

animal nutrition. Forage crop breeding, although recently developed, seems to offer unusual opportunities. Not only is it important to obtain greater yields and yields more uniformly distributed throughout the growing season, but it is likewise important to obtain forage of such a composition as to be highly nutritious to grazing animals and therefore of indirect benefit to man. The most economic feed for cattle, sheep and other farm animals is pasture. To provide adequate nutritious herbage throughout the grazing season is the aim of the breeder working with pasture plants. Breeding for some qualitative characteristics in forage crops will have to await the further development of information regarding the nutritional requirements of man and of the animals that help to sustain him.

CONCLUSION

To conclude, the plant breeder has a very definite responsibility in helping to place man on a higher nutritional plane and hence to help make him a more effective and contented member of society. I like to think of the problem from this angle rather than from the standpoint of producing more food just to feed more people. Plant breeders collectively have played an important role in bringing about the high agricultural production of which we are capable at present.

Only a beginning has been made in improving the nutritional qualities of food by plant breeding, but results already obtained indicate a promising future for this field of activity. The nutritional values of various plant constituents are guideposts for the plant breeder and in many instances information is incomplete. He can probably accomplish most by seeking to enhance those plant constituents of a high nutritive value that are largely dependent for their development on elements abundantly present in the plant's environment. A natural corollary is to breed plants for a reduction of constituents that inhibit nutritional value. In the long run the problem of mineral deficiencies in the soil can probably best be solved either by adding the deficient element to the soil or directly to the diet. The breeder already possesses the techniques and methodologies to enhance heritable nutritional factors in plants once those factors have been clearly identified. However, in order to proceed with confidence in the value of the final outcome of his endeavors in this direction he should have the constant guidance and counsel of the nutritionist. They working together must answer the significant question, What will be the real value of enhancing this or that component of the aggregate that constitutes the human diet?

OBITUARY

SAMUEL J. RECORD 1881-1945

FIFTY years ago when Samuel Record was sawing and splitting wood for the family stove he would have objected emphatically had he suspected that he would spend half his life working with that very substance which to a boy was so loathsome. It must be admitted that the tropical woods to whose study he later gave attention were more glamorous if not more practical than the oak and hickory of Indiana.

The abundant and detailed knowledge incorporated in his last and most important publication, "Timbers of the New World," was not acquired easily or quickly but as the result of long and tedious inquiry into the nature and composition of American forests, their various kinds of woods and the practical purposes to which they can be put.

Born at Crawfordsville, Indiana, on March 10, 1881, he attended Wabash College, the alma mater of a substantial number of men eminent in botanical science. He graduated in 1903 and received the M.A. degree in 1906 and an honorary doctorate in sciences in 1930. His interest turned to forestry after his graduation, and he received the degree of Master of Forestry from Yale University in 1905. He gained practical knowledge of forestry problems during sev-

eral years spent with the U. S. Forest Service. He was the first supervisor of the Arkansas and Ozark national forests, which lie in a region celebrated for the great variety of its trees. He joined the faculty of the Yale School of Forestry in 1910 and was appointed professor of forest products at Yale in 1917. Thereafter he was associated with the university until his death on February 3, 1945, having been in charge of tropical forestry since 1923, and Pinchot professor of forestry and dean of the School of Forestry since 1939.

Professor Record's keen practical interest in woods caused him to visit Guatemala, Honduras, British Honduras and many parts of the United States, to make collections himself and to interest and instruct others in the collection and proper preparation of specimens. He soon learned that many of the older collections of tropical woods in museums were useless since they obviously were not from the trees which they were said to represent. He elevated wood collecting from its former status of guesswork and curio gathering to a truly scientific occupation, insisting that the samples of wood should be accompanied by determinable herbarium specimens and thus be associateable with described species of plants. Through an unbelievably large number of correspondents scat-

tered over almost all parts of the globe he was able to bring together a collection of wood samples, all identified with known species, numbering more than 41,000 specimens. Many of the individual lots of woods, some of them small but important, were secured with the help of amateurs to whom he communicated something of his enthusiasm. The Yale collection includes material of most genera of woody plants of the Americas and of many from the Old World.

With this wood collection Professor Record was on intimate terms, and his knowledge of woods seemed uncannily to one unversed in the subject. Although regularly he called upon taxonomists to determine herbarium collections, he often could help them materially in naming strange plants by his own study of even slender twigs of plants that were sterile or otherwise difficult of recognition by ordinary methods. He enjoyed solving some of the minor problems of wood-lore. How did it happen that wood specimens sent from New Mexico were packed in a box made of Chilean *Araucaria*? Of what woods were made the articles found in Egyptian tombs or the ancient ship timbers retrieved from the sea?

Woods are obviously a subject of immense economic importance, and the utility of data regarding them requires no emphasis. The woods of the United States have long been pretty well known but those of tropical America have not. Some of the most important cabinet and other woods imported into the United States were known only by their vernacular names and the report that they came from some sort of a tree somewhere in the tropics. Professor Record went to great trouble to obtain authentic specimens of all such woods and of the trees that produced them. He was finally able to place properly almost all these long uncertain trees, as may be seen in his "Timbers of the New World," the most comprehensive and encyclopedic account of the woods of any great area of the earth.

Interested in establishing a common medium for dissemination of information among wood anatomists, whose vocabularies often had been personal rather than national or international, Professor Record was one of the founders of the International Society of Wood Anatomists. An important advance in the study of wood anatomy was made by the compilation of a list of equivalent terms for description of woods in the principal European languages.

Another successful enterprise was his publication of the quarterly journal *Tropical Woods*, begun in 1925 and now running to 80 numbers. This reviews current literature relating to tropical woods but consists in greater part of original papers relating to trees and their properties. This journal has had a more catholic distribution perhaps than almost any

other American scientific publication. It reaches all the principal botanical libraries of the world and also finds its way to forestry stations in the remotest parts of Africa and the islands of the Pacific, and other places with meager library facilities. *Tropical Woods*, aside from its importance as a place of publication for research, was of aid in the enlargement of the Yale wood collections, since many people sent collections to Professor Record to be named, studied and reported upon if their contents justified comment.

The evident practical value of this wood research was recognized by the lumber trade of the United States, which often consulted him for aid in its difficulties. His long experience gave him a realistic appreciation of commercial phases of the subject, and his opinions were invoked to settle disputes, often acrimonious, that arose in the industry.

Professor Record's success in investigation of the woods of all parts of the earth well illustrates the eminently desirable, but too seldom attained, combination of highly technical knowledge and its practical application to daily life. Boards for construction purposes and microscope slides of wood are both lumber, the latter merely cut thin. While he had to a notable degree the gift of common sense in consideration of practical problems, he appreciated equally that portion of wood research that ordinarily would be termed "pure" science, and he organized, principally on the basis of his own studies, the whole system of wood anatomy so far as it is illustrated by the forests of tropical America.

A chronological list of his chief publications gives a good idea of the growth of his interests: "Identification of the Economic Woods of the United States," 1912; "Mechanical Properties of Wood," 1914; "Timbers of Tropical America" (joint author), 1924; "Identification of the Timbers of Temperate North America," 1934; "Forests and Flora of British Honduras" (joint author), 1936; "Timbers of the New World" (joint author), 1943.

My personal knowledge of Professor Record's work, extending over a good many years, is based upon a close association in the study of tropical American trees. For a long time he has been rather closely associated with Field Museum of Natural History and a member of the staff since 1928. He assisted in assembling and arranging the exhibits of the Museum's Hall of North American Woods. For several years he visited the Museum regularly for this purpose, and he wrote a popular guide to the wood hall which is practically a handbook of North American trees.

It always is difficult to express exactly one's impressions of the personality of a deeply valued friend. In the case of one who lived so full a life, with contacts extending into so many fields of activity, it is

doubly difficult. With a very definite dignity, Professor Record possessed an interest in human life that enabled him to meet on common ground a bootblack or a newspaper magnate, and he possessed an extraordinary talent for making friends. To an unusual degree Professor Record enjoyed life in all its phases, simple or sophisticated, and he had the faculty of making others in his company enjoy themselves almost as much as he evidently did. So greatly was his com-

panionship valued that even casual acquaintances often went to considerable pains to enjoy his company again. A great many of his friends, many of them quite outside the farthest bounds of science, will indeed miss the contacts that have been broken so abruptly. They are only beginning to realize how much they depended upon his generous support and counsel.

PAUL C. STANDLEY

CHICAGO NATURAL HISTORY MUSEUM

SCIENTIFIC EVENTS

REORGANIZATION OF THE GEOLOGICAL DEPARTMENT OF MYSORE

It is reported in *Current Science*, Bangalore, India, that the Geological Department of Mysore, originally organized in 1894 for conducting a geological and mineral survey of the state, was in later years obliged to curtail many of its activities on account of severe retrenchment to which the department was subjected. Within the last ten or twelve years, however, the department has started on an extensive program of large-scale prospecting, mining, geophysical and soil surveys, including underground water resources. The limited staff at its disposal was found to be absolutely inadequate to cope with this continually growing volume of work, and realizing the need for its urgent increase, the Government of Mysore has recently reorganized this department sanctioning fully the proposals of the director.

Under the scheme now in effect, the routine geological work in the state will be allocated among three divisions to be newly constituted, each division forming a unit comprising three administrative districts in Mysore. Each of these divisions will be in charge of a division geologist, who will be responsible for all routine geological work within his division, subject to the administrative control of the director. He will be assisted by two assistant geologists. Assaying and other laboratory investigations of a purely scientific and fundamental character will be carried out under the immediate supervision of the director.

The technical and administrative staff includes one senior geologist, three geologists, six assistant geologists, one geophysicist, one assistant geophysicist, one inspector of quarries and museum curator, two chemists and one assistant chemist.

THE FOUNDATION FOR INDUSTRIAL RESEARCH OF THE UNIVERSITY OF WICHITA

A FOUNDATION FOR INDUSTRIAL RESEARCH has been established at the University of Wichita, which has been made possible by the gift of \$450,000 contributed by local business and industry. Started by voluntary

subscriptions of \$100,000 each from the Beech Aircraft Corporation and the Cessna Aircraft Company, the fund is expected to reach the half million mark. The program calls for expenditure of the original fund within the next ten years, thus providing a substantial annual sum which will be used in the main to supplement the present research staff and to improve present laboratory facilities.

Dr. W. M. Jardine, president of the municipal university, points out that Wichita is a vital war production area and following the war will face the task of maintaining employment in its readjustment to peacetime economy. Many sub-contractors and scientific men who came to the city to engage in war work wish to remain—some to carry on with industries already established and others to engage in new fields of enterprise. Many problems involving industrial research have arisen in these industries. The primary purpose of the foundation is to maintain facilities and personnel for research and testing work in this connection.

Applied and pure research will be conducted in aeronautics, engineering, agriculture, chemistry, physics, geology, petroleum and marketing analysis and outlets. Fellowships and scholarships will be established whereby outstanding students may engage in graduate study pertinent to the work of the foundation. Research on problems submitted to the foundation will be undertaken for industrial firms at their expense, with all results being turned over to them.

In a statement made by President Jardine he views the Foundation for Industrial Research as a step forward in integrated education—cooperation between business, industry and the university. Management of the foundation is vested in a Board of Governors consisting of nine members appointed by the Board of Regents: six from industry and two from the Board of Regents. The president of the university is automatically a member.

THE SOCIETY OF ECONOMIC GEOLOGISTS

THE annual technical sessions of the Society of Economic Geologists, which were to have been held