VIII.—*On Ancient Medicine* and the Origin of Medicine

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This paper is summarized in the last paragraph.

The controversy contained in the treatise *On Ancient Medicine*,[1] one of the most thoughtful of the works of the *Corpus Hippocraticum*, has been recognized by scholars as of critical importance in Greek thought. The cardinal purpose of the author is to combat the medical theorizing of those physicians and *sophistai* who, having themselves postulated an *hypothesis* (*ὑπόθεσιν* 1.2)[2] for their argument, attempt to develop the aetiology of disease (*τὴν ἀρχὴν τῆς αἰτίης* 1.4) by the introduction of some novel "philosophic"[3] *hypothesis*.[4] Against such thinkers, the author contends that medicine is already a *τέχνη ἐοῦσα*,[5] which has already long ago been established both as to content and method (*ἰητρικῇ δὲ πάλαι πάντα ὑπάρχει, καὶ ἀρχὴ καὶ ὁδὸς εὑρημένη* 2.1), in accordance with which many discoveries have

[1] References are to chapter and line of the text of W. H. S. Jones, *Hippocrates*, I (Loeb Classical Library, 1923). Jones' text in his *Philosophy and Medicine in Ancient Greece, Supplements to the Bulletin of the History of Medicine*, No. 8 (Baltimore, 1946), is in some passages superior, but is not readily available, as is true also of Heiberg's text of *VM* in *CMG* (Berlin, 1927).

[2] The author's use of the term *ὑπόθεσις* (and collateral words) in a technical sense, closely approaching the later use so characteristic of Plato, appears to be the earliest occurrence of the term. It is repeated frequently throughout the work and is clearly a familiar concept to the author, although he seems to feel the propriety of explaining (cf. *VM* 20) its implications for the benefit of his readers. The distinction between those thinkers who base their theories on an *hypothesis* and those who proceed with close attention to empirical observation is sharply drawn, and underlies all the writer's remarks. It would be interesting to know whether this distinction was original with and first made explicitly by the author of *VM*.

[3] Such thinking tends *ἐς φιλοσοφίην* (*VM* 20.5). The use of the word here and the following explanation is probably one of the earliest efforts to demarcate and define the respective spheres of "science" and "philosophy," which had not yet crystallized into its later more restricted meaning (cf. W. Jaeger, *Paideia* 3 [New York, 1944] 19 and n. 40).

[4] The polemic against such *hypotheses* (the term does not, of course, have the same meaning as our modern scientific term hypothesis) in medicine is introduced immediately and recurs *passim*, most pointedly in chapters 13, 15, and 20.

[5] *VM* 1.9. The use of *ἐούσης* is Ionic, and carries the implication that the *technê*, medicine, is a naturally-existing, true and real *technê*. Cf. the use of *ἐοῦσαν* in *VM* 12.11 and *τοῦ ἐόντος VM* 2.25. Cf. the similar usage in *On the Art* 5: *τοῦτό γε τεκμήριον μέγα τῇ οὐσίῃ τῆς τέχνης, ὅτι ἐοῦσά τέ ἐστι καὶ μεγάλη.*

been made over a long period of time, and further discoveries will be made, if research proceeds according to the same method, beginning from the knowledge already accumulated. If, however, one rejects the discoveries previously made and the established method, and attempts to do medical research by a different "method" (ὁδός), the result will be deception, of oneself and others, for research by any other method is impossible. This assertion leads the author to promise to show the logical and necessary reasons why such research is impossible. To accomplish this he undertakes to reveal what the nature of the *technê*[6] is and, by doing so, to demonstrate that it is a real and really-existing *technê*, since his whole controversy against those who wish to base medicine on a new *hypothesis* will hinge on the reality of the *technê* as he conceives it. This undertaking, however, immediately and naturally involves for the author[7] the deeper question as to the very origin of medicine. That is to say, it is the ἀρχή[8] and the ὁδός[9] of the *technê*, as he understands it,

[6] Reading, in *VM* 2.11: τὴν τέχνην ὅ τι ἐστίν, with M, Littré, Jones, Th. Gomperz (*Philologus* 70 [1911] 229 ff.), Heiberg, and A.-J. Festugière in his translation in *Lettres d'Humanité*, Association Guillaume Budé, 3 (1944) 52. If τὴν τέχνην ὅτι (A) ἔστιν (Kühlewein) be read with Kühlewein and Jones, in his second text, the sense seems inferior, and the next sentence does not follow as logically, since the author adds: "from this (i.e., the description of the nature and method of the *technê*) it will be clear that it is impossible to make discoveries in any other fashion."

[7] He is not content, as is the "sophistic" (cf. Th. Gomperz, *Die Apologie der Heilkunst*[2] [Leipzig, 1910] 3 and 15) author of *On the Art*, with superficial, dialectic arguments.

[8] The word ἀρχή is here used (2.1) and several other times (cf. τὴν ἀρχὴν τῆς αἰτίης 1.4 and ἐξ ἀρχῆς 20.7) in a somewhat peculiar sense which seems transitional between earlier and later connotations. It here begins to approach, but is not fully equivalent to, the Aristotelian sense of "principle." Its use here reflects much of the philosophical force of *archê* as "source" or "beginning." The word was so used in philosophy first by Anaximander (cf. the discussion of W. Jaeger, *The Theology of the Early Greek Philosophers* [Oxford, 1947] 25 ff. and note 26). There is an excellent study of the development of the meaning of *archê*, especially in the medical works of the Corpus, by W. A. Heidel, "On Anaximander," *CPh* 7 (1912) 218–225. The interpretation of *archê* by A. Keus, *Über philosophische Begriffe und Theorien in den hippokrateischen Schriften* (Cöln, 1914) as referring here (2.1) to "Erkenntnisprinzip" is, I think, mistaken.

[9] The word ὁδός, as used recurrently by the author, is more or less equivalent to the later term μέθοδος. It is not, however, fully technical, and its usage is rather significant, in view of the pregnant use of the word in early Greek thought. Quite in the spirit of several philosophers, who described the Way of Truth, the author conceives that there is only one *way* to the *technê*, and that this *way* is the only source of past or future discoveries in medicine. Any other *way* will lead only to deception. Why there is only one *way* will appear later on in his argument. The metaphor of the *Way* had deep roots in Greek thought. Cf. Otfrid Becker, *Das Bild des Weges, und verwandte Vorstellungen im frühgriechischen Denken*, *Hermes*, Einzelschriften, Heft 4

which he will reveal, with the purpose of demonstrating that medicine is a τέχνη ἐοῦσα. When he proceeds with the exposition of his theory, the most remarkable aspect, perhaps, of his performance is the fact that he bases it quite consciously on a thorough acceptance and application of the genetic concept, worked out to its most logical and rigorous conclusions. This was probably, at least as applied to medicine, a strikingly original point of departure, and its affinity with more modern ways of thinking should not minimize for us the achievement of the author's mind. For, in general, in earlier times, medicine and all the arts had commonly been conceived as revealed to man by the gods. The most famous statement of this primitive but at the time still prevailing attitude is perhaps that found in the *Prometheus Vinctus*[10] of Aeschylus. The attribution of medicine to a god is, indeed, mentioned by the author as an understandable but false belief; but he adds that it is still the commonly held opinion.[11]

Although the author of *On Ancient Medicine* is a superior and original thinker, the question rather naturally arises as to whether his conception of the origin of the *technê* is wholly original with him or whether it has been inspired in any degree by other systems of thought prevailing in the latter half of the fifth century B.C. One might easily believe that his theory is entirely his own creation, so carefully articulated is his argument and so constantly is it connected with his own medical doctrine. Further, he displays a deep-rooted hostility to "philosophy," at least in so far as its principles intrude upon his own *technê*. But it may possibly be that his basic idea of the origin of medicine is not totally independent of influence from other spheres.[12] For the question of the origin and

(Berlin, Weidman, 1937), especially 139–50, on the metaphor in early philosophy. On the *Way* of Parmenides, cf. W. Jaeger, *op. cit.* (note 8), 98 f. Several aspects of the metaphor occur in *VM*. Cf. Becker, *op. cit.*, 114, note 31; 128, note 59. The author, unconsciously perhaps, reflects in this usage his knowledge of philosophic thought.

[10] Cf. lines 459 ff., and for medicine, lines 479 ff. In the *Politicus* (274c), Plato mentions this belief as the traditional opinion.

[11] Cf. *VM* 14.19 f.: ὥσπερ καὶ νομίζεται.

[12] W. Meyer, in his dissertation *Laudes Inopiae* (Göttingen, 1915) 28, noted the similar function of χρεία in the thought of *VM* 3 and Democritus' theory of the origin of culture, but was reluctant to draw any conclusion. M. Pohlenz, "Das Zwanzigste Kapitel von Hippokrates *De Prisca Medicina*," *Hermes* 53 (1918) 421, with a reference to Meyer's work and without elaboration, spoke of chapter 3 of *VM* as "eine Specialanwendung" of the Democritean theory, a view which is, I think, greatly oversimplified. Pohlenz' view of such direct influence was objected to as too daring by W. Theiler,

development of civilization and culture was one of the subjects[13] which engaged the attention of philosophers during this period. Indeed, the earliest rational speculation on the question goes back to Xenophanes, who, even so early, rejected the traditonal view of divine origin, when he said: *οὔ τοι ἀπ' ἀρχῆς πάντα θεοὶ θνητοῖσ' ὑπέδειξαν, | ἀλλὰ χρόνῳ ζητοῦντες ἐφευρίσκουσιν ἄμεινον.*[14] In the case of later thinkers, the attempt to account for the origins of culture rationally, rather than to accept the traditional view of divine origins, would be a logically necessary continuation of the cosmogony which was an integral part of contemporary natural philosophy, especially as interest shifted increasingly in the latter part of the century toward man, the microcosm. It is then not surprising that rational solutions for the origin and existence of culture and the *technai* had been sought, and that several theories, exhibiting some vital distinctions, had been proposed.

Of the several attempts to explain systematically the origination of human culture and institutions, probably the most consistently worked out was that of Democritus, advanced, it is believed, in his *Mikros Diakosmos*.[15] Although, regrettably, the theory of Democritus can now be known only through late and imperfect sources, coupled with an isolated fragment or two of his own words, the main

Zur Geschichte der teleologischen Naturbetrachtung bis auf Aristoteles (Zurich, 1924) 41. On the other hand, S. O. Dickerman, *De Argumentis quibusdam apud Xenophontem, Platonem, Aristotelem obviis e structura Hominis et Animalium petitis* (Halle, 1909) 74, suggested an affinity between *VM* 3 and the bestial life pictured in the myth in Plato, *Protagoras* 321A ff. W. Nestle, "Hippokratea," *Hermes* 73 (1938) 21 and note 4, thought the work as a whole showed an unmistakable acquaintance with "Sophistik." That is not unlikely, considering the probable date of *VM*. But of the evidences which he cites, some are merely verbal and superficial, some, I think, rather doubtful. The influence of "Sophistik" on the author is, I think, such as might have been exerted upon anyone after the characteristic sophistic ideas had been widely diffused and had been generally absorbed into the fabric of intellectual activity. The basic ideas and attitudes of the author are about as remote as possible from "sophistic."

[13] The fullest complete treatment of the topic is that of W. Uxkull-Gyllenband, *Griechische Kultur-Entstehungslehren* (Berlin, 1924). From the surviving testimonia, it appears that Protagoras, Anaxagoras, and Democritus, among others, constructed theories. Cf. *op. cit.*, 6–34. Cf. also the briefer survey of A. Kleingünther, *Πρῶτος εὑρετής, Untersuchungen zur Geschichte einer Fragestellung, Philologus*, Suppl. 26, Heft 1 (Leipzig, 1933) 98–109.

[14] Cf. Diels-Kranz, *Die Fragmente der Vorsokratiker*[5], 21 B 18.

[15] Cf. *Vors.* 68 B 5 (2.134–138); the derivation of the contents of Diodorus 1.7–8, through Hecataeus from Democritus, was first proposed by K. Reinhardt, *Hermes* 47 (1912) 492 ff. For a survey of the later literature on the question, cf. G. Vlastos, "On the Pre-History in Diodorus," *AJPh* 67 (1946) 51, who also advances several further strong arguments for the correctness of Reinhardt's thesis.

outline of his hypothesis and the unique factor involved emerge with comparative certainty.[16] According to this hypothesis,[17] primitive man is visualized as existing in a "brutish" condition (*θηριώδης βίος*), individually hunting for sustenance and eating herbs and the natural fruits of the trees. Then, being attacked by wild animals, men aided each other, being taught by expediency (*ὑπὸ τοῦ συμφέροντος*).[18] Gathering together because of fear, gradually they came to recognize their mutual relationship. Little by little, out of confused, meaningless sounds, they articulated speech; and from symbols agreed upon by all mutually, they determined the significance to be attached to the names of things. Since such associations arose throughout the earth, many languages arose, for each group organized the elements of speech by chance. These primal men lived painfully, since none of the things useful for living had been discovered. The theory visualizes these early men as being unused to clothes, dwelling, or fire, and as having no conception at all of cultivated nourishment. Being ignorant of the storing of the wild, natural food for their need, many perished through cold or scarcity of food during winter. As a result of this, being taught by their experience (*ὑπὸ τῆς πείρας*), men took refuge in caves in winter and stored away fruits. After fire and other useful things had become known, gradually the *technai* also were discovered, and other things which were able to aid the common life. Speaking generally, the theory conceives that in all things it was need (*χρεία*) itself which was teacher (*διδάσκαλος*)[19] for mankind, guiding and providing appropriate instruction in each thing to a creature that was well endowed by nature, and having as its co-workers (*συνεργούς*) hands, speech

[16] Cf. Uxkull-Gyllenband, *op. cit.*, 25–34, for a full discussion of Democritus' theory. The main points are also summarized and interpreted by G. Vlastos, *op. cit.*, especially 56–7, as well as in his paper, "Ethics and Physics in Democritus, II," *Philosophical Review*, 55 (1946) 53–4. Cf. also G. Pfligersdorffer, "*Λόγιος* und die *λόγιοι ἄνθρωποι* bei Demokrit," *WS* 61 and 62 (1948) 23–4.

[17] The following analysis is a précis of the account of Diodorus (cf. *Vors.* 2.135.32 through 136.15). Some of the details are also found in the Tzetzes scholion (cf. *Vors.* 2.137.36–138.4), including one which may be quoted: *τὴν ἀνάγκην σχόντες διδάσκαλον.*

[18] The concept of *τὸ συμφέρον* as "teacher" occurs in another genetic context in Diodorus (1.90), which was probably also influenced by the same theory (cf. Uxkull-Gyllenband, *op. cit.* 27). The concept of *τὸ συμφέρον* in itself occurs three times in the fragments of Democritus. Cf. *Vors.* 68 B 4 (= B 188), B 107, and B 237.

[19] The idea of impersonal forces (though not "need") as *διδάσκαλος* occurs in the ethical fragments of Democritus. Cf. *Vors.* 68 B 76 (of "misfortune"); B 183 (of "time"), and B 246.

and mind (ψυχῆς ἀγχίνοιαν). The central and probably unique[20] idea in this hypothesis of Democritus is also validated in a fragment of his own words, and is strongly emphasized: it is τἀναγκαῖον[21] or χρεία which constitutes the creative, driving force responsible for the gradual emergence of the *technai* of human culture from the state of primitive savagery. Important factors also are τὸ συμφέρον and πεῖρα: they also are "teachers" of man, but they are ancillary to Necessity, while "mind," though vital as a "co-worker," is relegated to a place of secondary importance as a causal, creative factor.

When the theory of the author of *On Ancient Medicine* as to the origin of medicine is analyzed, it is impressive to observe how consciously and consistently the writer has elaborated his views. His major thesis is expressed very explicitly (3.1 ff.): medicine would never have been discovered, nor would it have been sought (for there would have been no need for it), if the same regimen and nourishment had been suited both to the ill and the well alike. But, as it was, necessity itself caused medicine to be sought and to be found, because the same regimen was not in earlier times, just as it is not now, beneficial to the healthy and the ill alike. Thereafter, the attempt to substantiate this thesis falls into two separately developed parts. First, the writer proceeds to demonstrate how the normal diet and regimen of mankind in health was found. Then, by an analysis of medicine as an established *technê*, as currently known and practiced, he tries to demonstrate that medicine and the discovery of human regimen involved basically the same factors. Finding the same factors and processes at work underlying both activities, he draws the conclusion that the discovery of medicine and of human regimen was essentially the same process. Both parts of his theory are worked out with careful attention to detailed arguments.

[20] Cf. Vlastos, *AJPh* 67 (1946) 56–7, on the specific and unique contribution of Democritus — the avoidance of the teleological elements of earlier theories. It is not unlikely that some of the elements, e.g., the "bestial life," of Democritus' theory, were influenced by Protagoras' theory of the origin of culture. On the probable relationship of Democritus and Protagoras, cf. Uxkull-Gyllenband, *op. cit.*, 32 and note 35 (with reference to earlier literature) and Pfligersdorffer, *op. cit.*, 35–39.

[21] The concept of "necessity" as separating out (ἀποκρῖναι τἀναγκαῖον *Vors.* 68 B 144) the arts occurs explicitly only once in the surviving fragments of Democritus' own words. Of course, the concept here could hardly be thought of as identical with the blindly-operating, mechanical *anangkê* of his physical cosmology.

At first, then, the author attempts to explain the factors which were operative in and responsible for the emergence and discovery of normal, human regimen and diet. Here it immediately becomes obvious that he thinks of the existence of mankind as having been, in the beginning, a θηριώδης βίος. To start from the beginning, he says, the normal human regimen and diet which we now use would not have been discovered, if man had been satisfied (ἐξήρκει 3.13) to eat and drink the same things as an ox or horse or other animals except man, that is, the things growing spontaneously from the earth, fruits, wood, and grass.[22] For other animals are nourished by these, and grow and live without pain and have no need (προσδεόμενοι 3.17) of other regimen. In the beginning, man also used such nourishment, and his present modes of living have been discovered and elaborated (τετεχνημένα 3.20) over a long period of time. For man suffered much and dreadfully from his strong, "brutish" diet (ὑπὸ ἰσχυρῆς[23] τε καὶ θηριώδεος διαίτης 3.22), just as men now from such a brutish diet would suffer violent pain, illness, and swift death; thus, in this additional comparison, the author appeals to reasoning on the basis of evidence from current medicine. Two arguments from probability emphasize the medical aspect of the author's reasoning, and its carefulness. It is probable, he adds, that such nourishment, because of its customary use (συνήθειαν 3.28),[24] caused less suffering then than it would now, but even then, although man was habituated to it, the suffering was violent. It is likely, too, that most people, having a weaker constitution, died, while those who were stronger endured for a longer time. This suggestion is supported by an analogy drawn from his medical experience: just as even now some men react easily to strong (ἰσχυρῶν 3.32) foods, others

[22] The lack of human diet was, of course, specially mentioned in the account of Diodorus (cf. *Vors.* 2.136.5; and cf. 2.135.35).

[23] The word is not used with a general, vague force, but is part of the author's almost technical medical vocabulary. It and its cognates occur thirty-six times in the work, and denote one of the unique and most important aspects of his theory of the cause of disease. On the word and its meaning, cf. Jones, *Philosophy and Medicine in Ancient Greece*, 93.

[24] The word and the idea are fairly well authenticated for Democritus (cf. *Vors.* 2.125.15–17). The author here utilizes thus briefly an important principle of his medical theory, which is developed more fully later on (*VM* 10 and 11). In these chapters, he is dealing with the physical change and "learning" of the organism and the resultant "needs" which it develops. Various men "learn" (μεμαθήκεσαν 10.23, cf. 10.25; 11.2; 11.10) to eat one meal or two meals a day, and this becomes beneficial to them. If they change their habit ἔξω τοῦ συμφέροντος (10.13), harmful physical effects and disease follow.

react with pain and difficulty, i.e., according to the varying strength of the *physis*. It was on account of this need (*χρείην* 3.34) that early mankind also (as well as contemporary medical men) sought for nourishment suitable to the organism, and discovered the regimen now in use. From all that has been said concerning this point, and from its frequent recurrence in the medical theorizing later on in the work,[25] it is apparent that the idea of the *θηριώδης βίος* of early mankind is thoroughly familiar to the author and is quite basic to his whole hypothesis — so much is this true that, apart from dealing with the *θηριώδης δίαιτα* in merely general terms, he will advance a medical explanation as to why the "brutish regimen" of early mankind was harmful to him and therefore subject to the necessity of alteration. The theoretical concept underlying this medical explanation is the idea of *τὸ συμφέρον*.

This concept of *τὸ συμφέρον* is one of the most essential to the entire thought of the author, and recurs repeatedly, both in his purely medical work and in his theory of the origin of the *technê* as well. It is a vital factor in his hypothesis: medicine would never have been discovered if the same regimen had been beneficial (*συνέφερεν* 3.6) to the healthy and the sick. But it was not beneficial then, just as it would not be beneficial now (3.10 *bis*). In all that the author has said about the effects of the "brutish" diet, it is obvious that the fundamental factor involved is that the *θηριώδης δίαιτα* was lacking in *τὸ συμφέρον*. Hence it did not suffice (*ἐξήρκει* 3.13) for man, and he was compelled to search for nourishment *ἁρμόζουσαν τῇ φύσει* (3.35), which would therefore prove beneficial. It is, moreover, extremely notable that the writer has given a medical or physiological interpretation as to why the "brutish" regimen was not beneficial: it is because such foods are *ὠμά τε καὶ ἄκρητα καὶ μεγάλας δυνάμιας ἔχοντα* (3.23).[26] Here he has explicitly projected backwards into primitive times several of the salient factors of his of his own, in some directions, unique medical theory. Similarly, in the latter part of the treatise, in the purely medical theory, *τὸ συμφέρον* plays an important role. The concept, indeed, is one of

[25] Cf. *VM* 7.5; 7.10; and 8. In these places the author conjectures the medical results of administering a "brutish" diet to human beings, and its consequences.

[26] The basic concept of *krêsis* originated with Alcmaeon, and was, of course, common to much of the medical theory of the day. So, to some extent also, was that of *dynamis*, though the part played by *dynamis* in the author's theory was somewhat extraordinary. For the author's use of the concept, cf. Jones, *Philosophy and Medicine in Ancient Greece*, 93–96.

the basic concepts of the best theoretical medicine of the day. The author, however, abstracts it from its usual role in medicine, and by generalizing its meaning and function, employs it in such fashion as to make it a vital part of his explanation of the genesis of human regimen. Basically, the "brutish" diet and life of mankind had necessarily to be altered, because it violated the demands implied in the concept, *τὸ συμφέρον*, with violent consequences for the organism of man.

These, however, the "brutish" regimen of primitive man, and the fact that it was not beneficial to him, are only the limiting and conditional factors, so far as the emergence of human regimen is concerned. Theoretically, the basic factor involved is that of "need" or "necessity," expressed in several ways.[27] After the author has described the sufferings which he visualized as arising for man from his primitive nourishment, he adds (3.34): *διὰ δὴ ταύτην τὴν χρείην*[28] man sought for nourishment suitable for his nature, and discovered the regimen now in use. Already, earlier in the chapter, the same concept has been expressed more emphatically and absolutely, and in a broader context: it was *αὐτὴ ἡ ἀνάγκη* (3.7) which made medicine to be sought and discovered; and the manner of expression here renders beyond doubt that he is stating the basic proposition in his hypothesis of the genesis of the *technê*. The two concepts, *χρείη* and *ἀνάγκη*, though very intimately related in meaning and used almost interchangeably,[29] are not, I think, precisely equivalent.[30] For the author, *ἀνάγκη* is the theoretical, abstract concept and more generalized — the *ἀνάγκη φύσιος* (*φύσις* being the nature of the human organism, e.g., *ἡ φύσις ἡ ἀνθρωπίνη* 7.9),[31] while

[27] It is first expressed in general terms. Cf. *VM* 3.2: *οὐδὲν γὰρ αὐτῆς ἔδει*, of the discovery of medicine. Cf. *VM* 3.17, of the food consumed by animals: *οὐδὲν προσδεόμενοι ἄλλης διαίτης*.

[28] This is the reading (with M) of Littré and Gomperz, *Philologus* 70 (1911) 229 ff., and is defended by Pohlenz, *op. cit.* (note 12) 403. Kühlewein preferred *αἰτίην* (with A), as did Jones in both of his editions, and Heiberg. It makes really little difference which word is retained, since the concept of "need" strongly underlies the entire passage. To read *χρείην* only makes the concept more explicit.

[29] Vlastos, *AJPh* 67 (1946) 56, note 21, thinks them identical. The use of *ἀνάγκην* in *VM* 4.3 does seem almost exactly equivalent to *χρείη*. Cf. also *VM* 10.7 and 14.16.

[30] Cf. the discussion of the two words and their meaning by A. Kleingünther, *op. cit.* (note 13) 102. However, his interpretation of *anangkê*, with reference to Parmenides' famous fragment (*Vors.* 18 B 8,30), is, I think, too profoundly metaphysical.

[31] The concept of a basic physical "human nature," operating in accordance with certain fixed natural laws, is an integral part of his thought. Cf. further, *VM*

χρείη is the basic expression or manifestation of ἀνάγκη, and is subsumed under it. It is, then, ἀνάγκη or χρείη[32] — the imperative complex of "needs" arising in the organism on natural grounds — which is the creative force which leads to the emergence of human regimen, and, as it turns out later, to the emergence of the *technê* as well.

From the natural needs of men came the attempts to change the "brutish" diet. The author everywhere thinks of a gradual process extending through long periods of time[33] (and even continuing into the future). His whole account stresses the temporal development and the tentative nature of the progress. The mechanism, so to speak, of this development is experience (πεῖρα) or experimentation, in fact — though the word itself is not used by the author. Two examples are given (3.36 ff.). Because of their pains and suffering from their brutish diet, men sought for better and more beneficial nourishment. So they took raw wheat, and grinding, sifting, baking, etc., and modifying it in other ways, they ended with bread. Similarly with the discovery of cake from barley: making many other experiments (πρηγματευσάμενοι 3.40) of a similar nature, they boiled and baked and mixed, mingling (and here he speaks medically again) the strong elements of foods with the weaker elements (3.41). In time, there resulted an alteration (3.52) of that regimen[34] from which suffering, disease, and death had come to primitive man.

The question as to the physical basis of the modification of and experimentation with early diet is also answered. The basic criterion is the human *physis*. In the alteration of foods, those who were seeking proper nourishment modified the earlier foods, molding everything in accordance with the nature and strength of man (πλάσσοντες πάντα πρὸς τὴν τοῦ ἀνθρώπου φύσιν τε καὶ δύναμιν 3.42 ff.),

14.17, 24; 20.46. Similarly, an ethical fragment of Democritus illustrates a "necessity" that arises (cf. *Vors.* 68 B 278) ἀπὸ φύσιος καὶ καταστάσιός τινος ἀρχαίης.

[32] The function of "need" is clearly expressed in Plato's *Politicus* 274c: in earlier times man had lived without the arts, so that, when the food which once grew spontaneously failed, they did not understand how to provide food διὰ τὸ μηδεμίαν αὐτοὺς χρείαν πρότερον ἀναγκάζειν. There may be here a Democritean influence, as Theiler, *op. cit.* (note 12), 80–82 has pointed out several reflections of Democritus' thought in the myth of the *Politicus* (though he reserves judgment on this passage).

[33] Cf., e.g., *VM* 2.3; 3.20; 4.6 ff. The idea is basic to his thinking.

[34] This is a εὕρημα to which one could, in fact, justly apply the name of medicine, the author suggests, since it led to health, safety, and nourishment in place of illness (3.49–54). But it is not considered a *technê* (*VM* 4) because no one is a layman in it, but everyone has knowledge of it διὰ τὴν χρῆσίν τε καὶ ἀνάγκην (4.3), so that it is not proper to call anyone a τεχνίτης of it.

because they believed that if the nourishment taken was too strong (*ἰσχυρότερα* 3.44), the *physis* would not be able to overcome (*κρατεῖν* 3.46)[35] the nourishment, and thus pain, disease and death would be the consequence, while from nourishment which the body was able to overcome (*ἐπικρατεῖν* 3.48) would come growth and health. This is a more exact medical statement of a principle already mentioned more theoretically: that primitive man sought nourishment harmonizing with his *physis* (3.35). The ultimate criterion and arbiter guiding, although unconsciously, the search for human regimen was, thus, actually the *physis* of man; and it is clear that the author is thinking and speaking here not vaguely nor generally, but in terms of his understanding of medical theory. His medical analysis and interpretation of the role the *physis* played in the genesis of human regimen is perhaps the most original and noteworthy part of his theory.

This is, then, the complex of concepts underlying the author's rational explanation of the gradual emergence and resultant "discovery" of human diet and regimen: the *θηριώδης βίος* of man in primitive times, the concept of *τὸ συμφέρον*, *ἀνάγκη* and *χρείη*, *πεῖρα*, and *φύσις*, the "necessity" of the *physis* being constantly that which stimulated the process and the criterion by which the results were accepted or rejected. As visualized by the author, human regimen was generated and prescribed solely by the natural needs and demands of the physical organism.[36] The whole process is conceived as having occurred in the fullest sense *κατὰ φύσιν* and, so far as the active, causative factors are concerned, mechanically and impersonally. For the function of the human mind and reasoning in the scheme, while of course necessary, is really subsidiary — it is a "co-worker."[37] Human regimen is thus not primarily a product of

[35] The verbs *κρατέω* and *ἐπικρατέω* are favorite words with the author and no doubt refer to what we should call "digestion." But to translate simply "digest," obscuring the etymological meaning, is somewhat anachronistic, and weakens the full force and directness of the author's conception.

[36] Cf. *VM* 4.6 ff. The idea is expressed here very simply and directly. Physical trainers are still making additional discoveries in regimen, by investigating according to the same "method" (*ὁδὸν*) *ὅ τι ἐσθίων τε καὶ πίνων ἐπικρατήσει τε αὐτοῦ μάλιστα καὶ ἰσχυρότερος αὐτὸς ἑωυτοῦ ἔσται.*

[37] The part played by the mind is definitely minimized in the account of the origin of regimen. It was a discovery that required much *observation* (cf. *σκέψιος VM* 4), i.e., of the effects of various foods on the organism, and of the consequent modifications of food. But the only explicit references to human reasoning in the process come later (cf. *λογισμός VM* 12.14; 14.16).

the mind of man in this conception, but actually the product of Nature itself. And the conception is free of teleological factors, except to the degree that it reflects the "unconscious" purposiveness which was characteristic of the current medical conception of Nature. As a whole, the author's theory of the genesis of human regimen shows much affinity to the general theory of the origins of culture of Democritus. Especially, in the case of the central role assigned to the concept of Necessity, there is little reason to doubt the influence,[38] whether direct or indirect, of the major contribution of Democritus to the thought of the period. But it would be quite mistaken to imagine that the author has crudely and mechanically imported into his thought ideas taken over bodily. He is not simply an eclectic. Whatever concepts have come ultimately from other sources have been thoroughly assimilated by the author to his own *technê* and independently reinterpreted in the light of his own basic medical theory.

Having established the natural origin and genesis of human regimen, the author now turns to the acknowledged *technê* of medicine (*VM* 5 ff.). He will consider two points in particular, whether the *technê* has any agreement with the process leading to the discovery of human regimen (ἦρά τι καὶ αὐτὴ τῶν αὐτῶν ἐθέλει 5.3), and whence the *technê* began. First, his original thesis is reiterated: no one would have sought for the Art, if the same modes of life had been suited (ἥρμοζεν 5.7) to the well and the ill.[39] Those who sought for and discovered medicine had the same intention (διάνοιαν 5.13) as those who discovered human regimen. The analogy between the two categories, as it will appear, is coterminous at almost every point. In the following description (5.15–29) of the principles involved, the same factors come into play, and guide and determine the activities which led to the *technê*. In principle, as

[38] There is nothing inherently improbable or chronologically impossible about such an influence. While the treatise cannot be dated with any precision, it is the general consensus of scholars that *On Ancient Medicine* is early. The probable date of composition may be set within the last quarter of the fifth century B.C. H. Diller, *Wanderarzt und Aitiologe*, *Philologus*, Suppl. 26, Heft 3 (Leipzig, 1934), especially 43 ff. and 54–68, has demonstrated on sufficiently good evidence, I believe, the influence of Democritus on certain spheres of Greek medicine, particularly the *Airs Waters Places*. Cf. also W. Nestle, *op. cit.* (note 12) 36–38, whose estimate, however, of the extent of Democritean influence on Greek medicine is, I think, highly exaggerated.

[39] The statement is supported by an argument from analogy (*VM* 5.7 ff.): foreigners and some Greeks, who do not possess medicine, *still* live without regimen, i.e., completely in accordance with pleasure and without self-imposed restrictions.

the author visualizes the development, what the first seekers did was to alter the diet in one fashion or another to discover by observation what was beneficial to the patient. In some cases this was accomplished merely by lessening the bulk of the nourishment, and this was sufficient (ἤρκεσε 5.18) and helpful (ὠφελῆσαν 5.18) to the patient. Since, however, some patients were not able to overcome (ἐπικρατεῖν 5.20) even very little food and were thus thought to need (δεῖσθαι 5.21) weaker food and nourishment, they discovered slops by mixing a little food with much liquid and consequently removing the strong elements. For those unable to overcome even slops, the early seekers came to administering liquids, being careful that the liquids were moderate (μετρίως 5.28) in composition and quantity, and neither greater nor less in composition and quantity than was necessary and proper (5.29) for the organism of the patient. It is apparent in this account that the *need* of the body was the paramount factor which guided the efforts of the investigator to determine what was in every case beneficial.[40] In the following chapter (*VM* 6) a slight digression drives home his point: slops are not always beneficial (οὐ συμφέρει 6.2), but for some patients intensify the disease. But any such who eat even a little dry food will be more seriously hurt by it than by slops, the cause being τὴν ἰσχὺν τοῦ βρώματος πρὸς τὴν διάθεσιν (6.12).[41] Even when slops are beneficial, more, rather than less, will cause more harm. The principle involved is this: the strongest foods (τὰ ἰσχυρότατα 6.16) will cause the most pain to well and ill alike. Throughout this account, the author projects his knowledge of the principles of his *technê* back into earlier times to interpret the processes which he visualizes as leading to the discovery of the *technê*.

In a later chapter of the treatise (*VM* 14), the author reverts once again in recapitulation to the theme of the origin of the *technê*. The first seekers after medicine, he says, paid no attention to dry

[40] A later remark illustrates especially well how directly the *physis* was visualized as the final criterion. In *VM* 9, the author points out that in medical treatment exactness is greatly to be desired. But he adds that no measure of any kind is available other than τοῦ σώματος τὴν αἴσθησιν (9.18), an expression that stresses the active role played by the *physis* of the organism. The emendation of αἴσθησιν to διάθεσιν proposed by K. Deichgräber, *Hermes* 68 (1933) 356 f., has been shown to be improbable by W. Müri, *Hermes* 71 (1936) 467 f.

[41] The word διάθεσις is technical. W. Müri, *op. cit.*, 468, interprets it as "die individuell verschiedene, aktive Kraft, die imstande ist, die Kraft der Nahrung zu bewaltigen," an interpretation which emphasizes the activity of the *physis* in the discovery of medicine, according to the author's theory.

and moist, hot and cold, for they did not believe that these pained man or that he had any need (*προσδεῖσθαι* 14.22) of them. They believed, rather, that the strength (*τὸ ἰσχυρὸν* 14.24) of each thing and that which was more powerful than the human *physis*, which he was thus not able to overcome (*κρατεῖν* 14.25), caused him harm and illness. Consequently, they sought to remove by modification *τὸ ἰσχυρότατον* of each of the components of the body. The underlying principle, as the author interprets, was this: by each of the foods consumed, foods modified in various ways and each thus possessing its own unique property (*ἰδίην δύναμιν καὶ φύσιν* 13.13) as a result of modification of whatever kind, mankind is affected and altered in one fashion or another (14.12 f.); and through these things, too, the whole life of the healthy and the sick alike is altered. Thus it was that the first discoverers, *λογισμῷ προσήκοντι ζητήσαντες πρὸς τὴν τοῦ ἀνθρώπου φύσιν* (14.16), discovered these things (i.e., the effects of foods, variously modified, on the individual). Throughout his exposition of the development of medicine, in accordance with the empirical methods on which he insists throughout his whole work, the author visualizes the early physicians merely as observing and determining the effects, good or bad, on the *physis* of the ill person, of the administering of foods modified in one fashion or another. In this activity, which led ultimately to medicine, theoretical and intellectual processes played little if any part. The basic process is *observation*, for the function of *λογισμός* is intimately connected with and dependent upon the observation of the *physis*.

After his analysis of the *technê*, the author is then prepared for the conclusion of the analogy between the two parts of his argument, by means of which he intends to establish beyond doubt the real nature and reality of medicine. What difference is to be seen, he asks, in the intention (*διανοηθείς* 7.2) of the physician and acknowledged practitioner who discovered regimen and nourishment for the ill, and that of the men who discovered our normal human regimen, originating it from that wild and bestial diet of primitive man (7.5). There was the same *λόγος* in both cases, and the resulting discovery was one and similar (*ἓν καὶ ὅμοιον* 7.8). The latter sought to remove from the regimen of man whatever food, because of its *θηριότητά τε καὶ τὴν ἀκρησίην*, the human *physis*, when in health, was unable to overcome (7.9 ff.). The former (i.e., the physician) seeks to remove from the regimen of the ill whatever the temporary condition (*διάθεσις*) of the ill person is unable to overcome. What

is the difference between them, except in appearance (εἶδος),[42] and that medicine is more complex and requires greater activity, while the discovery of human regimen was earlier, and was the ἀρχή of medicine? The argument is thus completely and self-consciously brought to its logical conclusion. Its major result is to establish, in the author's mind at least, that his *technê* is in actuality a τέχνη ἐοῦσα, since the basic principles of medicine have been shown to be the same as those responsible for the genesis of regimen, while it, in turn, was revealed as having arisen ἐξ ἀνάγκης from the very *physis* of man.

How deeply this similarity between the principles governing the origination of human regimen and of medicine is engrained in the author's mind and reasoning is illustrated by the hypothetical example introduced (*VM* 8) to strengthen the conclusion he has drawn. It consists of a comparison of the effects of "brutish" diet and of human diet, each taken under unsuitable circumstances. Take a man who is ill, though not seriously so, and let him eat even a small amount of food that would be beneficial to the healthy. Take another man who is in health and of average strength of constitution, and let him eat a small amount of food that would be beneficial to a horse or ox, barley or other such things. If such an experiment were tried, the latter would suffer not less pain and danger than the former, who merely ate normal food unseasonably. Both diets would be equally harmful. In this example, which is clearly based upon the same basic factors already encountered, the author joins together the principles from the two parts of his theory of the origin of the *technê*, and thus illustrates the method of making a εὕρημα. This is evidence, he adds, that all medicine could be discovered, research being continued by the same "method" (8.20).

Both the purpose and the result of the author's attempt to account for the origin of medicine are of first importance for his thought, and its incorporation into his work is neither accidental nor superfluous. To justify his opposition to the use of "philosophic" hypotheses in medicine, he undertakes to prove that his *technê* is in actuality a τέχνη ἐοῦσα. To accomplish this, he must show what the nature of medicine is, and, if his argument is to be compelling, that the *technê* cannot be otherwise than it is. This is what forces him to proceed to explain the origin of the *technê*. This

[42] On the meaning of the word, cf. A. E. Taylor, *Varia Socratica* (Oxford, 1911) 214.

explanation then embraces his hypothesis as to both the ἀρχή and the ὁδός of medicine. His development of his hypothesis makes his view perfectly certain: the ἀρχή and the ὁδός, as he conceives them, are both completely κατὰ φύσιν and necessary, and thus the established *technê*, which has the same ἀρχή and ὁδός and has gradually grown out of them, is also κατὰ φύσιν and necessary. If his hypothesis is accepted (and for the author it would be guaranteed by the empirically-grounded nature of his argument), then the ἀρχή and ὁδός are real, and the *technê* itself is the only possible real and true form of medicine. His opposition, therefore, to "philosophic" hypotheses is not only justifiable but inevitable, and does not spring simply from a peculiar intransigeance of his mind. This rational conception of the nature of the *technê* is also what justifies his insistence (*VM* 20.10 ff.) that one can learn nothing exact about Nature as a whole from any other source than from medicine. This assertion, which has been thought to be merely an expression of arrogance, has some real point, in view of his demonstration of the natural and necessary ἀρχή and ὁδός of his *technê*. For he has earlier (*VM* 1.20–27) insisted that those who try to explain τὰ ἀφανέα τε καὶ ἀπορεόμενα, for instance, those who try to say anything about τῶν μετεώρων ἢ τῶν ὑπὸ γῆν, must use an *hypothesis*, but can never know themselves or demonstrate to others whether their doctrines are true or not, since there is no criterion by the application of which τὸ σαφές can be attained.[43] His demonstration of the natural genesis of his *technê* has, however, in his own view at least, revealed a source of real and exact knowledge of the nature of the microcosm, and thence, perhaps, to knowledge of the macrocosm. Hence, by his own reasoning, his opposition to "philosophic" thinkers is by no means illogical. His whole position, in fact, approaches remarkably closely, in principle, to certain modern scientific attitudes toward the problem of the nature of knowledge.

[43] M. Wellman, *Sudhoffs Archiv für Geschichte der Medizin* 23 (1930) 300, thought the author here had been influenced by the first fragment of Alcmaeon (*Vors.* 24 B 1). But there is in fact a much more surprising coincidence of thought on several points with an epistemological fragment of Xenophanes (cf. *Vors.* 21 B 34).