in current evolutionary doctrines, and to undertake researches directed to the elucidation of obscure and doubtful principles.

He has largely advanced the knowledge of the "phenomena of coupling and repulsion," and has added to the knowledge of sex-linked inheritance, and has contributed to an explanation "of the part played by the chromosomes in inheritance. . . ." With a tribute to Morgan's disciples, J. T. Wilson in 1922 reaffirmed that Morgan's "Monograph on the Development of the Frog's Egg" is still a classic, and that the treatise on "Regeneration" at once became, "and still is, the leading authority on the subject in our language." His work has been in favor of "the complete and accurate correlation of the two sets of facts, cytological and 'Mendelian.'" E. S. Goodrich recommended Morgan in 1924.

Also in 1918, W. A. Herdman suggested Henry Fairfield Osborn for the same medal. One of the results of his work is

> the more precise determination of the relative ages of the extinct mammals in North America, and that has led to the correlation between the order of succession of the mammalia in Europe and America. . . . All his work has been of an evolutionary character. He has written on the bearing of palaeontology upon Darwinism, and it seems most appropriate that he should be the recipient of the Darwin medal.

In putting forth the name of R. A. Millikan, 1923, James Jeans wrote, "He is proposed for the Hughes Medal especially for his determination of the electronic charge e and of Planck's constant h. . . . His determination of h was not only remarkable in itself, but was of still greater value as finally vindicating the Einstein-Bohr view of the nature of the photo-electric phenomenon." Jeans also wrote of George Ellery Hale for the Copley Medal in 1924. He enumerated Hale's spectroheliograph and the discovery of the Zeeman effect in the faint light emitted by the umbrae of sunspots.

> Prof. Hale's outstanding eminence rests on a combination of three qualities each of which he possesses in extraordinary degree: first, a remarkable ingenuity in the design of astronomical instruments; second, skill and enthusiasm which enable him to get the utmost out of the instruments he has designed and third, a power of multiplying many-fold the productivity of his ideas by inspiring his co-workers with his own enthusiasm.

Rayleigh wrote in 1932 of Hale's spectrohelioscope,

> We may confidently expect that it will contribute to clearing up the mysterious relations between terrestrial magnetism and solar phenomena.

James Walker wrote in his suggestion for the Davy Medal in 1927:

> Prof. Arthur Amos Noyes was the torch-bearer of the modern theories of solution to the West . . . Noyes has exercised a great influence on physical chemistry, not only by the value of his experimental work, but by his careful analysis of the fundamental concepts of the science, and by his clear and logical presentations of their nature and their interrelations.

His work on electrolytic solutions, the velocities of reactions of different orders and reaction-velocity in heterogeneous systems was specified.

It was said of Edmund Beecher Wilson in a proposal for the Copley Medal in 1926 by J. H. Ashworth that "his papers on the development of the earthworm (1887, 1889) and on the cell-lineage of Nereis (1892) are classics, and were the models for numerous subsequent studies on the embryology of invertebrates." Further, "By his own investigations and by those of his pupils, Professor Wilson has exerted a far-reaching influence on the progress of cytological knowledge during the past thirty years." Similar proposals were made by E. S. Goodrich in 1931 and 1932.

Arthur Lapworth considered Gilbert Newton Lewis one of the leaders of modern physical chemistry, especially in chemical thermodynamics, and in proposing him for the Davy Medal he spoke of his valuable work in the field of electrode potentials; "his recognition of the fundamental importance of the electron duplet have greatly influenced the development of modern chemical theory." W. D. Coolidge was recommended for the Hughes Medal by R. T. Glazebrook in 1927. Joseph A. Arkwright in 1932 and 1933 suggested Theobald Smith for the Copley Medal, saying that in 1896–98 he first clearly distinguished between the human and bovine types of *Bacillus tuberculosis* and the forms of disease which they produce, "preceding Koch's pronouncement in 1901." Later work was adumbrated.

Thus, in one small part of the chronicles of British science has the course of American science been traced. It is pleasant narration because of the material used; a fuller picture might well have more shadows.

SCIENTIFIC EVENTS

LIVERPOOL CANCER COMMISSION OF INQUIRY

THE London *Times* reports that on the initiative of Lord Derby, a commission of leading Liverpool medical men and others has been appointed to report on the work being done in the Liverpool area in the investigation and treatment of cancer and on possible extensions and improvements of that work. The members of the Liverpool commission are: Dr. Arnold D. McNair, vice-chancellor of the university, *chair-*

man; Professor R. E. Kelly, professor of surgery; Dr. Henry Cohen, professor of medicine; Dr. James Chadwick, Lyon Jones professor of physics, Nobel prizeman in physics; Dr. A. Leyland Robinson, professor of obstetrics and gynecology, and Roland H. Thornton, Alfred Holt and Company, chairman of the Associated Voluntary Hospitals Board.

The terms of reference to the commission are to examine and report on the work being done in the Liverpool area in connection with the treatment of cancer and the investigation in all its aspects of the cancer problem; to examine and report on methods of extending and if possible improving this work in the Liverpool area and of giving the maximum effect to all the scientific, clinical and financial resources available therein for these purposes, with particular reference to:

(1) The best use consistent with the welfare of patients of the hospital accommodation and research facilities available in the voluntary and municipal hospitals in the Liverpool area and in particular in the Liverpool Radium Institute and the Hospital for Cancer;

(2) The most promising lines of investigation in regard to cancer (its causes and treatment) capable of being pursued in the Liverpool area.

(3) The feasibility of coordinating, if that should seem desirable, the various activities involved, whether by bringing these activities under some unifying board or authority or by some other method.

The commission will proceed at once with its work and will ask for evidence from all persons who can in their opinion be of service in the inquiry.

INVESTIGATION OF THE PILCHARD FISHERY

A NEW section of the Division of Scientific Inquiry of the Bureau of Fisheries has been established on the Pacific Coast for the investigation of the pilchard fishery. O. E. Sette, formerly in charge of the North and Middle Atlantic Fishery Investigations staff, will head the new section. L. A. Walford will serve as assistant to Mr. Sette and will have charge of certain phases of the investigation.

Headquarters for the investigation have been established at Stanford University. Two junior aquatic biologists, an assistant statistical clerk and a junior clerk stenographer will be appointed.

Dr. Ray Lyman Wilbur, president of Stanford University, has expressed his cordial interest and desire to cooperate in the investigation by furnishing quarters. The State of California will cooperate in the pilchard studies by furnishing statistical data from certain of the fishing areas.

The pilchard fishery at present produces considerably more than a billion pounds annually. Most of the catch is taken by California fishermen. The increased exploitation to which the fishery has been subject during recent years has given rise to fears that the fishing strain may be greater than the fishery can support. It is believed by some investigators that the fishery is taking undue toll of immature individuals, thereby endangering the spawning reserve.

The primary purpose of the current investigation is to determine whether over-exploitation exists and what form of regulation, if any, will be necessary to conserve the resource. The first year's activities will be directed toward measurement of changes in abundance, detection of seasonal and yearly changes in size or age composition of the population and the development of satisfactory methods for determination of age, a problem that has not yet been solved for the Pacific sardine.

Airplanes will be used in an attempt to discover whether unexploited units of the pilchard population exist in waters not frequented by commercial fishermen. It is planned that a fishery observer accompany naval pilots on routine practice flights offshore.

THE FLOODS IN SOUTHERN CALIFORNIA

REPORTS from field engineers of the Water Resources Branch of the Geological Survey in California furnish information about the recent record-breaking floods in southern California. The five-day storm that caused the floods extended from February 27 to March 3 and covered Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties. The depth of precipitation is said to have totaled about 14 inches as an average on the area; the maximum 24-hour rainfall at Los Angeles was 6.25 inches. The total storm rainfall at Mt. Wilson was 26 inches, of which 12.81 inches came in a 24-hour period.

The storm is reported to have been the most severe in southern California in a period extending back at least to 1884. Preliminary information indicates that extraordinarily excessive rates of discharge were experienced in the flooded streams. Flood discharges as high as or higher than 700 second-feet per square mile were common. This compares with rates of 100 to 250 second-feet per square mile, which represent the maximum rates previously recorded on southern California streams. The inflow of San Gabriel River into the reservoir created by San Gabriel Dam No. 1 is estimated as 92,000 second-feet, the drainage area being approximately 200 square miles. This discharge was smoothed by the storage in this reservoir and that in the Morris reservoir next below, to 52,000 second-feet.

The highest previously known flood discharge in San Gabriel River at Azusa at the mouth of the canyon with a drainage area of 214 square miles was 40,000 second-feet in 1916. The flood flow of the Santa Ana River at San Bernardino was estimated as 75,000 second-feet as compared with a previous maxi-