



SATURDAY, AUGUST 25, 1923.

CONTENTS.

	PAGE
Lord Grey's Bill for the Protection of Wild Birds	269
The Capillary Blood-Vessels. By Prof. E. H. Starling, F.R.S.	270
Thermodynamics and Chemistry	272
A Scientific Introduction to Biology. By J. B. F. Kamerlingh Onnes and his Laboratory	273
Thirty Years of Public Health Work in Manchester The Ichthyosaurians. By A. S. W.	274
Our Bookshelf	276
Letters to the Editor :—	
Light and Electrons.—Prof. H. S. Allen	279
Continental Drift and the Stressing of Africa.—E. J. Wayland	279
Protozoa and Virus Diseases of Plants. (Illustrated.) —Miss M. S. Lacey	280
The Scattering of Light by Liquid and Solid Surfaces.—Prof. C. V. Raman	281
On Continuous Radiation from the Sun —Prof. Megh Nad Saha	282
Separation of Common Lead into Fractions of Different Density.—R. H. Atkinson	282
Proposed International Survey of the Sky.—C. J. P. Cave and G. Aubourne Clarke	282
An Einstein Paradox: An Apology.—Prof. R. W. Genese	283
Colour Vision and Colour Vision Theories.—Dr. F. W. Edridge-Green, C.B.E.	283
Stirling's Theorem.—G. J. Lidstone	283
The Growth of the Telescope. (Illustrated.) By Dr. William J. S. Lockyer	284
Obituary	288
Current Topics and Events	289
Our Astronomical Column	292
Research Items	293
The Earth's Magnetic Field for 1922. (Illustrated.) By Dr. Louis A. Bauer	295
Lichens and their Action on the Glass and Leadings of Church Windows. (Illustrated.) By Dr. Ethel Mellor	299
The Liverpool Meeting of the British Association. By Dr. Alfred Holt	301
International Hydrography	301
The Age of the Earth. By Dr. Arthur Holmes	302
University and Educational Intelligence	303
Societies and Academies	304
Official Publications Received	304
The Life History of an α -Particle. (Illustrated.) By Sir Ernest Rutherford, F.R.S.	305

Lord Grey's Bill for the Protection of Wild Birds.

WE have now for many years had legislation in Great Britain for the protection of wild birds, in addition to the much older laws relating only to game. The desirability for such protection has received increasing recognition on humanitarian and æsthetic grounds, and it is also to be hoped that there is a growing realisation of the importance of the subject from an economic point of view. The different Acts which have successively been placed on the Statute Book have had varying merit as judged by the wisdom of their intentions, but where they have all so lamentably failed is in their ineffectiveness. This grave fault has been remedied in the wise measure which Viscount Grey of Fallodon has introduced into the House of Lords, and, although his Bill has many other good points, it is probably on that ground that we should chiefly welcome it. The Bill was read a third time on July 30, and a copy of it, as amended in committee, is before us. It is greatly to be hoped that the House of Commons will similarly pass the measure next session.

The Bill aims at the repeal of all existing enactments on the subject, and at making complete provision on the new lines recommended in 1919 by the Departmental Committee on the Protection of Wild Birds. All birds to which the Bill applies—that is to say, all wild birds other than grouse, ptarmigan, partridges, pheasants, and black game—are divided into three categories, each of which is to receive its appropriate degree of protection, as follows :

Category I.—Birds in this group, and their nests and eggs, are to be protected absolutely at all times and places.

Category II.—Birds in this group, and their nests and eggs, are to be protected absolutely during the close season from the 1st March to the 31st July. (The Woodcock is to be protected from the 1st February to the 31st August, and the owners or occupiers of land may take the eggs of the Lapwing thereon up to the 15th April.)

Category III.—Birds in this group, but not their nests and eggs, are to be protected during the close season from the 1st March to the 31st July except against the owners or occupiers of the land concerned and their accredited agents.

The birds included in the first and second categories respectively are listed in the schedules to the Bill, and the third category includes all the other birds. Roughly speaking, the birds in the first category are either species which are relatively rare or species of great usefulness, such as the owls, which it is desirable to encourage. Those in the second category are species which have not been considered quite worthy of the first but require special protection during the breeding

Editorial and Publishing Offices :

MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Advertisements and business letters should be addressed to the Publishers.

Editorial communications to the Editor.

Telegraphic Address: PHUSIS, LONDON.

Telephone Number: GERRARD 8830.

season. The Home Secretary or the Secretary for Scotland, as the case may be, is to be given power to transfer birds from one category to another or to change the dates of the close season. He may do this by general order or, with the consent of the local authorities, by local order affecting only a particular district; and with the consent of the owner and occupier of the land he may make a special order in support of an endeavour to create a bird sanctuary, even to the extent of giving all birds in the sanctuary the full protection of Category I. In exercising these functions the Secretary of State is to be assisted by an advisory committee.

The Bill also contains a number of special provisions, some of which are new and others of which are retained from existing enactments. The use of certain types of trap is to be prohibited altogether; the use of mechanically propelled boats or of aircraft is to be prohibited as an aid to killing or capturing birds; the capture of birds on highways, commons, and public places is to be prohibited; the killing or capture of birds on Sunday is to be prohibited; and the catching of birds alive is to be prohibited except under licence granted by the competent local authority. Lastly, the liberation of imported birds is to be permissible only with the authority of the Secretary of State, a wise provision aimed at the prevention of interference with the balance of nature.

The great advance in legislation of this kind which is marked by this Bill, however, lies in its application not only to offenders caught red-handed but also to all persons found in possession of birds, parts of birds, nests, or eggs which may be presumed to have been illegally taken. The onus of proof is to be thrown wholly on the possessor in the case of birds, nests, or eggs in Category I. and nests or eggs in Category II., and also in other cases during the whole of the close season except its first fortnight. Further, every taxidermist and dealer is to be compelled to keep a register giving all particulars of specimens passing through his hands which come under Categories I. and II. If this measure becomes law we may therefore hope to see an end of the scandal that the skins and eggs of some of our rarest and most strictly protected birds may be seen openly displayed in the taxidermists' windows or publicly advertised in the catalogues of dealers. Similarly, it will become an offence to sell or possess "plovers' eggs" after April 20 (allowing five days' grace from the beginning of the close season specially determined as regards the taking of these eggs).

The Secretary of State is to be empowered to grant special licences to kill or take protected birds or to take their eggs or nests either for scientific purposes, for the protection of crops, property or fisheries, or for other special reasons. The potential exemption from the

law in favour of scientific purposes is a useful new provision, but it is to be hoped that the power will be very sparingly exercised in view of the great amount of useless collecting, especially of eggs, which masquerades under the name of science.

The Capillary Blood-Vessels.

The Anatomy and Physiology of Capillaries. By Prof. August Krogh. (Silliman Memorial Lectures.) Pp. xvii+276. (New Haven: Yale University Press; London: Oxford University Press, 1922.) 13s. 6d. net.

EVERY cell of the body is brought into material relationship with all other cells in virtue of the existence of a common medium, the blood, which is maintained in constant circulation throughout the body. Substances absorbed into the blood from the exterior, either through the external or internal surfaces of the body, are thus brought round and presented to every cell, to be taken up or rejected according to the needs of the latter. In the same way the products of the chemical changes occurring in any cell are distributed to all other cells, so that the blood represents the internal environment integrating the metabolic activities of all parts of the body. The interchange between blood and tissues takes place only in the capillaries and smaller veins, so that we may say that the whole vascular system—heart, arteries, and veins—exists to ensure an adequate passage of blood through the capillaries. It is therefore rather surprising that the physiology of the capillaries has been comparatively neglected until the last few years. There have been isolated observations with regard to their structure and contractility and the properties of their walls. Some twenty-five years ago, when the question of lymph production and absorption was brought into prominence by the researches of Heidenhain, the functions of the cells forming the capillary walls were hotly debated, but after a few years, interest in the matter died down, and physiologists failed to appreciate or to follow up the many other problems concerning the capillaries which were implicit in the problems of lymph production.

By a study of injected specimens, or of the circulation in the lung or web of the frog, it can be seen that an arteriole breaks up into a large number of capillaries, each of which may have a diameter approximating to that of the arteriole. The relations in this part of the circulation have thus often been compared to those in a narrow stream flowing into a lake, and it has been tacitly assumed that the circulation through the capillary network as well as the state of dilatation