

ALCMAEON RE-EXAMINED

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The main purpose of this paper is to provide a modified interpretation¹ of Alcmaeon's doctrine of perception. Specifically, this re-examination hopes : (a) to offer better solutions to many of the problems involved in Alcmaeon's *psychology* (e.g., the difficulties surrounding the activity v. passivity theories of perception, localization and physiology, the suggested fire assumption for sense vision, etc.); (b) to point to some epistemological implications and the bearings they have upon concerns such as the mind-body problem; (c) to *philologically* elucidate such key terms and phrases as : αἰσθάνεσθαι, ξυνιέναι, κρίνειν, διακρίνεσθαι, δέχεσθαι, ἀντιφαίνη, δοκεῖ, κενόν and κοῖλον; and (d) in some cases, to *semantically* interpret those terms and phrases in a new way.

I. Φυσιολόγος. Alcmaeon has been characterized as the founder of empirical psychology²; however, it would seem to be more appropriate to call him the founder of *physiological* psychology³. The reason for this is that Alcmaeon has said more concerning the anatomical structure of the sense organs and the localization of the psychological functions than he has about percepts, their relations, and the inner organization of the experience. He might be called a φυσιολόγος, rather than an empiricist. The supporting evidence is both substantive and convincing. It should suffice, however, merely to mention that for Alcmaeon ἐγκέφαλος

¹ For the "classical" or commonly accepted interpretation, see : (a) John I. Beare in his *Greek Theories of Elementary Cognition*, Oxford, 1906, pp. 11–13, 93–4, 131–33, 160, 180, 203–4, and 251–2; (b) Theophrastus, *De Sensu* (translated and edited with commentary by George Stratton, Allen & Unwin, London, 1919, pp. 88ff, 175–6, and (c) J. Wachtler, *De Alcmaeone Crotoniata*, Leipzig, 1896. Also, for those interested, Gregory Vlastos, *Isonomia*, The American Journal of Philology, V. 79, 1956, pp. 337–366, can be quite informative as an auxiliary reading.

² John Burnet, *Early Greek Philosophy*, Meridian Books, New York, 1967, p. 194.

³ In this connection it would be interesting to refer to Max Dessoir's statement : "Alcmaeon of Crotona made the discovery, decisive for every physiological psychology, that the brain is to be regarded as the central organ of the soul". See *Outlines of the History of Psychology* (translated by D. Fisher), The Macmillan Company, New York, 1912, p. 253. However, Dessoir does not justify his point.

is the center of the senses. If we take Theophrastus' passage as a historically precise evidence, then :

ἀπάσας δὲ τὰς αἰσθήσεις συν-
ηρτῆσθαι πῶς πρὸς τὸν ἐγκέφαλον ⁴.

In this, Alcmaeon is undoubtedly on stronger ground than was either Aristotle or the Stoics, both of whom located the common sensorium in the heart. In this regard, it should also be mentioned that some⁵ believe that both Plato and Aristotle refer (although not by name) to Alcmaeon as the expounder of the ἐγκέφαλος doctrine. Thus, according to this hypothesis, Plato's passage that the brain

τὰς αἰσθήσεις παρέχων τοῦ ἀκούειν καὶ
ὄρᾶν καὶ ὁσφραίνεσθαι ⁶

echoes Alcmaeon's physiological theory. Also, by accepting this theory one sees Aristotle's phrase, δοκεῖ τισίν, as attributing to Alcmaeon the ἐγκέφαλος theory : αἱ δ' εἰσὶν ἐν τῇ κεφαλῇ (διὸ καὶ δοκεῖ τισίν) αἰσθάνεσθαι τὰ ζῶα διὰ τὸν ἐγκέφαλον ⁷.

The phrase δοκεῖ τισίν, may be assumed to refer to Alcmaeon, but only by elimination, that is, by eliminating the psychological doctrines of those philosophers known to have been living before Aristotle. Indeed, no scientist or philosopher before Aristotle included in his fragments an ἐγκέφαλος theory. However, this does not exclude the possibility that another physiologos or thinker might have advocated a physiological doctrine, i.e. an anatomist of the Hippocratic School, whose treatise has been lost.

2. Αἰσθάνεσθαι and ζυνιέναι. From a historical standpoint, it is very important that Alcmaeon was the first to make the distinction between αἰσθάνεσθαι and ζυνιέναι ⁸. Αἰσθάνεσθαι refers to aesthesis (perceiving), while ζυνιέναι (conceiving) refers to antilepsis as psychological processes. The results of each are the percept and the concept, respectively. To αἰσθάνεσθαι and ζυνιέναι correspond the nouns αἰσθήσεις and ζύνεσις. In this connection it might be observed that the grammatical forms of aparemphaton (ἀπαρέμφατον : -εσθαι and -εσθαι) indicate the movement-character of αἰσθάνεσθαι and ζυνιέναι, that is, both can be used only for processes, whereas as noun-forms (-is) might indicate abilities which are not always activated. Given that Alcmaeon uses aparemphaton forms, one might assume that he refers to processes and not to their results. And indeed, if this were the case, Alcmaeon would have to be considered the founder of an activity-theory of perception.

The distinction between αἰσθάνεσθαι and ζυνιέναι in Alcmaeon's thought is not clear; this, in turn, seems due to the fact that either

⁴ Theophrastus, *De Sensu*, 26.

⁵ John Beare, *Greek Theories of Elementary Cognition*, p. 252.

⁶ *Phaedo*, 96b.

⁷ *Parva Naturalia*, 469a 22-23.

⁸ Theophrastus, *De Sensu*, 25-6.

he did not go far enough in his researches, or, if he did, then the existing sources of information for his theory are incomplete. In either case we are left without the information needed to clarify these fundamental concepts and to be able to know where, according to Alcmaeon, αἰσθησις ends and ξύνεσις begins⁹. In fact, the same point troubles us today; we have not been able to clarify the concepts 'sensing' and 'perceiving', thus clearly defining the end of the former and the beginning of the latter. If we identify¹⁰ ξυνιέναι with intelligence, we are in no better position than was Alcmaeon as concerns the definition to be given the latter concept¹¹. Other assumptions could be made, e.g., ξυνιέναι could be identified with the Aristotelian κοινὴ αἰσθησις or κρίνον which has to do with the perception of κοινά (or, in Lockean terminology, with the primary qualities): σχῆμα, μέγεθος, ἀριθμός, χρόνος and κίνησις; or a δυνάμις (organism's power) which refines and synthesizes the ἰδία (secondary qualities) with the κοινά (primary qualities); or a very general mental function which includes not only κρίσις (judgment), but also memory and imagination. It must be pointed out, however, that whatever scholars say in their efforts to offer a true interpretation, no claims to "certainty" can be made. On the other hand, two points undoubtedly have strong support: First, Alcmaeon distinguishes sensory perception from conceptual perception¹² and in this he would disagree with some modern psychologists who do not think there is a need for such a distinction. Alcmaeon here uses the aporemphaton φρονεῖν and perhaps some are misled by the fact that in the later times it came to be identified with prudence, thus having a strong ethical connotation. Alcmaeon, it must be pointed out, uses it as a synonym of thinking (νομίζειν). And second, Alcmaeon states explicitly that ξυνιέναι has a physiological location, i.e., ξυνιέναι he believes, is located in the ἐγκέφαλος. Such a position must be seen as being more advanced than those taken during the subsequent centuries in which was considered a separate entity by those holding completely non-physiological doctrines.

3. Ἰσονομία. Alcmaeon, contrary to the dualism of his contemporary Pythagorean friends, supported a physiological monism. Apparently he was influenced by the medical writers of the Ionian and Sicilian schools¹³. In particular, however, the theory of the organismic constitution of man by Ἰσας δυνάμεις, the κρᾶσις, seems to be the main ground from which he abstracted the concept ἰσονομία.

Vlastos makes the assumption¹⁴ that although Alcmaeon was mainly concerned with physiology and medicine he might have transferred the concept of ἰσονομία from cosmology to medicine. For Vlastos, Greek metaphysical thought was deeply saturated by the ἰσονομία concept

⁹ Beare, p. 251.

¹⁰ *Ibid.*, pp. 251, 203.

¹¹ To say that 'intelligence' is 'what an intelligence test measures' (such operational definitions are easily found in any psychology text) smacks of epistemological naivete.

¹² Theophrastus, 25, 4-5.

¹³ Gr. Vlastos, *Isonomia*, *The American Journal of Philology*, Vol. LXXIV, 4, 1956, p. 362.

¹⁴ *Ibid.*, p. 364.

and as a physician, Alcmaeon may have been struck by the cosmos—man analogy, thus transferring the concept from “the physical macrocosm to human microcosm”. A more specific hypothesis could be advanced, viz., one could claim that Alcmaeon has applied the rationalistic Pythagorean concept of harmony to his medicine. In this sense, Alcmaeon is a “Pythagorean”, but he is not a docile student of the authority of Pythagoras. That is, he could not repeat αὐτὸς ἔφα, for he was a restless researcher whose investigations were based on “evidential inference”, τεκμαίρεσθαι¹⁵. In Alcmaeon's case τεκμαίρεσθαι indicates not a rationalistic calculation, but rather his efforts to explain man's incorporeal psychic functions in terms of his organic structure. Τεκμαίρεσθαι cannot be justified by a Pythagorean rational activity, but only by an observational inquiry, i.e., by an anatomical observation or elementary experimentation and dissection of the organism which together provide physiological τεκμήρια. Alcmaeon made such anatomical operations¹⁶, studied and wrote on medical themes, and discussed topics of natural philosophy¹⁷. Indeed, it seems safe to conclude that the isonomia concept was derived inductively, both from his physiological inquiries and from the doctrine of the ἔσων δυνάμεων, the κρᾶσις.

4. Sensory Perception. By dissection Alcmaeon made discoveries about the anatomical structure of the eye, specifically of the “optic nerves”. He found that the διαφανές is the physiological means whereby the eye as a whole functions perceptually. The watery substance of the διαφανές ἀντιφαίνει the sensible object.

The meaning of the verb ἀντιφαίνει is rendered by the verb to reflect. Thus, the διαφανές is used like a mirror which reflects the outside world. Furthermore, Alcmaeon held that the mirror-like image is more precise to the real object if the διαφανές is καθάρων (pure)¹⁸. In this connection one may argue that his point has epistemological bearings in the sense that the visual percept and, therefore, the formed concept of a thing cannot be taken as accurate knowledge of the perceived object. The poor καθαρότης (purity) of the διαφανές means a poor percept, and thus an inadequate knowledge of the object. Alcmaeon, in other words, provides a good ground for the sensory scepticism which was so utilized by later sceptics in support of their epistemological theses. As for the word ἀντίλαμψις, it does not necessarily suggest that Alcmaeon held that there is fire in each eye and that this is the “active force of vision” or “the energy”¹⁹ which collects the visual images. Ἀντίλαμψις might have been used metaphorically to denote the phenomenon of reflection on mirrors, waters and so forth; if so, it could be taken to refer to the reflection on the watery of διαφανές rather than to “the fire in each

¹⁵ D. Laertius, *Lives of Eminent Philosophers*, Harvard University Press, VIII, 83–84 : ὥς δ' ἀνθρώπους τεκμαίρεσθαι, Gr. Vlastos, *Isonomia*, The American Journal of Philology, p. 345.

¹⁶ Chalcidius, *Plat. Tim.*, p. 279, ed. Wrobel, pp. 340–1, ed. Meursius.

¹⁷ D. Laertius, *Lives of Eminent Philosophers*, VIII, 83–84 : καὶ τὰ πλεῖστα γὰρ ἰατρικὰ λέγει, ὅμως δὲ καὶ φυσιολογεῖ.

¹⁸ Theophrastus, 26, 4 : ὅσον ἂν καθαρώτερον ἢ μᾶλλον.

¹⁹ Beare, p. 13.

eye". If, as Beare claims ²⁰, ἀντιφαίνει means reflections on the watery διαφανές, so too he could make the same reference for ἀντίλαμψις. Why should he come to support a risky hypothesis? And why does he not make the same hypothesis for the very ἀντιφαίνει i.e. to explain it in terms of the "existing fire"?

Of course, there is the phrase ὅτι δ' ἔχει πῦρ δῆλον εἶναι πληγέντος γὰρ ἐκλάμπειν. This phrase is indeed a puzzling one, and in fact hardly fits within Alcmaeon's φυσιολογία. There could, however, be three possible explanations for its use: (a) Alcmaeon was influenced by the tradition and the visual-ray theory of the Pythagoreans, ²¹ and he believed in the existence of the πῦρ in the eye; (b) He used the word πῦρ metaphorically in order to indicate that in the eye there is a sort of sui generis energy which determines the special function of the visual perception; or (c) this phrase was inadequately inserted by Theophrastus himself or other commentators.

I am inclined to take *b* and *c* as safer explanations than *a*, for the following reasons: (1) Alcmaeon had practiced anatomy, made dissections, and so forth, according to the available historical evidence. On the πῦρ hypothesis depends "the collection . . . of the visual image" ²², and therefore aesthesis is dependent on the πῦρ function. Every animal has aesthesis ²³ which, according to the πῦρ hypothesis, should pre-suppose the existence of πῦρ in the animal's eye. But as we have seen, Alcmaeon made anatomical studies of animals (maybe of humans too) which would falsify the πῦρ hypothesis. And by analogy he should get a negative conclusion. (2) Contrary to the Pythagorean αὐτὸς ἔφα, Alcmaeon initiated in his inquiries the τεκμαίρεσθαι, the evidencial inference. ²⁴ (3) He was a φυσιολόγος psychologist holding that ἀπάσας δὲ τὰς αἰσθήσεις συνηρτῆσθαι πως πρὸς τὸν ἐγκέφαλον and that if the ἐγκέφαλος is disturbed or undergoes changes, the aestheses πηροῦσθαι become incapacitated or handicapped in their functions. ²⁵ Thus, it seems to me that Beare's interpretation does not do justice to Alcmaeon. Indeed, one gets the impression that he tried to force the information into a biased hypothesis. Beare tries to relate the πῦρ case with the Pythagorean tradition, and even with the Hippocratic views (in περὶ Σαρκῶν) concerning the functional connexion between: ὀφθαλμοῦ-ἐγκεφάλου-ὄραν. Whereas in fact the Hippocratic theory (eye-vain-brain-vision) is contrary to the πῦρ exegesis and better supports the φυσιολογία explanation. In sum, then, it seems more secure to deny ²⁶

²⁰ p. 11.

²¹ Arist., *Met.*, i.5—586a29.

²² Beare, p. 13.

²³ Fragment, 95: τὰ δ' ἄλλα (ζῶα: creatures) αἰσθάνεσθαι.

²⁴ Vlastos, p. 34.5.

²⁵ In this view one can trace the scientific hypothesis of brain geography. As efforts in this direction, we might mention: (a) surgical operations for removal of certain portions of ἐγκέφαλος, and (b) mere anaesthetization, whereby the τόπος of the psychological functions is sought.

²⁶ A similar view might be found in Aristotle's *Περὶ χρωμάτων* (p. 37). For Stagiritus there is no πῦρ and πῦρ flash in the eye.

the $\pi\upsilon\rho$ hypothesis²⁷ and keep alternatives *b* and *c*. But the *c* alternative (although it can be kept as a hypothesis for the scholars) is unjustifiable due to its purely speculative nature. Hence, what remains is *b*, i.e., the metaphorical use of the word $\pi\upsilon\rho$.

The acoustic perceptual function ($\acute{\alpha}\kappa\omicron\upsilon\epsilon\iota\nu$) in connection with the acoustic organs ($\omicron\upsilon\varsigma$) is also explained in physiological terms. For Alcmaeon the particular anatomical structure of the acoustic organ is of fundamental importance for the acoustic perception. The $\omicron\upsilon\varsigma$ is $\kappa\omicron\iota\lambda\omicron\nu$ with inner curves, and $\kappa\epsilon\nu\acute{\omicron}\nu$, empty. The two predicating words $\kappa\omicron\iota\lambda\omicron\nu$ and $\kappa\epsilon\nu\acute{\omicron}\nu$ render the inside anatomical description. The description is made in functional terms, that is, in terms of the conduciveness of $\kappa\omicron\iota\lambda\omicron\nu$ and $\kappa\epsilon\nu\acute{\omicron}\nu$ to the acoustic perception. One could justifiably hypothesize that Alcmaeon made more detailed and anatomical studies on the $\omicron\upsilon\varsigma$ and had more knowledge about it, but Theophrastus mentions only these two characteristics ($\kappa\omicron\iota\lambda\omicron\nu$ and $\kappa\epsilon\nu\acute{\omicron}\nu$), both of which are virtually indispensable for the acoustic function. It has been suggested²⁸ that the use of $\kappa\omicron\iota\lambda\omicron\nu$ is a mistake which we have inherited by some sort of philological carelessness through the centuries, and that the real word is $\kappa\acute{\omicron}\chi\lambda\omega$ which renders the inner anatomy more adequately. It might be observed that both $\kappa\omicron\iota\lambda\omicron\nu$ and $\kappa\acute{\omicron}\chi\lambda\omega$ indicate the cave-like curviness of the inner $\omicron\upsilon\varsigma$, the difference between the two being that the latter tells us more specifically about the $\kappa\omicron\chi\lambda\iota\omega\delta\epsilon\varsigma$ pattern of curves, that pattern being spiral, beginning with wide curves and gradually narrowing as they develop inside. Diels' corrections²⁹ suggest the $\kappa\omicron\iota\lambda\omicron\nu$ kind of interpretation, but Beare rightly considers it unnecessary.³⁰ The corrections of two sentences are: (a) $\tau\omicron\upsilon\tau\omicron \gamma\acute{\alpha\rho} \acute{\eta}\chi\epsilon\iota\nu \delta\iota\acute{\alpha} \tau\omicron \kappa\omicron\iota\lambda\omicron\nu$ and (b) $\tau\omicron\upsilon\tau\omicron \gamma\acute{\alpha\rho} \acute{\eta}\chi\omicron\upsilon\nu \phi\theta\acute{\epsilon}\gamma\gamma\epsilon\sigma\theta\alpha\iota \delta\iota\acute{\alpha} \tau\omicron \kappa\omicron\iota\lambda\omicron\nu$.³¹ Syntactical re-arrangement, however, says the same thing: the $\kappa\omicron\iota\lambda\omicron\nu$ is the bodily organ which by its *sui generis* structure receives the vibrating air waves by virtue of $\acute{\omicron}\nu\tau\eta\chi\epsilon\iota\nu$, that is, by a kind of sound refraction, thus transmitting the sound into the intra tympanon area.

Concerning the question whether $\kappa\epsilon\nu\acute{\omicron}\nu$ should be taken as equivalent to $\acute{\alpha}\eta\rho$ in Aristotle,³² it could be observed that this suggested equivalence should admit specifications. First, the view is that $\acute{\alpha}\eta\rho$ is always *in* $\kappa\epsilon\nu\acute{\omicron}\nu$ but the copula *in* is not one of an identity; it only

²⁷ Why does Beare insist on the $\pi\upsilon\rho$ exegesis? Is it only because of the pertinent phrase? It seems that by giving such an interpretation he wants to attribute to Alcmaeon an activity theory of visual perception and mind. He points out "mind or the eye" are not simply mirrors "reflecting objects as is done by a standing pool" (p. 13). But no one would agree with Beare that reflecting of images ($\acute{\alpha}\nu\tau\iota\phi\alpha\iota\nu$) suggests necessarily a passive reception and further a mind passivity. He thinks that it is "a popular confusion" to put together $\acute{\alpha}\nu\tau\iota\phi\alpha\iota\nu$ and mind activity. What is rather confusing is his phrase "mind or the eye" which suggests an identity of the function of the eye with the function of mind. Furthermore, there is nothing to indicate that Alcmaeon did not or could not hold that while the initial impute of the image by reflection is passive, afterwards the eye itself becomes active by refining the image and transmitting it to the mind.

²⁸ L. Philippson, "Γύη Ἀνθρωπίνης, Berlin, 1931, p. 107.

²⁹ Beare, p. 93.

³⁰ *Ibid.*, p. 93.

³¹ He rearranges Theophrastus' sentences: $\tau\omicron\upsilon\tau\omicron \gamma\acute{\alpha\rho} \acute{\eta}\chi\epsilon\iota\nu$. $\phi\theta\acute{\epsilon}\gamma\gamma\epsilon\sigma\theta\alpha\iota \delta\epsilon \tau\omicron \kappa\omicron\iota\lambda\omicron\nu$, $\acute{\omicron}\nu \acute{\alpha}\epsilon\rho\alpha$, $\delta' \acute{\alpha}\nu\tau\eta\chi\epsilon\iota\nu$.

³² *De Anima*, 419b33: $\delta\omicron\upsilon\kappa\epsilon\iota \gamma\acute{\alpha\rho} \epsilon\iota\nu\alpha\iota \kappa\epsilon\nu\acute{\omicron}\nu \acute{\omicron} \acute{\alpha}\eta\rho$.

has a localization meaning. That *κενόν* always *contains* *ἀήρ* does not entail any identity. Further, the quotation from Aristotle that Wachtler uses to support this identity is not decisive. The verb *δοκεῖ* is not assertive. Even if Aristotle had had such a conception, what forces us to conclude that Alcmaeon meant the same thing? It might also be mentioned that the distinction³³ between (a) *ἀήρ* in the *κοῖλον* or outer part and (b) the *ἀήρ* or *κενόν* of the inner part, is not justified. The distinction is based upon a functional ground holding that a "receives and introduces the sonant stimulus from the atmosphere" where *b* "catches it up and transfers it to the brain". The impression given is that these are two different functions, but they are not. After all, what could the functional verbs "receive" and "catch" mean? Both bodily parts (outer and inner) are *κοῖλα* and *κενά* containing *ἀήρ*. The air waves are wide in *a* and less broad in *b*. The moving air (regardless of the size of its waves) transmits the acoustic stimuli which is rendered by the verb *ἡχεῖν*. Because of the inner structure of the *οὔς* (*κοῖλον*), a refraction of the waves takes place and the phenomenon of *ἀντηχεῖν* occurs. This is clearly shown in the following :

$$\frac{\text{φθέγγεσθαι δὲ τῷ κοίλῳ}}{(a)}, \quad \frac{\text{τὸν ὅρα δ' ἀντηχοῦν}}{(b)} \quad ^{34}$$

The *a* part of the sentence indicates the refraction activity and the *b* part the phenomenon of re-echoing, *ἀντηχεῖν*.

For Alcmaeon the perceptual function of tasting occurs by means of the tongue which "admits" the "sapid particles" :

$$\gammaλώττῃ δὲ τοὺς χυμούς κρίνειν \quad ^{35}$$

The verb *κρίνειν* is used in such a way that it may be taken to mean *judging*. This could reinforce our view, viz., the position that Alcmaeon has introduced an activity-perception theory. He mentions that certain conditions such as warmth and softness enable *γλώτταν* to dissolve the *χυμούς* before it "admits" them, but the functions of the aforementioned *κρίνειν* or *διακρίνεσθαι*³⁶ refer to the *action* of the organism by his sense organ *γλώττα*. These could be conceived of as having two stages :

- (a) *κρίνειν*
- (b) *διακρίνεσθαι*.

In *a*, a sort of selection and classification takes place so that the perceived sense data are categorized from the sapid particles, thus referring to the

³³ Beare, p. 94.

³⁴ Theophrastus, 25, 8–9.

³⁵ Diels, *Die Fragmente des Vorsokratiker* (Berlin, 1903), p. 104; Theophrastus, *De Sensu*, 25, 10–13.

³⁶ Plut., *Epit.*, IV. 18; Diels, *Vors.*, p. 104.

past taste perceptual experience; in *b*, through the reference to the sense data as arriving in the *μυελόν* "sensorium", the identification, *διακρίνεσθαι*, is realized. *Διακρίνεσθαι* precisely means discerning which, as a mental activity, presupposes a prior activity, *κρίνειν*.

In this connection it is necessary to refer to both words *δέχεσθαι* and *διαδιδόναι*. *Δέχεσθαι*, receiving, suggests passivity and is against our activity-interpretation, whereas *διαδιδόναι* suggests processes and is for it. Of course, this does not seem to seriously outweigh the evidence for activity which has already been cited, especially that deriving from the *κρίνειν* and *διακρίνεσθαι* functions.

A problem arises when we consider taste perception, namely, "how it comes to pass that the sapid particles are perceived as tastes?" Alcmaeon does not explain how, from the dissolving of substances, we jump to *κρίνειν* and *διακρίνεσθαι*, both of which are sophisticated cognitive processes. Here we are left with a serious epistemological gap. Needless to say, my prior introduction of sense data is only assumptive. Beare said ³⁷ in 1906 that "Anatomy, Physiology, and Chemistry, despite the enormous advantages they give the psychologist today, have been able to advance the psychology of taste little beyond the popular and superficial stage at which Alcmaeon left it". ³⁸ And even in our day, perhaps, we should be no more optimistic than Beare.

Finally, for the smelling perceptual activity, *ὀσφραίνεσθαι*, ³⁹ Alcmaeon offers us an unsatisfactory explanation: through the nose and breathing, smelling data reach to the sensorium.

³⁷ *Greek Theories of El. Cognition*, p. 160.

³⁸ Here, as in touching, Psychology tends to merge itself in Physiology.

³⁹ Theophrastus, 25, 9.