segment on each hind tarsus denied by the overwhelming majority of responsible workers on beetle taxonomy? The answer is that they believe that among Coleoptera a change in the number of tarsal segments, such as appears to have taken place many times in different lines, has always resulted in a decrease. The reason for this belief is again not obvious. When asked why he believes it, the coleopterist is likely to reply something such as, "The reduced number is found most often in forms that are derivative as judged on other characters, and the larger number is found in primitive forms of the same group." In other words, he implies some sort of correlation among characters. However, when considering a restricted group, such as a genus or tribe, one often finds that it is "primitive" in one or more characters, but "derivative" in others, so that the correlation, in the strict sense of the term, may be weak or non-existent at this level.

Nevertheless, if one considers very large groups, such as most insect families, superfamilies, and orders, a correlation of a stronger sort is often so evident that we commonly are able to speak of the "lower" and "higher" genera of this or that family with some degree of confidence. But what gives us this confidence?

It seems to me that the answer lies with a rule or principle that we have all absorbed without perhaps thinking much about it in any explicit way: This we may call the *rule of evolutionary reduction.* It is exemplified by the statement, familiar, I am sure, to all college botany students, to the effect that the flowers of higher plants have tended to evolve *from a condition of large, indefinite numbers of parts toward small, definite numbers.* The rule of reduction has been explicitly recognized by plant morphologists (e.g., Eames, 1936), and is perhaps implicit in such "Laws" as those of Dollo or Meyrick, as well as in the writings of many other zoologists.

Stated in a crude and general way, the rule of reduction is simply that *a gross evolutionary change in a given character is more likely to be a reduction than an elaboration.*

To avoid the difficulties of defining "reduction" and "elaboration," we may for the moment restrict ourselves to considering only meristic characters—characters that can be counted as integral units, such as the vertebrae of a fish or the segments of an insect antenna. The rule of reduction then becomes (for metazoan animals, at least): *For macroscopic meristic characters in general, a phylogenetic change in number much more frequently results in a decrease than in an increase.* Putting it another way, we may say that for any evolutionary span of time the probability that a given meristic character will lose in number is much greater than the probability that it will gain. When we compare "lower" and "higher" genera of a family, for instance, we generally associate large counts for meristic characters in the "lower" genera, and *vice versa.* We can frequently test the *direction* of evolution in such cases by (1) the direct chronological evidence of the fossil record (e.g., the decrease in number of dermal skull bones during the fossil history of the vertebrates, or loss of some longitudinal wing veins in the record of the insects); or (2) by the interpretation of regressive "vestigial" characters.

So far as I can tell from a spot check of actual groups (Formicidae as well as Hymenoptera and Arthropoda in general, Diptera, Rhipiphoridae, and Stylopoidea as well as Coleoptera in general, Vertebrata), following generally accepted and in the main stable classifications for each group, the meristic reduction rule holds extraordinarily well. The exceptions are conspicuous because they run against the "reductive current" of the remaining characters. For instance, *Prionus* species have 12–25 antennal segments as against the "base number" of 11 for other Cerambycidae and for beetles in general; therefore, it seems clear that this is one case in which the lesser probability of a meristic increase has been realized. It should be noted that the idea of a "base number" or "primitive pattern" is very important to phylogeneticists.