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***The Manner of Demonstrating in Natural Philosophy.* By Melvin A. Glutz, C. P. River Forest, Illinois: Dominican House of Studies, The Aquinas Library, 1956. Pp. xii + 184, with index. \$3.00.**

In a doctoral dissertation submitted to the Pontifical Faculty of Philosophy of the Dominican Fathers at River Forest, Fr. Melvin Glutz has focused attention on the perpetual validity of the Aristotelian logic of demonstration as an instrument in natural doctrine. To outline briefly the field of inquiry, Fr. Glutz begins with a sound exposition of the traditional doctrine on the kinds of demonstration. He proceeds to inquire how this will find application in the philosophy of nature. Thus he will carefully establish the formal subject and object of this science as unifying the more general philosophical knowledge and the particular knowledge of the physical positive sciences. From this position he investigates the kinds of demonstration which it uses together with the certitude and necessity which characterize its reasoning.

Fr. Glutz's efforts in venturing to expose the difficult matter of chapters nine and ten of the *II Posterior Analytics* will be appreciated by many. In the light largely of these chapters he illustrates the kind of definition which may be used in physical demonstrations as well as the possibility of demonstrating in this science through each of the four causes of natural things. He does not propose to measure exactly how far their use will extend. Thus one can differ with the author on some of the particular examples of physical demonstration which he suggests, without questioning the fundamental validity of the thesis as a valuable work on method. The middle term in several cases appears to involve a hypothetical element, so that one might question whether the intellect truly sees here the requisite necessary connection between the major, middle and minor terms, e.g., the use of "energy" on

p. 114. Fr. Glutz has brought out particularly well the kind of necessity proper to natural philosophy as distinct from that of metaphysics.

Carefully ordered work such as the present is to be encouraged today, especially with the common tendency to relegate such matter to a graveyard of outdated logical implements of no more than historical interest. Fr. Glutz's work serves to show that if the traditional philosophy is unacceptable to the positive sciences, it need not be because of its ever valid method which has much to recommend it; differences between the two should occur, then, not in the order of logic, but properly in the physical order of the causes which are sought and the notion of their efficacy. On the reverse side of the coin we find an implicit indictment of the many modern scholastics who, either ignoring the logic of demonstration or not recognizing its importance, fail in putting their logic into practice.

We feel that certain aspects of the work might further be strengthened by the following considerations. If the science generated by demonstration *quia* shares only imperfectly in the notion of science relative to demonstration *propter quid*, it would seem that demonstration itself, as ordered to science, would likewise be analogous and not univocal (p. 28). The manner in which Aristotle develops the notion of demonstration, defining and analyzing it simply as *propter quid* rather than in a generic sense, would seem to confirm this. The full analogous character of demonstration could make it easier to present the scientific unity of a natural philosophy which actually makes use of several kinds of demonstration.

To judge from internal evidence, the author had available neither the opusculum of Cajetan *De Subjecto Naturalis Philosophiae* nor his complete commentary on the *Posteriora*. The latter especially would have been most helpful in analyzing the relation of definition to demonstration. Cajetan's analysis of the manner of demonstrating one definition from a prior definition might have forced the author to reconsider his acceptance as *a posteriori* the proof from the *III Physics* that motion is in the mobile (p. 106). The same problem of demonstrating one definition from another is of importance in establishing the two definitions of the soul at the beginning of psychology, a problem which has found self-contradictory solutions in some recent psychology texts. It would also be interesting to see an elaboration of the notions of dialectical and scientific definition as a division strictly relative to a given science and to have this division applied to the science of nature.

In dividing the sciences a choice of terminology must be made, but we would hesitate to agree with the author that the terminology of Cajetan is deficient relative to that of John of St. Thomas in not explicitly distinguishing "between the subject of a science and the object of the habit of science" (p. 41). The notions of *ratio quae* and *ratio sub qua* express with precision a relation in what is formal to a science as it illumines its matter.

A few distinctions would serve to obviate an ambiguity at several points. Thus the statement that "the concepts of the positive sciences are not true universals, but the quasi-universals or generalized sense images of the cogitative" (p. 33) raises a question whether the role of the mind in granting universality in many cases through an *ens rationis* is taken into account. If the above passage were to be taken strictly, it would prejudice the applicability of the whole doctrine of the *Priora* to dialectical knowledge.

A distinction between the necessity which derives from the final cause in the order of generation and that in the order of substance would help to clarify the ambiguity of several statements on the proper place of a priori necessity in the philosophy of nature (p. 80 ff.).

The first half of the book labors under the handicap of a disproportionate number of typographical errors. The ambiguity of several infelicitous metaphors in this part of the book prejudices the doctrine and is at variance with the scientific character of the work. If we make these remarks, it is not to be captious, but because we believe that the over-all excellence of this study warrants great care on many points which might be overlooked in a lesser work. We thank the author for his work on these aspects of the logic of demonstration which are very seldom treated either in themselves or in their application. His work lays firm foundations for investigating further the more detailed questions of the way in which scientific logic can help in ordering the work of the positive sciences.

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