THE ART OF MEDICINE IN RELATION TO THE PROGRESS OF THOUGHT

By general consent there are good and bad periods in art. When art is bad, good art does not exist. When art is good, good and bad art flourish side by side. It is the same in medicine, which is sometimes honoured by inclusion in the distinguished company of the arts, and it is to the good medicine in these relatively good periods that we must look to discover the contributions which medicine has made, if any, to the progress of human thought.

I cannot, however, claim any particular knowledge of the history of medicine, and propose to devote most of my time this morning to modern medicine in relation to current thought. Nevertheless, in order to fulfil my task, I must attempt a brief review of the three great periods of the past. The first, or Hippocratic, runs from the sixth century B.C. to the death of Galen at the end of the second century of the Christian era. The second begins with the publication of *The Fabric of the Human Body* by Andreas Vesalius in 1543, and includes the discovery of the circulation of the blood by Harvey, and the work of Mayow and others on respiration and combustion. This period ends for the purpose of this lecture in the seventeenth century with the posthumous publication of the first complete book on the physiology of the human body by René

Descartes, the contemporary and correspondent of the English philosopher, Thomas Hobbes, and with the vitalism of the German physician, Stahl, who also promulgated the phlogiston theory. The third period emerges out of the solid complacency of the eighteenth century and the upheaval of the industrial revolution, and includes Darwin's publication of *The Origin of Species* in 1859, Pasteur's disproof of the spontaneous generation of life, the discovery of the bacterial cause of many diseases, Mendel's work on genetics, and Lister's antiseptic and aseptic surgery. It covers roughly the last hundred years, and culminates in our own day in the discovery of insulin, Pavlov's description of conditioned reflexes, Freud's work on the subconscious mind, increasing knowledge of the viruses and genes, and finally in the discovery of the sulphonamides and penicillin, with the dramatic fulfilment of Ehrlich's dream of chemotherapy.

I am also confronted with an initial difficulty in interpreting my terms of reference as a lecturer in this course. Medicine is not a single science, but depends on the integration of a number of sciences for the specific purpose of understanding the nature of disease as a natural phenomenon, and the application of these and other sciences to the practical problems of the prevention and treatment of ill-health. We are not concerned with the contributions that individual medical men may have made to thought, unless it can be claimed that their particular contributions to science have had an effect on our way of thinking specifically through medicine. Rather,

we must consider the way in which medicine, by bringing science and thought into intimate and personal relationship with humanity, has resulted in science making a greater contribution to thought than would otherwise have been the case. Copernicus, a physician, revolutionized our ideas of the universe, but not through his profession. Aristotle never practised medicine, but influenced medicine profoundly, and, through medicine, human thought for over a thousand years.

THE HIPPOCRATIC PERIOD

The Greek physicians of the school of medicine associated with the name of Hippocrates made three great contributions. In the first place they broke away from preconceived ideas, and started to observe disease as an objective phenomenon of nature, keeping records of cases which are remarkable for accuracy and detail. They knew little about the physiology of the body, and less of the causes of disease. Nevertheless, they emphasized the integration of the functions of the body as a whole, and regarded disease as disharmony of the body or mind, an aspect of medicine which was lost sight of until revived by Sydenham in the seventeenth century. But their great achievement was to lay the foundation of the observational method in the study of natural phenomena, and by so doing to make a contribution to science in general, and in consequence to the progress of human thought, which it would be difficult to overestimate.

Secondly, against the corrupt background of temple medicine, in the atmosphere of the declining mythology of the Greek religion, and in the pre-Christian era, they adopted the best moral standards of the age, as reflected in the life of Socrates and the philosophy of Plato, and laid down the ethical code for the practice of medicine which survives to this day. 'I swear by Apollo, the healer, invoking all the gods and goddesses to be my witnesses, that I will fulfil this Oath and this written Covenant to the best of my ability and judgement. I will look upon him who shall have taught me this Art even as one of my own parents. I will share my substance with him, and I will supply his necessities, if he be in need. I will regard his offspring even as my own brethren, and I will teach them this Art, if they would learn it, without fee or covenant. I will impart this Art by precept, by lecture and by every mode of teaching, not only to my own sons, but to the sons of him who has taught me, and to disciples bound by covenant and oath, according to the Law of Medicine. The regimen I adopt shall be for the benefit of my patients according to my ability and judgement, and not for their hurt or for any wrong. I will give no deadly drug to any, though it be asked of me, nor will I counsel such, and especially I will not aid a woman to procure abortion. Whatsoever house I enter, there will I go for the benefit of the sick, refraining from all wrong-doing or corruption, and especially from any act of seduction, of male or female, of bond or free. Whatsoever things I see or hear concerning the life of men, in my attendance

on the sick or even apart therefrom, which ought not to be noised abroad, I will keep silence thereon, counting such things to be as sacred secrets. Pure and holy will I keep my Life and my Art. If I fulfil this Oath and confound it not, be it mine to enjoy Life and Art alike, with good repute among all men at all times. If I transgress and violate my oath, may the reverse be my lot.'* There are those still living who were required to take the Hippocratic oath on attaining the University degree which entitled them to practise physic.

In the third place, Greek medicine established the idea of the physician as a necessary aid to living in human society. The legendary figure of Hippocrates has become the personification of the wisdom and experience for which all crave in sickness and anxiety, and of the physician as guide, philosopher, and impersonal friend whom many require even in health. Hippocrates must surely have inspired 'the wise physician' of the unknown writer of Ecclesiasticus, and Luke, 'the beloved physician' of St Paul. If Greek medicine has set an example to which my profession must endeavour to aspire, it has at the same time provided a type behind which, granted the necessary presence and the power to act a part, charlatanism, ignorance, and insincerity, can be successfully and even profitably concealed.

The philosophy behind Greek medicine was characteristic of an age of uncertainty and doubt, and comparable

* The Hippocratic Oath. Charles Singer, *A Short History of Medicine*. Oxford, at the Clarendon Press, 1928.

with that of the Stoics at a later date. The world was designed by God; all events in the natural world were determined by forces outside Man, who had no power to control his destiny. Epidemics came and went with a regularity comparable almost to the return of the seasons and the ebb and flow of the tides. The physician, who could do little for his patient, had to rely on the natural tendency of the body to effect recovery, and advocate patience and resignation. All was for the best, even death. 'The time of man's life is as a point, the substance of it ever flowing, the sense obscure; and the whole composition of the body tending to corruption. His soul is restless, fortune uncertain and fame doubtful; to be brief, as a stream, so are all things belonging to the body; as a dream or as a smoke, so are all that belong unto the soul. Our life is a warfare, and a mere pilgrimage. Fame after life is no better than oblivion. What is it then that we will adhere to and follow? Only one thing, Philosophy. And Philosophy does consist in this, for a man to preserve that spirit which is within him from all manner of contumelies and injuries and above all pains or pleasures; never to do anything either rashly, or feignedly, or hypocritically; wholly to depend upon himself and his own proper actions: all things that happen unto him to embrace contentedly, as coming from Him, from Whom he himself also came; and above all things, with all meekness and a calm cheerfulness, to expect death, as being nothing else but the resolution of those elements, of which every creature is composed. And if the elements themselves suffer nothing

by this perpetual conversion of one unto another, that dissolution and alteration, which is so common unto all, why should it be feared by any? Is not this according to Nature? But nothing that is according to Nature can be evil.' *

Aristotle, however, had been brought up in the philosophy of Plato, and had been profoundly influenced by the methods of the physicians. He extended systematic observation to almost the whole of the natural world, dissected animals, arranged them in a natural order, studied their different methods of reproduction, and founded comparative anatomy. He speculated in physiology, came to the conclusion that the heart was the seat of the emotions—Plato had realized that the brain was the physiological basis of the mind—and introduced conceptions which, although largely erroneous, dominated medicine throughout the Middle Ages. His main influence on thought was to correlate Plato's idea of the soul with the physiology of the body. This teaching long survived his death, and when, soon after, the intellectual centre of the world shifted to Alexandria, the first medical school was established on the basis of Aristotle's system of natural philosophy. Herophilus started to dissect the human body, and Erasistratus to speculate more exactly on the different parts which were revealed. Erasistratus, indeed, adopted the materialism of Epicurus, who had revived the atomic

* *The Meditations of Marcus Aurelius*: Second Book, xv, translated by Meric Casaubon. Everyman's Library, No. 9. J. M. Dent and Sons Ltd., 1906.

theory of Democritus, and the stoic philosophy of Zeno, which had dominated Alexander's empire. He admitted the existence of a designing force in nature, but denied the soul which Aristotle postulated, and attributed the peculiar characteristics of living things to some subtle essence which he confused with air and breathing. Nevertheless, the spirit of original inquiry was almost dead, science was already on the decline, and Galen, at whose death in A.D. 200 the classical period comes to an end, made only a few original contributions. But by his voluminous writings as a physician he popularized the conceptions of Aristotle, including his conjunction of Plato's idea of the soul with the physiology of the body, rather than the materialism of Erasistratus. Moreover, he saw in the body greater evidence of design than Erasistratus would allow, and more opportunity for free-will and independence of the human mind than the Stoics would admit. By adopting Aristotle's conception of the relation of the soul to the physiology of the body, Galen helped to prepare the world for the acceptance of the idea of individual responsibility and the Christian interpretation of human life.

The Israelites had introduced the idea of a covenant between Man and a single universal God. The Greek philosophers had argued in favour of an abstract morality, the metaphysical existence of God, and the survival of human personality. These two points of view met in the Hellenistic world. And now Aristotle's conception of the relation of an immaterial soul to a material body, designed by a Creator, was being popularized in the writings of a

physician who, although lacking in originality, dominated medical thought throughout the Middle Ages. Galen's teleological teaching was naturally attractive to the protagonists of the new faith, which preached a Trinity of three Persons, individual responsibility, original sin, and redemption by grace. On the other hand, medical science was likely to make little progress in a world in which the human body, where Galen had seen so much beauty and evidence of design, was now largely an obstacle to salvation, and had become the 'vile body' of the Pauline epistle which must be kept under subjection in order to gain salvation. The power of mind over body became greater than at any other period in the history of the world. The saints and martyrs suppressed pain and fear in spiritual exaltation to a degree which has never since been achieved, and the body was deliberately subjected to maltreatment and hardship to be purified of the lusts of the flesh to an extent to which it is now difficult to imagine. It would be interesting to know the incidence of deficiency disease, tuberculosis, and hypochromic anaemia in the cloisters at Tintern, Fountains and Rievaulx, where the Cistercian rule demanded strenuous labour in the fields on a scanty diet, repeated blood-letting, and nightly interruption of sleep to carry out the offices of the Church. It would be still more interesting to know the extent to which depression of the function of the brain, on which mind depends, by the deliberate cultivation of ill-health, influenced the development of theological doctrine, or contributed to a spurious form of individual morality

and saintliness. Interest in the body and the power of medicine inevitably declined, as the Church struggled to dominate the declining Empire in the West.

THE RENAISSANCE

At the Renaissance, the physical and biological sciences were conceived out of art in the mind of Leonardo, who investigated mechanics, and studied anatomy and physiology. The first child, physics, became viable in the work of Copernicus, Galileo, and Kepler. Biology was born second, in the studies of Vesalius, Harvey, and Malpighi: and, ever since then, has limped along behind the mechanical sciences in the part-worn clothes of her elder sister, physics. Copernicus described the revolution of the planets, and Vesalius gave an account of the static structure of the human body. Galileo enunciated the principles of mechanics, and Harvey applied them to the circulation of the blood. Boyle rescued chemistry from alchemy, and Mayow applied chemistry to the physiology of the body. The materialism of Erasistratus was triumphant: Aristotle's conception of the soul and Galenism were dead. The body was a machine which worked by mechanical laws, and consciousness and mind were by-products of the material world. Metaphysics was not yet ready to criticize this point of view. No wonder that the Church reacted so violently, for on the new theory the body was all important, and the soul did not exist. Surgery advanced rapidly, aided by more accurate knowledge of anatomy; modern physiology had been founded by Harvey; and Sydenham