analysis of precipitation in relation to wind direction. Southerly and south-easterly winds have the highest relative frequency, while south-south-westerly and west-north-westerly winds are the wettest; easterly winds are the driest. The mean annual temperature at Trondhjem for the 30½ years is 4·8° C. (=41° F.). The average for January and February is about −2½° C. (=27½° F.), and for July, the warmest month, 13·8° C. (=57° F.). There is a good range of variability, −26·1° C. (=−15° F.), having been recorded in February, 1899, and +35° C. (=95° F.) in July, 1901, the latter a remarkable value for the latitude.

(3) "Oversigt over Luftens Temperatur og Nedbøren i Norge (1918)." This paper contains mean temperature and rainfall tables for the year 1918 for Norway. January is shown to have been abnormally cold, especially in the North, where Karasjok was 8·8° C. and Alten 7·2° C. on the average below normal. June, except in the North, and September, were also cool, but temperatures for other months and also for the whole year, were generally above normal. The rainfall at Florø amounted to 2617 mm. (=103 in.) during the year, 481 mm. in excess of normal. Karasjok, however, with a total of only 224 mm. (=9 in.) was 161 mm. below the normal.

(4) "Om betydningen av, at der i Skandinavien oprettes aerologiske stationer," by Th. Hesselberg. In this paper the director of the Norwegian Meteorological Institute gives a brief survey of the present position and importance of aerological research, and urges the need for the establishment of aerological research stations in Scandinavia to take part in international investigations. He advocates a departure, however, from the present custom of observing on certain fixed days in the year, and proposes to make ascents only during the prevalence of interesting types of pressure distribution. Such an arrangement is certainly desirable, but likely to be difficult in practice.

(5) "Aarsberetning (1919–1920)." Much of the information contained in this annual report relates to purely administrative work. There is an account of the opening of a geophysical observatory on Spitsbergen and of the destruction caused by a severe storm. There is also a note on a comparison which was made at the end of 1919 between spectro-heliograph observations at Meudon (near Paris), and simultaneous magnetic observations at Haldde (N. Norway), and it appears that a connection was traced between calcium flocculi and the electric radiation occurring in aurora borealis and magnetic storms. Although the general cause of these phenomena remains unknown, the writer of the report expresses the view that terrestrial magnetic storms are a far more delicate test of solar activity than any solar phenomenon which can be studied by direct observation of the sun. J. W.

The Preservation of our Fauna.[1]

By T. A. COWARD.

THE preservation of a fauna or flora is a national and international duty. The main arguments for protection are: (*a*) economic—the argument of the commercial mind and of the Board of Agriculture; (*b*) æsthetic—mainly used in support of bird protection; (*c*) humanitarian—the argument against cruelty and the wastage of life; and (*d*) scientific—the desire to preserve all species or forms rather than individuals from extinction. The last, though the most difficult position to demonstrate logically, is the one which should carry most weight with the biologist.

Man is a competing animal, and in that aspect is justified in interfering with natural laws so far as is necessary for his welfare. But all such influence should be ordered by scientific and unprejudiced investigation of the inter-relation of animal life. Legislation and personal influence are the best methods of retarding or stopping the destruction of the fauna, but either without the other fails in its purpose. Public opinion, the aggregate of personal influences, is the creator and upholder of legislation. Protective measures have in the past frequently been framed for selfish ends, not for the sake of the object to be protected, hence the confusion in the legislation of to-day.

Normally, without the influence of man, a natural numerical ratio of individuals and species is maintained, for convenience termed the balance; famine or other causes adjust this balance in time of over- or under-population. Man by cultivation and domestication has so dislocated natural conditions that such balance is impossible. But there is, especially in civilised lands, an artificial "natural balance," in which man is one of the competing factors. This balance is constantly overthrown by man or his competitors; it should be readjusted whenever possible in so far as readjustment is in accordance with advance. Unwise or over-cultivation, as exemplified during the food shortage, caused certain unexpected results; the temporary cessation of checks to the natural increase of certain species, as shown during the absence of many men during the war, produces a surprising alteration in the status of many forms.

Man, by his very abundance, encourages the increase of such forms as depend upon him; many of these are inimical to his welfare and therefore must be combated. In his attitude towards the larger animals, especially where he treats them as legitimate objects for the increase of wealth or for the enjoyment of sport, he may easily destroy the very creatures he wishes to exploit. The artificial introduction of animals alien to any country is always dangerous, and has in the past been the cause of the crowding out or destruction of native forms; in the interests of a fauna this practice should be stopped. The unintentional introduction of many "pests" is almost entirely due to commerce; these hangers-on of civilisation should, so far as is possible, be controlled, as their presence is alike a danger to the human race and to other creatures.

[1] Abstract of the presidential address delivered to the Manchester Literary and Philosophical Society on October 4.

Researches on Food.

THE Report of the Food Investigation Board for 1920[1] records a considerable amount of research work of scientific interest and immediate practical value. The Engineering Committee of the Board has shown that of the two channels of heat loss through an insulator, the solid itself and the air enclosed in the spaces of the solid, the latter is far the more important. The specific conductivity of any particular substance, *e.g.* cork, depends much more upon the form and size of its air spaces than upon the specific con-

[1] Report of the Food Investigation Board for 1920. (H.M.S.O., 1921.) 1s