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DIOCLES OF CARYSTUS ON SCIENTIFIC EXPLANATION

I. INTRODUCTION

Though scarcely familiar to many students of ancient philosophy and science, Diocles was among the more celebrated medical authors of the ancient world. At some point – most likely during his life or soon after his death – he became known in Athens as 'the younger Hippocrates', and his fame as a medical practitioner and theorist extended well beyond his lifetime in the fourth century B.C.E., persisting into later antiquity and the early Middle Ages. His present obscurity is due largely to the regrettable fact that none of his works survive intact. Fortunately, Philip van der Eijk's admirably thorough re-examination of the extant fragments and *testimonia* has now put the study of Diocles' thought on a more secure footing than was previously possible.[1]

In discussions of the theoretical side of Diocles' work, a single fragment has loomed large (fr. 176 vdE). It comes via Galen from the first book of *Matters of Health, Addressed to Pleistarchus (Ὑγιεινὰ πρὸς Πλείσταρχον)*,[2] and it is among the few longer quotations we possess. In it, Diocles questions the value of pursuing explanations – *αἰτίαι* – when investigating the dietary powers of

[1] P.J. van der Eijk, *Diocles of Carystus. A Collection of the Fragments with Translation and Commentary*, 2 vols. (Leiden, 2000/1). That edition replaces the earlier one by Max Wellmann, *Die Fragmente der sikelischen Ärzte Akron, Philistion und des Diokles von Karystos* (Berlin, 1901). All citations from Van der Eijk's edition will henceforth use the initials 'vdE', and will be accompanied either by a fragment number (from the fragments collected in vol. 1) or by a page reference to the commentary in vol. 2. Regarding the appellation 'the younger Hippocrates', see fr. 3 vdE, which Rose and Wellmann attribute to Vindician but which van der Eijk more cautiously ascribes to 'Anonymous of Brussels'. (See vdE 2.79–81 for discussion.) Compare also fr. 4 vdE (Plin. *HN* 26.10–11), where Diocles is said to be *secundus aetate famaque* with respect to Hippocrates. On the general problem of Diocles' date, see vdE 2.xxxi–xxxviii. Jaeger's famous argument for a date *c*. 340–260 B.C.E. is now widely regarded as unsound, as are most of his other arguments in favour of the thesis that Diocles was a pupil of Aristotle. (For a detailed account of Jaeger's interpretative distortions, see H. von Staden, 'Jaeger's "Skandalon der historischen Vernunft": Diocles, Aristotle, and Theophrastus', in W.M. Calder III (ed.), *Werner Jaeger Reconsidered* (Atlanta, 1992), 227–66.) As van der Eijk has lately observed, 'In the present state of scholarship, it seems that all we can say is that the evidence suggests that Diocles lived some time after Hippocrates and presumably somewhat earlier than Herophilus and Erasistratus … I would think that any reasonable pair of dates between 400 and 300 is theoretically possible …' (vdE 2.xxxiii–xxxiv). Compare the similar judgement in von Staden, *Herophilus: The Art of Medicine in Early Alexandria* (Cambridge, 1989), 44–6.

[2] On the ambiguity of the work's title, see vdE 2.323. The quotation is preserved in Galen's *On the Powers of Foodstuffs* 1.1 (*CMG* 4.2, 202.26–203.21 Helmreich = 6.455–6 Kühn). For a translation and analysis of Galen's treatise, see O. Powell, *Galen:* On the Properties of Foodstuffs (De alimentorum facultatibus) (Cambridge, 2003).

foods.[3] His remarks are suggestive but obscure, and they have occasioned a host of divergent interpretations. Most influentially, Jaeger promoted the view that Diocles was a devoted disciple of Aristotle and that he marks the culmination of a supposed Aristotelian progression from an essentially speculative attitude to one of rigorous empirical study. Boldly labelling the passage quoted by Galen *das große Methodenfragment*,[4] Jaeger took Diocles to be deploying Aristotelian methodological and logical principles in order to defend the empirical status of medicine against those who would assimilate it to an exact theoretical science.[5]

Although critical reactions were swift and pointed, Jaeger's conception of Diocles as a pupil of Aristotle managed to hold sway for decades. Of late, however, scholars have taken a cautious attitude toward Diocles' relationship to the intellectual movements of his time and have accordingly promoted a more modest reading of the fragment in question. In explicit opposition to Jaeger, von Staden has characterized what Diocles says as no more than 'an excerpt on practical problems encountered in systematising preventative dietetics'.[6] And in essential agreement with that line of thought, van der Eijk has condemned as 'exaggerated and unjustified' any interpretation seeking to explain Diocles' position by means of a grand thesis concerning his connection to another figure or movement in the proximate historical context.[7] Through a detailed reinterpretation of the fragment, van der Eijk argues that Diocles is not in fact venturing any broad statement of scientific method. Instead, his point is limited to the field of dietetics, where he is concerned to correct certain naively confident views regarding the ready attainability and the practical utility of causal explanations.[8]

Taken as a warning against poorly grounded conjecture, such caution is constructive, and subsequent interpreters would do well to avoid any practice of combing the fragments for slight verbal echoes of other thinkers or for resemblances between isolated bits of doctrine. None the less, I intend to argue, interpretations like those of von Staden and van der Eijk are ultimately too cautious and significantly underestimate the importance of Diocles' position for the history of science and

[3] The translation of the term αἰτία will be discussed below. What Diocles says in the fragment may well be intended to apply to drinks and drugs as well as foods. Diocles himself does not specify clearly the range of his concern. On the point, see vdE 2.325 and compare van der Eijk, 'Diocles and the Hippocratic writings on the method of dietetics and the limits of causal explanation', in id., *Medicine and Philosophy in Classical Antiquity* (Cambridge, 2005), 74–100, at 79 n. 12. (The latter is reprinted with alterations from R. Wittern and P. Pellegrin [edd.], *Hippokratische Medizin und antike Philosophie* [Hildesheim, 1996], 229–57.) In discussing Diocles' views, I prefer to use 'foods' rather than van der Eijk's more expansive 'substances' because, to my mind, the latter term inappropriately suggests an Aristotelian background for Diocles' argument. Cf. n. 24 below.

[4] W. Jaeger, *Diokles von Karystos. Die griechische Medizin und die Schule des Aristoteles* (Berlin, 1938), 25.

[5] See Jaeger (n. 4), ch. 1 and, for a brief statement of the view, id., 'Diocles of Carystus: a new pupil of Aristotle', *The Philosophical Review* 49 (1940), 393–414, at 402–3 and 406–11.

[6] 'Jaeger's "Skandalon der historischen Vernunft"', 240. Compare von Staden (n. 1, *Herophilus*), 120–1.

[7] Van der Eijk (n. 3), 75. See also vdE 2.322.

[8] Van der Eijk holds that one can discern views of the relevant sort in Hippocratic writings like *On Regimen* and *On Ancient Medicine*. See van der Eijk (n. 3), 75, 89–92, and cf. vdE 2.331–2. At p. 90 of the former work, van der Eijk closely echoes the judgment of von Staden concerning the point of Diocles' remarks: 'Fragment 176 does not present itself as (nor claims to be) a methodological programme for medical science as a whole: it is concerned with dietetics, with the powers of foodstuffs and with practical problems the physician has to face.'

philosophy. As I shall contend, the fragment is best read in such a way that Diocles is seen to be making a point of general methodological significance, one that has implications well beyond the study of dietetics.

I shall begin with a translation, to be followed by a detailed discussion of Diocles' argument.[9] First, however, let me offer a brief characterization of my overall approach. As mentioned above, the heart of fr. 176 is an attack on the impulse to state *αἰτίαι*, why things have the dietary powers they do. I propose to explain Diocles' position by way of a suggestion regarding some prominent uses of the term *αἰτία* in fourth-century thought. In the literature on Plato and Aristotle, it is by now a familiar theme that the notion of an *αἰτία* (or using the neuter singular of the cognate adjective, of an *αἴτιον*) is much broader than modern conceptions of a cause.[10] In Book 2 of the *Physics*, for example, Aristotle famously declares that the number of *αἴτια* correspond to the various ways of asking 'why' questions, and he likewise speaks of them as ways of stating 'the because' (*τὸ διὰ τί*) (2.7, 198a14–16, b5). In view of that, it has sometimes been suggested that it would be better to translate the word by an expression such as 'reason' or 'explanation'.[11] Those terms are attractive not merely because they are wider than 'cause' in their range of possible signification but, in addition, because they indicate that the connection between an *αἰτία* and the phenomenon for which it accounts is, broadly speaking, an 'explanatory' one. What this means, I take it, is that a statement picking out an *αἰτία* in perspicuous fashion may be said to provide *understanding*, or *insight*, into the phenomenon being explained. The sense of insight might assume a variety of forms, depending on the context. For instance, it might involve a grasp of the inner nature or constitution of the thing under examination. Or it might instead consist in seeing why a certain event occurs in precisely the way it does. For the purposes of the present discussion, what is crucial is that even in contexts that *we* would characterize as involving 'causal'

[9] I shall at points devote particular critical attention to van der Eijk's reading because it is the most thorough and well-reasoned account of the fragment so far offered. Whatever my disagreements may be, I have learned more from it than from any other source.

[10] For influential discussions of the breadth of the word, see: G. Vlastos, 'Reasons and causes in the *Phaedo*', *The Philosophical Review* 78 (1969), 291–325, reprinted with alterations in id., *Platonic Studies* (Princeton, 1981[2]), 76–109; and J. Moravcsik, 'Aristotle on adequate explanations', *Synthese* 28 (1974), 3–17. Note also the recent remarks, accompanied by an illustrative reading of Aristotle, in S. Broadie, 'The ancient Greeks', in H. Beebee, C. Hitchcock and P. Menzies (edd.), *The Oxford Handbook of Causation* (Oxford, 2009), 21–39. Here and throughout, I draw no distinction between the meanings of the words *αἰτία* and *αἴτιον*. Frede has famously argued that an *αἰτία* should be thought of as a linguistic or propositional item, while an *αἴτιον* is instead an extra-linguistic thing, a cause. Although he bases his interpretation largely on a passage from Stobaeus reporting the views of Chrysippus, he maintains that the distinction can likewise be found in Diocles and Plato; see M. Frede, 'The original notion of cause', in id., *Essays in Ancient Philosophy* (Minneapolis, 1987), 125–50, at 129. The suggestion about Plato has met with little agreement (on which point see my 'Socrates' new *aitia*: causal and metaphysical explanations in Plato's *Phaedo*', *Oxford Studies in Ancient Philosophy* 36 [2009], 137–77, at 137–8 n. 1). As for Diocles' usage, see n. 27 below.

[11] Many interpreters have presumed that such expressions must designate linguistic items. However, I agree with Barnes in thinking that misguided; see J. Barnes, *Aristotle*: *Posterior Analytics* (Oxford, 1993[2]), 89–90. I shall accordingly speak as if an *αἰτία* involves some sort of relation between non-linguistic items. So far as concerns this discussion, there is no need to take sides on the vexed question of whether the *relata* tended to be understood as things or as facts. For some divergent views regarding Aristotle, see for instance the essays by Moravcsik and Frede cited in n. 10, as well as J. Annas, 'Aristotle on inefficient causes', *Philosophical Quarterly* 32 (1982), 311–26.

relations, the sense of insight would still be thought to play a determinative role. Therefore, a thinker of the fourth century (at least, one influenced by Plato or Aristotle) would be reluctant to apply the term αἰτία to a situation in which that sense goes unsatisfied – say, one in which someone regularly observes that one thing or event is consistently followed by another but in which the observer cannot say that the former provides any real understanding of why the latter is the way it is. (The situation is, of course, quite different for many uses of the word 'cause' in post-Humean philosophical contexts.)

As I plan to argue, Diocles' remarks in fr. 176 are directed against the concept of an αἰτία just described. When Diocles rejects the demand that one always try to state an αἰτία why a food has a given power, he is protesting against the suggestion that a theorist should be centrally concerned with formulating accounts that yield a feeling of insight – in this case, insight into why a dietary power manifests as it does. In other words, Diocles is attempting to undermine the conviction that the sense of insight is a productive guide to the development of an adequate dietetic theory, or (given what I shall argue is the broad scope of his attack) of an adequate scientific theory generally. I shall explore his reasons in what follows, but let me be clear at the outset that I am not attempting to cast Diocles as a forerunner of the tradition of medical Empiricism – that is, as someone who is hostile to theoretical constructions of any kind.[12] As will emerge, Diocles may well be open to theoretical speculations that allow us to organize and systematize our observations as to what powers result from the ingestion of what foods. However, he will resist any suggestion that the mark of a successful theory is its being able to foster a subjective feeling that one 'sees how' the phenomenon to be explained follows from the terms of the theory.

II. FRAGMENT 176 VDE

What follows is a translation of the fragment as quoted by Galen (lines 13–37 of fr. 176 vdE).[13] I shall remark later on what Galen says about Diocles in the context of the quotation.

(1) Those who presume that all things having similar flavours or smells or warmth, or anything else of the kind, also have the same powers are mistaken. For, one could show many dissimilar things arising from what is similar in those ways. (2) Indeed, it should not be presumed that each thing that is laxative or diuretic, or that has some other power, is that way because it is hot or cold or salty, inasmuch as things that are sweet or pungent or salty or whatnot do not all have the same powers. (3) Instead the whole nature must

[12] On the tradition of medical Empiricism, see for example L. Edelstein, 'Empiricism and skepticism in the teaching of the Greek Empiricist school', in O. Temkin and C.L. Temkin (edd. and trr.), *Ancient Medicine. Selected Papers of Ludwig Edelstein* (Baltimore, 1967), 195–205; and M. Frede, 'The ancient Empiricists', in id., *Essays in Ancient Philosophy* (Minneapolis, 1987), 243–60.

[13] The translation is indebted to the one supplied by van der Eijk in his 'Diocles and the Hippocratic writings' (n. 3) and *Diocles of Carystus* (n. 1); but it differs on some significant points of detail, to be discussed in what follows. One major difference worth signalling at the outset is that in keeping with my general line of interpretation, I have chosen to render αἰτία by 'explanation' rather than by 'cause'. For other English translations of the passage, see W.D. Smith, *The Hippocratic Tradition* (Ithaca, NY, 1979), 183–4; R.J. Hankinson, *Cause and Explanation in Ancient Greek Thought* (Oxford, 1998), 295–6; and Powell (n. 2), 30.

be deemed explanatory of whatever typically results from each of them, since in this way one would be least likely to go wide of the truth.

(4) Yet as regards those thinking it necessary to state an explanation for each thing, on account of which it is nutritive or laxative or diuretic or something of that sort, they seem not to realize, first of all, that this is not often needed as far as practice is concerned; (5) and further, that many things as regards their natures somehow resemble principles of a sort, so that they do not allow for a statement of what is explanatory. (6) In addition [the theorists in question] sometimes go wrong, whenever they accept what is unknown or disputed or implausible, thinking that they have adequately stated the explanation. (7) So one should not pay attention to those who state explanations in this fashion, and [generally] to those who think one should state an explanation for everything. (8) Rather, one should rely on what has been discerned on the basis of empirical testing over a long period of time. (9) One should seek an explanation of those things that admit it, whenever as a result of it what is said is likely to be more familiar or more convincing.

(1) *οἱ μὲν οὖν ὑπολαμβάνοντες τὰ τοὺς ὁμοίους ἔχοντα χυλοὺς ἢ ὀσμὰς ἢ θερμότητας ἢ ἄλλο τι τῶν τοιούτων πάντα τὰς αὐτὰς ἔχειν δυνάμεις οὐ καλῶς οἴονται· πολλὰ γὰρ ἀπὸ τῶν οὕτως ὁμοίων ἀνόμοια δείξειεν ἄν τις γιγνόμενα.* (2) *οὐδὲ δὴ τῶν διαχωρητικῶν ἢ οὐρητικῶν ἢ ἄλλην τινὰ δύναμιν ἐχόντων ὑποληπτέον ἕκαστον εἶναι τοιοῦτον, διότι θερμὸν ἢ ψυχρὸν ἢ ἁλμυρόν ἐστιν, ἐπείπερ οὐ πάντα τὰ γλυκέα καὶ δριμέα καὶ ἁλμυρὰ καὶ τὰ λοιπὰ τῶν τοιούτων τὰς αὐτὰς ἔχει δυνάμεις,* (3) *ἀλλὰ τὴν ὅλην φύσιν αἰτίαν εἶναι νομιστέον τούτου, ὁτιδηποτοῦν ἀπ᾽ αὐτῶν ἑκάστου συμβαίνειν εἴωθεν. οὕτω γὰρ ἂν ἥκιστα διαμαρτάνοι τις τῆς ἀληθείας.*

(4) *αἰτίαν δ᾽οἱ μὲν οἰόμενοι δεῖν ἐφ᾽ ἑκάστου λέγειν δι᾽ ἣν τρόφιμον ἢ διαχωρητικὸν ἢ οὐρητικὸν ἢ ἄλλο τι τῶν τοιούτων ἕκαστόν ἐστιν, ἀγνοεῖν ἐοίκασι πρῶτον μὲν ὅτι πρὸς τὰς χρήσεις οὐ πολλάκις τὸ τοιοῦτον ἀναγκαῖόν ἐστιν,* (5) *ἔπειθ᾽ ὅτι πολλὰ τῶν ὄντων τρόπον τινὰ ἀρχαῖς τισιν ἔοικε κατὰ φύσιν, ὥστε μὴ παραδέχεσθαι τὸν ὑπὲρ αἰτίου λόγον·* (6) *πρὸς δὲ τούτοις διαμαρτάνουσιν ἐνίοτε, ὅταν ἀγνοούμενα καὶ μὴ ὁμολογούμενα καὶ ἀπίθανα λαμβάνοντες ἱκανῶς οἴωνται λέγειν τὴν αἰτίαν.* (7) *τοῖς μὲν οὖν οὕτως αἰτιολογοῦσι καὶ τοῖς πάντων οἰομένοις δεῖν λέγειν αἰτίαν οὐ δεῖ προσέχειν,* (8) *πιστεύειν δὲ μᾶλλον τοῖς ἐκ τῆς πείρας ἐκ πολλοῦ χρόνου κατανενοημένοις·* (9) *αἰτίαν δὲ τῶν ἐνδεχομένων δεῖ ζητεῖν, ὅταν μέλλῃ παρ᾽ αὐτὸ τοῦτο γνωριμώτερον ἢ πιστότερον γίγνεσθαι τὸ λεγόμενον.*

III. SECTIONS (1)–(3)

The first three sections of the fragment constitute a unit of thought and prepare for the argument to follow in sections (4)–(9). That structure is made explicit in the text by the balance between the opening *μέν* of section (1) (*οἱ μὲν οὖν ὑπολαμβάνοντες*) and the *δέ* that begins section (4) (*αἰτίαν δ᾽*) and governs the rest of the passage.[14]

[14] Presumably, the *οὖν* at the outset of section (1) was originally used to establish a connection with something that preceded. It shows that the quotation did not come from the beginning of Diocles' treatise. (So too vdE 2.323.) A reader for *CQ* has suggested that the opening *μὲν οὖν* is best understood as having a compound force, affirming and resuming a preceding statement. In that case, it would be incorrect to think of the *μέν* as balanced by any subsequent particle. Yet as is clear from the discussion in Denniston's *Greek Particles*, 475–9, such uses of *μὲν οὖν* are rare in continuous prose except in highly dramatic or dialogical contexts, ones in which a speaker is effectively engaging in imagined conversation. There is no indication of that being the case in the present passage; and the reading of *μέν* as prospective and as balanced by a subsequent *δέ* makes good sense of why Galen excerpts the passage as he does. The idea that the relevant contrast comes in section (4) will be developed in the interpretation to follow. But

In sections (1) and (2), Diocles criticizes a group of thinkers who mistakenly presume there to be a correlation between certain qualities of a food and that food's dietetic powers (δυνάμεις). He identifies the qualities as those of flavour, smell, warmth and the like (χυλοὺς ἢ ὀσμὰς ἢ θερμότητας ἢ ἄλλο τι τῶν τοιούτων). In all probability, he has in mind the class of perceptible qualities, or even the sub-class of those qualities pertaining to the activity of ingestion – that is, those of taste and smell, as well as certain qualities of touch. (Cf. the phrasing in sec. [2]: τὰ γλυκέα καὶ δριμέα καὶ ἁλμυρὰ καὶ τὰ λοιπὰ τῶν τοιούτων.) Against the view he rejects, Diocles protests that foods with similar qualities often exhibit disparate powers. A fortiori, a power cannot be said to come about *because* (διότι, sec. [2]) of the presence of a given quality. As Diocles effectively points out, even if one were to suppose that only salty things are diuretic, it would not follow that *every* salty thing is diuretic. Some such things might in fact have a divergent effect – say, that of causing fluid retention.

Diocles does not specify the target of his criticism, and it may well be that he has in mind views expressed by a number of practitioners and theorists. Yet it is none the less worth pausing over the Hippocratic *On Affections*, which famously announces a position like the one Diocles opposes. Here is *On Affections* 55 (6.264–6 Littré):

> Hot foods are constipating when dry, since they dry up the moisture in the cavity; but when moist, they relax the bowels by moistening with their heat. Sour foods dry and contract the body, and they too are constipating; acidic ones make the body grow lean by the gnawing they produce; salty ones are laxative and diuretic; those that are fat, rich and sweet promote moistness and phlegm, and they fortify.[15]

Strikingly, the author of that passage does not simply declare there to be an experiential correlation between various perceptible qualities and dietary powers. Instead, he offers reasons *why* it makes sense to link the qualities and powers at issue. His account is governed by an associative pattern of thinking whereby a given perceptual quality (sourness, say) is connected with a certain effect on the body (drying and contracting), which in turn is taken to account for a food's dietetic power (being constipating).[16] Underlying such an approach is the notion that one

it is worth noting here that the οὐδὲ δή of section (2) has a function unrelated to that of the opening μέν. The οὐδέ picks up on the negative of the earlier οὐ καλῶς οἴονται (sec. [1]), while the δή indicates that Diocles means to give greater exactness to the point just made: as he explains, his initial observation that certain qualities and powers cannot reliably be correlated may furthermore be said to show that the qualities should not be considered the explanatory basis of the powers.

[15] The connection with *On Affections* is emphasized by van der Eijk, at vdE 2.323–4. Compare the position taken by Mnesitheus of Athens (fr. 22 Bertier), a theorist of the late fourth century: 'All salty and sweet flavours relax the bowels, while sharp and pungent ones release urine. Bitter ones are quite diuretic, and some of them also release the bowels. Those that are sour [retain] excretions.' On Mnesitheus as a possible target of Diocles' remarks, see van der Eijk (n. 3), 88, with references in n. 34; and on the date of Mnesitheus, see J. Bertier, *Mnésithée et Dieuchès* (Leiden, 1972), 1–10.

[16] One might compare here the Democritean attempt to explain taste sensations in terms of features of the atoms that come into contact with the tongue: 'Democritus … makes sweet what is round and large in size; astringent what is large, rough, polygonal and unrounded; sharp, just as the name suggests, what is sharp in body as well as angular, bent, small and unrounded; pungent what is round, small, angular and bent; salty what is angular, large, irregular and equal-sided; bitter what is round, smooth, irregular and small in size; and oily what is

can develop an adequate dietetic theory by pursuing explanations that are intuitively satisfying, that 'feel right'. I shall argue shortly that what follows in fr. 176 is best read as a protest against the tendency to rely on explanations of precisely that sort; and thus I think it makes good sense to see the tendency in the background of Diocles' attack here. Yet even ignoring that broader interpretative connection, the proposal that Diocles' opponents subscribe to such an explanatory requirement helps to clarify what is otherwise puzzling about their position – namely, why they might find it so attractive to correlate perceptible qualities and dietetic powers even in those cases where such correlations are empirically quite questionable. Indeed, the present proposal shows why they might have concentrated so closely on qualities of taste, smell and touch, since those are precisely the ones that would facilitate explanations of the relevant sort.

In place of such unreliable aetiologies, Diocles declares that one must consider a food's 'whole nature' to be explanatory of its powers.[17] The phrase he uses is somewhat curious, since no whole–part contrast is discernible elsewhere in the context. One might initially be inclined to suggest that he is here thinking of a thing's nature as constituted by an ensemble of qualities. Yet that would be unlikely if, as I have been suggesting, his remarks so far have been focussed only on a certain range of qualities, rather than on qualities generally. What is more, such a suggestion would have the effect of supplying Diocles with an obvious non sequitur, since to point out the unreliability of fixating on individual qualities as explanatory does not amount to showing that one will achieve any better results by focussing on a combination of qualities, let alone on the whole array of them. It would therefore be better to read Diocles as using the phrase 'whole nature' to refer non-specifically to some fuller and theoretically more sophisticated account of a food's composition. His point would then be that the theorist who searches for αἰτίαι will have to concede that one cannot produce them by concentrating solely on the perceptible qualities of a food and that one must instead look to set any explanation in the context of a comprehensive account of the food's nature.

In connection with this, two points are worth stressing:

(1) The emphasis on wholeness need not be taken to imply that Diocles advocates a 'holistic' account of a food's powers, in the sense of thinking that the food's nature cannot productively be scrutinized and dissected. (As will emerge later, some such presumption is central to van der Eijk's interpretation of the fragment.) Nothing about what Diocles says would suggest that he has in mind an insusceptibility to analysis rather than a fullness of theoretical perspective. Indeed, the only way in which he might have defended a claim of unanalysability would have been to show the necessary failure of *any* attempt to locate a food's powers in a proper subset

fine, rounded and small' (Theophr. *Caus. pl.* 6.1.6 = DK 68A129). Interestingly, the expanded version of those remarks in Theophr. *Sens.* 65–7 (= DK 68A135) records several attempts to correlate taste sensations and dietary effects. For instance, Democritus reportedly held that the large and many-angled atoms producing astringent tastes have the following further effect: 'by clogging the passages, they stop them up and prevent [what is ingested] from flowing together; and because of that they also stay the bowels' (*Sens*. 66).

[17] I follow van der Eijk in thinking it most likely that the nature of the food is meant here rather than the nature of the patient (as Jaeger argued) or some combination of the natures of the food and patient. See vdE 2.325–6 and cf. van der Eijk (n. 3), 81.

of its constituents – a task that his brief remarks on a single approach cannot remotely be said to have accomplished.

(2) There is no suggestion here that Diocles' argument is founded on any precise view as to what a food's 'whole nature' consists in. His observation that by thinking in terms of the whole nature one will be least likely to miss the truth (*οὕτω γὰρ ἂν ἥκιστα διαμαρτάνοι τις τῆς ἀληθείας*) suggests that what recommends the present position is the unworkability of the procedure he criticizes, and not the well-confirmed character of any specific theory. Diocles may have his own views concerning the composition of various foods; but for the purposes of his discussion here, he is not concerned to defend any specific account.

There is an important reason for that in what he goes on to say. Rather than explore theories of a food's 'whole nature', Diocles will raise several cautions regarding the pursuit of *αἰτίαι* in dietetic inquiries. As we shall see, one of them will involve the idea that the natures of many foods are not in fact analysable in such a way as to foster a sense of insight into why their various dietetic powers manifest as they do. Diocles' point about the 'whole nature' as explanatory will thus be qualified sharply in the sequel. I suggest he raises it in section (3) in order to drive home the idea that those who pursue *αἰτίαι* will be forced to acknowledge the need for a fuller, theoretical account of a food's constitution. They cannot trumpet their way of thinking as a simple and straightforward one, in the sense of needing to rely only on *explanantia* given in sense experience (that is, on the perceptible qualities of various foods). Since there is no way to avoid theoretical constructions, the question then becomes what approach to theory building is the most reliable. In place of an approach dominated by the sense of 'insight', Diocles will propose a new one, which adheres in a more sophisticated way to the deliverances of experience. From the perspective of that new approach, it will turn out that the sort of procedure he rejects in sections (1)–(2) is not just overly crude but, in addition, rests on an underlying presupposition that distracts one from a genuinely empirical focus.

In this connection, it is worth contrasting what I am characterizing as Diocles' position with the one adopted in Book 2 of the Hippocratic *On Regimen*, a text with which fr. 176 has often been compared. Here is *Regimen* 2.39 (6.534–6 Littré = 40 Joly [Budé edition]):

> Those who have tried to speak in general of the power (*τῆς δυνάμιος*) of sweet or fatty or salty things, or anything else of that sort, are mistaken (*οὐκ ὀρθῶς γινώσκουσιν*). Sweet things do not all have the same power, nor do fatty things, nor do others of that sort. Many sweet things are laxative, others constipating, still others drying, and others moistening. Likewise with all the rest … Since it is thus impossible to set out how things hold generally, I shall relate the power each thing has individually (*περὶ μὲν οὖν ἁπάντων οὐχ οἷόν τε δηλωθῆναι ὁκοῖά τινά ἐστι· καθ' ἕκαστα δὲ ἥντινα δύναμιν ἔχει διδάξω*).

There are clearly echoes both verbal and argumentative between that passage and the opening of Diocles' fr. 176. None the less, Diocles will go on to advocate a different position. The author of *Regimen* effectively concludes that all one can do is document one's experience of the dietetic powers associated with various foods, and he proceeds to do precisely that at considerable length (2.40–56). Although Diocles has sometimes been read as even more dogged in his resistance to theory,

and indeed as a forerunner of the tradition of medical Empiricism, there is really no warrant to see him thus.[18] To be sure, he will go on to attack the tendency always to pursue αἰτίαι and will assert that in many cases they simply cannot be found. But his reason, as indicated above, is that in such cases it is impossible to give an analysis of a food's constitution that would allow one to understand intuitively why it has its power on the body. This does not imply that Diocles is opposed to *all* theorizing about the constitutions of foods or about their interactions with the body. Indeed, as I shall argue, the larger question occupying him is how precisely one's theorizing should proceed; and he favours an approach to theory construction that is grounded in experience and testing, while rejecting one that is oriented primarily by a desire to foster a sense of explanatory fit between one's account and the phenomenon to be explained. For him, the theory-resistant stance of *Regimen* thus yields place to a new and more nuanced approach to theory construction, and the overall movement of fr. 176 is from the falsely empirical stance discussed in sections (1) and (2) to the truer and more theoretically fruitful one that Diocles will go on to delineate.

IV. SECTIONS (4) AND (6)–(7)

With the words αἰτίαν δ' in (4), Diocles begins the second segment of his argument, which occupies the remainder of the fragment. His discussion is in turn divided into subparts of unequal length: the phrase οἱ μὲν οἰόμενοι in the first line of (4) is balanced by αἰτίαν δέ in (9), the final sentence of the quotation. The bulk of what Diocles says (sections [4]–[8]) is devoted to a criticism of the idea that one should always try to state an αἰτία why a food has the power it does. The last section acknowledges a positive but limited role for αἰτίαι.

Sections (4)–(8) present three considerations that are intended to support the position Diocles announces at the outset. The first of them – that there is little practical need to seek αἰτίαι – is compatible with various interpretations of Diocles' overall position. The second and third reasons merit close discussion, however. The second (in [5]) is quite difficult to interpret and will require detailed elaboration, which I reserve for later. Here I shall discuss Diocles' third reason – namely that those who pursue αἰτίαι often erroneously accept what is 'unknown or disputed or implausible' (ἀγνοούμενα καὶ μὴ ὁμολογούμενα καὶ ἀπίθανα) as an adequate statement of an αἰτία (see [6]).[19]

[18] C.J. Fredrich, *Hippokratische Untersuchungen* (Berlin, 1899), 171–2 proposed that Diocles is attacking the same group that is attacked in *Regimen* 2.39 but that Diocles goes even further than the author of *Regimen* in his rejection of aetiological speculation. On the influence of this idea that Diocles is a thoroughgoing empiricist, see the illustrative quotations in Smith (n. 13), 185 n. 12.

[19] In his commentary, van der Eijk calls into question the idea that the objection in (6) is meant to provide a supporting reason for the thesis that one need not state an αἰτία why each thing has the power it does. He says (vdE 2.329): 'Grammatically, the subject of this sentence [namely (6)] still seems to be the holders of the view mentioned [in section (4)] (οἱ μέν); but [subsequently, in section (7)], at "Therefore …" (τοῖς μὲν οὖν …), Diocles *makes a distinction* between those who are guilty of the errors mentioned [in section (6)] and those who say that one should state a cause for every case' (italics added). However, such a characterization does not make for the best reading of what goes on in (7). The phrase at the beginning of (7) – 'those who state explanations in this fashion' – indeed refers back to the third objection in

Typically, that remark is seen as a simple observation about the possibility of error. What is thereby left unclear is *why* a medical theorist would ever be tempted to presume that a disputed or implausible claim is in fact true. It could of course be suggested that the theorist is simply unaware of the problematic nature of his candidate *αἰτίαι*. But then it becomes puzzling how his ignorance in this regard is supposed to cast doubt on the thesis that one should try to state an *αἰτία* why each thing has the power it does. If the difficulty were that certain theorists become reckless in their speculations, or even lose all grip on what may be deemed plausible, the proper response would be an admonition to be more cautious in the search for *αἰτίαι*, and not a condemnation of the impulse always to seek them.

The mention of accepting 'unknown' claims poses even more of a problem. In his 1996 essay on the fragment, van der Eijk says the following:

> It is not quite clear whether 'things that are not known' (*ἀγνοούμενα*) should be taken in the sense of 'invisibles' (the *ἄδηλα*), namely things unknown to human perception (which, of course, would please those who read the fragment as an anticipation of Empiricism) or in the sense of 'not known to them', in which case Diocles means something like 'they do not know what they are talking about'.[20]

Van der Eijk cautiously endorses the latter reading (see his p. 84 n. 24), but it is unclear what sense it might make in the context of Diocles' argument. Something more would seem to be needed besides a simple observation that the theorists in question make mistakes. Yet if the suggestion is that these theorists are somehow muddled about the very position they hold, Diocles might much more simply and effectively have described their situation using an expression meaning 'things that are unclear' or 'that are confused'. Indeed, if the background idea were that they are so injudicious as to be utterly impetuous in their theorizing, then the question would once more be how such crude mistakes could be said to cast doubt on the appropriateness of trying to state *αἰτίαι* in all cases. A pause for careful reflection would seem to be an adequate, and much more sensible, remedy.

As for the suggestion that what is at issue are explanatory principles that are *ἄδηλα*, invisible to human perception, it leaves unaddressed the question why a theorist would ever be tempted to accept any such principle as an *explanans*. If he has a plausible but ultimately incorrect reason, then his going wrong would not necessarily raise a caution regarding the impulse always to pursue *αἰτίαι*. One might suggest that, for Diocles, going wrong is *to be expected* in the case of what is invisible, in so far as speculation about any such thing is bound to lead one astray. Yet although such an idea may have become a dominant theme of the later Empiricist tradition, it has no support from other details of the fragment.[21] Its

section (6). But the next phrase, *καὶ τοῖς πάντων οἰομένοις δεῖν λέγειν αἰτίαν*, looks back over the whole group discussed in (4)–(6). As is often the case, the *καί* places a part in the context of its whole, thereby creating an emphatic effect: 'and generally to those who think that one should state an *αἰτία* in all cases'.

[20] (n. 3), 84.

[21] Van der Eijk (n. 3), 80 and 97–100 likewise rejects any connection with Empiricism. (As will be clear from a comparison of our interpretations, I do not accept all of the reasons he offers in support.) A mischaracterization of Diocles' empiricist leanings prompts Kudlien to doubt other parts of the doxography that suggest a willingness to entertain a humoural theory and other speculative doctrines; see F. Kudlien, 'Probleme um Diokles von Karystos', in H. Flashar (ed.), *Antike Medizin* (Darmstadt, 1971), 192–201, at 198–9.

introduction here would rest only on a questionable interpretation of ἀγνοούμενα[22] and would make for an awkward reading of what is said in (6). For if the governing thought behind Diocles' remark were that one needs to eschew all causal speculation involving unobservable principles, then the fact that those principles are also disputed or otherwise implausible would seem beside the point. It might perhaps be argued that what is 'unseen' is, by virtue of that very fact, continually in dispute and therefore unconvincing. But even if one accepted such a questionable thesis, one would be faced with the task of explaining why Diocles *also* allows that the theorists he attacks are unaware of the disputes and are perfectly content with appeals to such *explanantia* (ἱκανῶς οἴωνται λέγειν τὴν αἰτίαν). If his idea were that they are simply heedless, or else are inappropriately under the sway of some grand theoretical impulse, it would again raise the question why precisely their mistakes should lead one to surrender the impulse to seek αἰτίαι for every dietary power. Diocles might more plausibly have confined himself to observing that those theorists are in important respects thoughtless or methodologically confused.

The appearance of disconnection here can easily be dispelled if one accepts what I have suggested is the target of Diocles' attack – namely, the idea that an adequate statement of an αἰτία generates a feeling of insight into the phenomenon at issue. Diocles' point would then be that such a subjective feeling is utterly unreliable as a guide to truth. After all, a false explanation may well be accompanied by a profound sense of insight, and the illusion that one has finally understood a certain phenomenon might prompt a theorist to insist on an explanatory account that is unsupported by any experiential evidence ('unknown', ἀγνοούμενα), or that is but one among several competing possibilities ('disputed', μὴ ὁμολογούμενα), or that is even unlikely given certain additional pieces of evidence or given other aspects of a larger theoretical system ('implausible', ἀπίθανα).

When Diocles' point is understood that way, it is far from trivial. Indeed, it is one that remains a live issue even at present. Here, for instance, is the way a contemporary philosopher of science makes the point:

> The fact is, our history is littered with inaccurate explanations we confidently thought were obviously true … The sense of understanding would be epistemically idle phenomenology were it not so poisonous a combination of seduction and unreliability. It actually does harm, sometimes making us squeamish about accepting true claims that we don't personally understand, and more often operating in the opposite direction, causing us to overconfidently accept false claims because they have a kind of anecdotal or theoretical charm.[23]

My suggestion is that Diocles is perhaps the first theorist in the history of science to raise the possibility of such a mismatch between the sense of understanding and the truth about the phenomenon being examined. He does so, of course, in a particular context – the investigation of the dietetic powers of foods – but his point is a profound one for the development of scientific theory generally. Indeed,

[22] As a possible parallel, van der Eijk cites *On Ancient Medicine* 1.3, which uses the phrase τὰ ἀφανέα τε καὶ ἀπορεόμενα. However, the parallel is a questionable one. Van der Eijk translates that phrase as 'the things that are invisible and difficult to know'. But in context ἀφανέα may refer broadly to anything that is uncertain or doubtful, while ἀπορεόμενα may simply be used to underscore the connotations of doubtfulness. For an interpretation along those lines, see M. Schiefsky, *Hippocrates.* On Ancient Medicine (Leiden, 2005), 136–7.

[23] J.D. Trout, 'Scientific explanation and the sense of understanding', *Philosophy of Science* 69 (2002), 212–33, at 229–30.

as will emerge even more clearly in what follows, he argues it in perfectly general terms. To that extent, it is misleading to see the significance of his remarks as being limited to dietetics.

V. SECTION (5)

I now want to bolster that interpretative suggestion by looking at Diocles' second objection to the impulse always to state *αἰτίαι*. It is found in section (5), where Diocles declares: 'many things as regards their natures somehow resemble principles of a sort, so that they do not allow for a statement of what is explanatory' (*πολλὰ τῶν ὄντων τρόπον τινὰ ἀρχαῖς τισιν ἔοικε κατὰ φύσιν, ὥστε μὴ παραδέχεσθαι τὸν ὑπὲρ αἰτίου λόγον*). Let me explain briefly how I propose to read that difficult remark and then elaborate by commenting on van der Eijk's alternative, which is the fullest interpretation that has yet been ventured.

I construe the subject expression *πολλὰ τῶν ὄντων* as referring to a class of things that would include (though it need not be limited to) a number of the foods and drinks with which the treatise is centrally concerned. Diocles' observation regarding those things is that in their natures they 'somehow resemble principles of a sort'. The sort of principle he has in mind is one that is ultimate, in the sense that it cannot be explained in terms of anything more basic.[24] The way in which the things under discussion resemble such principles is that they cannot be analysed – at least not in a fashion that would be useful in allowing one to see how certain of their characteristics and powers follow from aspects of their natures. As Diocles puts it, the things do not allow for or accommodate (*παραδέχεσθαι*) an account concerning what is *αἴτιον* – what in a thing's nature is responsible for a given characteristic or power.[25]

Yet precisely because of that, these things are unlike ultimate principles in another sense. Our knowledge of the latter is presumably crucial for certain further items of knowledge – whether those be thought of as the derivative propositions of a demonstrative system or as statements concerning the physical structures that may be generated out of various elements and simple forces. But the things Diocles is talking about play no such role. Hence their resemblance to the *ἀρχαί* is a qualified one, existing only after a fashion (*τρόπον τινά*).

[24] Some interpreters have seen the influence of Aristotle in this mention of *ἀρχαί*. But as I interpret the passage, the point at issue could well have been inspired by Plato or, indeed, by any moderately reflective account of the role of *ἀρχαί* in an explanatory scheme. Van der Eijk argues that one can discern a similarity with the language of Aristotle and Theophrastus in the use of *τρόπον τινά* together with *ἔοικε* as well as in the combination *ἀρχαῖς ἔοικε*; see van der Eijk (n. 3), 92–4, and cf. vdE 2.328. However, neither linguistic pairing is so peculiar a piece of usage as to testify to an intellectual connection between Diocles and the Lyceum. Indeed, setting aside two citations from the *Magna Moralia*, which is of uncertain origin and date, there are only two Aristotelian parallels for the use of *ἀρχαῖς ἔοικε*, and in both the theoretical point at issue is quite different from what it is in our fragment. For that matter, as is observed by R.J. Hankinson, 'Doctoring history: ancient medical historiography and Diocles of Carystus', *Apeiron* 35 (2002), 65–81, at 79–80 n. 37, most of the passages using *ἔοικε* with *τρόπον τινά* involve a different sense of the former word ('seem to' rather than 'resemble').

[25] Van der Eijk and Hankinson translate otherwise, so as to suggest that what the things in question do not admit is an account of their own cause: van der Eijk (n. 3), 78: 'they do not admit of the [kind of] account that deals with [their] cause'; Hankinson (n. 13), 295: 'they cannot be given a causal account'.

As we have already seen, Diocles rejects accounts that seek to explain a thing's powers by grounding them in its perceptible qualities. Such accounts are superficially attractive because of the feeling of insight they generate – the sense that one can 'see how' the power at issue follows from a certain quality. Yet that feeling can be deceptive, as is clear from the fact that different theorists might arrive at radically different, though equally intuitively appealing, explanations of what qualities are to be correlated with what powers.[26] Although Diocles goes on to say that one must therefore turn to a thing's 'whole nature' in order to develop more reliable aetiological accounts, he immediately restricts the value of such a pursuit. The reason he offers in (5) is that there is a broad class of things that do not permit an explanation of their typical effects to follow intuitively from any analysis of their composition.[27] To take an example that might have appealed to Diocles: one may be able to infer from experience that wine is diuretic, but it might nevertheless be impossible to supply an account of the composition of wine whereby one can see how its diuretic character follows from elements of its nature. If one's central focus in the development of a dietetic theory is on achieving explanations that satisfy the sense of insight, one will be frustrated in this and comparable cases. It is simply an unreasonable ideal to expect that one can discover an *αἰτία* for every power.[28]

[26] One might compare here the account of *Affections* 55 with that of Mnesitheus (above, n. 15). Although it is unclear why Mnesitheus correlates qualities and powers in the way he does, it makes sense to suppose that the correlations are based on a speculative aetiology similar to that offered by the author of *Affections*. Certainly, it is hard to imagine that such an account could have been founded on any significant degree of experience.

[27] Let me add here that I place little weight on the use in (5) of the adjectival form *αἴτιον* rather than the noun *αἰτία*. In an influential article, Frede (n. 10), 129 argues: '[Diocles] uses 'the account about the *aition*' interchangeably with 'the *aitia*' … Obviously, the idea is that the *aitia*, the reason or explanation, is a *logos*, a propositional item of a certain kind, namely a statement or a truth about the *aiton* [*sic*], the cause, or rather the relevant truth about the cause, the truth in virtue of which it is the cause'. That distinction cannot be sustained: Diocles does not in fact use 'the account about the *aition*' interchangeably with 'the *aitia*'. In (4), (6) and (7) Diocles uses (*τὴν*) *αἰτίαν λέγειν*; and while *αἰτίαν* might conceivably be understood as the 'internal' object of the verb *λέγειν* ('to speak an account' rather than 'to speak (about) the cause/explanation'), it is not at all clear that one should interpret in such a fashion. The occurrence of *αἰτίαν* in (3) could be either adjective or noun (I have translated it adjectivally), while the one in (9) fits poorly with Frede's distinction, as does the only other use of *αἰτία* in the verbatim fragments, at vdE 185.23. ('Likewise [according to Archidamas], things boiled in oil turn brittle and crumbly on account of the same explanation [*διὰ τὴν τοιαύτην αἰτίαν*].') If there is any distinction between *αἰτία* and *αἴτιον* at work in these passages, I tend to think that the latter term is used not of the explanation per se but, instead, of the thing or factor that may be said to be determinative for the explanation. (On this point, cf. Sharma [n. 10], 170 n. 62.) However, nothing in the present interpretation turns on such a hypothesis, and one piece of indirect evidence may suggest that there is no distinction of any sort to be drawn. In fr. 171 vdE, Soranus reports Diocles' views by using *αἴτιον* and *αἰτία* in a seemingly equivalent manner: '[He says that] an explanation (*αἴτιον*) of difficult labour is that the mouth of the uterus is not straight, or that having hardened it is closed and does not easily give way. He also says that big foetuses are an explanation (*αἰτίαν*). Yet [later in the same work] he says that foetuses that have gone unnourished and that have died are an explanation (*αἰτίαν*), and he says that especially moist and warm women have difficult labour.' (On some problems in the text of the passage, see vdE 2.313–15.) It is of course difficult to determine to what extent Soranus' terminology goes back to Diocles.

[28] Van der Eijk reports that in his 1928 Cambridge doctoral dissertation A.L. Peck offers the following paraphrase: 'many of the substances we have bear a considerable resemblance in their nature to some of the first principles, so that there is no place left for an account of the cause

While the first and third of Diocles' objections to the search for αἰτίαι are quite compatible with the supposition that they exist for all phenomena, the second one is not. But on my reading of that objection, Diocles is neither a medical Empiricist nor a causal sceptic. His proposal to suspend the quest for αἰτίαι comes instead from his rejection of the concept of adequate explanation on which it depends. In its place, I shall suggest, Diocles wants to substitute a notion of theory construction that revolves around the collection and systematization of empirical data. He thereby anticipates certain modern understandings of causal explanation and of the importance of observation and testing to the development of scientific theory.

Such a reading of the scope and nature of Diocles' concern offers a plausible account of what is said in (5) and helps explain, specifically, why Diocles frames his point in an utterly general way – by speaking of 'many things' (πολλὰ τῶν ὄντων) rather than by referring more narrowly to the foods, drinks and drugs with which the treatise is centrally concerned. I now want to add some further support by comparing that reading to the different one offered by van der Eijk. His account of the passage is elaborated with admirable care and attention to detail; but as I shall argue, it none the less displays several weaknesses that help indirectly to show the attractions of what I am proposing.

Van der Eijk takes Diocles to be maintaining that the natures of certain 'substances' are unanalysable and that, as a result, one cannot account fully for the powers of those substances. In this respect, his reading is comparable to my own. Yet he develops his point in another manner. As he interprets the passage, the problem with which Diocles is concerned is that the very wholeness of the substances in question cannot be captured by any enumeration of their constituents:

> A foodstuff has its effect due not to one of its particular qualities but to its nature as a whole; as soon as we descend to a level that is lower (e.g. more elemental) than this 'whole nature', for instance by considering the constituents or qualities of the foodstuff in isolation, we lose the 'wholeness', the total sum of these constituents or qualities and the structure or proportion according to which they are interrelated … To be sure, we might be able to explain why honey is sweet (which is, after all, a question of elementary physics or pharmacology), but this does not contribute anything to our understanding of why honey produces certain dietetic effects. On the level of its nature and with regard to the effect it produces, a foodstuff 'resembles' (ἔοικε) a genuine undemonstrable starting-point … To say it with some exaggeration (which goes beyond what is in the text): there is a causal 'gap' between the nature of a foodstuff as being causally *responsible* for certain dietetic effects on the one hand, and the nature of the foodstuff as being the *result* of a certain sum of elements or qualities.[29]

As that quotation makes clear, van der Eijk interprets Diocles' point as being about causation rather than about explanation of the sort I have been discussing. The heart

(of their effects)'. In a footnote, Peck adds, 'Because it is not possible to trace out a cause further back than a first principle'; see van der Eijk (n. 3), 83 n. 21. Peck's interpretation is similar to mine in so far as he takes the inexplicability of certain 'substances' to imply that their 'effects' are likewise inexplicable. Yet as his explanatory gloss would suggest, he seems to be assuming some sort of transitivity of causal explicability: because no 'cause' of the substance can be identified, one cannot give a causal account of its effects. If one were to press that idea, the upshot would be that *everything* is inexplicable – either because there are inexplicable first principles in the physical world, or because there are no first principles at all (in which case there would be a vicious infinite regress of causal explanations, since a theorist would never be able to elaborate all of the conditions constituting the cause of a given effect).

[29] Van der Eijk (n. 3), 83–4.

of his reading seems to be that any analysis of a food's nature inevitably loses the fuller, integrated perspective needed for an adequate causal account of the food's dietetic powers. Although that reading offers a clever way of connecting what is said in (6) to Diocles' earlier remark about the 'whole nature', it leaves unclear in just what sense the wholeness is lost by analysis and why Diocles might therefore think that there is an unbridgeable gap between the micro-structural account and the power to be explained. Indeed, if one's enumeration of a food's constituents can readily account for its perceptible qualities (the sweetness of honey, for instance), then why can it not likewise account for the effects by means of which we identify the food's dietetic powers? For that matter, however precisely one understands the conceptual problem at issue here, it would seem an utterly general one – one that attends any attempt to explain the 'wholeness' of a thing so as to account causally for its effects. In that case, it is unclear why Diocles would go on (in section [9]) to allow even a limited role for *αἰτίαι* of the sort he is here criticizing.

The above interpretation also suffers from a textual awkwardness. As the quotation makes clear, what is deemed inexplicable is not so much the nature of a thing taken by itself as it is the way in which the elements of its nature contribute to causing its dietetic effects. In order for that interpretation to work, one must consider the subject expression of the sentence, *πολλὰ τῶν ὄντων*, to refer to a class of facts that would include a thing's having a certain effect. Van der Eijk thus comments: 'it seems that we have to think not only of things or separate entities (e.g. foodstuffs, drugs), but also of facts and states of affairs (e.g. honey is sweet; or, garlic affects the eyes)'.[30] And in his translation, he renders the subject expression 'many of the [things] that are [the case]'.

However, that reading sits awkwardly with his construal of the phrase *κατὰ φύσιν*. As do I, he takes *κατὰ φύσιν* closely with *πολλὰ τῶν ὄντων*: the former phrase refers to the natures of the *ὄντα* in question. In fact, van der Eijk explicitly considers and rejects two other ways of understanding the phrase. One would be to read it closely with the verb *ἔοικε* and to understand Diocles as maintaining that the resemblance between 'many things' (the subject) and 'certain *ἀρχαί*' (the object) is a natural one. The problem here is that no explanation is forthcoming as to what it might mean to consider the resemblance 'natural' as opposed to 'unnatural'. As van der Eijk observes, any such reading would supply Diocles with 'a remarkable statement which would have no justification in the context'.[31] A similar objection applies to the second way of understanding *κατὰ φύσιν*, which is to take the phrase as modifying *ἀρχαῖς*, as if Diocles were referring to certain 'natural principles'.[32] An interpretation of that sort would serve only to generate a host of further difficulties. For example, what might Diocles have in mind by distinguishing natural from non-natural principles? And just what subset of 'natural' principles might he then be referring to with the phrase *ἀρχαῖς τισιν*?[33]

[30] Van der Eijk (n. 3), 82; and see also vdE 2.327.

[31] Van der Eijk (n. 3), 83. See the almost identical statement at vdE 2.327–8.

[32] That is in fact the interpretation adopted by W. Kullmann, *Wissenschaft und Methode: Interpretationen zur aristotelischen Theorie der Naturwissenschaft* (Berlin and New York, 1974), 351. It also seems to be that of Jaeger (n. 5), 406, 411; but contrast his *Diokles von Karystos* (n. 4), 38. Van der Eijk ([n. 3], 83 n. 21 and vdE 2.27 n. 17) thinks that the word order tells against such a construal, but Hankinson (n. 24), 79 n. 36 deems this objection a weak one.

[33] In support of his interpretation, Kullmann (n. 32), 352 remarks, 'Es kommt Diokles gerade darauf an, daß diese Prinzipien naturgemäß und nicht künstlich sind, um die Frage nach abstrakten Letztursachen ein für allemal auszuschließen'. This leaves it unclear how precisely the

If the most straightforward approach is therefore to take κατὰ φύσιν closely with πολλὰ τῶν ὄντων, the question becomes how best to interpret those phrases in conjunction with one another. Here, unfortunately, van der Eijk's discussion of the passage fails to provide a compelling answer. With regard to the phrase κατὰ φύσιν, van der Eijk remarks, 'φύσις again [as in section (3) of the fragment] refers to the nature of the substance in question, for example the foodstuff, and κατὰ φύσιν means "according to their nature", "in virtue of their nature"'.[34] This would seem to require that one understand the subject expression, πολλὰ τῶν ὄντων, as designating 'substances'. Indeed, it is quite unclear what it would mean to speak of the nature *of a fact*: that way of speaking would seem to be nothing more than an indirect and rather misleading way of referring to the natures of the constituents that compose it. As we have seen, however, the supposition that πολλὰ τῶν ὄντων refers to 'substances' does not actually fit what van der Eijk takes to be the point of Diocles' remark (since he reads Diocles' objection as concerned with the fact that a food has a given power, not with the food itself).[35]

In order to produce a smoother reading, it is therefore best to allow that πολλὰ τῶν ὄντων refers directly to 'things' rather than to the fact of a thing's having a certain effect or power. In that case, the task for an interpreter is to clarify how the things in question resemble ἀρχαί in a way that would suggest their powers are inexplicable. The interpretation I recommend not only makes sense of that but also shows how Diocles' statement can be understood as an instance of his overarching thesis that one should not seek an αἰτία why each food has the power it does. On van der Eijk's alternative reading, it is in fact unclear how what is said in (5) is meant to support Diocles' comment in (4). Indeed, what is said in (4) would seem to be inaccurate at best: as van der Eijk proposes to understand the passage, what those lines should say is *not* that it is mistaken to insist on pursuing αἰτίαι in every case but, instead, that the sort of αἰτία mentioned in (3) (the one having to do with a thing's 'whole nature') cannot admit of further causal explanation.

VI. SECTIONS (8)–(9)

I therefore think it best to view Diocles' objection in (5) no less than the one in (6) as being focussed on the subjective sense of insight that he considers to be part and parcel of some common conceptions of an αἰτία. Yet the final test for any reading of those sections is whether it can accommodate what is said subsequently, in (8) and (9), where Diocles briefly mentions his own view and then allows a

implied contrast between abstract and concrete principles should be understood or why, in context, Diocles would feel a need to protect himself against being thought to refer to the abstract ones and would accordingly emphasize the 'natural' status of the principles he has in mind.

[34] Van der Eijk (n. 3), 83. Cf. vdE 2.327: 'it is in virtue of their (whole) nature that substances are like starting-points'.

[35] Van der Eijk reads the early lines of the fragment – sections (1) and (2) – as if Diocles were speaking about *qualities of any sort* (rather than just perceptible qualities); and that perhaps encourages his judgement that in section (3) Diocles is declaring the need for some more 'holistic' account. As I have argued, however, it is incorrect to read the opening of the fragment that way. Diocles there mentions only perceptible qualities, and his subsequent reference to wholeness is about moving beyond the level of what is manifest in perception to a fuller perspective on the constitution of a food. If one adopts such a reading, it becomes unlikely that there is anything about wholeness per se that is central to the argument of (5).

limited role for αἰτίαι. Let me thus fill out what I have been saying by discussing how it might account for the remarks made toward the end of the fragment.

Diocles' only positive statement of the proper method to be followed in dietetic inquiry occurs in section (8), where he declares, 'one should rely on what has been discerned on the basis of empirical testing (πείρα) over a long period of time'. Here, I think, it is important to understand the term πείρα, often colourlessly rendered 'experience', in a way that underscores the idea of a reflective engagement with the empirical evidence. As I propose to read his remark, Diocles is not suggesting that a physician make judgements solely on the basis of his past experience. Such a stance might be appropriate to an Empiricist, who is hostile to any theoretical speculations regarding the internal structure of bodies, their ultimate material constitution and so forth. Yet so far as one can tell from other fragments, Diocles actually engaged in some such speculations in other contexts. Famously, for example, several fragments credit him with the position that most diseases are the result of an imbalance of elements or humours.[36] Indeed, in the surrounding context of fr. 176, Galen classifies Diocles as a Dogmatist, and that classification was apparently commonplace, as is indicated by Diocles' regular appearance on lists of Dogmatist (or 'Rationalist') physicians.[37]

In section (8), I take it, Diocles has in mind a form of πείρα that, at a minimum, involves carefully comparing various cases in which a food is ingested so as to note similarities and differences among them. As the reference to 'a long time' perhaps also indicates, he may well be interested in examining the effects of a food on different individuals, or on a single individual at different stages of life, and he may further be concerned with other types of empirically based inquiry – say, the ability to manipulate outcomes by altering the details of a situation so as to prevent the expression of a power, to exaggerate its effects or to bring about subtle changes in the way it manifests.[38] In whatever way one understands the scope of his concerns, the point worth underscoring here is that there is no need to read him as being hostile to theoretical construction in dietetics. A theory concerning the composition of a certain food or the way it interacts with the body may well be useful as a means of sorting and organizing the empirical evidence, and it may also suggest productive directions for further observation and testing. The point of Diocles' remark in (8) is simply that any theoretical account must be grounded in careful empirical scrutiny. In that sense, Diocles may be considered a 'rationalist' about theory construction even though he insists on divorcing himself from the misguided conviction that the 'sense of insight' is either a necessary or a sufficient condition for the formation of an adequate theory.

Let me stress here a further point. To say that Diocles is rejecting a concern with αἰτίαι as one's primary theoretical orientation is perfectly consistent with supposing that he would embrace much of what we (post-Humeans) might consider central

[36] See frr. 27, 40, 51b–d, 137, 138–40, 183a (sec. 6) vdE, along with the discussion of humoural theory in vdE 2.48–53.

[37] I shall discuss shortly Galen's comments in the context of fr. 176. For classifications of Diocles as a Dogmatist, see frr. 13a–g and 155 vdE, with van der Eijk's comments at vdE 2.18–23.

[38] Compare here two methodological techniques that van der Eijk finds prominent in Diocles' dietetic inquiries: '(i) Diocles' habit of comparing similar substances with each other and describing their dietetic powers in relative terms … (ii) the importance Diocles attaches to the mode of preparation of a substance and the combination with other substances and the quantities involved in such combinations …' (vdE 2.332).

to causal theorizing. As I have suggested, he would be quite content to entertain a theory positing entities or processes in connection with observed regularities or correlations between different experiential situations. In elaborating such a theory, he would presumably feel the need to rely on some form of 'because' talk in order to describe the connections between its various entities and processes. The point is not that all giving of reasons must be eschewed. It is rather that such talk is acceptable so long as one does not thereby presume that the explanatory relations at issue are intuitively graspable in a manner that can be said to foster a feeling of insight. Thus, Diocles could quite comfortably make use of various common expressions (such as *ὅτι*, *διότι*, *διά* and the like) so long as they can be severed from any associations with what he finds implicit in the word *αἰτία* and can be joined instead to a quest for theoretical systematicity that is firmly grounded in empirical testing.

Yet what are we to make of the last section of the fragment, which seems to counter what is said in (4)–(8) by suggesting that the pursuit of *αἰτίαι* is actually useful in some cases? Although it might present a problem for interpretations that regard Diocles as a thoroughgoing Empiricist, this last remark can readily be understood along the lines of the interpretation I have been offering. To suppose that the 'sense of understanding' cannot constitute one's primary theoretical orientation is quite compatible with holding that, once one has arrived at a viable theory by some other means, there may still be value in formulating explanations that satisfy this sense. In line 36, Diocles remarks that, when available, such explanations can render what is said *γνωριμώτερον* or *πιστότερον*. He is thinking, I take it, that an account supplying an *αἰτία* can render a theory 'more familiar' in the sense that it can be more readily grasped and called to mind. Relatedly, such an account can have the persuasive function of making one's theory more convincing, especially to someone who is not in a position to assess the observational evidence.[39]

Diocles' willingness here to acknowledge a limited place for talk of *αἰτίαι* may help reconcile the present analysis of the fragment with a body of further testimony concerning his work. Elsewhere we are told that Diocles composed a treatise with the title 'Affliction, explanation, treatment', *πάθος, αἰτία, θεραπεία*.[40] That might initially seem strange if indeed he rejects a methodological focus on the search for *αἰτίαι*. But as we have just seen, he could easily suppose that the giving of *αἰτίαι* can have an important role to play in communicating one's theories. To that extent, he may think there is a value in presenting them in the form of a treatise such as the one in question. What is more, Diocles may well hold that *αἰτίαι* are more readily available in certain sub-fields of medicine than they are in dietetics. For example, in situations where an affliction can be traced to the

[39] Van der Eijk translates differently, rendering *γνωριμώτερον* as 'better known' and *πιστότερον* as 'more reliable'; see vdE 2.330 and cf. also Hankinson (n. 24), 81 n. 42. Those translations would suggest that *αἰτίαι* have a central role to play in the development of scientific theories. Van der Eijk defends them by saying that Diocles' words here are 'clearly echoing "not known," "disputed" and "implausible"' earlier in the fragment (section [6]). Yet (even leaving aside the question whether the supposed echo really justifies the translations van der Eijk provides) I see no reason to presume that Diocles intends to establish a connection with his earlier remark, which is after all part of his criticism of the impulse to state an *αἰτία* in every situation.

[40] Galen uses this title in frr. 109 and 132a vdE (see also 49 vdE). Caelius Aurelianus often refers to the work Diocles wrote *De passionibus atque causis et curationibus*. For this and similar expressions, see frr. 73, 79, 85, 92, 99, 100, 103, 111a, 114, 116, 120, 123, 125, 128, 129, 131, 136, 139 vdE.

structural details of a patient's physiology, it may turn out to be much easier to establish a sense of understanding or insight than in a situation in which one is trying to explain the way in which the nature of a foodstuff is responsible for a certain effect on the body. However that may be, the fundamental point is that the *testimonia* concerning Diocles' other work need not be interpreted as suggesting that, for him, one's theorizing should after all be dominated by the quest for *αἰτίαι*, and specifically by the subjective sense of fit between *explanans* and *explanandum*. Indeed, he should not be so read, given what I have argued are the cautions regarding the possibility of being misled that Diocles presents in section (6) of the present fragment. Even in contexts in which it may be easier to satisfy the sense of insight, one still runs the risk of accepting false explanations because of their seemingly illuminating character. And to that extent, Diocles' point in fr. 176 is an important one for the development of scientific theory generally, rather than being limited in significance to a particular sub-field of medicine.

Interestingly, a large segment of the fragment also appears, albeit without attribution and with some textual variations, in a late compilation – pseudo-Galen, *Hippocrates' Book on Nutriment* 3.13 (15. 303–4 Kühn).[41] There, after the end of the fragment as we have it in Galen, the text continues:

> Yet we think it important for those who are serious about the truth always to be on their guard that none of the manifest phenomena be concealed, not even if a reckoning of the explanation presents the greatest amount of difficulty. In this connection it is right to praise Hippocrates, on all other topics and especially on those we are now discussing.
>
> *ἀεὶ μέντοι διαφυλάττειν ἀξιοῦμεν τοῦτο, οἷς ἂν ἀλήθεια σπουδάζηται, τὸ μηδὲν ἀποκρύπτεσθαι τῶν ἐναργῶς φαινομένων, μηδ' ἂν ὅτι μάλιστα τὸν τῆς αἰτίας λογισμὸν ἀπορώτατον ἔχει. τοῦτ' ἐπαινεῖν Ἱπποκράτην ἄξιον ἔν τε τοῖς ἄλλοις ἅπασι καὶ ἐν τοῖς περὶ τούτων, περὶ ὧν νῦν διαλεγόμεθα λόγοις οὐχ ἥκιστα.*

The first sentence is particularly interesting in connection with the issues presently under consideration. What seems to be meant is that one must take care not to let a difficulty in formulating *αἰτίαι* lead us to ignore anything given in experience. It is not clear whether that remark goes back to Diocles or accurately represents his words; but if it does, it would fit neatly with what I have been saying. A difficulty in formulating the *αἰτία* of a given phenomenon might well lead someone whose theorizing is dominated by the quest for *αἰτίαι* to ignore it, or to embrace a highly speculative account that fits questionably with other features of his experience. Indeed, in cases where experience actually seems to conflict with a proposed explanation, the theorist might well be tempted to minimize its significance with an eye to promoting his preferred aetiology. Whatever qualified value *αἰτίαι* may have, one must be on one's guard not to let their attractions overwhelm a keen focus on the 'manifest phenomena'.

VII. CONCLUSION

Let me end by briefly pointing out an additional attraction of my interpretation, which is that it fits quite well with what Galen says about the fragment in the

[41] See vdE 2.333 for full quotation and translation.

surrounding context of his *On the Powers of Foodstuffs*. On some interpretations, Galen's testimony would seem puzzling, since he associates Diocles with a purely empirical approach while at once comfortably classifying him as a Dogmatist. Thus in introducing the fragment, Galen mentions that many doctors have maintained that the powers of foods have been discovered through πείρα alone. After setting aside the stance of the Empiricists, he suggests that Diocles too, 'though a Dogmatist' (καίτοι δογματικὸς ὤν), may be classed among those empirically oriented doctors. Subsequently, just after his long quotation of the fragment, Galen remarks: 'These are the words of Diocles, who thinks that the powers in foods are known from πείρα alone and not from an indication according to mixture or an indication according to the humours. There is also another [type of indication], one according to the parts of plants, but he did not mention it.' What is at issue here, as in Galen's earlier comment, is the process by which the powers of foods come to be known. Galen casts Diocles as preferring πείρα to two types of 'indication'. From the way he goes on to mention yet another type that Diocles did not discuss, it would seem that the first part of Galen's remark is intended to refer to something Diocles actually said, whether or not it is expressed in terminology that Diocles would have used.[42] The word 'indication' (ἔνδειξις) here apparently designates a process by which one discovers the dietetic power of a food by inferring it from some theory of the food's internal constitution.[43] Galen's remark suggests that Diocles refused to derive an account of dietetic powers purely from the terms of such a theory, and this fits well with the notion that Diocles is attempting to move away from 'explanations' of the sort I have been discussing. To say as much does not imply that he is resistant to theory construction altogether; and Galen does not suggest otherwise.[44] Indeed, in another context (16 vdE) Galen stresses that Diocles defended 'at length' a rigorous empiricism concerning the effects of various foods and drinks, and he *also* characterizes Diocles as a proponent of 'reasoning in conjunction with experience'.[45] The point here, as in fr. 176, is that for Diocles theory construction must be governed by a steadfast adherence to the phenomena and not by any a priori constraints on the adequacy of one's claims.

If these suggestions are correct, there is no reason to think that Diocles' theoretical pronouncements are confined to the field of dietetics, as some recent interpreters have thought. Instead, he emerges as sketching the rudiments of a powerful and general account of scientific method, one that – so far as can be told – is original to him. Indeed, far from being a mere student of Aristotelian methodological principles, or a physician whose work is of interest mainly for the way it informs

[42] Van der Eijk suspects that the terminology used here is Galenic (vdE 2.330–1).

[43] Elsewhere, 'indication' refers to the process by which a Rationalist doctor infers from symptoms to the cause of an illness, or from a theoretical account of the cause to an appropriate therapy. For discussion, see M. Frede, 'The method of the so-called Methodical school of medicine', in id., *Essays in Ancient Philosophy* (Minneapolis, 1987), 261–78, at 263–6.

[44] Van der Eijk contends that Galen's remarks about Diocles' exclusively empirical focus (as regards the discovery of powers) are a 'gross overstatement', and he suggests that Galen's testimony is a distortion designed to differentiate himself from Diocles and thereby to make a case for his own originality; see van der Eijk (n. 3), 98–100, at 98 ('gross overstatement') and vdE 2.322–3, 330–1. Yet I think this misses the point of what Galen says. Galen is not using Diocles as a foil by means of which to articulate his own conception of 'qualified experience'. He is instead pointing out that a broadly Rationalist stance can be compatible with a mindset concerned with respecting the deliverances of experience.

[45] I here quote van der Eijk's translation of the Arabic of the fragment.

the thought of the Lyceum, Diocles provides an important counterbalance to the rationalism characteristic of some major philosophical and scientific movements of the Classical period. For that reason, studies of his thought should be liberated from interpretative frameworks that would seek to locate him securely within the orbit of some familiar way of thinking. Likewise, it is important to view him as more than a simple proponent of a trend (Empiricism, Rationalism) that would eventually become prominent in medical theory. Whatever influence he may have on those later developments, his is a unique theoretical voice, and it is time to restore him to a position of independence in narratives of the development of scientific thought.[46]

Clark University

RAVI SHARMA
RSharma@clarku.edu

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