

The Exmoor Earthquake of September 10.

EARLY in the morning of Friday, September 10, three slight earthquakes were felt in North Devon in the district between Morte Bay and Exmoor Forest. The first occurred at about 12.15 a.m., and this was followed about an hour later by two slighter shocks separated by an interval of ten minutes. Though it is reported that part of a chimney was dislodged at East Down, and that the light at Bull Point lighthouse was extinguished, it is doubtful if the intensity of the shock at any place exceeded the degree 4 of the Rossi-Forel scale.

The chief interest of the earthquake lies in its connection with a similar, but slightly stronger, shock which occurred on January 23, 1894 (*Geol. Mag.*, vol. iii., 1896, pp. 553-56). This earthquake disturbed an area 30 miles long, extending from Ilfracombe to about 2 miles east of Dulverton, and 16½ miles wide, the whole area containing about 389 square miles. The centre of the inner isoseismal (intensity 4) was half a mile south-west of Simonsbath. From the dimensions and relative positions of the isoseismal lines it was inferred that the earthquake was due to a fault passing close to Simonsbath, running in the direction E. 22° S., and hading to the south—a position which agrees almost exactly with that of the northern boundary fault of the Morte Slates. The length of the fault-displacement was probably about 10 miles.

From the accounts so far received it appears that the disturbed area of the recent earthquake is shifted to the west. It is about 22 miles long, 13½ miles wide, and contains about 230 square miles. The centre lies half a mile north of East Down and a mile south of the northern boundary fault of the Morte Slates—that is, on its downthrow side. The length of the seismic focus was about 8 miles, with its centre 10 miles west of that of the earthquake of 1894. The points of interest are (1) that, as is so often the case in British earthquakes, the epicentre migrated to the west, and (2) that the lengths of the two foci and the distance between their centres were roughly equal to that which separates the epicentres of British twin earthquakes.

C. DAVISON.

Aids to Forecasting.¹

A LONG-FELT want of the weather forecaster has been a methodical classification of weather types associated with the various weather conditions which present themselves. The weather-chart commonly offers a picture familiar enough to the forecaster, but there is much connected with the movement and development which depends upon the bounding conditions. A low-pressure system or depression when appearing off our south-west coasts may have a clear path to the north-eastward, the high-pressure system in its front giving way to its progress. On the other hand, the high-pressure system or anticyclone may be well established and may maintain its ground, thus compelling the advancing disturbance to adapt its track to the situation—a feature of no uncommon occurrence, but one offering considerable difficulty to the work of the forecaster.

Lt.-Col. Gold has made a good attempt to classify the different types of weather which present themselves, and it seems an advance on any previous effort in this direction. The memoir is not hampered by mathe-

maties, and is the outcome of a classification and analysis made by the Meteorological Section, R.E., in France during the late war. It is an effort to supply the forecaster when in doubt with reference to some previous situations of a similar character, so that he may see what developments occurred.

Forecasting is admitted to be a matter of experience which is not always very lengthy. Fifteen types and sub-types have been selected, and are graphically shown in the diagrams. The controlling feature in the type is the distribution of atmospheric pressure, and especially the position of the anticyclone. The Daily Weather Charts for fourteen years, 1905-18, have been analysed according to these types and are classified by months. The results are given in tables, and the forecaster, having drawn his chart, can see to which type it most nearly corresponds, and then look up the dates in the corresponding month on which the type previously occurred. On reference to the Daily Weather Charts for these days he will be able to trace the later developments.

The type-frequency is given in a table for the several months on the totals for fourteen years, which shows clearly the preference of different types for the separate seasons. The essential weather features associated with each type are clearly set out, and relate primarily to the winds and weather of North-East France and Flanders, although applying also to the conditions over the British Isles.

C. H.

American Work in Genetics.

THE increasing intricacy of genetic problems and the volume of contributions from American investigators are notable features of present-day biology. Selection of a few recent papers will indicate the way in which genetic experiment is permeating many fields of biological research.

Dr. F. B. Sumner is continuing his studies of the Californian races of the deer-mouse, *Peromyscus maniculatus*, and in a paper on geographic variation and Mendelian inheritance (*Journ. Exptl. Zool.*, vol. xxx., No. 3) reaches conclusions which, if substantiated by further work, will be of great interest. The sub-species studied are *rubidus*, which occurs near the coast northwards from San Francisco Bay; *Gambeli*, a coast-form south of the bay; and *sonoriensis*, a desert form from the interior of Southern California. Wild mice were trapped from eight stations within these areas, and caged mice are also being extensively bred. Significant racial differences are found in respect to mean length of skull, ear, foot, pelvis, femur, and tail, width of the dorsal tail stripe, colour of pelage, pigmentation of feet, and number of tail vertebrae. Local differences also occur within the range of the same sub-species. Mutations have been described which show Mendelian inheritance, but in hybrids between geographic races it is claimed that the result is a blend, with very little evidence of later segregation.

Among the numerous genetic studies of extra bristles in *Drosophila*, that of MacDowell has been most extensive. In two of his latest papers (*Journ. Exptl. Zool.*, vol. xxiii., No. 1, and vol. xxx., No. 4) he has further analysed the effects of selection on the number of bristles. After selection for a high number through several generations, reverse selection was found to be impossible, except after crossing with the normal type, which has four bristles. One main factor determines a monohybrid ratio in crosses with normal flies, but there is no dominance in the ordinary sense, and there are additional genetic differences between flies having extra bristles. Studies by Payne

¹ "Types of Pressure Distribution, with Notes and Tables for the Fourteen Years 1905-18." By E. Gold, Meteorological Office. *Geophysical Memoirs*, No. 16. (Published by the Air Ministry.) Price 2s. 6d.