Agricultural Meteorology in India

THE progress of agricultural meteorology in India is outlined in the latest annual report of the Agricultural Meteorology Branch of the India Meteorological Department, which covers the third year of that branch, ending Aug. 21, 1935. In the Experimental Section, a diagram is shown in which is plotted for three different levels the march of temperature throughout the 24 hours in the stem of sugarcane and in the air at the same levels, the observations having been made in a small plot of sugarcane at Poona with the aid of a portable thermo-couple set specially designed for obtaining plant temperatures. This set was described in the previous year's report. It is seen that the sugarcane is cooler than the air during the day, but warmer at night. Further work on portable percolation gauges and evaporimeters is described in the same section.

Another interesting diagram relates to the microclimates of growing crops. Graphs are shown of the variation of dry bulb temperature and of vapour pressure at various heights up to 6 feet within the crops and in the open air during the hottest part of a typical fine afternoon in October, that is, in the clear season. The observed differences are greatest at the level of the ground, and in the case of the vapour pressure become small at a height of 6 feet. A large amount of experimental work was also done on the behaviour of various soils with respect to evaporation during the day and absorption during the night. It was found that the black cotton soils have the greatest diurnal variation of moisture content and the alluvial soils the least.

Radiation received a large share of attention, especially the nocturnal radiation from the surface of the earth and its relationship with the water content of the atmosphere. It is claimed that this study of the exchanges of radiation between the ground and various layers of the atmosphere explained why the temperature was found to decrease with height in the first few centimetres above the ground and then to increase.

In addition to these nocturnal studies, measurements were made with a pyrheliometer at Poona at fixed times on clear days, and every hour on representative days during each month, of the intensity of direct solar radiation and the distribution of energy in different parts of the spectrum; a self-registering Moll solarigraph was also maintained in action during a large part of the year. Another solarigraph was set up at Shahjahanpur, and it is intended to install a third at Lyallpur, with the view of discussing eventually the seasonal variation of the total radiation of sun and sky in different parts of India.

A striking feature of the work in nearly all the branches of agricultural meteorology described in this report has been the amount carried out voluntarily by research students, some of whom were working for the M.Sc. degree.

Game Sanctuaries or National Parks

THE subject of the preservation of the wild fauna of the world, especially in those parts where for a variety of reasons there exists grave danger that interesting species may under the actions of man be exterminated, has been before the public on several occasions lately. The well-known national parks in the United States and Canada are often quoted as examples to be followed elsewhere. It is true that on a far smaller scale both national park and fauna (and flora) sanctuaries can be formed—even in the small island of Great Britain; and evidence shows that steps are being taken to give effect to so desirable an object.

It appears to be a curious fact that in the British Empire such suggestions have met with little response until lately, either in Asia or Africa. That position is now also being rectified in some degree. In India the subject of fauna preserves has been ventilated for a number of years. In fact, fauna sanctuaries have been in existence since early in the present century.

The commencement was made in Assam, for the protection of rhinoceros, bison, buffalo and elephant; though the latter has been under protective laws in British India for decades. About 1908–10 a fauna sanctuary was formed, under the auspices of Sir John Hewett, Lieutenant-Governor of the United Provinces, in the great sal forests at the foot of the Himalaya in these provinces. At the time there was a considerable divergence of opinion as to whether the sanctuary should be permanent or only for so many years, after which it would be opened to shooting and another area closed.

As a result of these early attempts and the more modern ideas attached to a national park which have been given ventilation in the Press of late years, in the spring of 1934 Lord Hailey, at the time Governor of the United Provinces, suggested that the Forest Department should make proposals for the creation of a game sanctuary or national park on the lines recommended by the International Conference of 1933, that is, a national park to be created by legislative authority. The account of this departure, and the formation of the Park to which the name of the Governor, Lord Hailey, was given, is detailed by E. A. Smythies ("The Hailey National Park". *Indian Forester*, **2**, 467). The area selected for the park is in the famous and beautiful Patli Dun and the hill forests to the south of it in the Ramganga Valley, situated at the foot of and in the foothills of the Himalaya somewhat to the east of the River Ganges. The total area selected is about 125 square miles.

A Bill, the first of its type in India, was drafted. The United Provinces National Parks Act, 1935, was finally passed by the Legislative Council and

received the assent of both Governor and Governor-General. Its provisions are very wide. For example, "animal" is defined as "any mammal, reptile (excluding snakes, except python) or bird"; and it is an offence "to kill, injure, capture, or disturb any animal or to take or destroy any egg or nest of any bird". Permits have to be obtained by anyone wishing to enter or reside in the Park. Photography is permitted, but no flashlight apparatus may be taken in. Roads are projected in order to make this area freely accessible to the public.

Since the Patli Dun has long been famous for its tigers and leopards, it will be of interest to note any changes which may take place in their habits and attitude towards man, when the Park, which to date has seen little save the forest officer, timber contractor and hot weather shooting and fishing parties, becomes frequented by the holiday-maker and tourist.

Association of Special Libraries and Information Bureaux

FOURTEENTH ANNUAL CONFERENCE AT CAMBRIDGE

THE fourteenth Annual Conference of the Association of Special Libraries and Information Bureaux was held at Gonville and Caius College, Cambridge, on September 24–27. The programme of the Conference covered a wide field and merited a considerably larger attendance, although that was well up to the average of recent years. The address of the president-elect, Sir Harry Lindsay, on the Friday evening on "The Interrelation between Science, Agriculture and Industry" gave an excellent start to the Conference. Sir Harry stressed not merely the way in which the prosperity of agriculture and of industry were really connected, but also the importance of understanding the real differences between the objectives and methods of the agriculturist and the industrialist, with the view of developing a long-range policy which would eliminate conflct.

Pointing out that the manufacturer was better able than the agriculturist to adjust his output and methods quickly, so as either to benefit by increased demands or to shelter himself against reductions of demand, Sir Harry emphasized that the lesser susceptibility of agriculture to scientific control was due essentially to the fact that the agriculturist was dealing with Nature and the growth of living organisms, not with inorganic or dead matter. In addition, while the Great War gave a great impetus to scientific discovery and to the application of scientific method, it had also a disintegrating effect on the whole structure of industry and commerce, particularly in the destruction of credit. Although the ultimate effects of scientific discovery were beneficial, their immediate effects on business relations were disturbing. As an example, Sir Harry referred to the use made by the business man of modern means of obtaining knowledge of events to lay in or unload his stocks, and asserted his belief that the huge stocks of primary products which were a feature of post-War commerce had always existed, but in pre-War days were so spread that they were invisible and their effect unfelt. This throwing back of stocks on to the primary producer was another factor in the post-War years of disparity between the prices of agricultural produce and those of manufactured goods. Quality was another factor, and in competition between natural and synthetic products, the natural was usually the better although liable to fail in its resistance to standardization or to respond to increased demands. As regards foodstuffs the natural products still held their own. Despite the general cheapening of production and the higher standard of living, the cost of transport remained high and the question should be faced whether profit-making was the soundest principle on which to build our economic policy. Sir Harry considered that we were at present evolving a new technique of conscious control of economic life; long-range and not short-range solutions of our economic problems were required, and we were advancing to a new technique whereby instinct was supplanted by conscious constructive action.

A symposium on "Newspaper Indexing", at which Capt. A. C. Taylor presided, was opened by a paper by Miss Marie-Anne E. Walker of the *New York Times*, read by Dr. R. H. Hutton, which described the efforts made in this field in the United States, particularly the *New York Times Index* and the indexing project initiated under the New Deal Administration. Mr. J. J. Eaton of the *Yorkshire Post* approached the subject from a different angle, giving an impressive picture of the range of information which a newspaper library was expected to supply whether for the internal staff of the paper or for its readers. In describing the actual indexing system used, Mr. Eaton referred to the possibilities of using micro-photography for this work which they were now exploring. The discussion and papers alike stressed the value of the newspaper as a source of contemporary history, and the increasing reference to scientific matters in the Press renders the subject of some immediate interest to scientific workers. Already it not infrequently happens that not merely the earliest but sometimes the only report of a scientific meeting or discussion appears in the daily Press.

At the next session of the Conference, Dr. S. P. Turin presented a paper on "Scientific and Technical Research in Soviet Russia", in which he emphasized the need for establishing some system of regular research work on Russian subjects if much valuable work was not to be lost. Already constant watch on publications was required to obtain really exhaustive knowledge of any subject of research. Dr. Turin gave a list of various research institutes as well as an outline of the work of three associated with the oldest universities, and some details of science and special libraries in Russia. His plea for a central research body was accompanied by reference to conditions which must be fulfilled in establishing regular contact with Russian institutions. In the first place it was necessary to emphasize our *bona fide* interest in scientific and technical research and to show that we did not desire to utilize Soviet inven-