

Book Reviews

WOLFGANG KULLMANN, *Wissenschaft und Methode: Interpretationen zur aristotelischen Theorie der Naturwissenschaft*, Berlin and New York, Walter De Gruyter, 1974, pp. x, 419, DM.138.

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The study of Greek biology and science has in recent years moved from a search for the place of an author in a progressive development and a hunt for origins to an appreciation of the limits and achievements of ancient scientific thought within a specifically historical context. While G. E. R. Lloyd in his *Polarity and analogy* concentrated upon two methods of analysis used by the Greeks over several centuries, Dr. Kullmann in a lucid and wide-ranging book has chosen to examine the varying ideas of explanation and enquiry of a single author, Aristotle.

His starting point is the methodological statements contained in *De partibus animalium* I, which prefaces and yet stands apart from Aristotle's other zoological treatises and which schematically illustrates several types of argument. After a general running commentary on that book (which can be easily followed in the English versions of Peck and Ogle) and relevant passages elsewhere, Dr. Kullmann considers in detail particular terms and arguments; the meaning of *Paideia* (education) and its relationship to experience and to the ability to formulate hypotheses and definitions—the educated man, who alone can attain to “exact learning”, is more than a mere craftsman or a logician who claims, like Speusippus, to possess knowledge of the universal and deduces the behaviour of the particular from his general assumptions. Unlike other members of the Platonic Academy, with their stress on the mathematical aspects of the universe and on rigid dichotomies, Aristotle used syllogisms and a more flexible method of division in both his theoretically logical and his scientific treatises. He was concerned with various types and explanations of causation and with the relationship between particular and general phenomena—here Dr. Kullmann's chapter on phenomenology and aetiology is enlightening, especially as it shows what advantages and problems syllogistic reasoning brought to Aristotle's scientific enquiries and to his search for a sure knowledge based upon demonstration. Once the methodological framework of *De partibus* I is established, the structure and validity of the arguments contained in the other books can be analysed, and the importance of teleology and dogmatic definitions in Aristotle's discussion of natural phenomena clarified, if not always accepted. His liking for explanations based upon “necessity” and “for the best” depends as much upon the theoretical basis of his thought as on observation.

Dr. Kullmann ends his book with a short argument for the primacy in time of Diocles over Aristotle, which is based upon Diocles' weaker methodology and cruder classification of animals, a conclusion reached simultaneously by Georg Harig and Jutta Kollesch, ‘Diokles von Karystos und die zoologische Systematik’, *NTM*, 1974, 11: 24–31.

Ancient natural scientists and physicians were also philosophers, and Dr. Kullmann has performed a distinguished service by showing how the philosophical preconceptions of one of them influenced his explanations and analyses of the natural world, and by offering an appreciation of Aristotle's achievements that does not rely on anachronistic positivism to compel admiration.