Pennsylvania. In this capacity he worked on such problems as methods for determination of the radiant luminous efficiency of light sources, factors affecting the relation of photoelectric current and illumination, construction of vacuum gauges, and the efficiency of light from the electric arc and from microorganisms. In 1919 the Franklin Institute awarded Dr. Karrer, jointly with Herbert E. Ives and E. F. Kingsbury, the Edward Longstreth medal of merit for outstanding optical research.

For about a year during World War I he served the Government in Washington in the capacity of research engineer, and in 1918 he joined the National Bureau of Standards as associate physicist in the Searchlight Section, of which he later became chief. Here he extended his work on light, covering contrast sensitivity of the eye, relative spectral transmission of the atmosphere, and more accurate methods for measurement of light intensity.

During 1921 Dr. Karrer left the Bureau to become physicist of the National Lamp Works of the General Electric Company at Nela Park, Cleveland, Ohio. Papers, some of which were published in German journals, continued to appear in the field of applied research on the improvement of apparatus, the properties of different lamps, and the biological effects of light.

In 1923, in addition to his activities at the Nela Park Laboratory, Dr. Karrer became research associate at the Cushing Laboratory for Experimental Medicine, Western Reserve University. Here, in association with H. C. Stevens, one of his former teachers at Washington State University, he conducted researches extending over 12 years and culminating in some nine papers in the field of muscle activity and medical instrumentation. Undoubtedly Dr. Karrer's great interest in medical phenomena throughout the remainder of his life stemmed from this long association.

In 1926 Dr. Karrer transferred from the Lamp Works to the Cleveland Wire Works of the General Electric Company, and later in the same year to the B. F. Goodrich Company, Akron, Ohio, where he undertook measurements of the plasticity of rubber and developed a new instrument for this purpose. One especially interesting title for this period reads: "A method of blood transfusion by means of rubber tubes vulcanized on the blood vessels." During this period also, a number of patents were issued to him and assigned to the B. F. Goodrich Company. In 1932 he left the Company and for approximately three years gave his full time to Western Reserve University.

Dr. Karrer was an author of approximately 70 publications in the scientific field in addition to some half-dozen patents. At the time of his death he had many phases of investigation in various stages of development, and the stage seemed to be set for his former fruitful flow of papers.

In his attitude toward research Dr. Karrer was fundamental and extremely antagonistic toward halfway measures and expedients, and had a profound sense of ethics in the scientific field. His ingenuity and experience as well as his kindly smile will be greatly missed among his many colleagues and friends.

CARL M. CONRAD

New Orleans, Louisiana

Philippe Lasseur
1882-1946

Philippe Lasseur, professor of microbiology in the Faculté de Pharmacie, Université de Nancy, France, died on 10 January 1946 from complications following an attack of pneumonia. He was 63 years of age.

Prof. Lasseur, who served in the French Army during World War I and was made a chevalier of the Legion of Honor in 1934, was the author or joint author of over 200 papers on microbiology. His work in this field covered a wide range, but he is perhaps best known for his studies on the conditions affecting growth and pigment production by dissociated types of various species of chromogenic bacteria. In 1928 he founded the annual publication, *Travaux du laboratoire de microbiologie de la faculté de pharmacie de Nancy,* in which most of his later work was published. Despite the difficulties of World War II, he was able to continue his work as well as the publication of this journal, of which Fascicule 14 appeared in 1945.

His death marks the end of an era, but it is to be hoped that his students will be able to continue the work which he carried on for so many years.

WALTER C. TOBIE

Old Greenwich, Connecticut

Bernice Maclean Shapiro
1903-1946

Bernice Maclean Shapiro, assistant professor of biology at Hunter College and former chairman of that Department, died on 8 March 1946. She was born on 20 November 1903 in Waterbury, Connecticut, of Scottish ancestry reaching back to Duart Castle on the Isle of Mull.

At Mount Holyoke College, from which she was graduated with high honor in 1926, she majored in zoology and was elected to Phi Beta Kappa.

During the next year she served as an assistant in zoology at Mount Holyoke and the year following was appointed instructor. During her instructorship, from

1927 to 1929, she became increasingly interested in zoology and thoroughly demonstrated her scholarship, enthusiasm, and teaching ability. Her paper on hermaphroditism in the frog shows the thoroughness of her work in this period.

In 1929 she was awarded the Mary E. Woolley Fellowship by Mount Holyoke College and went to Columbia University, where she began work in experimental embryology in the Department of Anatomy. In her second year at Columbia she was awarded a graduate fellowship from that university and also was appointed instructor. In this capacity she continued her own investigations and gave laboratory instruction in medical histology from 1929 through the summer session of 1931. A part of the next year was devoted to an investigation in the Department of Ophthalmology the results of which were included in papers on the embryology of Amblystoma, published with H. B. Adelmann. She received her doctorate from Columbia University in 1933. Her published papers from that study, some of them with S. R. Detwiler, are concerned with the growth of engrafted embryonic spinal cord of Amblystoma.

In the autumn of 1933 Dr. Shapiro began work in the Department of Biological Sciences at Hunter College, becoming assistant professor in 1937 and serving as chairman of the Department from 1941 to 1944. Although heavy administrative duties were added to her teaching, which included courses in embryology, comparative anatomy, and general zoology, she found time to continue research with her husband, Harry L. Shapiro, on the development of the tooth germs in the mammal.

Up to the time of her death she continued to plan for further study and for her return to her students at Hunter College.

ANN H. MORGAN
Mount Holyoke College, South Hadley, Massachusetts

Technical Papers

A Possible Avian Analogue of the Scrotum

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The phenomenon of heat-induced sterility is a familiar one and long has been noted as a characteristic of all species of mammals that have been studied from this viewpoint (*1*). Similarly, in insects where this trait has been sought its presence has been demonstrated, as in *Drosophila* and *Ephestia*. Indirect and some direct evidence has suggested the presence of heat-induced sterility in the remaining major groups of terrestrial animals.

Because nothing was known regarding the possible existence of this phenomenon in reptiles, these animals were tested in our laboratories for the trait, and it was clearly demonstrated in the first species studied, *Xantusia vigilis* (*2*). Because reptiles were a key group in the origin and evolution of birds and mammals, the presence of this character, even in the highly specialized modern forms, is of considerable interest.

With regard to birds, Riley (*3*) has reported that spermatogenesis in the English sparrow takes place intermittently and that the time of greatest spermatogenic activity is confined to the last hours of the night, when the body temperature is at its lowest level. This is consonant with the theory of heat sensitivity of the germ cells and suggests the need for more extended studies on the thermo-spermatogenic relationships in birds.

Because of the apparently universal occurrence of a heat-induced sterility resulting from the dual standard of heat tolerance, it has been proposed (*1*) that the phenomenon may have played a dominant part in the evolution of most or possibly all terrestrial animals, and that thus it was logical to suggest the possibility that, whatever other factors might have been involved, the predominant influence in archosaurian extinction might have been the result of overheating. If this can be substantiated by future studies of paleoclimates, this dramatic event may provide us with additional and important support for the proposal that this dual thermal capacity has extended to archaic animals and is not a new feature.

Because birds retain many characteristics that are reptilian and because they operate at the highest temperatures known among the vertebrates, yet have internally located testes, they have posed a serious question which was only partially answered by Riley's studies.

Attempts to measure the presumable existence of a temperature differential between the testes and the rest of the body so far have failed. In view of Riley's findings, this lower temperature in the region of the testes is not a necessary condition for normal spermatogenesis, but its presence would be a logical