It seems obvious that as a citizen the scientist's social responsibility is at least as great as his understanding of man and nature. What he can contribute to a saner and happier life for man is not little, but unless we tackle this difficult task at once, it may be too late, considering current hysteria, artistic lying, fear, hate, and preparations for more destructive wars. Our age is not yet an age of science, even in our intellectually and scientifically most advanced nations. Largely through ignorance, and traditions based on ignorance as to the nature of man, we are still nourishing the malignant cancers of race prejudice, hate, fear and war. To do justice to our superior forebrain we should go forward with our eyes open. *We should replace violence with intelligence.* That would mean a healthier, happier future for our race. We would then be a credit to our name: *Homo Sapiens*, "Wise Men." So let us step down from our proverbial ivory tower and carry on!

When the shadows beckon men of my years, we still have our children, we still have our dreams. I dream of a day when our leaders will actually put the principles of science and democracy to work in our land, in politics, in industry, in trade, in education; when understanding will more than hold its own against superstition, guile, and greed, when force and violence is replaced by conference, compromise, and approximate justice in all our domestic and foreign relations. When that day is at hand in our own land, our example will be a greater impetus to the path of peace and justice in other lands, than are our present speeches, and our lend and lease of the implements of war to all democracies, and would-be democracies of the world. It is a matter of forgetting the hypothetical universe created out of ignorance and motivated by our undisciplined emotions, and a reconditioning to the actual universe as gradually understood through *controlled experience and experiment.* I think we can say, even in the face of current fears and pessimism, that during the ups and downs of the past million years man has gradually acquired more understanding, more freedom from fear, more dignity, greater kindness, and a clearer conception of justice. Even though for the moment "the bird of sorrow" is not only flying over our heads, but is actually nesting in our hair—to borrow a Chinese proverb—that bird will not nest in our hair forever, unless a blackout on science be decreed in every land. For, slowly but surely, the understanding of man provided by science will help to make our life more intelligent, toil more cheerful, fear and hatred, pain and tears less prevalent in our life.

References

1. McGrath, E. J. *Sci. Monthly,* **71**, 119 (1950).
2. Adrian, E. D. *Roy. Soc. London, News Rept.,* **2**, No. 4 (1952).
3. Hill, A. V. *Bull. Atomic Scientists,* **8**, 265 (1952).

Edwin Grant Conklin: 1863—1952

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WITH THE DEATH of Edwin Grant Conklin just before his eighty-ninth birthday, on November 21, 1952, there passed away one of the great interpreters of biology in the United States. Professor Conklin was born on November 24, 1863. He was a great admirer of Lincoln and proud of the fact that the year of his birth was the year the Emancipation Proclamation became effective, and proud that he had traveled in a covered wagon from one part of Ohio to another, attended a country school of one room and one teacher, and worked on a farm. Later he became the teacher in a similar country school, where he was janitor and disciplinarian as well as instructor, at a salary of $35 a month.

One of Professor Conklin's most valuable attributes was a prodigious memory of detail, perhaps fostered by his thesis study of cell lineage. Even during the later years of his life, the date of almost any event was recalled with precision, and those of us who knew him well were entertained by many an amusing anecdote of early life in the Middle West and of his later educational period.

After graduating from high school at Delaware, Ohio, he attended Ohio Wesleyan, obtaining a B.S. degree in 1885 and a B.A. in 1886. There he first became interested in science. This interest was fostered by trips for collecting shells and fossils under the guidance of his professor of biology and geology, Edward T. Nelson. Professor Nelson turned him toward biology, and the experience of the next three years as a teacher of Latin, Greek, and science at Rust University, a missionary college in Mississippi, matured the decision to make biology his lifework.

He entered the Johns Hopkins University Graduate School in 1888 and started work with Professor William K. Brooks. His first problem was the identification and morphology of a siphonophore collected by Alexander Agassiz in the Pacific. For continuation of these studies, he was sent to the U. S. Fish Commission Laboratory at Woods Hole, Mass. Perhaps it is fortunate that no siphonophores were obtainable there.

Turning to the varied fauna of that region, he was attracted by the abundant embryological material; and thus began the extended studies on cell lineage, first of *Crepidula,* on which he was to write his thesis, and then a similar investigation of Ascidian eggs and, later, of *Amphioxus.* In connection with the developmental history of the regions of the egg, or of the blastomeres, he studied the details of cell structure and cell division, and later performed many experiments to discover what influence environmental changes might have on the cytological picture. Embryology and cytology were his chosen fields for investigation.

Space does not permit a detailed account of the early influences in Edwin Grant Conklin's life, so important in molding his personality. Suffice it to say that the religious influence was strong in his home and in Ohio Wesleyan. Before he was seventeen, he had read the complete King James version of the Bible and committed long passages to memory. At one time he considered becoming a preacher but gave up the idea and was never ordained, although he did pass a perfunctory examination on the Bible and received what was known as a "local Preacher's license."

The ability to quote scripture served him well in later years as a popular lecturer. The controversy over evolution was at its height in the 1880's and Professor Conklin studied the subject carefully, buying personal copies of Darwin's books so that he could mark important passages for future use. The evidence convinced him completely; and the whole subject of evolution, with all its ramifications, became his lifelong interest. He always spoke of evolution as "the central theme of biology, the connecting strand on which all details of the science could be strung." Later, when he accepted a teaching position at Ohio Wesleyan it was with the stipulation that he must be free to present his own beliefs regarding evolution, without censure or dictation from the university.

Evolution led naturally to a study of development. One of his favorite dicta, "Ontogeny recapitulates phylogeny," expresses this relationship well. Besides, what is more fascinating than to watch the successive divisions of the egg? I have always felt that his special interest in cell lineage was an outgrowth of the preformation-epigenesis controversy. The arguments might delight a theologian. How exciting it must have been to learn that certain cells, indeed certain regions of the egg cell itself, were always destined to become a particular part of the future organism.

Although Professor Conklin's special field of investigation was the cell, his interest in biology included the whole organism, particularly man himself. The ascidian egg and especially the embryology of *Amphioxus* may have interested him because of their status as Protochordates, ancestors of the vertebrates and thus of man.

Man's place in nature and the broader implications of biology occupied his thoughts more and more as his career progressed. After receiving the Ph.D. degree at Johns Hopkins in 1891, he became successively professor of biology at Ohio Wesleyan (1891–1894), professor of zoology at Northwestern (1894–1896) and at the University of Pennsylvania (1896–1908), and finally departmental chairman and professor of biology at Princeton University (1908–1933). His retirement from Princeton in 1933 involved little change in activity. He took a continued interest in departmental affairs, giving seminars for graduate students in addition to writing ninety-three articles for journals, magazines, and publications of learned societies.

A broad interest in science resulted in his early election to the American Philosophical Society (1897), the National Academy of Sciences (1908), and the American Academy of Arts and Sciences (1914). The Philosophical Society "held at Philadelphia for promoting useful knowledge" particularly appealed to him because of the wide range of subjects discussed. He rarely missed a meeting, and he took a most active part in its affairs, serving on many of its committees for long periods of time, presiding at various symposia, and acting as councilor, executive officer, and vice president. He was elected president for two terms, 1942–1945 and 1948–1952.

Apart from a great loyalty to Princeton University, dating from his first years as Chairman of the Department of Biology and his association with Woodrow Wilson, then President of the University, Professor Conklin had three great outside interests to which he devoted a great deal of thought and to which his service may be said to have been really dedicated. First and foremost was the American Philosophical Society just mentioned. Another was the Marine Biological Laboratory at Woods Hole, with which he had been connected almost since its beginnings in 1888. He started teaching there in 1891 and was elected a trustee in 1897. At Woods Hole the atmosphere was and still is conducive to scientific freedom in its broadest sense: no direction of what the investigator should study, no pressure to produce premature results, only the attempt to supply the living material and the best conditions for research.

The third was the Bermuda Biological Station for Research, in which Professor Conklin had as personal an interest as its founder, Professor E. T. Mark, who was for many years its director. On reorganization of the Bermuda laboratory in 1926 Professor Conklin was made a trustee and he acted as president of the Corporation from 1926 to 1936. He was also much interested in the Academy of Natural Sciences of Philadelphia, which he served as vice president from 1901 to 1950, and in the Wistar Institute, where he had been a member of the Advisory Board since 1905 and of the Board of Managers since 1945.

Professor Conklin received many honorary degrees, was elected to membership in many foreign societies and to the editorial boards of a number of journals. At the same time his own contributions to scientific literature were voluminous. His most important book,

"a best seller," was *Heredity and Environment,* which appeared first in 1914. It passed through six editions and was translated into Japanese and Russian. Other volumes are: *Direction of Human Evolution* (1920, 1922), *Mechanism of Evolution* (1920), *General Morphology of Animals* (1927), *Problems of Development* (1929), *Freedom and Responsibility* (1935), *Science and Ethics* (1937), *Biology and Democracy* (1938), *What Is Man?* (1941), and *Man: Real and Ideal* (1943).

Throughout his life, the human interest led to acceptance of executive duties, to willingness to serve on many committees, to support various causes, all of which took time from scientific research but became the background for a far wider viewpoint than specific research could have given. He was especially interested in education and in the philosophy of religion. Commencement addresses and published pamphlets present an original viewpoint in this field. Always a liberal in outlook, he was a great believer in freedom and, like most scientists, was vehemently opposed to any sort of regulation and regimentation.

As committeeman he was a persuasive speaker, and as lecturer an eloquent one. At Ohio Wesleyan much attention was paid to elocution and public speaking. Professor Conklin had joined a literary society, wrote poetry and essays, and took part in oratorical contests. This training and his human interest made the general biology lectures at Princeton University a popular course for many years, and he was in great demand for talks in which science is interpreted for the layman. His long association with Science Service (president, 1937–1945) and the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (president, 1936), again reflect his broad interest in science and in man.

Professor Conklin liked nothing better than to gather around him, in the laboratory or at his home, a group of students for discussion of various subjects. These were times for reminiscence during which his listeners could learn about the history of American biology in the early part of the century from tales related with a keen sense of humor. His love of social contacts was ably supported by his wife, the former Belle Adkinson, who was always interested in his many friends and was a delightful hostess. His students and all who knew him intimately will mourn the loss of this truly great biologist and leader in science.

News and Notes

Federation of American Societies for Experimental Biology

THE Federation of American Societies for Experimental Biology (American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Society for Experimental Pathology, American Institute of Nutrition, American Association of Immunology) held its thirty-seventh annual meeting in Chicago, April 6–10. The meeting was well attended, with a total registration of 6078, composed of members of the constituent Societies, visiting scientists, representatives of industries in the fields of the Federation, and guests of members. The six Societies scheduled 1389 papers at 140 scientific sessions, with an additional 153 papers read by title. Of this total, 522 were in Physiology, 454 in Biochemistry, 281 in Pharmacology, 84 in Pathology, 99 in Nutrition, and 102 in Immunology. In addition, eight symposia and panel discussion sessions were held by the Societies, and a special session presented nine motion pictures.

The Joint Session of the Federation was held on Tuesday evening, April 7, with Vincent du Vigneaud, Past President of the American Society of Biological Chemists and Chairman of the Federation Board, presiding. Three papers were presented on the general topic, "Some Aspects of Light and Biology." E. Newton Harvey of Princeton University spoke on bioluminescence as observed in various evolutionary forms. George Wald of the Harvard Biological Laboratories discussed the mechanisms of vision. The third paper, on photosynthesis, was presented by Dean Burk of the National Cancer Institute.

Another special Federation session took place on Thursday evening, April 9, to present a report on the Survey of Physiological Science which is currently being made by the American Physiological Society, with support from the National Science Foundation. R. W. Gerard of the University of Illinois Psychiatric Institute, Chairman of the session, gave a short introductory address by way of orientation. This was followed by a progress report presented by L. M. N. Bach, Director of the Survey. Physiology in education was discussed by Orr E. Reynolds for the undergraduate and graduate schools and by J. H. Comroe for the professional schools. An evaluation of the personality patterns of experimental biologists was presented by Anne Roe, research psychologist, of New York City.

The Federation Board and the Councils of the constituent Societies met throughout the week, and Society meetings were held for the election of officers and members and the transaction of business. Dinners were scheduled for the Pharmacology, Pathology, and Nutrition Societies, and a joint smoker by the Biochemistry and Nutrition Societies was held on Wednesday evening, April 8. In addition, various other groups scheduled special meetings and dinners.