

rar smaller percentage of fire-damp than any lamp will detect may be the source of the gravest danger in the presence of coal-dust, and we hope that, in subsequent issues, the Home Office will see its way to lay the strongest possible stress upon this fact. The average pitman is only too prone to believe that anything which the Home Office does not distinctly declare to be dangerous, must be absolutely safe, and every care should be taken to dispel so fatal a confidence.

FLIES AS CARRIERS OF INFECTION.¹

THE reports referred to below include the results obtained in the further investigations concerning flies as carriers of infection. These are considered under the following heads:—(1) observations on the ways in which artificially infected flies (*Musca domestica*) carry and distribute pathogenic and other bacteria, by Dr. G. S. Graham-Smith; (2) summary of literature relating to the bionomics of the parasitic fungus of flies (*Empusa muscae*), by Mr. Julius Bernstein; (3) note as to work in hand, but not yet published, and as to proposed further work in reference to flies as carriers of infection, by Dr. S. Monckton Copeman, F.R.S.

Dr. Graham Smith gives the results of an elaborate series of experiments in connection with the rôle which house-flies are supposed to play in the dissemination of disease. He has proved conclusively (a) that in artificially infected flies non-spore-bearing pathogenic bacteria do not survive on the legs and wings for more than a few hours (five to eighteen); (b) that these bacteria (a) frequently survived within the crop for several days, and usually for a longer period in the intestine; (c) that the fæces and regurgitated fluids ("vomit") often contain the organisms (a) in considerable numbers, and that they may remain infective for varying periods; (d) that "the only spores (*B. anthracis*) with which experiments were made survived on the legs and wings, in the crop and intestine, and also in the fæces, for many days.

His somewhat premature conclusions regarding naturally infected flies are that cultures of pathogenic organisms may occasionally be obtained from them, but that this does not "afford conclusive evidence that such flies are a frequent source of disease in man by infecting food materials." Several of the photographic illustrations accompanying this memoir are extremely poor and of little scientific value.

Dr. Bernstein's contribution consists of a short *résumé* of the literature relating to the fungus *Empusa muscae* (Cohn).

Dr. Monckton Copeman has elaborated an excellent organisation for the elucidation of the question as to the range of flight of house-flies, and trials will also be made of the respective value of various baits that have been proposed from time to time for attracting and killing flies. The results of these investigations will doubtless prove of great value, and materially assist in the methods of controlling this ubiquitous pest.

REPORTS OF METEOROLOGICAL OBSERVATORIES.

MADRID OBSERVATORY (1902-5).—The meteorological observations for these four years are included in one volume (recently published). The data for each year are divided into three sections:—(1) daily observations and monthly means; (2) monthly and annual summaries, with differences from normal values; (3) daily sunshine observations, with monthly and yearly summaries. This volume completes the series of these valuable observations, which for subsequent years have been published in yearly volumes. The observations call for no special remark, except that they appear to have been very carefully made, and that full information of instruments and methods is supplied. The average amount of sunshine during the four years was 66 per cent. of the possible amount, as compared with twenty-five years' normal of 44 per cent. at Jersey.

¹ Further Reports (No. 3) on Flies as Carriers of Infection. Reports to the Local Government Board on Public Health and Medical Subjects (new series, No. 40). Pp. 48+7 plates. (London: Printed for His Majesty's Stationery Office, 1910.) Price 9d.

Royal Magnetical and Meteorological Observatory, Batavia (1907).—The observations include hourly readings and results, and a list of the earthquakes and tremors registered by Milne's seismograph and Ehlert's horizontal pendulum. The mean temperature of the year was 26.0° C., which is practically normal. The month with highest mean of daily maximum was October, 31.0° C., and that with lowest mean minima August, 22.6° C. The absolute maximum was 34.5°, in October; minimum, 20.4°, in June. The mean magnetic results were:—declination, 0° 52.21' E.; horizontal intensity, 0.367105 (C.G.S.); dip, 30° 55.17' S.; vertical force, 0.219877 (C.G.S.). A new series of observations of upper clouds was started in 1907, and the observatory is cooperating with the Zürich astronomical observatory for the observation of sun-spots. A regular service of kite and balloon ascents has also been recently established.

Odessa Observatory (1908).—The meteorological observations for this year have been published by Prof. B. V. Stankevitch, who has been appointed director in the place of Prof. Klossovsky. In addition to the usual observations for the year, a useful summary of the results for 1870-1908 is given. The mean annual temperature is 50.2°; January 26.6°, July 73.8°; absolute maximum, 96.4° in July, minimum, -18.8° in February. The average number of days of frost is 91. The average annual rainfall is 15.98 inches; the wettest year, 24.62 inches, the driest, 8.97 inches. The greatest fall in one day was 3.1 inches. An appendix contains an account of magnetic determinations made by the director in the summer of 1908 in the governments of Smolensk and Kaluga.

Mysore, Rainfall Registration (1909).—The tables show monthly, seasonal, and yearly values for stations and districts, also averages extending over many years. The values for 1909, and average annual values, are also exhibited on maps. The rainfall of 1909 was very favourable as compared with that for 1907 and 1908. For the whole province, the year's aggregate was 42.44 inches, being 5.50 inches, or 15 per cent., above the normal. On the whole, the excess was greatest in January, caused by a cyclonic storm crossing the south of the peninsula to the Arabian Sea. The greatest falls in twenty-four hours were 11.10 inches in Shimoga district (July 12) and 13.96 inches in Kadur (June 6).

ASSOCIATION OF TECHNICAL INSTITUTIONS.

THE eighteenth annual conference of the Association of Technical Institutions was held at the Stationers' Hall on February 10 and 11. Sir Henry Hibbert, the president for the forthcoming year, delivered his address in the afternoon of Friday. In the course of the address he pointed out that modern labour conditions render it difficult for a boy to learn every branch of his trade. It is therefore necessary that workshop practice should be supplemented by the technical school. Day training classes must be developed in order that those who are to take the leading positions in great industrial concerns—the master, his sons, managers, and foremen—may be scientifically equipped, but the bulk of the provision of technical education must be made by and through evening classes. He would like to extend the day-school life—no boy to leave school before the age of fourteen, and then to have a part-time system up to seventeen. Students should not be allowed to specialise too early. He would make preparatory classes compulsory before students were allowed to join trade classes. To avoid irregularity of attendance, employers of labour must be got thoroughly in sympathy with the organised efforts of education authorities. Conditions have changed since the time when a man could say he had succeeded without education. The education provided at the secondary schools under the regulations of the Board of Education is not that required by children who are able to remain at school for a limited period prior to entering on industrial pursuits. For these special schools are required. He believed that British employers are not awakening to the necessity of strengthening their producing power by the employment of highly skilled workmen.