

The South-Eastern Union of Scientific Societies.

ANNUAL CONGRESS AT FOLKESTONE.

THE thirtieth annual congress of the South-Eastern Union of Scientific Societies was held at Folkestone on June 3-6 inclusive. At the opening meeting and before leaving the chair after his year of office, Sir Richard Gregory presented in the name of the Union an illuminated address to Mr. H. Norman Gray, former secretary to the Union. Sir John Russell, director of Rothamsted Experimental Station, then assumed the presidential chair, and delivered his address on "The Place of Science in Rural Life." He traced the changes in the manner of manuring since the empirical days of the ancients, citing as an instance the twelfth-century writer, Idn-el-Awam, who said that human blood stimulated decomposition of manure-heaps and gave a valuable fertiliser. Science was first introduced into rural life when in 1834 Boussingault began analysing his crops and manures. In comparing the output per man on a Sussex farm it was stated that in 1881 it took 117 man-hours to grow one ton of wheat, but only 82 in 1921. "A clod of earth is a storehouse of wonders which are being patiently explored in the experimental stations and colleges."

In the Botanical Section Mr. A. G. Tansley, F.R.S., drew a large audience to hear a paper on "The Vegetation of the Southern English Chalk." He explained the various ecological factors of the chalk, and touched upon plant communities, the pioneer vegetation, the chalk grassland, the chalk scrub, the chalk woodlands, beech forest, the succession of vegetation on the chalk, and the factors arresting the succession in various stages.

In the Geological Section Mr. A. G. Davies directed attention to the many sections that are being temporarily exposed in the progress of excavations for new arterial roads. Mr. Davies has done a good deal of work around London, and in particular dealt with the widening of the main Brighton road at and about Merstham, and cuttings and borings between that point and London, the latter part being examined in detail in the boring of the Tube from London to Merton, the strata covering from the base of the Chalk to the top of the London Clay. An interesting and fruitful section at Woodfield Hill showed an exposure of 400 yards in the *Holaster planus* zone, with a continuous section of the Chalk Rock or Reussianum band, perhaps one of the finest sections of Chalk Rock in Britain. Much new palæontological work has been

done on the section. From the Clapham Road portion of the Tube in the London Clay the "sea-serpent" of Owen, *Ophida toliapicus*, was rediscovered after the lapse of nearly a century.

Mr. D. Ward Cutler made a valuable contribution in his paper on "Life in a Garden Soil." There is a vast assembly of little-known creatures in a piece of garden soil. It had long been suspected that in sewage beds the conversion of ammonia into nitrate was not a chemical but a biological process, but not until 1880 was it shown that the process involved two stages, associated with two organisms, and the organisms were isolated in artificial culture. All decomposition and purification of the soil is now known to be due largely to the activities of bacteria.

The Regional Survey Section listened with interest to Mr. Geo. L. Pepler on "Surveys as Preliminaries to Town Planning," and in the Zoological Section Mr. E. C. Stuart Baker gave a brilliant address on "Field Naturalists and Evolution," to illustrate which he brought many cuckoos' eggs from his collection, showing gradations in size and markings between the eggs of the foster parent and those of the cuckoo from decided diversity to perfect resemblance.

In pursuance of the custom of recent years of bringing to notice the uses of the cinema for educational purposes, a lecture was arranged at the Picture Theatre, at which some hundreds of children were present, when Dr. Clarence Tierney lectured to them on "Some of Nature's Secrets." Mr. E. A. Martin raised some controversial points in his paper on "Some Controversial Points in Anthropology." He suggested that the differences of opinion as to the age of the human jaw discovered in Kent's Cavern should be adjudicated upon by a committee of experts. In dealing with the pictorial representations of the human form on palæolithic cave-walls, he made the suggestion that we may have here preserved what were really monstrous forms of the human race, when the species was scarcely fixed and the race was still in a plastic condition.

Many interesting excursions were made, amongst them being one to what has been called the finest Roman site in the south-eastern counties, and another to Dungeness point, rendered famous of late years on account of the supply of fresh water which is to be found within three or four feet of the gravel surface.

The Calculation of World Temperatures.

MATHEMATICAL expressions giving the variation of air temperature with such factors as time and latitude have been obtained by a number of different meteorologists by evaluating the several coefficients in a Fourier series. Mostly the investigations have been confined to conditions existing in a particular locality, and in only a minority of cases have world conditions been considered. When only one locality is considered, the task is comparatively straightforward. If, however, the whole world is dealt with, the accuracy of the results will be limited by the number of observing stations existing over the earth, and more particularly by their distribution. To obtain satisfactory mathematical relations a series of observations extending over a considerable number of years is necessary. Over the more densely populated parts of the earth it is usually possible to make a selection of stations which shall be fairly representative of the whole area, but over many large areas

no information exists at all. Over other large areas the observing stations are very sparsely distributed, and to obtain results which are true on the average for the whole area is correspondingly more difficult.

The author in the publication before us¹ has dealt first with the simpler case, taking Brussels as the locality to be considered, and afterwards he has extended the investigation to cover the whole globe. This very considerable task was undertaken during the War, when night astronomical observations at the Royal Observatory of Belgium were forbidden by the German military authorities.

The maximum, minimum, and mean temperatures for Uccle extending over a period of 75 years have been extracted from *L'Annuaire Météorologique* for 1908 and used to establish general mathematical expressions which will give for any date in the year the

¹ "Expression analytique des variations de la température de l'air." Par H. Philippot. Pp. 48. (Bruxelles: M. Hayez, 1924). 5 francs.