55

Medicine

INTRODUCTION

MEDICINE is the name of an art, of a science or group of sciences, and of a learned profession whose members are proficient in these sciences and experienced in the practice of the art. By derivation it is also the name for curative drugs, physics, or other remedies prescribed by the physician. The archaic usage of the English word "physic" as the name for the art, practice, and profession of what is now generally called "medicine" suggests what the word's Greek root signifies, namely, that the physician, no less than the physicist, is a student of nature.

There is one other historic use of "medicine" which indicates its scope and connections in the western tradition. When medieval institutions first shaped the university, the basic divisions of learning then embodied in its structure reflected different uses of learning as well as differences in subject matter. The three faculties of medicine, law, and theology not only disciplined their students in different branches of knowledge, but also trained them for distinct applications of knowledge to practice.

The faculty of medicine represented all the natural sciences, especially those which have come to be called "biological sciences," just as the faculty of law or jurisprudence represented all the moral sciences and their later offshoots, now called "social sciences." The doctor of medicine was concerned with knowledge bearing on the relation of man to nature, as the doctor of laws was concerned with knowledge bearing on the relation of man to man, and the doctor of theology with knowledge bearing on the relation of man to God.

It is a curious accident that the word "doctor," which in origin signified the competence to teach others who might practice in each of these great fields of learning, has come in popular usage to designate, not the teacher, but the practitioner, and chiefly the practitioner in only one of the learned professions. Medicine may not deserve the implied emphasis upon the learning of its practitioners, but there would be some truth in granting it the distinction of being the oldest of the professions in the sense that it comprises a group of men who not only share a common training in the relevant sciences and arts, but who also have adopted a code of practice and obligated themselves to perform a service to their fellowmen.

The Hippocratic Oath, sworn to in the name of "Apollo the physician and Aesculapius, and Health . . . and all the gods and goddesses," is the first explicit formulation of a professional ideal. In the collection of writings attributed to Hippocrates, *The Law* explicitly indicates, as *The Oath* implies, that there are intellectual as well as moral conditions to be fulfilled by those who would dedicate themselves to the service of health. Only those who have satisfied all requisites for the study of medicine and by diligent application have acquired a true knowledge of it shall be "esteemed physicians not only in name but in reality."

The same high conception of medicine appears in the Bible. We read in Ecclesiasticus: "Honor the physician for the need thou hast of him: for the most High hath created him. For all the healing is from God, and he shall receive gifts of the king. The skill of the physician shall lift up his head, and in the sight of great men he shall be praised. The most High hath created medicines out of the earth, and a wise man will not abhor them . . . The virtue

of these things is come to the knowledge of men, and the most High hath given knowledge to men, that he may be honored in his wonders. By these he shall cure and shall allay their pains, and of these the apothecary shall make sweet confections, and shall make up ointments of health, and of his works there shall be no end. For the peace of God is over all the face of the earth."

FIVE OF THE authors of the great books—Hippocrates, Galen, Gilbert, Harvey, and Freud—belonged to the profession of medicine. They were major figures in its history. Practitioners of its arts, they were also contributors to the sciences concerned with health and disease. Three others combined medicine with other pursuits. Copernicus studied medicine at Padua and devoted considerable time to its practice; Locke was Lord Shaftesbury's personal physician; William James took a medical degree at Harvard after years spent in the biological sciences. Still another, Rabelais, not only studied and practiced medicine, but also edited the *Aphorisms* of Hippocrates and Galen's little treatise on the medical art. His knowledge of medicine and his observation of its contemporary practices can be readily discerned in his comic exaggerations of anatomic and physiological detail, and of regimens of diet or exercise.

The discussion of medicine in the great books is not limited to its professors or practitioners. Montaigne has many doubts about medical diagnosis and the possibility of charting the causes of disease or the remedies which cure. The patient's ignorance permits the physician to claim credit for his successes and to blame fortune for his failures.

Montaigne, characteristically, delights in observing that the doctors disagree. He offers, as "an example of the ancient controversy in medicine," the following: "Hierophilus lodges the original cause of diseases in the humors; Erasistratus, in the blood of the arteries; Asclepiades, in the invisible atoms flowing in our pores; Alcmaeon, 'in the exuberance or deficiency of our bodily powers; Diocles, in the inequality of the elements of the body and in the quality of the air we breathe; Strato, in the abundance, crudity, and corruption of the nourishment we take; Hippocrates lodges it in the spirits." There is no great danger, he adds, "in our miscalculating the height of the sun or the fraction of some astronomical computation; but here, where our whole being is at stake, it is not wisdom to abandon ourselves to the mercy and the agitation of so many conflicting winds." Molière writes in a similar vein. A doctor means no ill in anything that he does: "it's with the best faith in the world that he will finish you off, and in killing you he will do just what he has done to his wife and children, and what, if the occasion should arise, he will do to himself."

Such commentary as this bears more on the history of medicine than on the abiding problems of its science or art, which, from Hippocrates to Freud, have been more generally agreed upon than the theories proposed for their solution. Of similar historical significance are the passages in the great works of history which describe the phenomena of disease as they appeared to contemporary observers, the plagues which ravaged Athens, Rome, and London, or the maladies which afflicted eminent individuals. Poetry, as well as history and biography, contributes to this record. The novels of Tolstoy, Mann, and Proust, the plays of Shakespeare and Molière, the tales of Cervantes and Chaucer, the Greek tragedies, and the Homeric epics furnish evidence of both the constant and the changing elements in the conception of disease, the vocation of medicine, and the social acceptance of the physician.

The history of medicine is an epitome of the history of the natural sciences. The researches of the Hippocratic school initiate specific methods of empirical investigation, such as the systematic collection and comparison of observations and the painstaking record of individual case histories. The fundamental concepts of medical theory reflect the philosophy of nature and of man. Conflicting notions of the causes of disease focus major issues in biology, such as the controversy in which Galen engages with Asclepiades and Erasistratus in the defense of what he supposes to be Hippocrates' and Aristotle's organic view of nature against mechanism and atomism.

Medicine, moreover, provides some of the clearest examples of the interdependence of theory and practice, for the rules of the healing art put theories to work and to the test; and as the rules are refined or altered by the accumulated experience of particular cases, inductive insight leads to new theoretical generalizations. As the work of Harvey illustrates, biological science is both the source and the reflection of medical knowledge. Medicine also affords Bacon and Descartes the prime example of a useful application of the knowledge gained by the new methods they propose.

More than engineering or the invention of mechanical utilities, medicine represents for them knowledge in the service of mankind. That science shall bear fruit in technology "is not merely to be desired," writes Descartes, "with a view to the invention of an infinity of arts and crafts . . . but principally because it brings about the preservation of health, which is without doubt the chief blessing and the foundation of all other blessings in this life . . . It is true that the medicine which is now in vogue contains little of which the utility is remarkable; but, without any intention of decrying it, I am sure that there is no one, even among those who make its study a profession, who does not confess that all that men know is almost nothing in comparison with what remains to be known."

The subsequent history of medicine, some of the great documents of which are cited in the list of Additional Readings under the names of Jenner, Bichat, Virchow, Bernard, and Koch, seems to substantiate Descartes's prophecy. But it also seems to be true that the major problems of medical practice are not greatly altered or diminished by the tremendous increase in our knowledge of the causes of specific diseases and our vast store of well-tested remedies.

What sort of art medicine is; to what extent the physician should let nature run its course; with what restraint or prudence the physician should apply general rules to particular cases; whether health is better served by the general practitioner treating the whole man or by a specialist treating a special organ; how the relation of the physician to his patient is itself a therapeutic factor and underlies the effectiveness of his skill in all other respects; to what extent mind and body interact both in the origin and in the cure of disease—these are the problems of medicine concerning which Hippocrates and Galen can converse with William Osler and Freud almost as contemporaries.

THE DISTINCTION made in the chapter on ART between the simply productive and the cooperative arts associates medicine with agriculture and teaching, and separates these arts, which merely help a natural result to come about, from the arts which produce an effect that would never occur without the work of the artist. Plants grow and reproduce without the help of farmers. The mind can discover some truth without the aid of teachers. Animals and men can preserve and regain their health without the care of physicians. But without shoemakers or house builders, shoes and houses would not be produced.

The art of medicine does not produce health in the sense in which the shoemaker produces a shoe, or the sculptor a statue. These other arts imitate nature by embodying natural forms or functions in materials wherein they do not naturally arise. An art like medicine seems to imitate nature by cooperating with natural processes. It follows the course of nature itself and, by working with it, enables the natural result to eventuate more surely than it might if art made no attempt to overcome the factors of chance.

Socrates expresses this understanding of the physician's art when he uses the metaphor of midwifery to characterize his own method of teaching. As it is the mother who labors and gives birth, so it is the student who is primarily active in the process of learning. The teacher, like the midwife, merely assists in a natural process which might be more painful, and might possibly fail, without such help. "The teacher," writes Aquinas, "only brings exterior help as does the physician who heals; just as the interior nature is the principal cause of the healing, so the interior light of the intellect is the principal cause of knowledge.

"Health," he continues, "is caused in a sick man, sometimes by an exterior principle,

namely, by the medical art; sometimes by an interior principle, as when a man is healed by the force of nature . . . Just as nature heals a man by alteration, digestion, rejection of the matter that caused the sickness, so does art . . . The exterior principle, art, acts not as a primary agent, but as helping the primary agent, which is the interior principle, and by furnishing it with instruments and assistance, of which the interior principle makes use in producing the effect. Thus the physician strengthens nature, and employs food and medicine, of which nature makes use for the intended end."

Medicine as practiced by primitive tribes seems to take the contrary view: the art of healing is a process of subverting nature. The tribal medicine man or shaman, as described by Lévi-Strauss, proceeds from the belief that a sick person has lost his "spiritual double or, more correctly, one of the specific doubles which together constitute . . . vital strength." During meditation, the shaman "undertakes a journey to the supernatural world in order to snatch the double from the malevolent spirit who has captured it; by restoring it to its owner, he achieves the cure." Shamanism consists of "a curious mixture of pantomime, prestidigitation, and empirical knowledge," and in Lévi-Strauss's accounts, it often makes the art of healing look like the art of drama.

The subordination of the medical art to nature seems to be the keystone of the whole structure of Hippocratic medicine. It is implied in the emphasis which Hippocrates places on the control of the patient's regimen, especially the elements of his diet, the exercise of his body, and the general circumstances of his life. Even in the treatment of acute diseases, Hippocrates looks to the regimen first, prescribing changes or special articles of diet.

Medicines or drugs perform an auxiliary function. Surgery is always a last resort, to be used primarily in the treatment of injuries, and not to be employed in diseases which will yield to a course of regimen and medication. There is an element of violence in surgery which puts it last among the means of an art which should work by cooperating with nature rather than by operating on it. And among medicines, those are preferable which, like ptisan, a special preparation of barley water, derive their efficacy from properties similar to those of normal nutriment.

According to Hippocrates, the control of regimen is not only the primary factor in therapy, but also the original principle of medicine. In the treatise *On Ancient Medicine,* he points out that "the art of medicine would not have been invented at first, nor would it have been made the subject of investigation (for there would have been no need for it), if when men are indisposed, the same food and other articles of regimen which they eat and drink when in good health were proper for them, and if no other were preferable to these . . . The diet and food which people in health now use would not have been discovered, provided it suited man to eat and drink in like manner as the ox, the horse, and all other animals . . . What other object, then, has he in view who is called a physician, and is admitted to be a practitioner of the art, who found out the regimen and diet befitting the sick, than he who originally found out and prepared for all mankind that kind of food which we all now use, in place of the former savage and brutish mode of living?"

THE SAME CONCEPTION of medicine's relation to nature seems to be fundamental in Galen's thought. He attributes to Hippocrates his own reformulation of the insight that the art of healing consists in imitating the health-giving and healing powers of nature itself. The medical doctrines which he criticizes were based on the atomism of Epicurus. They regarded the body as a complex piece of machinery. When it gets out of order, it needs a mechanic and mechanical remedies to fix it. On the contrary, it seems to him, the living body is an organic unity, not an aggregation of atoms, or a system of interlocking parts.

"Nature is not posterior to the corpuscles, but a long way prior to them," Galen writes. "Therefore it is nature which puts together the bodies both of plants and animals; and this she does by virtue of certain faculties which she possesses—these being, on the one hand, attractive and assimilative of what is appropriate, and, on the other, expulsive of what is foreign. Further, she skillfully moulds every-

thing during the stage of genesis; and she also provides for the creatures after birth, employing here other faculties again."

Nature, according to Galen, works not by the external impact of part upon part, but by its faculties or powers for the performance of natural functions and the production of natural effects. Galen's polemic against the mechanists thus leads him to reverse the usual statement. Where Hippocrates looks upon nature as the model for art to follow, Galen calls Nature the artist, in order to set his view in sharp contrast to all mechanical conceptions. "Instead of admiring Nature's artistic skill," he declares, "they even go so far as to scoff and maintain that . . . things have been made by Nature for no purpose!" Nature, Galen holds, produces effects according to its powers and in conformity to its needs. It seems to work with intelligence and for an end, not blindly and by chance. The true art of medicine, therefore, borrows its method from "Nature's art."

The conception of nature as an artist may be taken metaphorically or literally, but the insight controlling the practice of medicine remains the same. The physician is a servant, not a master, of nature. Aristotle's doctrine of final causes, summarized in the maxim Galen so often repeats—that "nothing is done by Nature in vain"—furnishes a principle for physiological research, as well as the rules of medical art. Whether because of faulty observation on his part, or because of a failure to apply his own principle, Galen leaves to Harvey one of the great discoveries which can be credited to close attention to final causes. Always observant of the relation between structure and function, always questioning the purpose which bodily organs serve, Harvey establishes the fact that the blood circulates, and finds therein the reason for the structure of the heart, its motions, and its relation to the lungs.

It may also be possible for a principle to be carried to excess. Montaigne, for example, expresses his distrust of medical theory and the physician's remedies by an unqualified trust in nature's own resourcefulness. Drugs, especially purgatives, do violence to nature. "We disturb and arouse a disease by attacking it head on. It is by our mode of life that we should weaken it, by gentle degrees, and bring it to its end. The violent struggles between the drug and the disease are always at our expense, since the combat is fought out within us and the drug is an untrustworthy assistant, by its nature an enemy to our health, and having access to our constitution only through disturbance . . . Let us let things take their course: the scheme of things that takes care of fleas and moles also takes care of men who have the same patience to let themselves be governed as fleas and moles."

Nor is there any need for an art of medicine when nature can do better by herself. "We should give free passage to diseases . . . I find that they do not stay so long with me, who let them go ahead; and some of those that are considered most stubborn and tenacious, I have shaken off by their own decadence, without help and without art, and against the rules of medicine. Let us give Nature a chance; she knows her business better than we do." Molière seems to be of the same mind. When sick, we best do nothing, Béralde advises his hypochondriac brother in *The Would-Be Invalid*. "Just stay quiet. When we let nature alone, she recovers by herself from the disorder she's fallen into. It's our disquiet, our impatience which upsets everything; and most men die of their remedies, and not of their illnesses." The Hippocratic doctrine seems to occupy a middle ground between this view of nature as an unerring artist and the opposite extreme which permits all sorts of tampering and tinkering with the machinery of the body.

THE ART OF MEDICINE "consists in three things," writes Hippocrates: "the disease, the patient, and the physician. The physician is the servant of the art, and the patient must combat the disease along with the physician." With regard to diseases, the physician must "have two special objects in view . . . to do good, and to do no harm."

This celebrated summary indicates the two kinds of knowledge which the physician should possess. He should know about disease in general, so that he can classify diseases according to their special causes, their

symptoms, and the typical course each seems to take. Such knowledge underlies the doctor's diagnosis of the patient's malady. That in turn determines his prognosis of the stages through which the illness will run, from its onset through various crises or turning points to its *sequelae* or consequences. Upon the accuracy of his diagnosis and the certainty of his prognosis may depend the effectiveness of any remedy the physician prescribes in the individual case.

But individual cases are seldom completely alike. The physician must therefore know the patient as an individual, and all the relevant circumstances of his life as well as the particular characteristics of this instance of the disease; even though its general characteristics are familiar to him from much experience in the treatment of similar cases. *The Book of Prognostics* and the treatise *Of the Epidemics* in the Hippocratic collection seem to combine both these kinds of knowledge. They enumerate the symptoms by which diseases can be recognized and their future foretold. They also set forth individual case histories from which such generalizations can be drawn.

The practice of medicine thus appears to require more than scientific knowledge of health and disease in general, and more than general rules of art. It requires the sort of experience which can be gained only from actual practice. Without prudence born of experience, general rules can be misapplied, for no general rule, in medicine as in law, fits all cases alike. The most famous of Hippocratic aphorisms conveys a sense of the hazards of medical practice: "Life is short, and Art long; the crisis fleeting; experiment perilous, and decision difficult. The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and the externals cooperate."

To persuade the patient to cooperate is the first maxim governing the physician's relation to his patient. Plato contrasts the right and wrong relation between doctor and patient by comparing the practice of the physicians who treated slaves and those who treated freemen. "The slave-doctor," he says, "prescribes what mere experience suggests, as if he had exact knowledge, and when he has given his orders, like a tyrant, he rushes off with equal assurance to some other servant who is ill . . . But the other doctor, who is a freeman, attends and practices upon freemen; and he carries his enquiries far back, and goes into the nature of the disorder; he enters into discourse with the patient and with his friends, and is at once getting information from the sick man, and also instructing him as far as he is able, and he will not prescribe for him until he has first convinced him; at last, when he has brought the patient more and more under his persuasive influences and set him on the road to health, he attempts to effect a cure."

In the treatment of mental diseases, as Freud points out, the proper development and management of the relationship between patient and physician is itself a major factor in psychotherapy. "It presupposes a profound interest for psychological incidents, as well as a personal sympathy for the patient," he writes. "It requires the full consent and the attention of the patients, but above all, their confidence, for the analysis regularly leads to the inmost and most secretly guarded psychic processes." Since fears, anxieties, or other temperamental dispositions on the part of the patient may affect the course of an organic ailment, the patient's confidence in the physician and, even more generally, his emotional response to the physician's character play an important role in the successful treatment of bodily ills as well as of mental or functional disorders.

Hippocrates recommends that the physician cultivate prognosis, not only for the guidance of his own actions, but also for the sake of the patient. "By foreseeing and foretelling, in the presence of the sick, the present, the past, and the future, and explaining the omissions which patients have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick; so that men will have confidence to entrust themselves to such a physician."

Certain issues surrounding the ethics of the physician-patient relationship seem to be peculiar to the 20th-century practice of medicine. The right of the mortally ill to die is an issue the significance of which is a measure of

the advances in medical technology; the issue would never have arisen if doctors had not been able to preserve the life of a patient far longer than could be expected naturally. According to Weber, medicine falls into difficulties by aiming both to preserve life and to reduce suffering to the greatest extent possible. "This is problematical," writes Weber. "By his means the medical man preserves the life of the mortally ill man, even if the patient implores us to relieve him of life . . . Whether life is worth while living and when—this question is not asked by medicine."

THE RELATION OF physician and patient raises a question about the organization of the practice of medicine, to which opposite answers have been given in both ancient and modern times. Herodotus reports a high degree of medical specialization in Egypt. "Medicine is practised among them on a plan of separation," he writes; "each physician treats a single disorder, and no more: thus the country swarms with medical practitioners, some undertaking to cure diseases of the eye, others of the hand, others again of the teeth, others of the intestines, and some those which are not local." The fact that the next paragraph begins a discussion of funerals can hardly be taken as revealing the attitude of Herodotus toward specialization, though his comment on the Egyptian practice does imply a contrast to Greek medicine.

One sentence in the Hippocratic Oath—"I will not cut persons laboring under the stone, but will leave this to be done by men who are practitioners of this work"—indicates some division of labor in the organization of Greek medicine. But apart from the special tasks and skills of surgery, the Hippocratic conception of the physician's work favors the practice of general medicine rather than specialization. The man, not the disease, is to be treated, and to treat him well the physician must examine the man as a whole, not merely the organ or bodily part in which the disorder seems to be located. The Hippocratic formula for getting a case history calls for an inquiry into the background of the individual's life, his antecedents, his occupation, his temperament, "the patient's habits, regimen, and pursuits; his conversation, manners, taciturnity, thoughts, sleep, or absence of sleep, and sometimes his dreams, what they are and when they occur; his picking and scratching; his tears." From these as well as from the symptoms, says Hippocrates, "we must form our judgment."

The defense of general practice against specialization is part of Galen's argument with his adversaries. Treatment of the disordered part as if it could be isolated from the living unity of the whole man is, to Galen, one of the deplorable consequences in medical practice of atomism or mechanism in medical theory.

This issue is argued again and again in the history of medicine, with each side pressing the advantages in its favor. Montaigne, for example, states the case for the specialist by analogy with the advantages of specialization in other arts. "As we have doublet makers and breeches makers to clothe us, and are served all the better by them because each one performs only his own specialty and needs a more restricted and limited skill than a tailor who undertakes everything; and as, in the matter of food, the great find it preferable to have separate functions for soup cooks and roasting cooks . . . so, for curing us, the Egyptians were right to reject the general practice of medicine and to subdivide this profession." With Freud and the development of a greater awareness of the psychological origin of many bodily disorders, a new factor enters into the argument. It tends to favor the general practitioner who, from his acquaintance with the patient as a person, may be better able than the specialist to detect hidden psychological causes.

THE CONCEPTION of disease is usually determined by the conception of health. The abnormality is judged and measured as a deviation from the norm. Hippocrates uses the outward appearance of man in a healthy condition as the standard for discerning the visible signs of illness. The physician, he says, "should observe . . . first the countenance of the patient, if it be like those of persons in health, and more so, if like itself, for this is the best of all; whereas the most opposite to it is the worst." He should also take note when he finds the

patient reclining in a posture which resembles the normal disposition of the healthy body. "To find the whole body lying in a relaxed state" is a more favorable sign than to find him "upon his back, with the hands, neck, and the legs extended."

The history of medicine, especially on the side of its science and theory, if not so much with regard to its art and practice, can be told in terms of refinements in the classification of diseases and progressive discovery of their specific causes, both internal and external, predisposing and exciting. But the analysis of diseases according to their etiology and by reference to the typical picture of the disease process leaves unanswered the general question about the nature of disease as a loss of health.

Apart from its causes and its symptoms, its modes and its patterns, what is disease? This is the question of major speculative interest in the tradition of the great books. The answers given have a certain uniformity in spite of the varying terms in which they are expressed.

The humoral hypothesis of ancient medical theory, for example, conceives health as that condition of the body in which the physiological elements are in a proper proportion or balance, and in which the various parts or powers function harmoniously with one another. As health is harmony or good order in the body, so disease consists in imbalance and disharmony—an excess or defect with consequent disproportion of the elements, or the disorder of conflicting bodily processes.

In the *Timaeus,* Plato first states this theory in terms of the four physical elements. "There are four natures out of which the body is compacted, earth and fire and water and air, and the unnatural excess or defect of these, or the change of any of them from its own natural place into another . . . produces disorders and diseases." He then considers the diseases which result from excess or defect of one or another of the four humors—blood, phlegm, black and yellow bile.

The humoral hypothesis, which Hippocrates and Galen share with Plato and Aristotle, undergoes many transformations in the history of medicine. The four elements or humors are replaced by other physiological factors, such as the hormones or internal secretions, or the elements of modern biochemistry. But constant throughout these changing formulations is the conception of health as an equilibrium, and of disease as its loss through disorder and disproportion.

This broad conception of health and disease seems to apply to mental as well as bodily ills. There is not only a basic continuity between Plato's and Freud's discussion of the bodily origin of mental disorders and the psychic origin of physical ailments; but the Freudian emphasis upon conflict and disintegration in the neurotic character—milder forms of the schizophrenia or "split personality" which characterizes insanity—also appeals to harmony as the principle of health. The language of modern psychiatry which refers to "the integrated personality" or "the well-balanced and adjusted individual" defines the norm or the ideal of mental health.

The various kinds and degrees of mental disorder, especially those which seem to be entirely functional rather than organic, represent abnormalities which, though they differ in cause, symptom, and tendency, have in common some excess or defect in the psychic structure or some unresolved conflict in the nature of man. Freud's psychoanalytic method in the treatment of mental ills places psychotherapy in the main tradition of medical practice; for in addition to insisting that the patient shall help to cure himself, it is directed toward the resolution of conflict, restoring the harmony which is health.