bears the epithet of "orphan" viruses is a case in point. Many more instances could be cited to attest the readiness with which hitherto cryptic viruses were revealed only through the agency of the susceptible growing cell in vitro.

Virologists who study viruses in their relationships to the host animal or plant should be concerned with the pathogenic properties of new virus isolates as well as with properties of physical and chemical nature. Definition of a disease-producing agent should encompass, when possible, a description of the faculties of that agent to produce disease in the host under study. Obviously there is opportunity for the authors to do just this with these new virus isolates and the original bovine host in one case and with the human host in the other. Only thus can virus and disease be related beyond question.

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Statistics Section Again

It seems appropriate that I be at least one of the persons to reply to the critical comments contained in Robert G. Hoffmann's letter [*Science* **141**, 1132 (1963)], since I was appointed program chairman of the Eastern North American Region of the Biometric Society for the AAAS annual meeting in Philadelphia in 1962, to cooperate with Jerzy Neyman, vice president, and Morris B. Ullman, secretary, of the AAAS for the new Section U (Statistics), in organizing a number of joint sessions sponsored by Sections F, G, and U of the AAAS and by ENAR of the Biometric Society.

Neyman, in his article "What is to be the function of the section on statistics?" [*Science* **138**, 1080 (1962)], calls for joint attacks on scientific problems in various substantive fields by statisticians and the substantive scientists as the most important proposed objective for Section U. It appears that Hoffmann, in his letter to *Science*, is calling for the same thing in his suggestion that Section U should perform a statistical-service function for the AAAS. Also, the background of the speakers and the titles of the joint sessions arranged for the 1962 Philadelphia meeting of the AAAS ("Some uses of high speed computers in statistics," "Some problems of mathematical biology," "Sampling for zoologists," and "Statistical problems of genetics and evolution") certainly show conclusively that cooperative work and exchange of information is the concern of ENAR and Section U.

What, then, is the point at issue? It would appear that the disagreement involves implementation; that is, what form or forms should the joint efforts of the statistician and the substantive scientist take? I should say that these joint research efforts may take many forms, depending upon the interests and backgrounds of the particular statisticians and substantive scientists concerned, the level of the analytical and quantitative development of the particular substantive field, the availability or lack of pertinent statistical methodology to handle the inference problems involved, and so on.

High school and junior college teachers of science and mathematics, as well as university teachers of undergraduate classes in those subjects, might well benefit from some program sessions for Section U dealing with the popularization of research methodology, including statistics. Substantive scientists still unacquainted with modern statistical methodology might well benefit from other sessions in which accounts were given of the possibilities of adopting statistical methods in their own fields which have proved useful in research in another field. Such adoptions have, of course, already taken place among many research workers in Hoffmann's own field, since much of the statistical methodology now used in medical research was suggested first by agricultural research needs. It is unlikely that very able statisticians will wish to spend any considerable amount of their time on joint work involving the *routine* applications of known statistical methodology to problems in substantive fields. It is also unlikely that sessions for Section U arranged to report on such activities would be of much interest to either the statisticians or the able substantive scientist. However, if the statistical-service function suggested by Hoffmann were to include sessions by Section U on *creative* contributions by the statistician as well as the substantive scientist in a joint attack on some substantive problem, these should be of great interest to all. Unfortunately, it appears to be quite difficult to obtain enough high-caliber papers of this nature for either publication in the statistical journals or presentation at meetings. Possibly more attention should be given this matter in order to overcome any imbalance that may exist between theory and application for a particular kind of journal or session. Some creative contributions, however, might very well take the form of developing some *new* statistical methodology or modifying some existing statistical methodology to meet the requirements of a research problem in a particular substantive field. In such cases, contrary to Hoffmann's suggestion, it would certainly be necessary for the statistician to use all the pertinent knowledge of sound mathematical and theoretical statistics at his command. Much of the general statistical methodology now available for routine or more creative applications performed by a statistical service has originated in this manner. Reports on this level of joint research should more properly be made in program sessions of Section U in an expository manner, the more mathematical and theoretical details being reported on in statistical journals or at the meetings of the statistical societies.

One last point needs to be made. Standard statistical procedures as a part of scientific method are constantly finding new areas of usefulness; however, at the same time, able statisticians are examining critically the foundations of statistics from which these procedures stem. Such work in the foundations of statistics may be quite mathematical and theoretical in nature, and yet it may lead to more pertinent inference procedures and hence to more fruitful applications. While detailed reports on such work may more properly be made in professional statistical meetings, expository accounts might well be of interest to substantive scientists.

While I have no knowledge regarding Hoffmann's statement that no action was taken by the American Statistical Association on the suggestion that it establish a section on medical statistics, it is my understanding, as one of the current directors of the ASA, that a procedure now exists whereby a subsection (which may later evolve as a section) may be formed upon petition by a reasonable number of ASA members.

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