condensation to be observed on the glass bell-jar.

As Mottier (*1*) suggested, fern gametophytes will probably grow indefinitely if no sporophytes develop. The Marietta plants grew approximately 12 years with very little attention other than watering. This, to the author's knowledge, constitutes a record.

References

1 MOTTIER, D. M. *Botan. Gaz.*, **83**, 244 (1927).
2. WALP, R. L., and PROCTOR, G. R. *Am. Fern J.*, **36**, (4), (1946).

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Individualistic or Statistical Approach?

IN THE past several months there have appeared in the pages of this journal several brief discussions, discussions that have a far more deep-lying significance than might appear on the surface. Even with due consideration of the risks involved in getting into someone else's argument, I believe that the following lines will clarify the most important point of the controversy (Huntsman, **110**, 566 [1949]; Goulden, **112**, 233 [1950]).

The central point of the argument is the determination of whether an investigation of a physical event carried out by the methods of statistical approach, and dealing with an aggregate of a large number of units, is of more fundamental nature than the investigation based on observation of the more intimate features of the individual units comprising the aggregate.

The logical answer is not a single entity. Thus, the use of statistical methods, per se, has given us many of the commonly known "general" laws used in most branches of physical sciences. No one can argue against the certain degree of utility of such generalizations in our study of the universe. The same universe, however, contains a great many examples that clearly show the inadequacy of the statistical view in applications to *all* problems (as is seemingly desired by one of the parties in the argument). The statistical approach fails utterly to supply us with the basic, fundamental reasons for the events that do take place. To illustrate, a decay curve of a radioactive element is the result of a statistical examination and, as such, may be used to estimate with considerable precision the relative decrease of population of a species. It fails utterly, however, when we try to see the reason why a particular atom, or a number of atoms, suffer degradation whereas their neighbors are unaffected. It seems obvious that some manifestation of incipient event must take place before the atomic catastrophe, unless cause and effect are to be completely discarded. Equally obvious may be the observation that knowledge of the phenomena that precede the event in the individual atom would be of much more fundamental nature than the observations of what happens after the event takes place, especially when only the gross manifestation of a "mob" is observed. To come down to the everyday level, consider the case mentioned by Huntsman, in which a successful insurance applicant passed on to an undoubtedly better world immediately upon receiving his policy. It is a custom of the insurance companies to examine their potential customers with some care, especially when a large sum is involved. Obviously, the man in question must have had some signs of impending doom in his system, yet apparently medical science had no way of detecting or estimating them. Does the fact that the statistical tables indicated a period of X years of life ahead of this man alleviate in any way the impact of the individual's death on his immediate family (or the checkbook of the insurance company)? Obviously, it does not. In addition, the statistical approach tends to close the door upon closer, more intimate, and more individualistic approach to the basic understanding of the reasons for the collective behavior of a mass of units.

If we are to take the reason for the existence of physical science to be our curiosity about the world around us, and if we pose to ourselves the questions "how" and "why," rather than "what," it would appear that the individualistic approach is the more fundamental one. Unfortunately, at this time we are just beginning to tackle the study of the individual material units, and our instruments and devices are too crude. May we hope that the future will see a justification of this view, or else each of us will become the ith component of a statistical mob.

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Errata

WE HAVE been informed by the author (Kipnis, F. *Science*, **113**, 40 [1951] that in his Formula XVII, page 42, he omitted – OH at position 5. In the same article, column 1, page 42, the paragraph which begins, "The pseudosapogenins, dihydrosapogenins, etc.," became pied after leaving our hands. This should read: "The pseudosapogenins, dihydrosapogenins and dihydropseudosapogenins, assuming that all have similar ring structures, are named as pseudosapogenans."—Editors.