are now known to be reversible suggests that photosynthesis may operate basically through reversal of a respiratory cycle which would be driven by radiant energy, a view supported by the work of Calvin and his collaborators (*20*).

Our experiments indicate that the photochemical reduction of coenzymes by green grana can mediate reductive carboxylations and other biochemical reductions through the action of well-defined respiratory and glycolytic enzymes that are common to all cells. The role of pyridine nucleotides as hydrogen acceptors in the photochemical reaction has been demonstrated by these experiments. The main task now will be to elucidate the mechanism by which the pyridine nucleotides and other coenzymes are reduced in the light. Similar mechanisms in chemosynthetic bacteria may couple the oxidation of hydrogen, sulfur, and ammonia to the reduction of pyridine nucleotides. The parallel study of photosynthetic and chemosynthetic organisms should further the understanding of the basic mechanisms of coenzyme reduction in autotrophic cells.

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James Fitton Couch: 1888-1951

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JAMES FITTON COUCH, eminent authority on poisonous plants and also on the flavonoid rutin, died on August 9, 1951, after a brief illness. He served for thirty-four years as a chemist in the U. S. Department of Agriculture. Born in Somerville, Massachusetts, he received degrees of A.M. from Harvard in 1913, A.M. and Ph.D. from American University in 1923 and 1926, and an honorary degree of Sci.D. from Philadelphia College of Pharmacy and Science in 1948. Although he was best known for his research and numerous publications in the field of phytochemistry, he was a penetrating student of philosophy and the history of science. He served part-time as professor of the history of science in National University, Washington, D. C., from 1928 to 1940.

During his twenty-three years' (1917–40) service with the Bureau of Animal Industry in Washington, D. C., he became well known for his investigations of stock-poisoning plants, such as loco weed, lupines, milkweed, larkspur, and white snakeroot. From the latter he isolated tremetol and showed that it was responsible for the disease known as milk sickness in domestic animals. He isolated and described many previously unknown poisonous substances occurring in plants.

In 1940 Dr. Couch joined the staff of the Eastern Regional Research Laboratory of the Department of Agriculture, as chemist in charge of the Tobacco Section. In the course of his work on the composition and utilization of tobacco, he isolated rutin and offered supplies of the pure compound to various physicians for clinical research, to determine whether it possessed activity in restoring increased capillary fragility and permeability to normal. After successful results were obtained, he established the buckwheat plant *Fagopyrum tataricum* as a domestic commercial source of the drug. Rutin is now widely used in the treatment of certain hemorrhagic disorders and conditions involving capillary fault, and considerable research is still in progress on the clinical and pharmacological evaluation of the flavonoids. The rutin development was recognized by the Department of Agriculture by presentation to Dr. Couch of its Distinguished Service Award in 1947. Dr. Couch and his collaborators also received awards for scientific exhibits on rutin from the Medical Society of the State of Pennsylvania in 1943 and 1946, and a certificate of merit from the American Medical Association in 1946.

Further recognition of his work on rutin came just prior to his death with the announcement that he had received the John Scott Award, comprising a medal

and premium, administered by the Board of Directors of City Trusts, City of Philadelphia. He thus entered the ranks of such recipients as Madame Curie, Thomas Edison, Orville Wright, Guglielmo Marconi, Alexander Fleming, C. F. Kettering, R. B. Woodward, Vannevar Bush, Irving Langmuir, C. E. K. Mees, J. J. Thomson, F. W. Aston, E. C. Kendall, Selman Waksman, and M. S. Karasch.

Dr. Couch was a member of the American Association for the Advancement of Science, the American Chemical Society, the American Institute of Chemists, the Pennsylvania Chemical Society, the Franklin Institute, the Pennsylvania Academy of Sciences, the New York Academy of Sciences, the Agricultural History Society, and the Philadelphia Organic Chemists' Club. He was a profound scholar and an enthusiastic research worker. His scientific ability, breadth of knowledge, personal integrity, and fine sense of humor won him the esteem and affection of many friends. His passing is a great loss to chemistry and agriculture, as well as to his colleagues and his numerous friends.

News and Notes

International Statistical Conferences

STATISTICIANS met for the first time in Asia in a series of International Statistical Conferences, which opened in New Delhi on December 5, 1951. Stuart A. Rice, president of the International Statistical Institute, presided. The President of the Republic of India inaugurated the meeting, and Prime Minister Pandit Nehru welcomed the delegates.

The International Statistical Conferences were the second largest world gathering of statisticians, the first being the one in Washington in 1947. The conferences were held from December 5 to 11 in New Delhi, and from December 16 to 18 in Calcutta. They were convened under the auspices of five international organizations, including the International Statistical Institute, the International Union for the Scientific Study of Population, and the International Association for Research in Income and Wealth. Delegates came from six Middle East countries, including Iran and Egypt, eight Far East nations, 16 European countries, Brazil, Chile, the U. S. and Canada, Australia, and Japan. Communist China was represented, but the countries behind the Iron Curtain were not. The delegates included representatives of the United Nations, ECAFE, FAO, UNESCO, WHO, and ILO. The host country, India, sent a strong delegation led by P. C. Mahalanobis, who was for the fifth time elected chairman of the UN Subcommission on Statistical Sampling. The delegates from the US included the 90-year old veteran Walter Willcox, Stuart A. Rice, M. A. Copeland, I. F. Corcoran, K. Davis, W. E. Deming, E. F. Dennison, A. Ross Eckler, Konard Becker, F. W. Lorimer, T. F. Mosimann, and W. F. Ogburn.

Dr. Rice said that serious limitations are imposed on the international development of statistics by the gulf between the Soviet and the non-Soviet concepts of statistics and by the withholding of available statistical data by various countries. He said that the United States had made available information requested by the United Nations and intergovernmental organizations for international publications, and he pointed out that underdeveloped countries of the East have fully recognized the vital need for the acquisition of statistics.

The orbit of the conferences was amazingly vast. The national statistical systems of the participating countries were discussed at a separate meeting, with W. R. Leonard in the chair; and reports on the internal statistical systems of Federal Germany, Japan, and India were presented. Emile Borel, leader of the French delegation, detailed the role of statistics in government administration. In population statistics, technical committees under Professor Willcox dwelt at length on the accuracy of demographic and census data. Papers on the statistical study of birth rates, variation of sex ratio in different conditions, and a study on the fertility ratio and age at marriage merit special mention. Industrial, labor, and agricultural statistics loomed large in the discussions. W. E. Deming, statistical adviser to the U. S. Bureau of the Budget, said that sampling methods in industry had increased production, and he emphasized the need for standardization of products. The role of quality control, business research, and observation in the increase of production was stressed by H. C. Hamakar (Netherlands), I. H. C. Tipper (U.K.), and A. Linder (Switzerland). The ILO Seminar on Labour Statistics continued its deliberations, focusing attention on the need for compilation of reliable labor statistics for Asian countries and for special methods of statistical inquiry into the problems of consumption and underemployment.

The computation of national income and wealth, statistical education, and the report of the Statistical Education Committee of the International Statistical Institute were also considered. The principal Indian delegate stressed the role of mathematical statistics in secondary education and professional training. The problem of teaching statistics in South East Asia was also covered. In statistical sampling, the U. S. subcommission considered the use of survey and experimental techniques for the development of agriculture and small-scale industries. The delegates had the opportunity of getting firsthand information on a new statistical project, an inquiry into rural economic con-