not shared equal honours with the great apostles? Reduction in various mortality rates and control of epidemics have deeply affected the world both psychologically and economically. Anxiety neuroses and community hysteria associated with epidemics are now matters of historical importance only. Constructive creative work and long-range planning necessitate tranquillity of mind. If organized efforts of the medical profession have succeeded in controlling and in certain cases eliminating epidemic manifestations of disease, the world should look upon them with appreciative gratitude. It should also be mentioned that the basic sciences owe their development to a considerable extent to medical men. Thus Copernicus (1473–1543), Galileo (1564–1642), Gilbert (1544–1603), Galvani (1737–98), and Geber (Sufi Jabir Bin Hayyan, middle of seventh century) were all medical men. Professor Huxley (1825–95) had remarked in 1854: "Medicine was the foster mother of Chemistry." In my humble opinion if one substituted basic sciences for Chemistry it would represent the situation more correctly.

Development of Medical Education

Two outstanding features mark the trends of medical education in ancient times: (1) the critical selection of new entrants to the profession; and (2) the close and intimate relationship between teacher and taught. The pupils lived more or less as members of the family of the preceptor. Not only were they thus provided with ample opportunities for picking up the technical side of the profession, but imperceptibly and with certainty they became conversant with the manners and the morality of the profession also. It is not possible to reproduce atmospheric isobars in intellectual fields, but reasonably good replicas of the great masters were often turned out. The prevalent systems of government definitely influenced the progress of the profession. There was the omnipotent king. It was he who appointed or dismissed the ministers and the administrators; the latter were therefore responsible to him and not to the people. Their weal and well-being were linked with the courts. Courtship of the people therefore did not interest him. As time went on settlements took the shape of kingdoms and kingdoms expanded into empires. The ancient system could no longer cope with the needs of the times.

The Romans were the first to provide institutional treatment for the sick. Their hospitals they called "valetudinaria."⁸ Automatically these institutions also became the centres of medical education. Medical men could now be turned out in larger numbers, but at the same time the selection of the proper type of student and the individual attention of the preceptor had to be relaxed. There were physicians, surgeons, and pharmacists attached to these hospitals; students had to go to all of them. In the Arabist period "bemaristins," and later in Christian Europe hospitals, were established. During the Renaissance in Europe medical practice and education followed exactly the pattern established by the Arabs at Bagdad and Andalusia (Spain). Medical education thus practically became impersonal.

There was a gradual, imperceptible, but sure change in power politics also. Power began to pass more and more from the kings to the people. The politicians and the administrators began to feel the need for courtship of the people. From the press and the pulpit, propaganda for more and more doctors and greater specialization was made. These downward trends were further precipitated by the advent of the two major wars, after a brief spell of peace in between. The last war has been followed by a cold war between two ideologies dividing the world into two potential war camps armed with the atom bomb and the hydrogen bomb.

This state of affairs is giving impetus to a greater and greater productions of doctors, and particularly to the mass production of specialists. The absence of sustained emphasis on the classical background of the profession during their undergraduate training has materially altered the outlook of medical students. They have begun to regard their medical education as vocational training, and the impression gathered by the general public seems to be of the same order. For specialization the highest type of general medical education should be the first prerequisite. This should be followed by protracted practice as general physicians or general surgeons over many years. Our mighty rivers, which with the majesty of their flow, the enormity of their expanse, and the dignity of their depth inspire awe in the spectators and infuse life in our lands, were but tiny rivulets to start with. While coursing through hill and dale they annexed a tributary here and a pool there until they assumed the status of great streams. No pumping system that human ingenuity or diligence is capable of inventing could create such phenomena. Specialists should be allowed to develop in the same way. Hippocrates, Galen (129–200), Avicenna, Rhazes, Sushrat, Vesalius (1514–64), Koch (1843–1910), Virchow (1821–1922), Sydenham (1624–72), J. Bright (1789–1858), Jenner (1749–1823), were not rushed through any special courses after obtaining their general medical qualifications. It was their lifelong study and sustained endeavour that brought their specialties to them, and it is this type of specialization that can do, and has done, lasting good to the world and brought honour to the profession. Mass production of immature specialists can have but one ending—conversion of the profession into a technology. To accord the status of a cardiologist, a urologist, and so forth to a freshly qualified postgraduate would be courting disaster. A half-baked specialist is as bad as a half-baked potato—one upsets a poor digestion, the other sets up a poor profession. Socialization of medicine is another step which is leading the profession in the same direction.

There is, however, a question to be answered. Why are our young men heading headlong towards specialization? The answer is very simple. It brings them status as well as money. If we stop this specialization, what are we offering them in exchange? Ethics, morality, and so forth alone cannot cut much ice. A medical man, whatever we might designate him, must have a sound income to enable him to maintain a respectable status and a comfortable standard of living. Neither the official services nor general practice are conducive to high profits or high status. There is nothing intrinsically wrong with the present generation. Society,

administrative machinery, and even ourselves have created conditions by which they can move only in one direction—mass specialization, which is alike detrimental to society as well as to the profession.

After the Renaissance in Europe phenomenal progress in medicine was a direct result of advances in basic sciences. At the present time attention is being paid more and more to a still closer association between medicine and the basic sciences. This infiltration of the medical profession leads to further maturity and appreciation of the width of the foundation on which the edifice of medical research rests. No doubt it is a move in the right direction, and it has certainly heralded great discoveries, but unfortunately, directly or indirectly, it again lays stress on technology. It is not my intention to decry the latter, but this concentrated attention on technique to the exclusion of a stress on discipline is bound to have a harmful effect on the professional concepts in the minds both of society and of the young undergraduates.

It is this aspect of the question which is drawing the attention of more and more educationists to-day. Medical education constitutes a university discipline and not vocational training. That position it has occupied for centuries. With the advancement in other sciences there has not only been enormous expansion in the parent subject but a great many newer branches have sprouted and established themselves in an apparent independent existence. As these sub-branches gain momentum they become more and more technical and highly involved. Ultimately there is a danger that these specialized studies may swamp the basic general education that a university discipline is calculated to impart. Any system which aims at preparing the undergraduate in a subject or group of subjects must have a relevance to life in general. The essential aim of technological training is to impart existing knowledge of a particular subject. It is concerned with the future so far as existing knowledge can be applied to particular situations which for the time being cannot be foreseen. All education, therefore, has its basis in technology. Education, in the higher sense of the development of the power to form judgments, becomes possible only after such techniques have been mastered. Technical knowledge is therefore an indispensable foundation for higher education.

University education as it pertains to medicine has three objectives—learning the technique, learning the art of applying this technique, and learning to give priority to the interests of others. In medical practice the last two constitute the dominant aspects. Such concepts have no place in a technical calling.

Dangerous Trends

In spite of having gathered so much glory around it the medical profession was never in so much danger as to-day. There are several reasons, internal as well as external. Among the internal causes the foremost, paradoxical though it may seem, is the great development in techniques and diversification of medicine into innumerable channels. This has resulted in the formation of cults within cults. This aspect has already been dealt with, but its importance, I feel, justifies a reiteration in some detail. Our undergraduates are becoming more and more vocational in outlook. Under the stress of time and of market demands we have also initiated mass production of medical specialists. If the profession does not make strenuous efforts to formulate a coherent policy by which the younger shoots continue to derive their sap and stamina from the roots and the stem of the parent tree till they are mature enough to maintain an independent existence they may drift away into discord and disaster. Engrossed and enamoured with the study of the individual trees, the concept of the forest is being lost.

As stated above, this overemphasis on technique is adversely affecting the concept of the profession. Consideration of the patient as an individual with a peculiar environment and a particular psychic background is largely ignored. The stethoscope, the x ray, and the electrocardiogram have

come so much into the limelight that the poor patient whose coronary artery or valve is the subject of this instrumentation is lost in the shadows of the umbras and the penumbras. The position of the medical man is above that of a slave of the instruments, and the patient deserves greater consideration than that given to a laboratory analytical specimen. No, he is not just a case. In his social set-up he occupies an important and a complicated position. His illness or death has a bearing on the lives of scores of others, epidemiologically as well as sociologically. The adage that we are treating a human being with a disease and not a disease should never be lost sight of.

The same is true of the specialties. They are not selective. Students pick a specialty rather from expediency and by chance than from their natural inclination. The defect is in our system of education. We allow specialization before a young man has sufficient maturity to decide anything for himself intelligently. This hit-and-run of random specialization without experience as a general practitioner cannot help a medical man properly to decide what his specialty is going to be. Let first things come first. Development of individuality must have precedence over specialization. We must refrain from putting the cart before the horse. Deciding factors naturally are the requirements of the country and its resources. In most underdeveloped countries the crying need is the control of preventable disease. The economic resources of these countries are generally inadequate even partially to cover this fundamental need. Even rich and advanced countries are uncomfortably conscious of the financial burden associated with the maintenance of specialists and the institutions and equipment which are prerequisites for the adequate discharge of their duties.

Let us consider again this specialization in the context of a world problem. In most of the backward countries even basic medical aid is not available, leave alone specialization. More than three-quarters of the world consists of such less fortunate countries. In view of the larger interests of the world, therefore, the maintenance and the revival of the concept of "profession" and what it stands for are of vital importance. There is no other solution. The politician is never slow to turn situations to his own advantage: power is like intoxication, the more you have the more you want to have. The administrator also appreciates that the situation is shaping into a position which can be of considerable advantage to him. That the profession of medicine to-day is a dead letter and a slogan, and a medical man merely a high-class technician, suits both the politician and the administrator. We as medical men have a different background, different traditions, and a different outlook on life. The generality of people are incapable of appreciating collective good. They do not know the difference between the amenities they enjoy to-day and the conditions that prevailed say a century back. A gulf is being created between us and the public which is being widened by interested parties. It is our duty to bridge this gulf. We do not need help from the State or from any other source to accomplish it. It is a domestic affair, and we should be capable of managing it ourselves in spite of every obstacle that is placed in our way. It is neither possible nor proper to offer any detailed proposals on the subject here. I feel that the solution lies in the revival of the general physician and the general surgeon on better-organized lines.

The confusion is worse confounded by ignorance, natural or wilful, on the part of the politicians and administrators who have assumed responsibility for medical programmes, by complacency and a tendency to drift with the stream on the part of the medical educationists, and by the exigencies of the times, which have allowed little opportunity for us to probe into the problem to the depth the situation called for. Instead of facing the situation squarely we have started playing to the gallery. Technology and profession are closely linked with indissoluble links, and yet they are not one and the same thing. Technology is the foundation on which the edifice of the profession has been built. It has its birth in the laboratory, and provides us with concrete, exact, dry

facts. A patient brings a chit from the laboratory, "*Bact. coli* isolated from the urine"; another presents an electrocardiogram. If one were to go over hundreds of such patients no two would present exactly similar systems. The machinery has done its work; it requires a mind to interpret and correlate the facts presented by the laboratory. Profession begins where technology ends. Technology is but an adjunct to profession. Profession existed when there was no technology. Without profession, technology is a sterile endeavour. What use is even a jet plane without a pilot?

Let us leave aside for a while acts of omission and commission by others. Some heart-searching is indicated at home also. How far have we ourselves contributed to the prevalent notions? The crux, the backbone, of an ideology is a study of its history, inculcation of its ethics, and an appreciation of the duties it ordains and the privileges it confers. In our zeal for mass production and in our zest for specialization we have ignored this fundamental formative aspect of the profession. Medical men that we have turned out during the last few decades have no such background. Society judges things by their face value. The word "leader" is becoming a misnomer. Leaders of to-day do not lead, they are led by the people. To their "aye" they say "aye," and to their "nay" they shout "nay." If public opinion fits in with their scheme of things also, their declamations are all the more vociferous. The jury's verdict is also not in our favour: the judges have no reason to go against the jury. We cannot preach one thing and practise another. Our bona fides has to be judged on the anvil of facts. Let us set our house in order and then invite an inspection. In the history of a profession as old as the world itself, decadence for a few generations should be of little moment. From what I have said there can be no gain-saying the fact that the profession of medicine is a profession first and last and not a mere technology, the latter being just one of the basic links in the medical set-up.

The discernment of the difference between a locomotive and the wheels of a locomotive can constitute a problem only for cortical amblyopes.

Light Ahead

I have pondered deep and long over the matter of this discourse. In my endeavour I am but following in the wake of many others who have preceded me. The goal lay high up at dizzy heights, enveloped in bewildering haze. During the last century diverse approaches to it were conceived and executed. The haze is lifting now. With the improved visibility we can now see things in their proper perspective. Our previous efforts were based on an optical illusion; we had been following a false image. The highways we have built lead away from the goal and are strewn with pitfalls and covered with unstable shingle. We have to discard them. The question of paramount importance before us is the education of the undergraduate on proper lines. The conception associated with the word "profession," its scope, its responsibilities, and its privileges should be fully brought home to him. Technical education constitutes the foundation on which the future edifice of medicine is going to rest. This aspect should also be accorded the consideration it rightfully deserves. It should, however, be consistent with and conform to the nature of duties that are going to be assigned to him after his graduation: no more and no less. It should help in making the medical education correct, concise, and yet productive of medical men of a higher order. Those who show promise should be afforded opportunities of acquiring the highest type of general education—that is, general medical or general surgical. I want to lay special emphasis on this point. Postgraduate qualifications, M.D. (Cardiology) or F.R.C.S. (E.N.T.), and so forth, should never be countenanced. After the benefit of this type of medical education the men should enter into the general practice of their art. Many years of such a practice should assist them in expressing themselves. It is not cramming with set courses which makes real specialists. Proficiency is born of pro-

pensity. For a final moulding the trusted and trained hands of accomplished specialists are essential. The time should then be ripe to place the developing specialist under their care, he being allowed an opportunity to work under a man of his own choice. When this final stage has been completed satisfactorily the new specialist could embark on an independent career. Any institutional training after this should be superfluous.

Technology has its place in medicine as a very important, I should say an indispensable, auxiliary, but I do feel it is sheer waste of time and energy to impart medical and advanced technological education as applied to medicine to one and the same person. Let me elucidate my point by a few examples. Anatomy, applied physiology, biochemistry, pharmacy, pharmacology, bacteriology, including protozoology, helminthology, entomology, histology, histopathology, radiology, electrocardiology, and so forth, can all be taught and practised as independent subjects. Technical advancement and proficiency in practice should be much greater if they could be studied as independent sciences, and not as appendages to medicine. As no lures of private practice could be attached to these technologies those practising it could do much more concentrated work. It goes without saying that these studies should be afforded post-graduate educational facilities of the highest type while remaining outside the medical profession proper, but, acting as its auxiliaries, they could be eligible for the highest honours and status open to other sciences. They could also with advantage be associated with medical education proper if, when, and where indicated.

These suggestions deserve the deepest consideration. If they are adopted the controversy, "Medicine—A Technology or a Profession," automatically comes to an end. If undergraduates could be relieved of the unnecessary burden of technique more stress could be laid on the basic aspects of medicine. Both medicine and medical technology could benefit considerably by such a dissociation. We could produce better medical men, fully alive to the fundamental concept of the profession of medicine. Chances of research and consequent advancement in technologies auxiliary to medicine could be much more enhanced. Medicine and technology could develop side by side, each aiding the other but without any chance of trespass.

Conclusion

I have discussed here at some length the historical development of the medical profession. I have shown the intrinsic difference between "profession" and "technology." I have also indicated the part medicine plays and has played in the social and economic development of the world. We have also seen the drift that medicine is taking to-day and the intrinsic and extrinsic dangers to which it is exposed. I have also broadly hinted at the task which lies ahead of medical educationists. The greater the magnitude of the task the greater the responsibility. There is, however, no room for despondency. Our forefathers weathered worse storms and with faith, honesty of purpose, and organized effort won more glory; and the prestige of the profession has been ever rising. I think—nay, I believe—we have material which can rise on any occasion. Ours is a profession built on the rock of humanitarianism, strengthened by self-effacement and self-sacrifice. We have a place of pride and honour in the community we live in. I am sure we shall live up to the traditions of our noble profession.

¹Mian Afzal Husain, first President of the Public Service Commission of Pakistan; in his presidential address at the first Science Conference, held at Karachi in 1949.

²Castiglioni, A. *History of Medicine*, 1947 edition, p. 59.

³Sarojini Naidu, wife of Major Naidu, of Hyderabad, Deccan (India), poetess and a politician. Died as Governor of United Provinces of India in 1950.

⁴*Sushruta Samhita*, one of the famous ancient Hindu books on medicine. Translated by Bhisage Ratna, 1907.

⁵Castiglioni, A. *History of Medicine*, 1947 edition, p. 117.

⁶C. Singer. *A Short History of Medicine*.

⁷E. E. Hume. *War and Medicine in New Worlds in Medicine*, edited by H. Ward, 1946 edition, p. 81.

⁸C. Singer. *A Short History of Medicine*.