with the help of the trained man we are trying to look beneath the surface. We are reaching out into new fields of research endeavor, we are gathering facts and deductions from the outlying regions of science, we are multiplying and sharpening the tools of research workers, and are constantly widening the perspective of agriculture. Much is being given to agricultural research and much is expected from it. Will the Department of Agriculture and our colleges and experiment stations measure up to the task? The answer must be an affirmative one if we are to gauge future achievement by the more ample facilities for study at our colleges and universities and the zeal, the integrity and the humility of our research workers.

J. G. LIPMAN

RUTGERS COLLEGE

FRITZ WILHELM WOLL

DR. FRITZ WILHELM WOLL, professor of animal nutrition in the University of California, well known as a writer on animal feeding and dairy subjects, died at Berkeley on December 6.

Dr. Woll received his early education in Christiania, Norway, obtaining the degree of Ph.B. from the Royal Fredericks University, Christiania, 1883. Later, degrees of M.S. and Ph.D. were conferred by the University of Wisconsin in 1886 and 1904, respectively. After graduation as Master of Science at Wisconsin Dr. Woll was appointed second assistant chemist, Wisconsin Agricultural Experiment Station, 1887, and rose to the position of chemist for the station in 1897. He became professor of agricultural chemistry, University of Wisconsin, in 1906, which position he held until 1913, when he was called to the University of California as professor of animal nutrition, holding that chair until his death.

He was the author of many works, each of which has been reissued in a number of editions; among these may be mentioned:

"A Book on Silage," revised edition, 1900.

"A Translation of Modern Dairy Practice" (from Swedish of G. Grotenfelt), 1894, third edition 1905.

"A Handbook for Farmers and Dairymen," 1897, sixth edition, 1914.

"Testing Milk and Its Products" (with Professor E. H. Farrington), 1897, twenty-fourth edition, 1918.

"Productive Feeding of Farm Animals," 1915, second edition, 1916, third edition, 1921.

"Feed Manual and Note Book," 1917.

Dr. Woll accomplished a large amount of scientific work while at the universities of California and Wisconsin, as is well shown by the series of important and timely bulletins of the respective agricultural experiment stations. He was also an extensive contributor to technical publications and agricultural and dairy papers. His articles were always replete with valuable aid to dairymen and feeders in general.

It is primarily due to the untiring efforts of Dr. Woll that the cow-testing associations of so much value and importance to the dairy industry of California have been developed and placed on a business-like and permanent basis.

He was a member of many agricultural and scientific societies, including: Wisconsin Academy of Sciences, Arts and Letters; Society for the Promotion of Agricultural Science; American Society for Animal Production; Association of Official Agricultural Chemists, (president, 1909-11); American Dairy Science Association; Sigma Xi; Member International Jury Panama Pacific International Exposition, 1915.

The passing of Dr. Woll is a great loss to the University of California and to the animal industry of the whole country.

SCIENTIFIC EVENTS

INTERNATIONAL TELEPHONY

THE inaugural address delivered by Mr. Frank Gill, as president of the British Institution of Electrical Engineers, as reported in the London *Times*, discussed the problem of establishing efficient international telephonic communication among the different countries of Europe, including Great Britain.

He expressed the opinion that, given adequate facilities, there is traffic waiting to be handled between the cities of Europe, and urged that there are weighty reasons for providing those facilities, such as the present necessity for improving the relations between nations, in addition to the normal commercial advantages. So far as distance is concerned,

there is no engineering difficulty in constructing and operating lines at commercial rates to give satisfactory speech between any one and any other part of Europe; and he illustrated this statement by pointing out that between Brussels and Athens, or Paris and Constantinople, the distance is about the same as between New York and Omaha, between which calls can be made at any time, and that the direct distance overland from London to Delhi is about the same as from Key West in Florida and thence to San Francisco and Los Angeles, over which distance calls can be made regularly.

Results of this kind, however, require the use of elaborate technical devices, such as loading coils and repeaters. Formerly a long-distance telephone line consisted merely of a pair of copper wires, which with comparative ease could be kept in good order by independent maintenance units situated along its length. But now that simple structure has vanished, the plant is more complicated, the various parts are interdependent, and it is no longer possible to consider maintenance of each part solely as a sectional matter, since what is done at one place may cause serious effects at another.

Present knowledge can secure great increase in the distances spoken over, in the number of channels of communication afforded by one pair of wires, and in the cheapness, security and speed of the service, but a price must be paid for these advantages in the shape of definite and unified planning throughout the area to be covered, with unity of maintenance and of operation. In Europe, however, there are about forty self-contained local telephone operating organizations, which, though for through service they must function as a whole, are without coordination, standard practice or common technique of construction, maintenance and operation; and the through service is meager in quantity, slow and inefficient.

The through business must be handled as a complete unit, if it is to be efficiently done, and to Mr. Gill the correct course appeared obvious—to depute a body to do for all the European nations what no one nation can do for itself. Such a body, he suggested, might consist of a single company working under licenses from the various governments, or of a company or commission in which they would be the sole stockholders, which would operate all the through business both within and between the various countries of Europe. As another alternative, frankly of a temporizing nature, be suggested that all the telephone authorities should form an association and hold an early conference to study the problem in detail.

THE INTERNATIONAL COMMITTEE ON MARINE FISHERIES INVESTIGATION

THE International Committee on Marine Fisheries Investigations held its fourth meeting in Washington recently, the members present being William A. Found and Dr. A. G. Huntsman, representing Canada, and Drs. H. F. Moore, R. E. Coker and H. B. Bigelow, representing the United States. Dr. J. Playfair McMurrich, of the Canadian delegation, and Dr. James Davies, the Newfoundland delegate, were unable to attend.

The *Fisheries Service Bulletin* states that the permanent organization of the committee was completed by the election of Dr. Moore as permanent chairman, Dr. Huntsman having been elected permanent secretary at the meeting in Montreal in May. It was announced that the French government, by reason of its investigations incident to the fishery on the Grand Banks from the island of St. Pierre Miquelon, was interested in the work of the committee and would apply for representation.

The records of current drift-bottles released by Canada and the United States on the coast north and east of Sandy Hook were discussed, and the preparation of a report assigned to a committee consisting of Messrs. Huntsman and Bigelow.

Plans were made for the initiation during the coming spring of experiments in tagging cod, haddock and other commercial species of importance in the fisheries of Canada and New England, and tentative arrangements were made for the conduct of other investigations of these fish. The committee adjourned to meet in Toronto in May.

COLLOID CHEMISTRY AT THE UNIVERSITY OF WISCONSIN

THE department of chemistry of the University of Wisconsin desires to call attention to the program for colloid chemistry which will be conducted by Professor The Svedberg