CHAPTER XI.

Of the Generad Rules of Syllogism.

Section 582. We now proceed to lay down certain general rules to which all valid syllogisms must conform. These are divided into primary and derivative.

I. Primary.

(1) A syllogism must consist of three propositions only.

(2) A syllogism must consist of three terms only.

(3) The middle term must be distributed at least once in the premisses.

(4) No term must be distributed in the conclusion which was not distributed in the premisses.

(5) Two negative premisses prove nothing.

(6) If one premiss be negative, the conclusion must be negative.

(7) If the conclusion be negative, one of the premisses must be negative: but if the conclusion be affirmative, both premisses must be affirmative.

II. Derivative.

(8) Two particular premisses prove nothing.

(9) If one premiss be particular, the conclusion must be particular.

Section 583. The first two of these rules are involved in the definition of the syllogism with which we started. We said it might be regarded either as the comparison of two propositions by means of a third or as the comparison of two terms by means of a third. To violate either of these rules therefore would be inconsistent with the fundamental conception of the syllogism. The first of our two definitions indeed (Section 552) applies directly only to the syllogisms in the first figure; but since all syllogisms may be expressed, as we shall presently see, in the first figure, it applies indirectly to all. When any process of mediate inference appears to have more than two premisses, it will always be found that there is more than one syllogism. If there are

less than three propositions, as in the fallacy of 'begging the question,' in which the conclusion simply reiterates one of the premisses, there is no syllogism at all.

With regard to the second rule, it is plain that any attempted syllogism which has more than three terms cannot conform to the conditions of any of the axioms of mediate inference.

Section 584. The next two rules guard against the two fallacies which are fatal to most syllogisms whose constitution is unsound.

Section 585. The violation of Rule 3 is known as the Fallacy of Undistributed Middle. The reason for this rule is not far to seek. For if the middle term is not used in either premiss in its whole extent, we may be referring to one part of it in one premiss and to quite another part of it in another, so that there will be really no middle term at all. From such premisses as these--

All pigs are omnivorous,
All men are omnivorous,

it is plain that nothing follows. Or again, take these premisses--

Some men are fallible,
All Popes are men.

Here it is possible that 'All Popes' may agree with precisely that part of the term 'man,' of which it is not known whether it agrees with 'fallible' or not.

Section 586. The violation of Rule 4 is known as the Fallacy of Illicit Process. If the major term is distributed in the conclusion, not having been distributed in the premiss, we have what is called Illicit Process of the Major; if the same is the case with the minor term, we have Illicit Process of the Minor.

Section 587. The reason for this rule is that if a term be used in its whole extent in the conclusion, which was not so used in the premiss in which it occurred, we would be arguing from the part to the whole. It is the same sort of fallacy which we found to underlie the simple conversion of an A proposition.

Section 588. Take for instance the following--

All learned men go mad.
John is not a learned man.

.'. John will not go mad.

In the conclusion 'John' is excluded from the whole class of persons who go mad, whereas in the premisses, granting that all learned men go mad, it has not been said that they are all the men who do so. We have here an illicit process of the major term.

Section 589. Or again take the following--

All Radicals are covetous.
All Radicals are poor.
.'. All poor men are covetous.

The conclusion here is certainly not warranted by our premisses. For in them we spoke only of some poor men, since the predicate of an affirmative proposition is undistributed.

Section 590. Rule 5 is simply another way of stating the third axiom of mediate inference. To know that two terms disagree with the same third term gives us no ground for any inference as to whether they agree or disagree with one another, e.g.

Ruminants are not oviparous.
Sheep are not oviparous.

For ought that can be inferred from the premisses, sheep may or may not be ruminants.

Section 591. This rule may sometimes be violated in appearance, though not in reality. For instance, the following is perfectly legitimate reasoning.

No remedy for corruption is effectual that does not render it useless.
Nothing but the ballot renders corruption useless.
.'. Nothing but the ballot is an effectual remedy for corruption.

But on looking into this we find that there are four terms--

No not-A is B.
No not-C is A.
.'. No not-C is B.

The violation of Rule 5 is here rendered possible by the additional violation of Rule 2. In order to have the middle term the same in both premisses we are obliged to make the minor affirmative, thus

No not-A is B.
All not-C is not-A.
.'. No not-C is B.

No remedy that fails to render corruption useless is effectual.
All but the ballot fails to render corruption useless.
.'. Nothing but the ballot is effectual.

Section 592. Rule 6 declares that, if one premiss be negative, the conclusion must be negative. Now in compliance with Rule 5, if one premiss be negative, the other must be affirmative. We have therefore the case contemplated in the second axiom, namely, of one term agreeing and the other disagreeing with the same third term; and we know that this can only give ground for a judgement of disagreement between the two terms themselves--in other words, to a negative conclusion.

Section 593. Rule 7 declares that, if the conclusion be negative, one of the premisses must be negative; but, if the conclusion be affirmative, both premisses must be affirmative. It is plain from the axioms that a judgement of disagreement can only be elicited from a judgement of agreement combined with a judgement of disagreement, and that a judgement of agreement can result only from two prior judgements of agreement.

Section 594. The seven rules already treated of are evident by their own light, being of the nature of definitions and axioms: but the two remaining rules, which deal with particular premisses, admit of being proved from their predecessors.

Section 595. Proof of Rule 8.--That two particular premisses prove nothing.

We know by Rule 5 that both premisses cannot be negative. Hence they must be either both affirmative, II, or one affirmative and one negative, IO or OI.

Now II premisses do not distribute any term at all, and therefore the middle term cannot be distributed, which would violate Rule 3.

Again in IO or OI premisses there is only one term distributed, namely, the predicate of the O proposition. But Rule 3 requires that this one term should be the middle term. Therefore the major term must be undistributed in the major premiss. But since one of the premisses is negative, the conclusion must be negative, by Rule 6. And every

negative proposition distributes its predicate. Therefore the major term must be distributed where it occurs as predicate of the conclusion. But it was not distributed in the major premiss. Therefore in drawing any conclusion we violate Rule 4 by an illicit process of the major term.

Section 596. Proof of Rule 9.--That, if one premiss be particular, the conclusion must be particular.

Two negative premisses being excluded by Rule 5, and two particular by Rule 8, the only pairs of premisses we can have are--

AI, AO, EI.

Of course the particular premiss may precede the universal, but the order of the premisses will not affect the reasoning.

AI premisses between them distribute one term only. This must be the middle term by Rule 3. Therefore the conclusion must be particular, as its subject cannot be distributed,

AO and EI premisses each distribute two terms, one of which must be the middle term by Rule 3: so that there is only one term left which may be distributed in the conclusion. But the conclusion must be negative by Rule 4. Therefore its predicate must be distributed. Hence its subject cannot be so. Therefore the conclusion must be particular.

Section 597. Rules 6 and 9 are often lumped together in a single expression--'The conclusion must follow the weaker part,' negative being considered weaker than affirmative, and particular than universal.

Section 598. The most important rules of syllogism are summed up in the following mnemonic lines, which appear to have been perfected, though not invented, by a mediæval logician known as Petrus Hispanus, who was afterwards raised to the Papal Chair under the title of Pope John XXI, and who died in 1277--

Distribuas medium, nec quartus terminus adsit;
Utraque nec praemissa negans, nec particularis;
Sectetur partem conclusio deteriorem,
Et non distribuat, nisi cum praemissa, negetve.