Meteorological Observations at Calcutta.[1]

THERE is a perpetual struggle between the advocates of continuity and of uniformity in such matters as meteorological observations. For a network of official stations under a central authority, the results of which have to be co-ordinated, uniformity is of very great importance. On the other hand, experiments with different methods are much less likely to be discouraged in an independent observatory, the work of which has a value of a totally different kind. In such a place continuity has a special significance, and it is refreshing to meet with a volume of data from a station that has been on the same site for fifty years, even though that site was criticised very soon after the beginning of the period.

The official observatory at Alipore is only two miles from St. Xavier's College, so that the latter is not required as a vital station for the Indian Meteorological Service, and the Jesuit Fathers, who have maintained their observatory for half a century, have received no special blame for departures from established practice, or any financial support. The Rev. E. Francotte, S.J., has been director for thirty-two years out of the fifty, and is responsible for the present volume of some 350 pages of very clear print with large figures not at all crowded. His full plan consists of four parts, of which the volume before us is the first. It contains for each day in the fifty years, 1868–1917, maximum, minimum, and mean shade temperature, with maximum solar radiation and minimum terrestrial radiation, barometric pressure, wind direction and velocity, relative humidity and rainfall; the monthly extremes in heavy type, with notes on absolute extremes where encountered. This is intended to show the mutual relations of climatic elements, and to further this object, in addition to the tables, some graphs are added. The original scheme was to publish at the end of forty-six years, and part of the volume is summarised for that period. The war, which held back publication, enabled four more years to be included in an appendix.

We have not space to consider in any detail the mass of data contained in the volume, but a few points of interest may be mentioned. In forty-six years the average number of days with at least 1 in. of rain was nineteen per annum. Daily falls of at least 10 in. occurred five times in the period, including one total fall of 14 in. The shade temperature reached 100° F. on 527 days in forty-eight years: 59 in March, 282 in April, 136 in May, 48 in June, and only 2 in July, both in 1897. Father Francotte examines some of the tables for periodicity, but is reserving a great deal more analysis for the second volume, the publication of which will be awaited with interest by those who have seen the first. W. W. B.

The Road to Industrial Peace.[2]

FROM time to time the Advisory Council of Science and Industry in the Australian Commonwealth issues bulletins dealing with various industrial problems, and the latest of its publications is entitled "Welfare Work," though it is wider in scope than the title is usually taken to imply. The preface tells us that the bulletin is prepared for the benefit of all who are seeking for some road to industrial peace and the establishment of more satisfactory and harmonious relations between capital and labour. It points out that these relations are far wider than questions of wages and hours of labour. A comprehensive industrial policy considers the responsibilities which fall on the shoulders of employers, the effect of industrial conditions on the employee, his well-being outside working hours, the distribution of the wealth produced, and the participation of the employees in the management and control of industrial operations. The bulletin sets out what has been done on these lines in Great Britain, the United States, and other countries, and in order to encourage its circulation it is issued at a very low price. It is to be hoped that it will receive the wide publicity it deserves, not only in Australia, but in this country as well. It is, in fact, of more direct interest to us than to its country of issue, in that all reference to welfare work in Australia is reserved for publication in a later bulletin.

The bulletin is admirably written, and affords a most valuable and impartial summary, especially of the large body of information which has been acquired during the war through the activity of the Health of Munition Workers Committee and other bodies. It describes the motives, scope, and administration of welfare work, and the social life, recreation, education, and housing of the workers. It discusses wage-payments, profit-sharing and co-partnership, provision for old age and sickness, and it goes somewhat fully into what is being more and more recognised as the most important factor of all in the attainment of industrial peace, viz. co-operation between employers and employed in control. The health and safety of the worker and the provision of a healthy industrial environment are debated at some length, whilst there is an excellent summary of problems of industrial fatigue in relation to hours of labour, overtime, and rest pauses. An extensive bibliography is included. H. M. V.

Wireless Telephony in Aeroplanes.

IN a paper read before the Wireless Section of the Institution of Electrical Engineers on February 18 Major C. E. Prince lifted the veil from the important results in wireless telephony from aeroplanes which were achieved in consequence of the stimulus of the necessities of war. Up to the summer of 1915, the author believes, wireless speech had not been received in an aeroplane, and, indeed, great were the difficulties that had to be surmounted before practical apparatus for working between ground and aeroplane or between aeroplane and aeroplane could be produced. In the earlier experiments, transmission from air to ground only was attempted by a small oscillation-valve set, but an aeroplane-carried receiving set, also of the oscillation-valve type, was successfully used in 1916. This, however, did not meet the immediate military requirements overseas, and attention was more particularly devoted to the urgent, but more difficult, problem of telephonic communication between machines in the air.

Major Prince gave a good idea of the difficulties encountered and the ingenuity with which he and his colleagues surmounted them. The crux of the problem is the method of controlling the radiation. Direct control was found to suffer from grave disadvantages. Placing a microphone in the grid circuit of the oscillation valve was tried with some success, but finally a method known as "choke" control, in which the modulation is applied to the anode circuit of a second or control valve, was employed. The grid of the control valve is acted on by the microphone transformer, the anode of which is in series with a one-to-one transformer, or choke coil, in the

[1] "Meteorological Observations at St. Xavier's College, Calcutta. (With a Short, Cursory Discussion on the Same)." Part i., Forty-six Years, 1868–1913. With Appendix, 1914–17. By E. Francotte. Pp. xiv+359. (Calcutta: St. Xavier's College, 1918.) Price, unbound, Rs. 3 per copy.

[2] "Welfare Work." Bulletin No. 15 of the Advisory Council of Science and Industry. (Melbourne, 1919.) Pp. 110. Price 6d.