

system. It seems to the writer that if something thoroughly trustworthy of this nature were invented it would perform admirably the functions of an electrical safety valve and a lightning protector.

There is a good exhibit of telephone transmitters and receivers. The Strowger automatic telephone sets and the working model of the automatic telephone system for the London area will interest many. The model is probably for its size the most complex mechanism extant. Six exchange switching centres are represented; access to these can be obtained by a number of automatic telephones included in the exhibit. Visitors may make test calls with these instruments and trace the progress of their call through the successive pieces of apparatus. They can also see how the call proceeds from one automatic exchange to another or a manually operated exchange. The telephone call meter (No. 136), which registers the number of effective calls made by a subscriber, is of general interest.

An interesting exhibition of telephotographs (No. 140), presented by the International Western Electric Co., shows the degree of technical excellence to which the transmission of pictures over long telephone lines has now been carried. This application of science has been rendered possible by the grouping of many modern inventions together. The thermionic valve, the carrier current transmission system, and the photoelectric cell are all used in the system. The method is a trustworthy one. A positive transparency prepared by any photographer can be sent, even although still wet, over telephone lines of any length in a few minutes, and after the usual photographic development of the received picture it can be produced in a newspaper.

A. R.

Nitrogenous Derivatives of the Sugars.

Hexosamines and Mucoproteins. By P. A. Levene. (Monographs on Biochemistry.) Pp. x + 163. (London: Longmans, Green and Co., 1925.) 10s. 6d. net.

D. R. LEVENE'S monograph deals with an important group of natural compounds, closely related to the simple sugars. Some of the properties of the parent-compounds are described briefly in the first chapter, in which the existence of ring-systems of different size is referred to; but Haworth's proof that even glucose itself contains a 6-atom instead of a 5-atom ring calls for a further revision of formulæ which have been accepted for a generation without any foundation of experimental proof. The remarks of the author, in reference to chitosamine, that "much of the chemical structure of the sugar was formulated correctly rather by instinct than by experimental

evidence," appears to be capable of a much wider application, but with a reservation as to the necessary correctness of the 'instinctive' formulæ.

The following chapters of the book deal with the hexosamines and their derivatives, with the hexosaminic and aminoheptonic acids and with the anhydrohexoses. Important sections are devoted to the configuration of these sugar-derivatives, and the study of this problem has led the author inevitably to the problem of the Walden inversion in the sugar series, on which he is now undertaking experimental work with the view of determining whether a change in polarity of a group attached to an asymmetric carbon atom does or does not change the direction of rotation.

The later part of the book deals with mucoproteins. These are complex proteins, in which the protein part varies widely from tissue to tissue and from species to species, whilst the carbohydrate group is always linked with sulphuric acid, the group being built up from equimolecular proportions of sulphuric acid, acetic acid, hexosamine, and glucuronic acid. These complex compounds have been made the subject of an intensive chemical investigation, in the course of which new ground has been broken in the preparation of sulphuric esters of simple carbohydrates. The field for investigation is a very wide one, and there are many difficulties to be overcome; but the author has given an admirable review of the present position. His chapters on 'Methods' describe the basic chemical operations which must precede any further investigations in this direction.

Bird Life and Natural Selection.

Indian Bird Life: or the Struggle for Existence of Birds in India. By Douglas Dewar. Pp. xv + 276. (London: John Lane, The Bodley Head, Ltd., 1925.) 7s. 6d. net.

WE congratulate Mr. Dewar in having written the best of the very numerous books which he has brought out. In his introduction he rather frightens us when he hints that he is going to show us to what extent Darwin was right or the reverse in his theories. As we read, however, we find that this apparently is not his object, and that all he intends to do is to quote examples of how natural selection may be influenced by environment or, in some cases, how neither natural selection nor environment can, in his opinion, account for what happens. The author's quotations are well selected but his theories are quaint. There are but few scientific workers who will agree with Mr. Dewar's theory that much of what occurs in life is due to 'luck.' On p. 260 he remarks, "the struggle for existence of birds results in the weeding