

1932—February 25, 1933, in the British Isles, is the fifth of a new series that began with vol. 45, published in 1929; the introduction to that volume explained the changes introduced in the new series. The week is commonly regarded as the unit of time best suited to the needs of agricultural meteorology, and this report is designed in other respects with the same needs in mind—for example, ‘accumulated temperature’, which is calculated with 42° F. as base, above which many forms of plant begin to grow, and statistics of ground frosts, that is, frosts registered by a thermometer set on the grass and freely exposed to the sky as are the upper surfaces of the leaves of the top-most sprays of plants, are among the items included. The tables are set out in such a way that the whole year’s succession of weekly data for a single station occupy one page. There are 57 stations, well distributed throughout the British Isles; these are also grouped into twelve so-called ‘districts’, and the deviations of the various meteorological elements, temperature, rainfall and sunshine, from normal values of these elements for a long period (generally 1881–1915) are averaged so as to give ‘district values’. The district values are set out for individual weeks, and these are grouped into the four seasons, for each of which there is an appropriate seasonal mean deviation from normal. The season under review was one of generally deficient sunshine with more than the usual rainfall. The data for the Midlands and for the eastern districts of England and Scotland would be suitable in a study of the agricultural results of a wet spring, as that season was notably wet in those districts.

#### Investigation of the West Kennet Avenue, Avebury

MR. ALEXANDER KEILLER has reported briefly in *Antiquity* of September on the results of an examination of the West Kennet Avenue, which leads from the Great Circle of Avebury to the Stone Circles on Overton Hill, undertaken recently with the view of determining its exact line. The Avenue has never been excavated scientifically; and in the spring of the present year operations were begun in a field about five hundred yards long near the middle of the course. Eight stones were still visible there, as well as one stone, which had never fallen, and one which had been re-erected by Mrs. Cunnington in 1912. The work began in April, and was planned to occupy three seasons. Fallen stones, or stones discovered beneath the surface, are being re-erected in the original holes as the work proceeds. Up to the time of writing, one buried stone, of which the previous existence had been unsuspected, and one fallen stone had been re-erected. In all, eight stone-holes have been discovered on the eastern side of the Avenue and eleven on the western side. One stone hole, despite careful searching, remains undiscovered. It is thought that the stone for which it is sought may not have penetrated the sub-soil, as the soil at the point where this stone most probably stood is unusually deep. Four other buried stones have been found and on three of these are markings which may be inscribed ornament. Post holes for timber uprights of which traces remain may, it is thought,

represent a habitation site. The associated pottery is of the type known as Neolithic B, that is, Peterborough, which in this region belongs to the secondary occupation of the neighbouring Windmill Hill. Two finds of foreign stone, broken polished axes, are of augite-granophyre from Graig Llwyd. This occurs only at Penmaenmawr, North Wales, and previously only three specimens had been recorded outside Wales, one being from Windmill Hill, and equating with Neolithic B pottery.

#### Experimental Soil Science

THE experimental study of the soil is so essential a branch of courses in agriculture, horticulture, botany and biology, that it seems a pity it is rather neglected, especially in the last two subjects, from elementary school courses up to courses in the universities. Most textbooks of botany, for example, devote little space to soil science in spite of the fact that the soil is the sole environment responsible for the physiological, biological and edaphic factors affecting one of the most important organs of the normal plant, namely, the root. We would therefore direct the attention especially of teachers of elementary biology and botany to an article on the experimental study of the soil by Dr. B. A. Keen, assistant director of Rothamsted Experimental Station, in *School Nature Study*, vol. 29, No. 117, October 1934. The author describes 18 experiments with a running commentary divided into four sections: what is meant by soil; organic matter; mineral matter; and separation of soil constituents. The paper is also published separately as Leaflet 22, copies of which can be obtained at 2½d. each, or 2s. a dozen, from Mr. E. G. Clarke, 7 Stanley Avenue, Wembley, Middlesex.

#### Gulls Destroy Grasshoppers

It is surprisingly seldom that one comes across telling examples of the activity of birds as destroyers of harmful insects. F. Bradshaw records an interesting experience in Canada, on the west side of Last Mountain Lake, east of Liberty, Saskatchewan (*Canadian Naturalist*, 48, 68, April 1934). On June 18, 1933, he observed there what in the distance appeared to be a cloud of smoke, but on nearer approach turned out to be enormous flocks of the black-headed Franklin’s gull. They alighted in column formation and gorged upon an army of grasshoppers. The number of birds present could not be estimated closely, but the column of close-set birds was a mile in extent and sixty birds in width, and two miles to the south-west an even larger cloud of gulls was seen. Estimates suggest that a Franklin’s gull might devour 500 grasshoppers daily; the protective value of a flock, which at a very conservative estimate numbered more than a million, is, therefore, of considerable moment.

#### Giuseppe Peano

AMONG the eighteen papers in the *Rendiconti del Seminario Matematico e Fisico di Milano* (7, 1933), the longest, and, to the general reader, most interesting, is an account of the scientific work of G. Peano of Turin (1858–1932). His publications, numbering

more than two hundred, ranged over pure and applied mathematics, logic, philosophy, grammar, comparative philology, international languages, and even politics. Some early papers dealt with the algebra of invariants. He then turned to calculus and differential equations. His 'space-filling curve' has been described as one of the most remarkable results in the theory of aggregates. The investigations of the foundations of geometry and arithmetic are of great importance, but his crowning achievement is his system of mathematical logic, with its elaborate symbolism (the 'Peanese' ridiculed by Poincaré), which has been used in England by Russell and Whitehead. Peano applied his logical methods to grammar, and this led to other linguistic studies, including the invention of the international language Interlingua. As a contrast to his abstract work may be mentioned his methods for the approximate solution of problems in practical mathematics. He stands out in the history of science as one of the few modern thinkers who have combined profound originality with a wide range of activities.

#### The Indian Mathematical Society

THE jubilee commemoration volume of the *Journal* of this Society contains, in addition to the usual research papers, an account of the history of the Society. It began in a very modest way in 1907, when Mr. V. Ramaswamy Aiyar, then deputy collector at Gooty, formed the "Analytical Club", the object of which was to subscribe for mathematical periodicals and circulate them among the members. In 1909 appeared the first number of the *Journal*. By the end of 1910, the name of the Society had changed twice, first to the "Indian Analytical Club" and then to the "Indian Mathematical Society". The number of members, originally about twenty, is now nearly three hundred. A central library is maintained at Poona, and conferences are held biennially in different parts of India. The Society is conducting an inquiry into the present conditions of mathematical teaching and examinations in schools and colleges, with the view of introducing certain reforms, and is also trying to set up prizes for research. It is considering the advisability of dividing its *Journal* into two parts, an advanced part for the publication of research papers, as at present, and a new elementary part, similar to the *Mathematical Gazette* or the *American Mathematical Monthly*. The achievement of which the Society is most proud is the discovery of the great Indian mathematician Ramanujan, whose contributions began to appear in the *Journal* in 1911. In the present volume, the place of honour is given to two papers developing Ramanujan's results.

#### The Automatic Telephone

WE think that an elementary knowledge of automatic telephony is almost a necessity to every well-educated young man. We therefore welcome the brief description in pamphlet form of the processes involved in making a call on the automatic systems of the British Post Office. It forms an excellent supplement to the demonstrations given daily on the

automatic telephone equipment installed at the Science Museum by the Post Office. The various ways in which a call can be made are described and illustrated by four simple diagrams. It is possible with the aid of the pamphlet to understand the main features of automatic telephony without going too deeply into technicalities and manufacturing expedients. The pamphlet (price 6d.) is published by H.M. Stationery Office, and is useful for reference.

#### Regulations for the Electrical Equipment of Buildings

THE Institution of Electrical Engineers has just published the tenth edition of its regulations for the wiring of buildings. The ninth and preceding editions were entitled the "I.E.E. Wiring Rules". This publication is very opportune, for the wide use of luminous discharge tubes and 'all electric' receiving sets has introduced several new problems as to the necessary requirements and precautions required for ensuring satisfactory results and providing immunity from fire and shock. The regulations do not take the place of a detailed specification but are supplementary to it. We think that any wiring system which complies with the instructions laid down in this little book (price 1s.) will be found satisfactory. The Wiring Regulations Committee has obviously taken great pains in its preparation. The definitions of the technical terms used are clear and the instructions for testing the completed installation are very good.

#### Congress of Anthropological and Ethnological Sciences

THE September issue of *Man* is devoted to the first session of the International Congress of Anthropological and Ethnological Sciences which was held in London on July 30–August 4. A group photograph in three sections of the members of the Congress forms the frontispiece of the issue, and a general survey by Prof. J. L. Myres, one of the general secretaries, opens the report. Full summaries are given of Lord Onslow's presidential address on "Anthropology in Administration" and of the Huxley Memorial Lecture by Sir Aurel Stein, as well as of the evening discourses delivered by Prof. T. C. Hodson on the census of India, by Dr. R. R. Marett on the tendency of anthropological studies and by Prof. J. B. S. Haldane on "Anthropology and Human Biology". The proceedings in each of the eleven sections among which the work of the Congress was distributed are briefly reported either by the sectional president or the secretary. As some delay is inevitable before the volume containing the full account of the proceedings with abstracts, etc., is available, this very full report is not only welcome, but also will be extremely useful for purposes of reference until a more authoritative source is available.

#### Boots Pure Drug Company's Medical Products

MESSRS. BOOTS Pure Drug Co., Ltd., Nottingham, have issued a small booklet about the therapeutic uses of medicinal glucose or anhydrous dextrose. Glucose is usually given by mouth but may be administered by rectum or intravenously. Its great advantage over other forms of carbohydrate in the