

reasons are twofold: (1) Frequencies of chromosome pairing and of kinds of configurations occur that can be predicted only on the assumption that chiasmata do not break in terminalization: (2) configurations occur in polyploids and structural hybrids that are only compatible with the alternative hypothesis that crossing-over has preceded (and determined) chiasma formation. Sax's genetical remarks might be taken to favor either hypothesis—for there is no decisive evidence between them. They are however vitiated as evidence by his using the word "chromosome" in three different senses, e.g., p. 209, l. 25 to mean one chromatid, l. 27 (?) two chromatids, and l. 28, four chromatids.

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### ADVANCES IN THE BIOLOGICAL SCIENCES

THE inclusion of the notes compiled by Science Service on the advances made in various branches of science during each year is a valuable feature of your paper. Permit me, however, please, to make a few comments on two of the 1930 items.

The tannic acid treatment of burns, originated by Dr. E. C. Davidson, of Detroit, was first published by him as far back as 1925. In 1929 the British Medical Research Council published a memoir by Mr. W. C. Wilson, of Edinburgh, and the results given in it "wholly confirm the claims made by Dr. Davidson for the tannic acid treatment."

Another item given in the 1930 list is the use of a neon lamp, connected in parallel with a condenser, to measure a small electric current. This device was applied by Dr. H. C. Rentschler, director of the research laboratories of the Westinghouse Lamp Company, to the measurement of the photo-electric current from a uranium cell, sensitive to ultra-violet light only. As far as I know his work was published during 1930. The same method, with minor differences, had, however, been published by Dr. J. H. J. Poole, of Trinity College, Dublin, in 1928, in the *Scientific Proceedings* of the Royal Dublin Society. When reading his paper before the society, Dr. Poole established that the rate of flashing was proportional to the photo-electric current from a sodium cell, and demonstrated the flashing to the audience by means

of a two-valve amplifier, so that each flash was heard as a rap.

Through the courtesy of Dr. Poole I was able similarly to demonstrate the flashing in a course of lectures in London University in May, 1929.

At the joint discussion on photo-electric cells, held by the Physical and Optical Societies in London on June 4, 1930, J. H. J. Poole and H. H. Poole communicated a further paper on the neon discharge tube method, and gave the results obtained for the absorption coefficient of the water of Lough Bray, in the Dublin Mountains, during August, 1929. In the autumn of the same year Dr. H. H. Poole and the writer collaborated in the use of the method for submarine photometry. For this it has many advantages, as it integrates the current over a suitable time interval and permits one to obtain correct values in which the effect due to dancing of the waves is averaged out. About the same time, and since, we used the apparatus for measuring in various situations the color of daylight (and other light sources, carbon arc, etc.) with a photo-electric cell, and more recently for the study of a mercury vapor arc. Accounts of these applications are now in the press.

The method has many uses. It appears to have been invented by Dr. J. H. J. Poole, and later by Dr. Rentschler, quite independently.

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### LITERATURE RELATING TO COD LIVER OIL

IN our recent "Report to the Empire Marketing Board on the Relative Values of Cod Liver Oils from Various Sources" (E. M. B. 35) an unfortunate blunder has arisen during the revision and proof-reading of the introductory chapter.

Reference 6 on page 9 is incorrectly given and should, of course, refer to the important paper by Professor Steenbock and his colleague Dr. Boutwell in the *Journal of Biological Chemistry* (1920, vol. 42, p. 131).

Immediately our attention was drawn to the error we wrote to Professor Steenbock expressing our great regret and, although he desired that we should give no further attention to the matter, we feel that we must override his wishes and make public our correction of the mistake.

On the same page the reference to Professor E. Mellanby's pioneer researches on the causation of rickets might suggest that his results were not published before 1921. We were, of course, well aware of his earlier contributions to the subject but thought it better, in a brief summary, to refer the reader to the full account of his earlier work which was published by the Medical Research Council.

<sup>5</sup> C. D. Darlington, "A Cytological Demonstration of 'Genetic' Crossing-over," *Proc. Roy. Soc.*, 107: 50-59, 1930.

<sup>6</sup> C. D. Darlington, "Studies in *Fritillaria* III: Chiasma Frequency and Chromosome Pairing in *Fritillaria imperialis*," *Cytologia*, 2: 37-55, 1930.

<sup>7</sup> C. D. Darlington, "Meiosis in Diploid and Tetraploid *Primula sinensis*," *J. Genet.*, 24: 65-96, 1931.

<sup>8</sup> C. D. Darlington, "Meiosis," *Biol. Rev.* 6, (in the press).

<sup>9</sup> C. D. Darlington, "The Cytological Theory of Inheritance in *Oenothera*," *J. Genet.*, (in the press).