Obituary

Rudolf W. Glaser

1888-1947

In the death of Rudolf W. Glaser experimental biology lost one of its most original minds. Although he was trained at Harvard primarily as an entomologist, his active imagination and his readiness to take chances on problems that the less courageous would avoid as unpromising led him into difficult but rewarding borderline fields of study. As a result, no classification narrower than that of biologist can properly be applied to him.

Dr. Glaser's early work from 1913 to 1918, alone and with J. W. Chapman, established the filtrable virus nature of the etiological agents of the polyhedral diseases of lepidopterous larvae. The polyhedral diseases are of considerable economic importance, including as they do "grasserie" of silkworms and "wilt" of gypsy moth and tent caterpillars. Their investigation is perhaps even more important from the point of view of the comparative study of disease and disease-producing agents, and it was from this point of view that Glaser approached them. His interest in them continued throughout his later years, and he spent many hot summer weeks at the laboratory working with his silkworms while others were away vacationing. Glaser also isolated and described a number of bacterial species producing disease in flies, grasshoppers, and other insects. He was able to demonstrate acquired immunity and the presence of antibodies in insects.

These studies aroused an interest in the intracellular symbionts of insects—microorganisms so well adapted to their host that they not only fail to do it any harm but also are essential to its normal development. He succeeded in cultivating *in vitro* the intracellular symbionts of roaches, and in recent work showed that the symbionts are required for the maturation of the ovaries of their host.

The necessity for rearing experimental insects under controlled conditions led to several valuable investigations of breeding techniques and of the nutritional needs of such insects as the stable fly and the house fly. In the 1920s he anticipated more modern work on insect nutrition and postulated that insects which appeared to require living microorganisms could be reared free from them if furnished with the appropriate dietary factors.

In 1929 Glaser sought to propagate filtrable viruses in pure cultures of free-living protozoa. He found that the so-called pure cultures of free-living protozoa described up to that time were contaminated with many different kinds of bacteria. He therefore had to turn his attention first to obtaining really pure cultures. In this he was successful, not only with protozoa of less exacting nutritional requirements but eventually with *Paramecium* as well. He was not able to demonstrate virus multiplication in any of these cultures, but the work proved fruitful in that it helped to introduce the study of the growth requirements of ciliate protozoa and also turned out to be applicable in the cultivation of certain insects and nematodes.

Glaser and H. Fox in 1930 reported the discovery of a nematode parasite of the Japanese beetle, at that time already one of the most devastating insect pests in the eastern United States. The use of parasites for the control of noxious insects is a well-established procedure. Ordinarily one has to rear in the laboratory large numbers of the host insect for use, in turn, for the rearing of the parasites. But Glaser developed ways of culturing *Neoaplectana glaseri* Steiner of the Japanese beetle in nutrient media. In this he accomplished for the first time the cultivation of a parasitic nematode apart from a living host and at the same time provided a method for producing the economically important worm in literally unlimited numbers. Through the interest and cooperation of the Bureau of Plant Industry of the New Jersey Department of Agriculture his methods were adapted for the rapid dissemination of the nematodes over large areas. Studies in regions where the nematode was introduced have shown it to be a major factor in controlling the Japanese beetle.

The successful cultivation of a nematode parasite of an insect encouraged Glaser to attempt, in collaboration with N. R. Stoll, the still more difficult task of cultivating a nematode parasite of a vertebrate. In this they partially succeeded, when they obtained *in vitro* the development of the sheep stomach worm, *Haemonchus contortus*, through its early parasitic stages.

It is evident that all these varied fields of endeavor bore in one way or another on the fundamental problem of the physiological relationships between disease-producing agents and their hosts. In his lifetime devoted to research, Glaser contributed significantly toward the ultimate understanding of these relationships.

Dr. Glaser's attitude toward his work was free from sham and pretense. The prospects of financial or pro-

fessional reward did not influence his mode of work or his choice of problem. He chose problems because he wanted to know the answers. His friends will always remember him best for his deep sympathy and understanding, his lively sense of humor, and his inability to take himself or others too seriously.

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Association Affairs

AAAS Journals

Members are advised that the February 6 issue of *Science* and the February issue of *The Scientific Monthly* will be the last sent to those who have not paid their dues for 1948. Because of high printing costs, free copies cannot be sent beyond a reasonable period. Remittances of dues should be forwarded promptly to insure continuity of receipt of the journals.

During the year 1947 the editorial staff of the Association worked on plans for improving the physical appearance and layout of the journals. Recommendations were made to the Publications Committee, and approval of the Executive Committee was secured to proceed with the plans formulated.

Beginning with the January 2, 1948, issue, *Science* has had a separate cover of heavier stock plus the new design and use of color. The use of heavier stock was dictated by the necessity of providing better carriage through the mails.

In the plans for physical improvement, the Association was fortunate in securing aid from the Bausch & Lomb Optical Company. An artist was commissioned by Bausch & Lomb to submit designs for the cover and suggestions for improvements in the typography of the Table of Contents page. The staff of the Association held several conferences with the artist, and the present design is the result. The interested assistance of the Bausch & Lomb organization has been acknowledged through the appropriate officers of the Association.

Further improvements will be sought continuously for both publications of the Association. At the meetings of the Association's Publications and Executive Committees in Chicago, the publication staff was directed to proceed as soon as possible to make both journals the same size. The experience of other societies publishing more than one journal was taken into consideration. In certain cases, scientific societies have achieved reductions of almost 25% in publication costs of their journals by such a standardization. Therefore, beginning with the next volume, *The Scientific Monthly*'s page size will be made identical with that now used in *Science*.

Section on Anthropology (H)

Section H held four sessions in the two opening days of the 114th meeting of the AAAS. One of these was a joint session with the Society for Research in Child Development, and another was in collaboration with the Linguistic Society of America. A new sound film, in color, showing the life of the Navajo Indians of New Mexico and Arizona, was presented with the cooperation of the American Museum of Natural History. All sessions were well attended and discussion was lively.

Following the previous practice of Section H, those papers were selected for presentation which seemed best to exemplify cross-disciplinary studies. In anthropology, these take two forms: (1) studies which combine two or more of the recognized branches of anthropology—archaeology, ethnology or cultural anthropology, linguistics, and physical anthropology; and (2) studies which cross into other disciplines or sciences. The high point of the former type was the dinner address by Wilson D. Wallis, vice-president of the AAAS, in which he critically analyzed recent reconstructions in physical anthropology according to standards laid down by techniques and methods of the other branches of anthropology. Volney Jones, of the University of Michigan, made an interesting contribution bringing botany and archaeology together. The cross-disciplinary paper which started the most discussion was probably that by Dorothy D. Lee, of Vassar College, in which she questioned the validity of the concept of basic needs as used today by both anthropologists and psychologists. This has important theoretical bearing on both sciences. Indeed, the trend in all the sessions seemed to be toward implications of a theoretical nature. A better trend could hardly be noted in this era of scientific stocktaking. (MARIAN W. SMITH, *Secretary*.)