beans, common beans, coconuts, and banana). The various types of plants mentioned (root plants, sugar plants, grains, beans, and trees) appeared to him as a promising field for the study of hybridization.

It is probable that in the years to come the emphasis of research will be directed toward attempts at modifying the genetics of higher plants to increase, among other things, their protein productivity.

Although no papers dwelt on the subject of agricultural aids, two exhibits at the engineering show illustrated the possible use of inexpensive collectors to increase ground heat and reduce frost damage.

Conclusions

As our fossil fuel resources dwindle, new energy sources will have to be found to satisfy man's requirements. Solar energy will play an increasingly important role in this reorientation together with such resources as fission and, possibly, fusion energy. Solar energy will also be put to more efficient use in supplementing the available world food supply.

Solar energy will best be used where the density of energy demand is low. It is doubtful that large energy consumers —aluminum plants and large manufacturing concerns—will ever rely much on solar energy. It is also doubtful that solar energy will be used significantly in crowded cities. On the other hand, it is apparent that many uses will be found for it in suburbs, in rural areas, and in isolated locations.

The symposium emphasized that scientists, engineers, and industrialists may now get together and profit from their knowledge. Much capital, much research, and much effort will be needed before solar energy can be used in the world by processes other than those nature has been using for a long time, but there is little doubt that this nearly inexhaustible supply will be put to use to improve man's standard of living.

Research is badly needed to solve many problems connected with solar energy. But more than isolated research is needed—more than that which has been done in the past. A concerted effort is required by all those concerned with these problems and by all those who realize the importance of finding new energy supplies to supplement our dwindling resources.

As a communication device, the solar symposium must be counted a success. Personal contact was established among investigators from all geographic and scientific origins. Thoughts and experiences were exchanged informally and in detail that is impossible in impersonal scientific publication.

Perhaps even more important, the status of solar technology was brought to the attention of men of government and industry who must ultimately realize any practical use of this energy source.

It may be hoped that this improved interchange of information and mutual stimulation will increase both the intensity of research effort and the rate of progress in solar engineering. If this further objective is achieved, this meeting will have advanced the day when man will be able to depend more and more on the sun for his supply of energy.

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Elmer Drew Merrill, Administrator and Botanist

There are few prominent scientists of the present era who are so nearly self-taught in the field of their prominence as was Elmer Drew Merrill, whose total formal training in botany included but two one-semester courses taken as an undergraduate at Maine State College of Agriculture and Mechanic Arts (now the University of Maine). Offsetting this lack of formal training to some extent was an early interest in natural history that began even prior to his high-school days in Auburn, Maine, where he was born 15 October 1876. In Merrill's first real job, he was fortunate to be associated in a quasi-apprenticeship capacity with the agrostologist F. Lamson Scribner in the U.S. Department of Agriculture, for it was there that he gained a needed broader experience and training in systematic botany.

In 1902, Merrill went to the Philippines, where he progressed gradually to become director of the Philippine Bureau of Science, a position he left to become dean of the College of Agriculture and director of the Agricultural Experiment Station at the University of California. Six years later, he moved to the directorship of the New York Botanical Garden, and finally, in 1935, he became Arnold professor of botany, director of the Arnold Arboretum, and administrator of botanical collections at Harvard University, where he served until his retirement in 1946 at the age of 70. He then became Arnold professor of botany, emeritus.

Between 1919 and 1946, Merrill occupied administrative positions that would have effectively eliminated the possibilities of scientific research for most men. However, he was not only able to cope with administrative duties during much of his active career, but he also managed to carry on a sizable research program as well and produced more than 500 original scientific papers. His contributions to botany were in floristics, plant geography, plant nomenclature, and botanical bibliography and history. In his most recent book, *The Botany of Cook's Voyages*, published in 1954, he dealt critically with various ideas and theories relating to the area of origin of economically important plants and their dissemination during

historical time. Several earlier titles make clear Merrill's prior concern with evidence from botany as it bears on the prehistory and movements of peoples and cultures of the Pacific region and of the Western Hemisphere. For example, in 1920 he wrote on ". . . Cook's theory as to the American origin and prehistoric Polynesian distribution of certain economic plants . . ." Later titles, such as "The phytogeography of cultivated plants in relation to the assumed pre-Columbian Eurasian-American contacts" and "Domesticated plants in relation to the diffusion of culture," show some of his predilections.

By the time Merrill left the Philippines in 1919, he had a surprisingly comprehensive knowledge of the plants of the whole Polynesian area, and this remained his chief area of floristic interest. Putting this knowledge to practical use during the last war, he produced a manual describing emergency food plants and poisonous plants of the Pacific islands and a book, *Plant Life of the Pacific World,* that were published for and widely used by the Armed Forces. His major contributions to botanical science arose from this wide acquaintance with the plants of a relatively complicated flora that was scarcely known except to a very few contemporary botanists.

Each institution with which Merrill became associated was rapidly enriched with new collections due to his stimulation. The flow of materials sometimes became a flood, and, in an instance or two, threatened to submerge all available space where he was located. In his research, he seldom went far below the surface, being content in most instances with identifying the plants with which he dealt. In this respect, he was one of a small group of floristic taxonomists of which there are but few remaining. This type of taxonomic research was suitable to the region of his study and was the only approach that would have permitted him to cover the ground that he did in his lifetime.

Merrill moved in national and international botanical circles and in numerous scientific societies. He was frequently consulted on botanical and other scientific matters and received recognition and numerous honors for his position and leadership in the botanical field. He served as president of the Botanical Society of America, the American Society of Plant Taxonomists, and was a member of the National Academy of Sciences and a number of other organizations.

Merrill died in Boston, Mass., 24 February 1956, after long, incapacitating illness.

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Gustav Egloff, Petroleum Scientist

A catalyst is a substance that accelerates a chemical reaction without itself being used up in the process. This definition is a little too simple, because all catalysts, no matter how good, wear out after a time and have to be regenerated or replaced. On 29 April 1955, the petroleum industry lost a dynamic human catalyst, Gustav Egloff. Unfortunately, it will not be possible to replace this catalyst among scientists.

Dr. Egloff was the product of the industrial era in which he lived as well as his own driving energy. His insatiable curiosity and enthusiasm kept him at work continuously. A clear thinker, Dr. Egloff had little patience with anyone who lacked this attribute. A meeting with "Gus," whether at breakfast, at a cocktail party, or at a scientific meeting, always meant pleasant conversation, interspersed with some searching questions. He always wanted to know what was going on in industry, why it was being done, and what his company could do along that line.

Dr. Egloff's primary interests were in applied science. His wide knowledge of industrial procedures and industrial needs made it possible for him to see practical applications for new scientific discoveries. The Universal Oil Products Company filed and obtained many patents based on Dr. Egloff's ideas.

Although Dr. Egloff's primary interests were in applied science, he was also sincerely interested in fundamentals. This concern led him to build an efficient library staff that aided him in the preparation of a series of books on the physical properties and reactions of hydrocarbons. In this work the most notable of his assistants was Miss Mary Alexander. For several years, she served as chairman of the nomenclature committee of the division of organic chemistry of the American Chemical Society. We owe Dr. Egloff a debt of gratitude for having contributed his own time and that of his library staff in preparing these valuable contributions to the literature. Dr. Egloff was very proud of the success of his assistants and associates.

Because of his work on the physical properties of hydrocarbons, he was selected as one of the four members of the advisory committee for the American Petroleum Institute research project 44, on the "collection, selection, calculation, and tabulation of the physical properties of hydrocarbons." This project was initiated in 1942. His advice and counsel in the meetings of this advisory committee were of great value in getting this important project started. Not the least of his contributions were the good stories with which he occasionally enlivened these long and sometimes tedious meetings. Dr. Egloff also served as chairman of the division of petroleum chemistry of the American Chemical Society (1947–48) and president of the American Institute of Chemists (1942–46). At the time of his death, he was an active member of the committee to administer the petroleum research fund of the American Chemical Society.

Of Dr. Egloff's personal life his friends in industry knew little. He resided with his wife in Chicago and enjoyed walking to his office on Michigan Avenue, summer and winter. That brisk morning walk was seldom missed. As a young man he liked long-distance bicycle riding, and, while he was a student at Columbia, he enjoyed wrestling. He helped many worthy young men who were struggling to complete their education, but one learned of these acts of kindness only from others, never from "Gus."

Dr. Egloff attended and addressed scientific meetings in this country and abroad. At future scientific meetings all of us who knew Gustav Egloff will miss his smile, friendly greeting, and searching mind.

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