

indigenous race of Zululand has established a certain degree of immunity as compared with the imported races—a fact which may be made use of by the Public Health Department in the future recruiting of labour for the industries of Zululand.

THE SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH,
JOHANNESBURG.

The annual report of the director of the South African Institute for Medical Research for the year ended December 31st, 1926, was published on November 3rd. During the year Dr. W. Watkins-Pitchford, who had held the appointment of director of the institute since its inception in 1912, retired because of ill health, and was succeeded by Sir Spencer Lister. The institute is divided into a research and a routine division. Much of the work of the research division reviewed in this report has already been described in these letters. The work included investigations into plague, tuberculosis, heat-stroke in deep-level mines, effects of inhalation of asbestos and other dusts, bionomics of the ectoparasites of rodents, bilharziasis, and such biochemical research as the steady growth of the routine work in the department of biochemistry has permitted.

Plague Infection.

To ascertain how plague infection is kept alive among gerbilles during off seasons between epizootics a series of experiments was carried out in fenced-off runs on the veld. It was found that plague-infected fleas could live without any hosts for periods up to three, and possibly even four months, and still retain the power of infecting fresh hosts. Such longevity, taken in conjunction with the known habit of the gerbille of visiting every burrow in its neighbourhood, may explain how plague infection can be kept going in a scanty rodent population until conditions become favourable for the occurrence of an epizootic. "Tiger River disease," which was found occurring naturally among veld rodents in 1925, was not again met with in the field. Experiments, however, were made with cultures of the causative organism to ascertain its possible use as a virus for the destruction of gerbilles. Food containing the bacilli was found to be very fatal to such rodents as actually ate it, the virus being at least as efficacious as any ordinary poison which had been employed, and some evidence was obtained that the disease had established itself as an enzootic infection. The virus would probably be useful in a gerbille-infested area in which a plague wave was due. A Tiger River disease wave might be made to anticipate and even prevent a plague epizootic. The causative organism of this disease was independently and previously discovered at Cambridge, England, by Dr. E. G. Murray, as the cause of an epizootic amongst rabbits, and named by him *Bacterium monocytogenes*, from its unique character of eliciting a large mononuclear response in the circulating blood of infected animals.

Heat-stroke in Deep-level Mines.

As a result of a series of deaths from heat-stroke in the deep levels of certain gold mines, Dr. A. Mavrogordato, Industrial Hygiene Research Fellow, and Dr. H. Pirow, Government mining engineer, engaged on an inquiry into deep-level mining in relation to high wet-bulb temperatures. The results of their work were communicated to the South African Institute of Engineers, in whose journal it was published (vol. xxv, February, 1927). It was found that many of the working places in the mines had a wet-bulb temperature of 86° F., the level above which temperature control tends to break down in Europeans engaged in physical labour. Cooling of working places presents considerable difficulties. As they are constantly shifting, air which has been cooled at a fixed plant would warm up too rapidly on its way to the more distant working places for a useful fall in temperature to be secured. It was urged that attempts should be made to increase the difference between the wet- and the dry-bulb readings, which was found rarely to exceed 2° F. It was suggested that this might be done by delivering dry air by pipes to the working places, and by attempting to reduce the amount of water used in dust laying.

The Routine Division.

In this division 65,980 investigations were made during the year—an increase of 13,136 over 1925. This increase was largely in investigations of a bacteriological and serological nature, associated with the diagnosis of specified diseases, particularly tuberculosis, syphilis, typhoid fever, and gonorrhoea. In the biochemical department there was a fall of 627 in the number of examinations as compared with 1925, due chiefly to a decrease in the requests for blood sugar estimations. As the number of patients in the two years was almost identical, the decrease in sugar estimations would appear to indicate a growing facility in the use of insulin, and the consequent reduction in the need for laboratory control once the patient's equilibrium has been established.

Hookworm infection with *Ankylostoma duodenale* was found in miners whose blood also showed a marked eosinophilia. Hydatid infection was confirmed microscopically in eight subjects. In four cases the application of the Casoni or hydatid skin test gave a positive reaction which was confirmed on operation; but on two occasions operation following a positive skin reaction revealed the presence of an amoebic abscess in the liver. The reaction is being further tested.

The number of rodents sent in for plague examination was 2,234. Of these the largest number (2,138) were received from the Johannesburg municipality, all of which proved negative on examination for the presence of *B. pestis*. Of the remainder, 9 veld rodents were found harbouring the bacillus.

Evidence of schistosome infection was found in 122 of the specimens, chiefly urinary, of the 432 submitted for examination. *S. haematobium* is the trematode whose ova were most frequently derived from the urinary tract, *S. spindalis* having been found in the urine of only one patient. On six occasions the intestinal form of the disease was confirmed by the finding of ova of *S. mansoni* in the faeces. The wider application in general practice of the Wassermann test is indicated by the marked increase of specimens examined. During the year 10,367 examinations, mostly serological, were made, positive results being obtained in 29 per cent. of the specimens received. To ascertain the incidence of specific infection among native mine workers an extensive investigation in co-operation with the Witwatersrand Native Labour Association has been begun. The blood from over 1,000 unselected natives is being subjected to the Wassermann test. Interesting and reliable data are expected from the results of this investigation. The increased activity in the investigation of tuberculosis is partly reflected in a large increase of specimens, chiefly sputums, received for examination; 18,780 specimens were received. The Weil-Felix test for typhus was applied with 1,120 serums—a decrease of 238 compared with the previous year. During the year 1,260 autogenous vaccines were prepared, and numerous stock vaccines and serums were issued.

India.

MEDICAL TREATMENT IN THE NORTH-WEST FRONTIER PROVINCE.

THE number of patients treated in all classes of hospitals and dispensaries in the North-West Frontier Province has increased considerably, the figures being 1,127,268 in 1926 and 1,078,443 in 1925. The number of surgical operations was also much larger, and there was a fall in the death rate in these patients in comparison with the two previous years. There was no such epidemic of cholera as that of 1925, and an outbreak of plague in Mardan was practically confined to that division. The number of malarial patients increased from 43,967 in 1925 to 46,441 in 1926, but the number of deaths fell. The largest number of major operations was performed in the Egerton Hospital, Peshawar, the Bannu Mission Hospital coming second. The health of the South Waziristan Scouts and the Tochi Scouts continues to improve. The total number of hospitals and dispensaries working during 1926 was eighty-

six—one more than in the previous year. The establishment of two civil dispensaries has been sanctioned and the Provincial Dais Training Centre in Dera Ismail Khan has been completed.

CHOLERA IN MADRAS.

During 1926 the field work in Madras in connexion with the control of cholera by preventive inoculation and treatment of early cases was continued, with the help of a further grant from the Indian Research Fund Association. In his annual report, Lieut.-Colonel A. J. H. Russell, I.M.S., director of public health for Madras, states that some parts of the Presidency continue to be heavily infected with cholera, but this made it possible to carry on immunization experiments, both with anti-cholera vaccine and with the Besredka cholera bili-vaccine, which is given by the mouth. In order to test the comparative value of these vaccines different groups of individuals in infected villages, and in particular the contacts of cholera cases, were treated; members of the population who refused protection by either vaccine served as controls. Up to September, 1926, the number of cases analysed was 20,000, and the results indicated that anti-cholera vaccine conferred a very considerable degree of protection, the case rate and mortality rate being, respectively, 3.3 and 1.1 per cent., as compared with 18.1 and 6.2 per cent. in unprotected groups. Although too few patients were treated by Besredka's bili-vaccine to permit definite conclusions to be drawn, the figures indicated that this vaccine also conferred a high degree of immunity; the treatment of contacts was continued during the winter, and it is hoped that the statistics now becoming available may make it possible to form a definite opinion. This work was undertaken by the Indian Research Fund Association at the suggestion of the health section of the League of Nations. It is stated that the villagers are much more willing to submit to inoculation than to swallow the bili-vaccine tablets. Colonel Russell thinks that whenever the purity of rural water supplies is at all doubtful the widest use of a preventive vaccine would seem to be indicated. It is hoped that it may be possible to provide free supplies of anti-cholera vaccine to all local bodies. Acknowledgement is made of the assistance rendered by the Indian Research Fund Association, which has again sanctioned a grant for the employment of a statistical assistant to continue the epidemiological studies on cholera. Papers on this subject have been published in the *Indian Journal of Medical Research*. The hope is also expressed that it may be possible to forecast cholera epidemics two or three months before they occur; the method employed has been tested in other provinces of India as well as in Madras, and has not so far failed in any case. A full report is promised before long on the geographical survey of cholera in the Presidency.

PROGRESS OF VACCINATION IN BENGAL.

In a triennial report on vaccination in Bengal for the years 1923-26 Dr. M. E. Sufi, assistant director of public health, commends the adoption of free vaccination by house-to-house visitation by paid vaccinators in place of the old method of licensing such practitioners. This, together with the increased activities of local bodies and the financial help afforded by the Government, enabled the district boards to oppose successfully the quinquennial onslaught of small-pox, which, in consequence, exacted a smaller toll of lives than in the previous quinquennium. Evidence of the arousing of the sanitary conscience of the people generally is afforded by the gradual increase in the number of vaccinations. Dr. Sufi suggests that if the district boards and other local authorities could maintain a large enough staff of qualified vaccinators and supervisors, small-pox epidemics would be abolished. In cases where persuasion has failed, strict legal enforcement of the Vaccination Acts to almost the whole of Bengal, with the preparation of lists of unprotected persons and early notification of the first cases of small-pox, would be valuable as subsidiary factors in the reduction of this disease. In Calcutta a smaller number of vaccinations is recorded owing to the fact that a very large number of people were treated during the previous year in anticipation of the quinquennial epidemic. There has been a

great improvement in the number of vaccinations of persons employed in the tea gardens during the year. Lanoline lymph is now being replaced by the more popular glycerin lymph. The quinquennial outbreak of small-pox which started in December, 1924, and continued during the following year, exacted a heavy death toll owing to the prevalence of the disease during the months of April and May, 1925. The outbreak, being of a very severe form, was mostly confined to Calcutta and the neighbouring districts, at least in its early stages; during the previous quinquennium it extended over the Presidency. The spread of the disease in one district was due largely to a constant influx of people from Bhutan, Sikkim, and Tibet. In other areas the outbreak was started by infected persons in Calcutta and Howrah. A timely intensive campaign of vaccination and revaccination cut short the spread of the epidemic to outlying areas. Dr. Sufi praises the activities in this connexion of several local authorities, and urges the appointment in each division of a medical graduate possessing the diploma in public health, and a special knowledge of bacteriological work. He regrets that during last year only about 270 per 1,000 of the estimated number of infants were successfully vaccinated; he attributes this to laxity in the enforcement of the provisions of the compulsory Acts. Vaccination of contacts has been neglected, and the failure of the law to help the local sanitary authorities in undertaking such defensive measures has been the subject of adverse comment by some of the district health officers.

England and Wales.

SIR DAVID DRUMMOND.

In celebration of fifty years' service given by him to the University of Durham College of Medicine, Sir David Drummond, C.B.E., M.D., Past-President of the British Medical Association, was presented at Newcastle on December 1st with his portrait in oils. The painting is by Mr. R. G. Eves, and shows Sir David in the robes of vice-chancellor of the University. The presentation was made by Mr. R. G. E. Mortimer, chairman of the governors, who recalled briefly Sir David Drummond's distinguished career since his appointment as lecturer on therapeutics in 1876. Warm tributes were paid also by Professor Thomas Beattie, who said that as a teacher of medicine and pathology he had earned the lifelong gratitude of a host of practitioners, and by Sir Robert Bolam, who recalled his original work in connexion with empyema, aneurysm, and general paresis. In returning thanks for the honour conferred upon him, Sir David Drummond said that it had been his good fortune to be appointed lecturer in the college just at a time when there was a revival in the teaching of clinical medicine, when Byrom Bramwell and Rutherford Morison were putting life into bedside teaching at Newcastle. Since those days the college had advanced and developed enormously, and now stood among the foremost medical schools in the country. He then invited the College of Medicine to accept the painting, if a place could be found for it among the portraits of those who had given of their best and devoted their lives to it, and Sir Thomas Oliver, as president of the college, gratefully accepted.

NEW GENERAL HOSPITAL FOR MIDDLESEX.

A new hospital at Edgware, Middlesex, built by the Hendon board of guardians, was opened by the Minister of Health on December 5th. The Redhill Hospital (as it is called, after the name of the old infirmary) has been constructed on most modern hospital lines in grounds of twenty acres. It contains 175 beds, but can be extended to provide three times that number. It includes medical, surgical, and maternity wards, an isolation annexe, administration, receiving, operating, and pathological blocks, and a separate building to serve as a home for the matron and forty sisters and nurses. On the south side of each ward is a paved terrace for beds. The hospital is intended only for the treatment of acute cases; chronic cases will continue to be treated at the old infirmary. Mr. Neville