

V. *Technê* and Discovery in *On Ancient Medicine*

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Two attitudes toward the past history of human culture and society may be distinguished in the development of early Greek thought. On the one hand, there is the early mythological view, first expressed by Hesiod in the legend of the Ages, and often recurring with various adaptations in later times, of the degeneration of man and society from a pristine state of natural excellence. Sharply contrasting with this pessimistic view is the optimistic conception, originating later and developing mainly in rational thought, of the gradual alteration and progress of man and society over a long period of time from a primitive, barbaric condition into a state of higher culture and excellence.¹ Whatever may be its full and precise interpretation, a fragment of Xenophanes² is the earliest clear expression of the basic idea of change and advance occurring as a result of man's own seeking and striving: οὐ τοι ἀπ' ἀρχῆς πάντα θεοὶ θνητοῖσ' ὑπέδειξαν, ἀλλὰ χρόνῳ ζητοῦντες ἐφευρίσκουσιν ἄμεινον. Later descriptions of the origin, alteration, and advance of human culture reveal several varying explanations. According to the surviving accounts, the "arts" and their development, with ensuing progress of human society, are conceived mythologically as the gifts of the gods or inventions of a culture-hero,³ or as inventions and discoveries resulting from man's own efforts and experiences and deriving ulti-

¹ The principal texts reflecting both attitudes have been collected and evaluated by A. O. Lovejoy and G. Boas, *A Documentary History of Primitivism and Related Ideas* 1 (Baltimore 1935) 23 ff. and 192 ff. The "cyclical" views of Plato and Aristotle were developed later. Hesiod gives two accounts, inconsistently expressing both attitudes toward the original condition of man; F. J. Teggart, "The Argument of Hesiod's *Works and Days*," *Journ. Hist. Ideas* 8 (1947) 45-77, attempts to reconcile the inconsistency, and denies for Hesiod himself the view of the degeneration of man.

² Diels-Kranz, *Vors.* 21B 18. Cf. B. Snell, *The Discovery of the Mind* (Oxford 1953) 139-40, who interprets the fragment, perhaps rightly, in conjunction with B 34 in an epistemological sense, and H. Fraenkel, *Dichtung und Philosophie des fruhen Griechentums* (Lancaster 1951) 430-31, who believes that Xenophanes expresses the idea of "einen stetigen Fortschritt."

³ The development of this view, with its later modifications, is studied by A. Kleinguenther, *Πρῶτος εὐεργής, Untersuchungen zur Geschichte einer Fragestellung* (*Philologus* Suppl. 26. 1 [Leipzig 1933]).

mately from the natural constituents and endowments of human nature,⁴ or as products arising in the course of natural evolution, a view elaborated in several forms in the cosmological reasoning of natural philosophy.⁵ All these diverse sources and influences contributed to the gradual diffusion and establishment during the latter half of the fifth century B.C. of the conception that the discovery, development, and progress of the various *technai* had been responsible for the great advance in human culture and society from its earlier primitive stage, with consequent betterment in the means and conditions of human life. This conception seems to have penetrated the intellectual activity of the Enlightenment rather broadly, as well as being implicitly assumed in the doctrine and activity of the Sophists and underlying the proliferation of the *technai*.⁶

One of the clearest and most self-conscious expressions of this idea of the progress of the "arts" from a primitive stage is that which is to be found in *On Ancient Medicine*, a work probably composed during the latter part of the fifth century.⁷ In attempting to accomplish the primary object of his treatise — opposition to those thinkers who wish to base medicine upon "hypotheses," the author describes the nature of his *technê*. In order to do this, and to demonstrate that the established *technê* is the only valid form of medicine, he explores the manner in which medicine has originated and evolved into a *technê*.⁸ This origin and development of the

⁴ This seems to have been the view advanced in his *Περὶ τῆς ἐν ἀρχῇ καταστάσεως* by Protagoras, who clothed his conception in mythical form; though his treatise has not survived, it is likely that its central idea is substantially reproduced in the myth of Prometheus ascribed to Protagoras by Plato in *Prot.* 320c ff. G. Vlastos, "On the Pre-History of Diodorus," *AJP* 67 (1946) 51–59, may be correct in suggesting (56–57) that Protagoras was proceeding upon a purely analytic principle and did not offer a positive explanation of the origin of the arts. But surely the teleological element of the myth was not introduced by Plato himself.

⁵ For the cosmological views, cf. W. von Uxkull-Gyllenband, *Griechische Kultur Entstehungslehren* (Berlin 1924) 10–34. On Democritus' view of the "separating out" of the arts by physical necessity, cf. Vlastos (above, note 4) 57–59.

⁶ On this general tendency of the age, especially the glorification of the "arts," cf. Lovejoy and Boas (above, note 1) 194–96, and P.-M. Schuhl, *Essai sur la formation de la pensée grecque*² (Paris 1949) 342–52; and J. H. Finley, *Thucydides* (Cambridge 1942) 82 ff., on the idea of past progress expressed in the "Archaeology."

⁷ On the probable date of *V.M.*, cf. A. J. Festugière, *Hippocrate, L'Ancienne Médecine* (Paris 1948) 56, 58–60. It is not possible to agree with H. Diller, "Hippokratische Medizin und attische Philosophie," *Hermes* 80 (1952) 385–409, who would date *V.M.* to the late Platonic period. The arguments which he advances are not convincing.

⁸ The significance of the author's description of the origin of medicine has been discussed in detail in my paper "On Ancient Medicine and the Origin of Medicine," *TAPA* 80 (1949) 187 ff.

technê is described in two stages. The author begins (3.1 ff.)⁹ with the origin and evolution of human diet and regimen, which he conceives as a series of discoveries resulting from necessity and the needs of human nature. These needs forced man to seek for foods more suited to his nature, and this process of seeking, in time, led to the gradual alteration of primitive diet and the formulation of human regimen — εὖρημα μέγα τε καὶ πολλῆς σκέψιος τε καὶ τέχνης (4.5–6). In this elaboration of the evolution and discovery of human regimen, the author reflects¹⁰ and adapts the idea of the progress of the “arts” to his own *technê*, articulating it with much originality in terms of his own medical conceptions. In the second part of his explanation (5–7), he employs further the factors which he had envisioned as operative in the evolution of regimen, applying them by analogy to the evolution of the *technê*, to demonstrate logically that medicine itself was the result of a series of discoveries. For the earliest physicians, seeking a regimen that was beneficial to the body in illness, experimented with foods that were suitable, and gradually evolved a regimen beneficial to those who were ill. And it was this process which in time resulted in the discovery of the *technê*. Throughout the whole description of the origin of medicine, the themes of “research” and “discovery” occur repeatedly.¹¹ They are, in fact, basic ideas in terms of which the author has visualized the origin and growth of medicine from its first crude beginnings to the status of acknowledged *technê* which he now claims for medicine.

It would be, however, scarcely an adequate appreciation of the role played by the ideas of research and discovery in the author’s mind if it were restricted merely to his conception of the evolution and advance, in the past, of his *technê*. Actually, these ideas are far more vital to his thinking than this would indicate, for they are profoundly operative in his whole approach to medicine, not simply in his view of its past progress to his own time. It is his consciousness of the importance of research¹² and discovery which evokes his

⁹ References to *V.M.* are according to the text of W. H. S. Jones, *Hippocrates* 1 (LCL, 1923).

¹⁰ Festugière (above, note 7) 35–36, provides an interesting conflation of several accounts of the past progress of the arts, and points out some verbal similarities of *V.M.* 3 to other accounts.

¹¹ Festugière, *loc. cit.*, citing together a number of occurrences of the words *ζητέω* and *εὕρισκω* and their derivatives, remarks, hardly exaggerating: “Noter le ton enthousiaste de cet ‘hymne’ à la recherche et à la découverte.”

¹² Even though *V.M.* is so brief a work, *ζητέω* and its derivatives occur 17 times, *εὕρισκω* and its derivatives 30 times. Of course, *ζητέω* is not technical in meaning,

first major argument against those *sophistai* and physicians who attempt to base medicine, in the new fashion, upon "hypotheses,"¹³ namely, that discoveries cannot be made by this new method. The *archê* and the *hodos* of the *technê* have already long ago been discovered, he remarks (2.1–13), by means of which many discoveries have been made over a long period of time. And, he adds immediately, other discoveries will be made, if research continues by the same method. But anyone who rejects and disregards the established *archê* and *hodos*, and attempts to do research *ἐτέρῃ ὁδῷ καὶ ἐτέρῳ σχήματι*, and then says that he has made some discovery, deceives others and is himself deceived. And it is to show why it is necessarily (*δι' αὐτῶν . . . ἀνάγκας*) impossible to make discoveries by any other method that the author undertakes to explain *what* the *technê* is. From this, he adds, *καταφανές ἐσται ἀδύνατα ἔοντα ἄλλως πως τούτων εὐρίσκεισθαι*. This is his basic objection to the method of "hypothesis," and it is reflected in his approach to many aspects of medicine discussed later in the work. The implication of this major fault of the new method of medicine is explored in two later passages. Reverting (13.1 ff.) to the theory *τῶν τὸν καινὸν τρόπον τὴν τέχνην ζητεούντων ἐξ ὑποθέσεως*, the author introduces an hypothetical experiment, in which he visualizes a case of illness arising from a diet of raw, crude foods. Then he confronts those physicians who advance the theory of "the hot and the cold, the wet and the dry" as the causal principle of disease with this hypothetical situation. Asking which of the four opposites should be applied, he argues that their theory fails in treatment, because they could not certainly determine which of the opposites was the cause of the illness. The ground of his objection is made even more explicitly and pertinently after he has enunciated the basic principle of *dynameis* upon which the established *technê* rests. Those physicians, he continues (15.1 ff.), postulating the hypothesis of "the hot and the cold, the wet and the dry" and *ἀγοντες ἐκ ταύτης τῆς ὁδοῦ ἐπὶ ὑπόθεσιν τὴν τέχνην*, would find the hypothesis useless in actual treatment of the ill, *οὐ γάρ ἐστιν*

though often it seems to come very close to a technical meaning "to do research," and both Jones and Festugière have properly so translated.

¹³ His objection to the use of "hypotheses" (the word, of course, does not have our modern meaning) had just previously (1.20–27) been expressed on a theoretical but closely related ground: Medicine has no need of empty hypotheses, as do *τὰ ἀφανέα τε καὶ ἀπορέμενα*. It is necessary, if one attempts to say anything concerning such subjects, e.g., concerning *τῶν μετέωρων ἢ τῶν ὑπὸ γῆν*, to use hypotheses. Yet, if one should know and say how these things are, it would not be clear either to the speaker or the auditor whether the thing said was true or not, *οὐ γάρ ἐστιν, πρὸς δὲ τι χρὴ ἀνεγέκταντα εἶδέναι τὸ σαφές*.

αὐτοῖσιν . . . ἐξευρημένον αὐτό τι ἐφ' ἑωυτοῦ θερμόν ἢ ψυχρόν ἢ ξηρόν ἢ ὑγρόν μηδενὶ ἄλλῳ εἶδει κοινωνέον. Consequently, since no absolute hot or absolute cold etc. has been discovered by them, treatment could not proceed in accordance with their hypothesis. The author, therefore, opposes the hypothesis, since it cannot be used in treatment. The specific ground upon which he attacks the validity of the hypothesis, i.e. that no absolute hot or absolute cold has been discovered, seems peculiarly consonant with the importance that discovery holds in the author's thinking, and will have important repercussions later when he presents his own conception of the nature of heat and cold, in opposition to this hypothesis. There would be, moreover, the same objection in the author's mind to all hypotheses, because they are irreconcilable with the process of research and discovery.

Contrasting with the impossibility of making discoveries by the method of medicine based upon hypothesis, as the author has insisted, is the fact that many discoveries have been made in accordance with the established *archê* and *hodos*. These discoveries have not, as he is careful to point out (12.10–16), been made merely by chance (*tychê*),¹⁴ nor have they simply come about aimlessly and haphazardly. On the contrary, they have resulted from the process of research that has been properly carried out, in accordance with reasoning. As he expresses it in a later passage (14.14–20), the first discoverers, καλῶς καὶ λογισμῷ προσήκοντι ζητήσαντες πρὸς τὴν τοῦ ἀνθρώπου φύσιν, made discoveries of the greatest usefulness and necessity to man, so that they thought the *technê* worthy to be attributed to a god. This was the process by means of which the *technê* has advanced from a state of deep ignorance (12.15) and made many excellent discoveries useful to the health and salvation of man. The purposefulness and usefulness of the discoveries of medicine is constantly in his mind, since he never loses sight of the treatment of the ill.

But not only have discoveries been made in the past. They are still being made, and the author is equally confident that further

¹⁴ Cf. *V.M.* 1.12–20, where it is pointed out that if no research and discovery had been made in medicine, then all its practitioners would be equally lacking in experience and knowledge and all the treatment of the sick would be carried out according to chance. The rejection of chance as a factor in the making of discoveries takes on more significance in view of the conflict between *technê* and *tychê* during this period. This controversy is most sharply seen, as it involves medicine, in *On the Art* 4–6, where the author of that work defends medicine as a *technê* against those detractors who assign cures to mere chance and therefore deny that medicine is a *technê* at all.

discoveries will be made in the future and that the *technê* will be perfected in time, if research continues according to the established principle and method. He is careful to qualify his first claim that τὰ λοιπὰ εὐρεθήσεται (2.4) by adding immediately: ἦν τις ἱκανός¹⁵ τῶν καὶ τὰ εὐρημένα εἰδὼς ἐκ τούτων ὁρμώμενος ζητῆν. These three qualifications reveal how precise and conscious his reasoning concerning the process of making discoveries is. The point of departure for further research must be the knowledge already acquired by the *technê*, and must proceed in accordance with a method, specifically that method which has evolved naturally, as he believes. It is according to this same method that even physical trainers of gymnastics αἰεί τι προσεξευρίσκουσιν κατὰ τὴν αὐτὴν ὁδὸν ζητούντες (4.5-10). In a later chapter (8), after an inquiry into the diet of the ill with reference to the diet of the healthy person and the resulting statement of a principle, he concludes by saying: ταῦτα δὴ πάντα τεκμήρια, ὅτι αὕτη ἡ τέχνη πᾶσα ἡ ἰητρικὴ τῇ αὐτῇ ὁδῷ ζητούμενη εὐρίσκειτο ἄν. These statements clearly reveal the orientation of the author's mind, and how vital the idea of discovery is. He clearly envisions the growth of medicine in the future, and even the ultimate perfecting of the *technê*, by further discoveries.

All these explicit remarks of the author concerning the making of discoveries reveal more deeply the cause of his hostility toward the new method of medicine depending upon hypotheses. It is not that he simply looks to the past and wishes to protect his *technê* because it is the "ancient art." He is, of course, very conscious of the discoveries and progress of the *technê* in the past, but he is equally conscious of the need for discoveries and progress in the future. The making of discoveries is, in fact, an integral element in the author's conception of the meaning and method of medicine, which is, for him, much more than simply the treatment of the ill. His conception of *technê* comprises several components. It consists of research (i.e., seeking for knowledge) directed toward the *physis* of man, based upon observation of the phenomena of the body and investigation (*skepsis*) into the causes (*aitia*)¹⁶ of the phenomena by reasoning

¹⁵ The competency of the physician to make discoveries also interested the author of *On the Art*, who remarks (9.15-18) that cures for diseases have been discovered, but the making of discoveries depends not just upon the desire of the physician to make them, but upon his capacity. And capacity depends both upon his nature and his training.

¹⁶ The words for "cause" occur 14 times in the work, though this does not indicate adequately how deeply aetiological his thinking is. He blames those who oversimplify

(*logismos*). This whole process, when it is properly carried out, yields discoveries. And it is this process which has been responsible for the progress of medicine in the past, and will be the source of further progress in the future. The other aspect of medicine is, of course, the use of the knowledge discovered, its application in treatment, in the prevention and curing of illness. The two aspects of the *technê* would not generally be sharply separated or demarcated from each other — they are naturally very closely intertwined.¹⁷ But investigation and discovery is clearly the more basic aspect, and its vital importance is recognized by the author.¹⁸ This recognition everywhere conditions his approach to the problems of the *technê*.

This approach to medicine, and his awareness of the need for further advance, does not fail to be reflected in his concern for a problem of vital importance for the *technê* — the need for greater accuracy. In discussing (9.1–20) the effects of repletion (*plerôsis*) and depletion (*kenôsis*) upon the body, he remarks that no simple statement of principle (e.g., that strong foods injure, while weak foods benefit) will suffice; repletion and depletion both have severe, though different, effects upon the constitution. These matters, then, are much more complex and require greater accuracy, for the physician must aim at some measure (*metron*). But no measure, either number or weight, can be discovered with reference to which the physician may attain exactness, other than the feeling (*aisthêsis*) of the body. This inherent and inescapable limitation contains an implication for medicine:¹⁹ δι' ὃ ἔργον οὕτω καταμαθεῖν ἀκριβῶς, ὥστε σμικρὰ ἀμαρτάνειν ἔνθα ἢ ἔνθα. The physician who errs only slightly

τὴν ἀρχὴν τῆς αἰτίας (1.4), while in his own reasoning the search for causation is very prominent.

¹⁷ However, *V.M.* 8 and 11, for example, illustrate the author's consciously stopping to make an inquiry or investigation of causes, and arriving at a new explanation. But it would, of course, be an exaggeration to think of him as primarily a "research man." The process of research and discovery is very intimately related, in his mind, to treatment.

¹⁸ Two additional passages may be cited to illustrate the author's attitude. Cf. *V.M.* 2.15–21 and 1.11–16, where the process of making discoveries is explicitly related to their use in treatment.

¹⁹ F. M. Cornford's interpretation of this sentence (quoted by W. H. S. Jones, *Philosophy and Medicine in Ancient Greece* [Baltimore 1946 = *Suppl. Bull. Hist. Med.* No. 8] 73) seems correct: "Our business is to make knowledge so exact that mistakes occur only by slight deviations through excess or defect," even though *ergon* in the sense of "proper work" or "function" is unusual, when the word occurs alone. Normal usage would require a possessive pronoun or qualifying genitive, but the author elsewhere fails to make the reference to the physician explicit, when it can be implied, e.g., 21.12, 23.7–9.

is to be praised, the author adds, but precision is rarely to be observed. He then proceeds (10) to examine the effects of unseasonable repletion and depletion upon the body in the case of healthy persons, and to investigate (11) the causes of these effects, concluding his discussion by making an accurate statement concerning the several degrees of strength of the body in illness (12.1–6). But it is difficult, he continues (12.6 ff.), while such accuracy does exist for the *technê*, to achieve precision always — though many “forms” of medicine (concerning which he promises to speak later) have already attained such a degree of accuracy. And he ends by protesting that the ancient *technê* should not be rejected if it has not achieved accuracy in all things, but ought rather to be admired because of having been able to advance from ignorance to a stage near to precision.²⁰ In this discussion, there is not only the consciousness of the need for greater accuracy in treatment, but the need of striving for greater knowledge, by means of which the lack of an objective standard of measure may be compensated.

How deeply the heuristic approach has penetrated the author’s mind may be especially well observed in his detailed and searching investigation of the nature of “the hot” and “the cold,” and their functioning in the body. Having just rejected (15) the hypothesis of “the hot and the cold, the wet and the dry” on empirical grounds, he states his view (16.1 ff.) that heat and cold “rule” in the body least of all the *dynamēis*.²¹ For as long as “the hot” and “the cold” are mingled together, they blend with and moderate each other, and no pain results. When, moreover, either of the two is separated and isolated, the other immediately and spontaneously supervenes, so that the condition of blending (*krêsis*) is quickly restored (16.10–12). To substantiate this view, the author goes on to cite a large number of observations of heat and cold manifested in the body. Then, continuing (17) his argument, he anticipates an objection: that in the case of fever occurring in serious and violent illness, cold does *not* spontaneously supervene to moderate heat. This he takes as the strongest evidence for his view that the cause of the illness and

²⁰ Note that he cautiously qualifies this claim, writing (12.13–14): διὰ τὸ ἐγγὺς οἶμαι τοῦ ἀτρεκεστάτου δύνασθαι ἔχειν.

²¹ The author’s reasoning throughout this discussion assumes his theory of *dynamēis* or “powers,” on which he bases his conception of health and disease (cf. especially *V.M.* 14). It should be mentioned that he thinks and speaks of the constituent elements of the *physis* either as *dynamēis*, or as humors, or as “forms” (*eidê*), for which cf. my paper in *TAPA* 83 (1952) 184–97.

fever is not "the hot" alone, but some other *dynamis* or "humor"; "the hot" is also present, but is merely concomitant and participating with the other *dynamis*.²² To demonstrate the truth of this new principle, the author appeals (18–19) to the symptoms of various illnesses. Analyzed at length, all these symptoms reveal that when heat alone or cold alone are the cause of illness, and nothing else (i.e. no other *dynamis* or "humor") is observed to be present, the illness will end when the moderating opposite supervenes (19.21–26). But when the cause of illness involves the presence of a "humor," heat may be observed to be present also, but it ends when the "humor" undergoes *mixis* and coction, and thus *krêsis* is restored.²³ "The hot" and "the cold" are not, therefore, *dynamis* of very great importance in their activities in the *physis*. The author's penetrating analysis of his observations of heat and cold as they manifest themselves in the body, both in illness and in health, has in fact led him to a new and original conception of heat and cold, and one which makes a considerable advance in the comprehension of their nature and effects upon the body.

The essentially heuristic attitude of the author underlies and illuminates all the remaining portion of his work in which he defines and clarifies the relationship of medicine to the investigation of Nature and states the principles which should properly guide and inform that relationship. He introduces this topic by broadening²⁴ his opposition to those physicians and *sophistai* who claim that it is impossible for the physician who does not know *what* man is to know medicine or to give correct treatment. Their theory tends toward philosophy, he objects, as in the case of Empedocles and others who have written concerning Nature, what man is from the beginning, how man was first formed, and of what elements he was composed. But all that has been said or written concerning Nature by *sophistes* or physician, the author insists, has less to do with the *technê* of medicine than with painting; on the contrary, it is not possible to

²² The idea is repeated several times and stated with especial care in *V.M.* 17.11–15: συμπαρεσσι δὲ καὶ τὸ θερμὸν ῥώμης μὲν ἔχον ὅσον τὸ ἡγούμενον καὶ παροξυνόμενον καὶ αὐξόμενον ἅμα ἐκείνῳ, δύναμιν δὲ οὐδεμίαν πλείω τῆς προσηκούσης.

²³ This is illustrated in *V.M.* 19 *passim*; cf. especially 18–21 and 26–28, where the principle is stated.

²⁴ Previously, his opposition has been based on the fact that such thinkers were introducing hypotheses into medicine, postulating "hot or cold, wet or dry" or whatever else they wished as the causal principle of all disease (1.1–6). His attack now goes much deeper, since he denies the validity of the method of such thinkers not only for medicine but for the investigation of *physis* at all.

acquire really certain knowledge of Nature from any other source than from medicine itself, and acquiring this knowledge is possible only when the *technê* of medicine and its method have been completely comprehended — but until then, it is far from possible. I mean, he explains, ταύτην τὴν ἱστορίην,²⁵ εἰδέναι ἄνθρωπος τί ἐστὶν καὶ δι' οἷας αἰτίας γίνεται καὶ τᾶλλα ἀκριβέως (20.15 ff.). Such knowledge as this concerning Nature the physician *must* acquire, and be seriously concerned that he shall acquire: ὁ τί τέ ἐστιν ἄνθρωπος πρὸς τὰ ἐσθιόμενά τε καὶ πινόμενα καὶ ὁ τι πρὸς τὰ ἄλλα ἐπιτηδεύματα, καὶ ὁ τι ἀφ' ἐκάστου ἐκάστῳ συμβήσεται. In thus rejecting the method of "philosophy" as a source of knowledge of Nature and insisting, on the contrary, that *historiê peri physeos* is possible of attainment only according to the method of the *technê*, the author is obviously inspired and guided by his attitude toward research and discovery, the ultimate process of acquiring knowledge, which he has so strongly stressed earlier in his work.

In the passage which follows (20.23 ff.), the author illustrates and elaborates upon the implications of the principle that he has just stated. It is not enough for the physician to make simple general statements about the effects of foods, e.g. cheese, upon the body. The physician must learn "what the pain is, why it arises, and to what constituent of the body cheese is unsuitable." And there are many other bad foods and drink, which affect men differently. Then, illustrating the necessity for complete and precise knowledge by citing the case of wine, of which the exact effects upon the body are already fully understood, he adds (20.34–35): "Such truth I wish to be manifested also concerning other foods." Then reverting to his example of cheese, he points out that it does not affect everyone in the same manner: the effects of cheese depend upon the varying constituents of the constitution of the individual. In principle, then, the physician must learn the exact effects of all foods upon each individual. Likewise, he points out (21) that most physicians, if a patient during illness or convalescence suffers some disorder, immediately attribute the cause of the disorder to any unusual act or any change of food in the regimen of the patient, being ignorant of the true cause. The physician must therefore know the real cause of all such disorders, i.e., he must learn the true effects upon man of

²⁵ As Festugière (above, note 7) 62 shows in an excellent study of the usage and meaning of this word, it here means "inquiry into Nature"; the author is using the technical term of natural philosophy.

all acts or habits, as well as the effects of food and drink. Anyone who shall not know the relationship of each of these things to man will not be able to understand the phenomena arising from them or to make correct use of them in treatment (21.16–18).

The physician must also undertake to know all the effects (*pathêmata*) which arise from the *dynameis* and all that arise from the shapes (*schêmata*) of organs in the body (22.1 ff.). This statement leads to a discussion at some length of the organs of the body, the effects of different shapes, and the causes of these effects. There are many different shapes, and differences of composition and texture as well, and the effects of these differences must all be investigated. For instance, he asks, what shape is of such a nature as to attract moisture to itself from the rest of the body? Stating his opinion, he adds: καταμανθάνειν δὲ δεῖ ταῦτα ἔξωθεν ἐκ τῶν φανερῶν (22.17–18) and proceeds to illustrate how this may be done, by learning the effects of the shapes, by analogy, from visible shapes. After discussion of various shapes and their effects, he sums up this topic by adding (23) that there are many other shapes both within and without the body, whose effects and their causes the physician must learn.²⁶

Then leaving the subject of the effects of organs, he turns to the “humors.” The physician must investigate also the “powers” of “humors,” both as to what effect each has upon man and as to their relationship with each other. And he gives an example to illustrate the latter: if a sweet “humor” should alter into another “form” not by *synkrêsis* but itself altering spontaneously, what sort of humor would it first become, bitter or salt or astringent or acid? He answers that it would alter into an acid humor — a fact that would govern the physician’s procedure in administering the proper humor. And he concludes the treatise by adding: οὕτως εἴ τις δύναται ζητέων ἔξωθεν ἐπιτυχάνειν, καὶ δύναται ἂν πάντων ἐκλέγεσθαι αἰεὶ τὸ βέλτιστον.

The heuristic attitude which pervades *On Ancient Medicine* is so congenial to later patterns of thought that its significance could easily be obscured. Throughout the work, the author reveals a remarkable consciousness of the importance of research and discovery²⁷, and a vigorous awareness of the need for further discoveries

²⁶ The author also makes the point here that individual differences in the size of the organ, e.g., the thinness or thickness of the neck, may cause a difference in the effect, and that these variations must be known.

²⁷ The idea is far more prominent in *V.M.* than in other medical works. Doubtless, the form and purpose of some of the medical treatises would preclude explicit expression,

and advance in the *technê*. That knowledge is discoverable by the physician is an essential presupposition of his reasoning. These are all fundamental and operative elements in his thinking and in his whole approach to medicine, and have engendered in his mind the idea of progress²⁸ and the possibility of further progress which underlies his conception of his *technê*, as expressed in his treatise. Such an attitude was not widely prevalent or, at least, did not find common expression in the surviving literature. One might readily anticipate that the idea of past cultural progress and evolution of human society, which has been mentioned earlier, would have led generally in the growth of contemporary thought to the further idea of continued progress. This would seem a very natural and even inevitable consequence. The idea of progress may, indeed, have existed more widely than can now be documented. However this may be, the method of medicine elaborated in *On Ancient Medicine* does clearly encompass the idea of further discovery, and of progress through the making of discoveries. One feels that the author would have agreed in spirit with Democritus, of whom it is reported that *ἔλεγε βούλεσθαι μάλλον μίαν εὐρεῖν αἰτιολογίαν ἢ τὴν Περσῶν οἱ βασιλείαν γενέσθαι*.²⁹

while the spirit of *V.M.* is strongly implicit in the aetiological works, even if unexpressed. The author of *Regimen in Acute Diseases* feels a need to defend (7-9) his writing concerning matters as yet unascertained by physicians, who are not accustomed, as he says (8), even *προβάλλεσθαι τὰ τοιαῦτα ζητήματα*. Nevertheless, he urges that an inquiry is valuable and closely related to the most important aspects of medicine. The author of *On the Art* is closer to *V.M.* in spirit: he rebukes (1.4-8) those who disparage the arts, remarking that the discovery of something useful and previously undiscovered is the desire and work of intelligence. Later, he remarks on the discovery of cures for visible diseases, and the capacity required for discovery (9.13-18). In the case of visible diseases, medicine has discovered various symptoms which give evidence of the disease (11.1-5) and procedures by means of which Nature is forced, even unwillingly, to give evidence (11.12-15). The author of *On Diet* praises his predecessors for undertaking research, even though they did not make complete discoveries (1.1.11 ff.), comments on the intelligence required to make discoveries (1.1.26 ff.) and mentions his own discovery, and discusses the reasons why it is impossible to make a final and complete discovery of the principles of health (1.2.40-69). The author of *Places in Man* 46 (6.342 L.) urges that medicine has already been completely discovered.

²⁸ This is not, of course, to be identified with the modern Idea of Progress or the Romantic Ideal of endless Progress. The author's conception does not depend upon a theory or doctrine of progress.

²⁹ *Vors.*⁶ 68B 118.