utilization of trained men from other fields. Geologists and economists can take over the teaching load in physics, chemistry or mathematics. Biologists and psychologists can take over other teaching duties in addition to those incident to their own important output, which must be maintained. It is possible that some teachers in history, classics, linguistics, anthropology and literature may also be fitted to teach in mathematics, particularly at elementary levels. The personnel of our schools and departments of education should be particularly applicable to such needs.

A teacher is a teacher, irrespective of the branch of learning. The methods and the students are the same—only the subject-matter is different. The university and college grade teacher can and must carry his personality and intellectual acumen into other fields of endeavor in addition to his own. This, while it may not be easy, is an immediate necessity. The standards and detail of subject-matter must be clearly presented to the substitute volunteers, and possibly refresher courses must be given by the specialists still remaining on the staff. This is one obvious source of man-power which can be utilized in the production of scientifically trained men.

A second source may be drawn upon from individuals who are in administration and have been removed from student problems for a long period of time. Many institutions are carrying a too large proportion of administrative officers, some of whom could be usefully reallocated at the universities' main job of production, teaching.

There is a third source as yet practically undeveloped and that is in the field of woman power in academic teaching. For many years women have been discouraged from attempting to enter academic fields. Now we need all of them that have been adequately trained and unfortunately that number is exceedingly limited, for when their placement has been made difficult for many years and their acceptance even by our leading female colleges has been rather tardy, all too few first-rate women scientists have been trained. To-day we could use ten times the numbers that are available if only the peace-time prejudices could be overcome.

From the above it is clear that there are many phases to the battle of scientific personnel production. One phase can not be overemphasized sufficiently, and rests with the personal conscience of many a teacher of science. It is easy to leave one's post and to accept new responsibilities, but are they always of greater utility than the accustomed routine or its possibility of rejuvenated potentiality? The importance of what you are now doing and how to intensify your effort must be evaluated by you individually. The home front is a pressing one which demands the best that we have if we are to keep our training program intact. We can not proceed on the simple substitute principle. A greater and more far-reaching view is demanded with a look toward a war future which is longer than any of us had ever anticipated. With this in mind let no one belittle his talents and opportunities on the home front of academic production. They are important, vital and of a degree of necessity which the country now demands. We will win the war—we must have trained thinking men to win and maintain the peace.

OBITUARY

ROSS AIKEN GORTNER
1885–1942

DEATH came Wednesday morning, September 30, to Ross Aiken Gortner, 57, chief of the Division of Biochemistry of the University of Minnesota, eminent scientist and scholar. Dr. Gortner had been able to carry on his work up to a few days before his passing, which resulted from a heart attack. He was first stricken with a heart ailment in the summer of 1938, and while the curtailment of his normal life of seemingly boundless energy was a sore trial to his spirit he made the adjustment with remarkable equanimity. Thus he was able to continue most of the scientific and social contacts to which he had been accustomed, and also carry the load of executive work of an expanding department as well as lecture to his classes, with few interruptions.

Dr. R. A. Gortner was born at O'Neill, Nebraska, on March 20, 1885. After graduation from Nebraska Wesleyan University in 1907 he earned his M.S. degree in 1908 from the University of Toronto, where he worked with the late Dr. W. Lash Miller, and his Ph.D. degree from Columbia University in 1909 under the direction of Dr. Marston T. Bogert. An honorary Sc.D. was conferred on him in 1932 by Lawrence College.

Dr. Gortner came to the University of Minnesota in 1914 as associate professor in the Division of Soils from the Station for Experimental Evolution at Cold Spring Harbor, N. Y. It was during the period at the Carnegie station that Dr. Gortner formed his close personal and scientific association with the late Dr. J. Arthur Harris, who probably exerted more influence on Dr. Gortner's scientific thinking than any other one person. This association culminated in Dr. Gortner being largely instrumental in bringing Dr. Harris to the University of Minnesota as head of the department of botany.

Dr. Gortner transferred to the Division of Biochemistry of the University of Minnesota in 1916 as associate professor and was made full professor and chief of that division in 1917, which position he held at his death.

Dr. Gortner's contributions to scientific journals number more than 300. His scientific interests were very broad. This became evident very early in his career. His first interests were chiefly in the field of organic chemistry, his first publications in 1905 and 1906, while still an undergraduate student, being in this field, as was his doctoral dissertation. However, he became interested in the field of colloid chemistry as early as 1908 in connection with a study of the reaction between chromic and hydriodic acids, published in the *Journal of Physical Chemistry*, and he was publishing papers in the fields of plant and animal biochemistry shortly after he joined the staff of the Station at Cold Spring Harbor. It was here, also, that Dr. Gortner began his application of physical chemistry to biochemical phenomena which dominated a large part of his work and that of his students in later years.

The enumeration of the many scientific subjects on which Dr. Gortner published would cover several printed pages. The fields of work in which a series of papers appeared is, in itself, a formidable one and includes the following: (1) melanin; (2) the chemistry of embryonic growth; (3) physicochemical properties of vegetable saps; (4) the humin fraction in protein hydrolysates; (5) the organic matter of soil; (6) the chemical and colloidal properties of flour proteins; (7) sulfur in proteins; (8) physicochemical studies on proteins; (9) electrokinetics of colloidal systems; (10) interfacial energy and the molecular structure of organic compounds; (11) the role of water in living processes; (12) the chemistry of wood and of the pulping process. So varied were Dr. Gortner's interests that his influence was felt in the research of almost every field of agricultural science and in the investigations of the entire department of agriculture of the university. This influence extended outside of these circles into other colleges of the university and throughout the nation. For many years he carried on an extensive correspondence with research workers in his special fields in the United States and also in foreign countries.

One of Dr. Gortner's major contributions to scientific thought was his book "Outlines of Biochemistry," the second edition of which appeared in 1938. Another volume, "Selected Topics in Colloid Chemistry," contained the lectures which he gave at Cornell University in 1935–36 in connection with the George Fisher Baker lectureship which he held, and a third volume prepared by Gortner and colleagues in 1936, entitled "J. Arthur Harris, Botanist and Biometrician," was in honor of his close friend. He also contributed chapters to several comprehensive monographs.

Dr. Gortner felt that his chief contribution to science was through his students. In recent years he delivered to many audiences his lecture on "Scientific Genealogy." His intense enthusiasm for science and especially for the field of biochemistry, his exceptional fund of scientific knowledge in many fields and his easy, familiar delivery made him an inspiring teacher. An increasing number of students were attracted to his classes and to his department for graduate work. He gave freely and liberally of his time and thought to the research problems of his own graduate students as well as to those of his colleagues both in the Division of Biochemistry and in other divisions of the university; in the early days of the development of graduate work in the Division of Biochemistry he spent many hours in the laboratory working with his students. During the 25 years of his service as chief of the division, 87 students were personally directed by Dr. Gortner in their graduate research, and during the academic years 1940–42 between 60 and 70 graduate students were in residence in the division. Dr. Gortner was active in many graduate student activities outside scholastic work. For five years he was national president of Phi Lambda Upsilon, honorary chemical fraternity, and for a number of years was "god-father" of the honorary graduate scientific society, Gamma Alpha, at the University of Minnesota.

A testimonial dinner had been planned for Dr. Gortner for Friday, October 2, in honor of the twenty-fifth anniversary of his appointment as chief of the Division of Biochemistry, at which time he was to have been presented with a bound volume of more than 200 letters from those who had been associated with him as colleagues and graduate students in the division during the 25 years. The hand of fate prevented him from seeing this volume. Instead it was with heavy spirits that his colleagues and students bore his remains to their final resting place on the day when the testimonial dinner had been set.

Dr. Gortner was honored by his colleagues with appointment to many positions of responsibility in scientific research and education. In the National Research Council he was serving at his death on committees on Biochemical Nomenclature, Chemistry of Proteins, Colloid Science and Organic Chemical Nomenclature; for the American Society of Biological Chemists and the American Chemical Society he was a member of the committee on Organic Chemical Nomenclature. For three years Dr. Gortner served on the executive committee of Sigma Xi, national honorary scientific society, and on December 31, 1941, he was elevated to the position of president of the society. Last May he was awarded the Osborne Medal

by the American Association of Cereal Chemists, given by this society to scientists who have made outstanding contributions in the field of cereal chemistry.

Dr. Gortner was a scientist whose mind had no racial or international boundaries. He was especially sympathetic towards the work of scientists laboring under adverse conditions. His intensely vital personality was evidenced in the enthusiasm with which he read in every field of thought, in the keen pleasure he took in scientific debate, in his passion for photographing in color a beautiful sunset at his lake cottage, and in his hearty laugh, his pride in his family and his division and in his loyalty to those whom he loved and admired. Those who in turn loved and admired him can not understand the necessity for his removal. Science in general will miss him sorely.

L. S. PALMER

UNIVERSITY OF MINNESOTA

RECENT DEATHS

DR. SIGISMUND SCHULZ GOLDWATER, commissioner of hospitals of New York City from 1934 to 1940, an authority on the construction and administration of hospitals, died on October 23 at the age of sixty-nine years.

PROFESSOR ROBERT WILCOX SAYLES, since 1907 curator of the Geologic Museum of Harvard University, died on October 23. He was sixty-four years old.

DR. ALBERT HASSALL, bibliographer and formerly assistant chief of the Zoological Division, U. S. Bureau of Animal Industry, died on September 18 at the age of eighty-one years.

DR. GEORGE GERALD HENDERSON, emeritus professor of chemistry of the University of Glasgow, died on September 28 at the age of eighty years.

SCIENTIFIC EVENTS

THE JAMES F. LINCOLN ARC WELDING FOUNDATION

THE James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, for two and a half years has been carrying on its second industrial study on arc welding, for which 408 awards amounting to $200,000 have been made.

Results of the study show that the war industries have only begun to gain the benefits of modern arc welding; that further application of the welding process will cut expenses by hundreds of millions of dollars from the United Nations' war bill and will cut by 30 per cent. the time required to produce ships and planes. Arc welding will save an average of 300 pounds out of every ton of steel going into war production.

Papers were submitted from 46 of the 48 states, by engineers, designers, architects, maintenance men and executives throughout the industrial field. Altogether, 408 awards were made to 458 recipients. The studies for which the awards were made, according to a letter from Dr. E. E. Dreese, head of the department of engineering of the Ohio State University, chairman of the Jury of Award, indicated that

> the figures, based on representative products and structures, show a possible annual cost saving of $1,825,000,000. This includes 7,000,000 tons of steel valued at $271,000,000 and 153,000,000 man-hours of labor. This $271,000,000 is a conservative figure calculated at base prices of $34 per ton for billets and slabs and $42 for plate.
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> One representative study in the Progress Program reported that caissons under construction and projected for naval drydocks can be built by arc welding in one third less time, at a saving of 9,000 tons of steel, $3,540,000 in cost, also allowing armor plating for bomb protection with no more steel tonnage than older construction.
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> Another study reported that arc welding of propeller blades alone would save the aircraft industry $50,000,000 annually.
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> Conservative estimates, based on the reports, indicate an annual saving of $100,000,000 in the vast machinery-manufacturing industry which is vital to our national security in war-time and indispensable to our way of life in times of peace.

Members of the Jury of Award were: Dr. Dreese, *chairman;* Assistant Professor R. W. Ahlquist, electrical engineering department, the Iowa State College; Associate Professor Paul Andersen, civil engineering department, the University of Minnesota; Professor Allison Butts, electrometallurgy department, Lehigh University; Professor R. L. Dowdell, metallography department, the University of Minnesota; R. G. Dukes, dean of the Graduate School, Purdue University; Professor Herbert B. Dwight, electrical engineering department, the Massachusetts Institute of Technology; Assistant Professor Fulton Holtby, foundry practice, the University of Minnesota; Professor C. A. Koepke, mechanical engineering department, the University of Minnesota; Professor Arthur F. Macconochie, mechanical engineering department, the University of Virginia; O. W. Muckenhirn, instructor of electrical engineering, the University of Minnesota; C. T. Morris, head of civil engineering, the Ohio State University; J. B. Taylor, head of the department of accounting, the Ohio State University; L. F. Van Hagan, chairman of the civil engineering department, the University of Wisconsin; Professor Chilton A. Wright, civil engineering department, Polytechnic Institute of Brooklyn.

The three principal awards were:

$13,700, First Grand Award, Captain C. A. Trexel and