CHAPTER X.

Of the Canon of Reasoning.

& 569. The first figure was regarded by logicians as the only perfect type of syllogism, because the validity of moods in this figure may be tested directly by their complying, or failing to comply, with a certain axiom, the truth of which is self-evident. This axiom is known as the Dictum de Omni et Nullo. It may be expressed as follows--

> Whatever may be affirmed or denied of a whole class may be affirmed or denied of everything contained in that class.

Section 570. This mode of stating the axiom contemplates predication as being made in extension, whereas it is more naturally to be regarded as being made in intension.

Section 571. The same principle may be expressed intensively as follows--

> Whatever has certain attributes has also the attributes which invariably accompany them .[Footnote: Nota notae est nota rei ipsius. 'Whatever has any mark has that which it is a mark of.' Mill, vol. i, p. 201,]

Section 572. By Aristotle himself the principle was expressed in a neutral form thus--

> 'Whatever is stated of the predicate will be stated also of the subject [Footnote: [Greek: osa katà toû kategorouménou légetai pánta kaì katà toû hypokeiménou rhaetésetai]. Cat. 3, Section I].'

This way of putting it, however, is too loose.

Section 573. The principle precisely stated is as follows--

> Whatever may be affirmed or denied universally of the predicate of an affirmative proposition, may be affirmed or denied also of the subject.

Section 574. Thus, given an affirmative proposition 'Whales are mammals,' if we can affirm anything universally of the predicate 'mammals,' as, for instance, that 'All mammals are warm-blooded,' we shall be able to affirm the same of the subject 'whales'; and, if we can deny anything universally of the predicate, as that 'No mammals are oviparous,' we shall be able to deny the same of the subject.

Section 575. In whatever way the supposed canon of reasoning may be stated, it has the defect of applying only to a single figure, namely, the first. The characteristic of the reasoning in that figure is that some general rule is maintained to hold good in a particular case. The major premiss lays down some general principle, whether affirmative or negative; the minor premiss asserts that a particular case falls under this principle; and the conclusion applies the general principle to the particular case. But though all syllogistic reasoning may be tortured into conformity with this type, some of it finds expression more naturally in other ways.

Section 576. Modern logicians therefore prefer to abandon the Dictum de Omni et Nullo in any shape, and to substitute for it the following three axioms, which apply to all figures alike.

Three Axioms of Mediale Inference.

(1) If two terms agree with the same third term, they agree with one another.

(2) If one term agrees, and another disagrees, with the same third term, they disagree with one another.

(3) If two terms disagree with the same third term, they may or may not agree with one another.

Section 577. The first of these axioms is the principle of all affirmative, the second of all negative, syllogisms; the third points out the conditions under which no conclusion can be drawn. If there is any agreement at all between the two terms and the third, as in the cases contemplated in the first and second axioms, then we have a conclusion of some kind: if it is otherwise, we have none.

Section 578. It must be understood with regard to these axioms that, when we speak of terms agreeing or disagreeing with the same third term, we mean that they agree or disagree with the same part of it.

Section 579. Hence in applying these axioms it is necessary to bear in mind the rules for the distinction of terms. Thus from

All B is A,
No C is B,

the only inference which can be drawn is that Some A is not C (which alters the figure from the first to the fourth). For it was only part of A which was known to agree with B. On the theory of the quantified predicate we could draw the inference No C is some A.

Section 580. It is of course possible for terms to agree with different parts of the same third term, and yet to have no connection with one another. Thus

All birds fly.
All bats fly.

But we do not infer therefrom that bats are birds or vice versâ.

Section 581. On the other hand, had we said,--

All birds lay eggs,
No bats lay eggs,

we might confidently have drawn the conclusion

No bats are birds

For the term 'bats,' being excluded from the whole of the term 'lay eggs,' is thereby necessarily excluded from that part of it which coincides with 'birds.'

[Illustration]