News of Science

Director Named for AAAS Science Teaching Improvement Program

The announcement that John Mayor has agreed to be the first director of the AAAS Science Teaching Improvement Program is very welcome news. The program to increase the number of well-qualified science and mathematics teachers is the culmination of the work of many groups, centering in that of the Cooperative Committee on the Teaching of Science and Mathematics. This committee has been in existence since 1941 and, since the close of World War II has been chaired by Karl Lark-Horovitz of the department of physics, Purdue University; Morris Meister, principal of the Bronx High School of Science; and John Mayor of the departments of mathematics and education, University of Wisconsin.

To carry out the program described at the beginning of this issue entails the cooperation of many persons, but it also depends upon some one person to see that it goes forward on all fronts, to coordinate the efforts of others, and to give administrative direction to the whole. As is the case for every important post, this person should have intelligence, vigor, and character, but for this particular position he also must be both a scientist and a person who has had intimate association with secondary education. Mayor, to a remarkable degree, satisfies these conditions.

Mayor is now 49 years old. He received his bachelor's degree from Knox College, his master's degree from the University of Illinois, and in 1933 his Ph.D. in mathematics from the University of Wisconsin; his field of specialization is geometry. During his graduate work at Wisconsin, he taught as a graduate assistant and after receiving his doctorate, continued at the university and its Milwaukee Extension Division until 1935, when he became chairman of the department of mathematics at Southern Illinois University. He returned to Wisconsin in 1947 as associate professor of mathematics and education in charge of the training of mathematics teachers. He was promoted to professor in 1951, again in both the department of mathematics and the department of education; he also served as chairman of the department of education. During 1954–55 he has been acting as dean of the School of Education, still retaining his professorship in mathematics. His teaching program has included courses in pure mathematics, courses in the teaching of mathematics for high-school teachers, and direction of the program of mathematics in the Wisconsin High School where he supervised practice teaching in the field of mathematics.

By nature Mayor is a gifted teacher; yet he has always shown, both by example and precept, that even the exceptionally able teacher can improve through deepening his knowledge of his subject and studying the methods for presenting it—illustrating the fact that a man reaches excellence only through a combination of talent and education.

He has written many articles, some of them research papers in mathematics, some mathematical exposition, and still others concerned with the teaching of mathematics. Mayor has a capacity for hard work and an enthusiasm that makes him enjoy it. This enthusiasm is not so much an ebullience of spirit as a keen desire to help attain goals that he believes are important. This not only has made him an outstanding success as a teacher at the university but has led him to serve on many committees for the improvement of scientific and mathematical education, to serve as officer of professional societies, including the presidency of the National Council of Teachers of Mathematics, to speak before state and local groups throughout the country, to serve as chairman of the Cooperative Committee, and now to be charged with carrying its program forward. I know of no one who would be more likely to carry such a program forward with vigor or to secure from others the cooperation necessary to its success.

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Do Ruminants Sleep?

The behavior of cattle and sheep has been carefully studied by a number of workers in recent years, and the evidence strongly indicates that these ruminants do not normally lose consciousness during either day or night. During digestion experiments with cattle, C. C. Balch [*Nature* **175,** 940 (1955)] observed that the animals never appeared to sleep and always used the same lying position. Throughout the night, periods of lying resting are interspersed with periods of standing and of rumination. Therefore, if sleep occurs at all in cattle, it must be of the polyphasic type. As a result of his studies, Balch concludes that, under normal conditions of management, healthy adult cattle and sheep, and probably ruminants in general, sleep little, if at all. He suggests that this ruminant peculiarity may be related to the need for upright maintenance of the thorax in proper functioning of the reticulorumen and to the requirement of time and consciousness for rumination.—W.L.S., JR.

Marine Chemistry

In 1953 our fishing industry found itself in an increasingly difficult position. Rising imports, decreased landings, depletion of fishing grounds, lack of modern techniques, and consumer indifference to American products, placed our fishermen in an unfavorable competitive position. In May 1954, Senator Leverett Saltonstall and Senator John F. Kennedy introduced a bill that provided that an amount equal to 30 percent of the gross receipts from duties collected under the customs laws on fishery products should be used to promote our domestic fisheries through biological, technologic, or other research pertaining to American fisheries. This bill, which also provided for the establishment of a Fisheries Advisory Committee, became Public Law 466, approved 1 July 1954.

The passage of the Saltonstall-Kennedy Act gave recognition to the importance of our marine resources and emphasized the significance of scientific

research in maintaining a prosperous fishing industry. It added an amount not to exceed $3 million to the $3.5 million annual budget of the Fish and Wildlife Service of the U.S. Department of the Interior, and thus enabled this Government office, through its own scientific research staff or through contract work carried out by universities or research institutions, to attack many vital problems that previously could not be investigated adequately, if at all. Although the work of the Fish and Wildlife Service covers many aspects of basic and applied research, it is noteworthy that the application of chemical and biochemical methods is dominating in the search for more efficient handling and processing methods and improved quality of fishery products.

The trawler *Delaware* of the Fish and Wildlife Service is carrying out research work in the North Atlantic to find the best way of freezing fish in the round and storing frozen fish in the hold. One promising method is to immerse freshly caught fish in a sodium chloride brine of 10°F. Low temperatures can now be easily obtained by using Dry Ice and alcohol, which make an excellent cooling medium. Additions to the brine such as antioxidants, glucose, and sucrose are being tested for their capacity to improve the flavor and appearance of the product and to counteract undesirable effects of sharp freezing and long storage.

The expanding market for frozen packaged foods is a remarkable recent development in the American food industry. In this field, packaged frozen fish products are playing an important role, and this, in turn, necessitates an ample supply of suitable raw fish. There is no need to rely so heavily on foreign sources for the supply if our domestic fishing industry is properly equipped with adequate fishing gear and freezing methods to venture from the depleted fishing grounds off the shore to better, more distant grounds.

Equal in importance to the fresh or processed fish and shellfish products are the fishery products that enter into animal feedstuffs and pharmaceutical and industrial products, in the processing of which chemistry is to play an ever more important role. The exceptional value of fish meal and concentrated fish solubles as a source of protein of highest biological value, of vitamins, and of the not yet completely understood "growth factors," is now so universally recognized that they are widely used as feed supplement in animal and especially in poultry feeding. Small amounts of fish oil greatly improve the palatability and the nutrient value of poultry fodder, prevent dustiness, and preserve the carotene and vitamin-A content by acting as link between vitamin or provitamin on the one hand and natural antioxidants on the other. Unfortunately, the amount of fish oil that can safely be added to poultry fodder without causing off flavors in poults and eggs is very limited, being 3 percent at most.

Although fish meal and fish solubles are much in demand, fish oils, which once constituted the main product of the fish reducing industry, face heavy competition from animal and vegetable fats and oils. Moreover, the market is shrinking, owing to the partial replacement of soaps by synthetic detergents, and the use of synthetic resins in paints. In order to secure for the fish reducing industry a healthy economic basis, chemistry is again called upon to develop processing and utilization methods that will bring out the unique chemical properties of fish oils, thus giving them a competitive advantage over other fats and oils.

Considering the structure of the unsaturated fatty acids of fish oils, it is easy to see how splendidly they could lend themselves as starting points for numerous organic products, inasmuch as the dicarboxylic fatty acids obtained through their oxidative splitting are just the ones most in demand for synthetic plastics and fibers. Unfortunately, the hydrolysis of fish oil gives only a mixture of fatty acids that requires costly and uneconomic steps for separation into its constituents. However, recent methods of separation by way of cathrates (addition crystals of fatty acids with urea or thiurea) offer new and promising avenues of chemical utilization of fish oil that are now being intensively investigated.

The Fisheries Advisory Committee, which was created under the Saltonstall-Kennedy Act, held its first session 28–29 Apr. The committee recommended the following criteria for consideration of projects under this Act: degree of emergency; national, or more than purely local, scope; extent of large-scale capital investment; substantiality in value, volume, and employment; extent to which fishery is affected by imports; extent to which results can be obtained in a reasonable time; relative need to fill gaps in knowledge; degree to which industry or states could do the work; relative need for the work and prospects for successful achievement; relationship of costs to benefits; effect on balance among major categories of work.

Some of the major projects already undertaken under the Act are (i) studies to determine racial characteristics of salmon on the high seas; (ii) research on fluctuation of the California sardine; (iii) study of causes and control of toxic red tide off the Florida coast; (iv) development of voluntary Federal grades and standards for fishery products; (v) development of chemical index and nutritive value of fish meal and development of new uses for fish oils; (vi) exploration of deep-water fishing grounds in the North Atlantic.

Since its passage, the Saltonstall-Kennedy Act has already proved its great value for the fishing industry, even though only a small part of the problems could be attacked in such short time. The utilization of the enormous salmon waste and the shrimp heads of the rapidly expanding shrimp industry, the enzymatic digestion of fish offal, the manufacture of fish flour and fish sausages, and a better utilization of the sponges and aquatic plants, especially seaweeds, off our shores, offer a large field of research, and promise technologic developments that could bring prosperity to our fishing industry.

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■ At least in Japan there appears to be a striking elimination of children of blood groups A and B because of a fetal incompatibility between them and their mothers when the latter are of group O. Ei Matsunaga [*Am. J. Human Genet.* 7, 66 (1955)] estimates the deficiency of A children to be about 14 percent of all expected from the mating of O mothers by A fathers; and the deficiency of B children from the mating of O mothers by B fathers is about 10 percent. Miscarriages were significantly higher in these matings than in the converse types. There is evidence that, as a consequence of this strong selection, blood groups A and B are diminishing in frequency among the Japanese.—B. G.

■ The House of Delegates of the American Medical Association at its June meeting in Atlantic City passed three resolutions concerning the introduction of new methods in the treatment or prevention of disease and concerning the Salk poliomyelitis vaccine. The first resolution reaffirmed "confidence in the established methods of announcing new and possibly beneficial methods in the treatment and prevention of disease" and reaffirmed "the need for the presentation of reports on medical research before established scientific groups, allowing free discussion and criticism, and the publication of such reports, including methods employed and data acquired on which the results and conclusions are based on recognized scientific publications." The second resolution criticized possible government control of vaccine, disapproving "the purchase and distribution of the Salk poliomyelitis vaccine by any agency of the Federal Government, except for those unable to procure it for themselves and that such necessary federal funds therefore be allocated to the various proper state agencies for such purposes," and urging the Congress of the United States

to "allow the Salk poliomyelitis vaccine to be produced, distributed, and administered in accordance with past procedures on any new drug or vaccine." The third resolution commended Salk, expressing "profound gratitude" to him and "admiration for his monumental contribution to medical science."—E. M. L.

Scientists in the News

The Foreign Operations Administration has appointed E. E. LEUALLEN, dean of Columbia University College of Pharmacy, to serve 3 mo in Formosa as a consultant in pharmacy. He will study local needs and aid in developing a program for the newly established School of Pharmacy at the National University of Taiwan.

AUSTIN L. RAND, curator of birds at the Chicago Natural History Museum since 1947, has been appointed chief curator of the department of zoology to succeed Karl P. Schmidt, who retired 1 July. Rand was previously associated with the American Museum of Natural History, New York, and the National Museum of Canada, Ottawa. He has conducted zoological expeditions in Madagascar, the southwest Pacific, the United States, Canada, and Central America.

EMMET R. BLAKE succeeds Rand as curator of birds. Blake, who had led expeditions to the West Indies and to Central and South America for the Carnegie Museum of Pittsburgh and the National Geographic Society, first joined the museum staff in 1935 as assistant curator of birds, and since 1947 has been associate curator of birds.

CLAY WAGGONER, head of the analytic section of the research department at American Potash and Chemical Corp., Trona, Calif., has been appointed chief chemist at the new San Antonio, Tex., plant of American Lithium Chemicals, Inc.

ERNEST W. GOODPASTURE, former professor of pathology and acting dean of the School of Medicine, Vanderbilt University, has been appointed scientific director of the department of pathology of the Armed Forces Institute of Pathology. He will be responsible for the supervision and correlation of the professional functions of the department, which include diagnostic consultative services in pathology, an advanced teaching program, and experimental studies in pathology and the ancillary sciences.

JOHN K. MAJOR, of Yale University, has been appointed associate professor and chairman of the department of physics at Western Reserve University.

BRYAN PATTERSON, former curator of fossil mammals at the Chicago Natural History Museum, has been appointed Alexander Agassiz professor of vertebrate paleontology at Harvard University.

ALFRED O. WOODFORD, chairman of the geology department at Pomona College, retired in June. Woodford received training at Pomona and the University of California at Berkeley. His fields of special study have included the rocks and minerals of Southern California and Lower California, stream hydraulics, submarine canyons, and the history of geology. In recent years he has directed the geology department's research on the surface and subsurface region between Claremont and Laguna Beach. He has also studied the structure of margins of the San Gabriel Mountains and has worked closely with the U.S. Geological Survey, for which he has been a senior geologist since 1943.

Woodford was author of the report on the National Science Foundation's conference on geological research in colleges in 1953. He was in charge of the Southern California section for the National Research Council in preparation of a tectonic map of the United States, a nine-year project that was completed during World War II.

JOHN H. DINGLE, professor of preventive medicine at Western Reserve University School of Medicine, was elected president of the Armed Forces Epidemiological Board on 1 July. He succeeds Colin M. MacLeod, of New York University School of Medicine. Robert W. Babione, Capt. MC, USN, became executive secretary of the board on the same date.

CLIFFORD W. DUNCAN, professor of agricultural chemistry at Michigan State University, received the Borden award—$1000 and a gold medal—during the American Dairy Science Association meeting in East Lansing in June.

Duncan was cited for research accomplishments pertaining to the biochemical and physiological character of the protein and other constituents of blood, milk, and semen of the bovine; investigations related to the vitamin and mineral requirements, especially the trace minerals of the cow and calf; the composition, digestibility and nutritional value of feeds; and the nutritional effects of crops grown on soils of different fertility level on the health, production, and reproduction of dairy cows.

JAMES G. WILSON, professor of anatomy at the University of Cincinnati, has been appointed to head the anatomy department of the University of Florida's College of Medicine, effective 1 Sept.

JOHN S. RUGG and GEORGE W. SCOTT, chemists of E. I. du Pont de Nemours and Co., Inc., Wilmington, Del., were the winners of a new award of the American Chemical Society's Division of Rubber Chemistry. The award is for the best scientific paper presented before the division at its 3-day spring meeting in Detroit in May.

Rugg and Scott were cited for the technical importance of their paper and for the high quality of the oral and visual presentation. The report, which was entitled " 'Adiprene' B urethane rubber—factors influencing its processibility," described methods for processing the tough, temperature-resistant new synthetic.

The Eli Lilly Co. has announced several recent staff changes. THOMAS P. CARNEY has been elected vice president of research, development, and control. Succeeding him as director of the organic chemical division is REUBEN G. JONES, former head of the company's general organic chemistry division. A. H. FISKE, vice president and member of the executive committee, will relinquish his responsibilities in the development and control division in order to devote full time to the study of special projects as an assistant to the president. R. M. RICE has become executive diector of medical research, and J. A. LEIGHTY executive director of chemical, biological, and pharmacological research.

PORTER H. BRACE, consulting metallurgist to the Westinghouse Research Laboratories, has retired after 42 years of service. His work has been concerned with rare-metals technology and the production of versatile metal alloys.

He has studied specialized melting techniques such as cage zone refining, a technique that is becoming increasingly important in obtaining almost totally pure metals, for example, titanium. About 1920 he devised the Brace process for the production of pure calcium. This process subsequently became a factor in the mass production of uranium.

JOHN CHIPMAN, professor of metallurgy and head of the department at Massachusetts Institute of Technology, was presented the Brinell gold medal for 1954 in a ceremony at the Swedish Academy of Engineering Sciences in Stockholm on 25 May. He was awarded the medal by the academy "in recognition of his outstanding achievements in metallurgy and metallography." This is the first time that a non-Swedish scientist has received the award, which was instituted in commemoration of J. A. Brinell, inventor of the Brinell test. Chipman gave a lecture on metallurgical research activities being carried on at M.I.T.