

these cultures were presented by Dr. A. G. Gibson of Oxford, who has been particularly interested in this group of micro-organisms. Recently Miss Dagny Erikson has made a study of these various strains of ray-fungi maintained in the National Collection, and her findings have now been published in a report<sup>1</sup> to the Medical Research Council. The material examined by Miss Erikson comprised some fifty strains of ray-fungi. The cultural characters of these organisms were examined on ordinary media and their morphology studied partly by means of impression preparations made from Petri plate cultures, but principally by direct observation of slide micro-cultures according to the technique of Ørskov. Those who are interested in this subject will, of course, study Miss Erikson's monograph, but some of her principal findings might be indicated here. Ørskov's classification into three main groups, *Cohnistreptothrix*, *Actinomyces*, and *Micro-monospora*, was found to be the most suitable of the various classifications proposed. This grouping is based on morphological and cultural characters, the presence or absence of aerial hyphae, and the mode of spore formation. With one or two exceptions Miss Erikson was able to classify these fifty strains, and show that they comprised no fewer than twenty-five species, of which fifteen were entirely new. These cultures were observed over a period of fifteen months, and in no single instance was a complete transformation of morphological or physiological characters noted. From time to time individual characteristics might vary with different conditions of cultivation, but apart from this the species remained quite constant in their characters, and Miss Erikson does not subscribe to the view that these ray-fungi possess a complicated life cycle in which one of the stages is filterable, although she did not actually investigate this question of a filterable phase. Further, she was unable to obtain any evidence that these micro-organisms possessed a sexual mode of multiplication.

#### POISONING BY CARBON BISULPHIDE

The Factory Department of the Home Office has issued a memorandum (Form 836<sup>2</sup>) on precautions against the dangers of poisoning, fire, and explosion associated with the use of carbon bisulphide in artificial silk, india-rubber, and other works. This colourless liquid is used in various industries—for example, in the manufacture of artificial silk and dipped rubber goods, and in the vulcanizing of rubber. It readily vaporizes at ordinary temperatures, and a mixture of 19 volumes in 1,000 of air is explosive. Chronic poisoning arises from the continued inhalation of small quantities of the vapour for some weeks or months, the first symptoms being nausea, indigestion, and giddiness, and emotional disturbances of the hysterical kind. An appearance of anxiety, with sweating of the hands and forehead, is suggestive; in the next stage the mental disturbance increases, and is accompanied by impairment of memory, mental dullness, and depression. The speech may be affected, and a contraction of the visual fields, with diminution of the power of accommodation, can be detected. One of the earliest symptoms of chronic intoxication is muscular weakness due

to toxic neuritis, the first muscles to be affected being those of the face and the flexors of the forearms. Tremor, paraesthesia, and loss of sensation are present, and optic neuritis is a late complication. Great difficulty in walking ensues, and leads to paralysis, confinement to bed, and inability of the patient to feed himself. Recovery in the less advanced cases is slow but usual after removal from the vapour; in the advanced cases permanent effects remain. Poisoning by carbon bisulphide in a factory or workshop is compulsorily notifiable, and since 1924 eighteen cases have been notified. The memorandum details the more important preventive measures, among which is the medical examination of workers exposed to carbon bisulphide at intervals of not more than one month. Information is also given about the storage and pipe conveyance precautions which have been found necessary, and also how explosions should be guarded against.

#### CONTROL OF PASTEURIZING PLANTS

The present advertising campaign of the Milk Marketing Board and the recent recommendations of the League of Nations Committee on Nutrition render it increasingly important that the milk supplied to the general population should be free from the risk of causing disease. Since, as several investigations have shown, the raw milk of this country is frequently infected with pathogenic organisms, and since there is no immediate prospect of preventing its contamination from bovine and human sources, the only practicable method of protecting the health of the human consumer is to expose the milk to some form of heat treatment. Of the various forms of treatment available, the most widely used is low temperature pasteurization. In this process the milk is heated to 145–150° F., held at this temperature for thirty minutes, and subsequently cooled to 55° F. or below. Only milk that has passed through specially licensed plants is allowed under the Milk (Special Designations) Order to be labelled "Pasteurized," but in fact a great deal of so-called pasteurized milk is sold that has not been produced under the supervision of the health authorities. Milk of this type is often imperfectly processed and may still contain small numbers of living pathogenic bacilli. In the interests of everyone it is highly desirable that pasteurization should be adequately performed. Far too little attention has so far been paid to its regulation and efficiency. The publication by Dr. A. W. Scott and Dr. Norman C. Wright of a report<sup>1</sup> dealing with the results of an inquiry into the design, operation, and efficiency of pasteurizing plants will be welcomed by milk processors and sanitary inspectors alike as affording clear and detailed information on the treatment of milk by the holder method of pasteurization. Several technical faults in design and operation of plants at present in use in Scotland are exposed, and suitable remedies suggested. Though a number of unlicensed plants were found to be inadequately pasteurizing the milk, it is abundantly clear that perfectly safe milk, free from tubercle bacilli, can be, and is being, consistently obtained in many licensed plants by attention to the main factors concerned. Apart from the tech-

<sup>1</sup> Medical Research Council, Special Report Series, No. 203. London: H.M. Stationery Office.

<sup>2</sup> H.M. Stationery Office. (3d. net.)

<sup>1</sup> *An Inquiry into the Design, Operation and Efficiency of Pasteurizing Plants*. By A. W. Scott, B.Sc., Ph.D., A.M.I.M.E., and Norman C. Wright, M.A., Ph.D. Bulletin No. 6. Published by the Hannah Dairy Research Institute, Kirkhill, Ayr. 1935.

nical control of pasteurization, three general proposals are made to improve the present position. The first of these is a suggestion that the Milk Marketing Board should offer a relatively larger margin of profit to distributors who agree to take out licences for the sale of "pasteurized milk." This measure, without in any way increasing the cost to the producer, would afford a stimulus to the distributor to install properly designed and supervised plant. Secondly, the need for training and certification of plant operators is stressed. In this connexion we may refer to the syllabus of instruction drawn up by the City and Guilds of London Institute, and mentioned in our issue of August 10th, 1935 (p. 263). Thirdly, an increase is recommended in the facilities available for routine laboratory control of milk. At present this is confined to a few of the larger companies. All of these proposals will receive support from public health workers. The report, which amplifies that recently published by the Ministry of Health, is another outstanding contribution made by the Hannah Dairy Research Institute towards improvement in the safety of our milk supply, and it is to be hoped that both central and local authorities will turn their serious attention towards implementing its main recommendations.

#### THE ENDOCRINE GLANDS IN HYPERTENSION

The presence in the body of endogenous products which exert powerful vaso-constrictor effects has naturally focused the attention of research workers on the relation between hypertension and certain endocrine glands, particularly the medulla of the adrenal and the posterior pituitary. Increased amounts of adrenaline in the blood of patients with hypertension have not, so far as we know, been detected. In a recent paper W. von Lucadon,<sup>1</sup> starting from the known fact that tumours of the adrenal medulla are associated with hypertension, seeks evidence of a disparity in the relative sizes of the adrenal medulla and cortex in post-mortem material from cases of hypertension. He compared the weights of the cortex and medulla of adrenals obtained from cases of diseases without cardiac involvement, of cardiac hypertrophy without hypertension, of chronic nephritis, and of hypertension. The ratio of medulla to cortex was found uniformly greater in males than in females, as the medulla is relatively heavier in the former. In cases of cardiac hypertrophy, whatever the cause, the adrenal medulla was heavier in relation to the cortex. No evidence of a preponderance of medulla in cases of hypertension was found, but there was some support for the view that where there is a functional increase in activity of the heart there is also a medullary hyperplasia of the adrenal, with, possibly, a chronic increase in formation of adrenaline. This work shows that any simple relation between the adrenal and hypertension is not to be expected. A. G. Marcano<sup>2</sup> gives the results of a histological study of seventy-five pituitaries obtained post mortem from forty-nine cases of essential hypertension, four of renal hypertension, and twenty-two from cases of disease without hypertension. Particular attention was paid to the basophilic cells, since several authors had stated that in hypertension either these cells were greatly increased in number in the anterior pituitary or that these cells passed into the

posterior part of the gland. Interpretations of these changes were different with different authors, some claiming that the increase in basophils indicated that they exerted a regulatory function against the increased blood pressure, and others that their passage into the posterior lobe was evidence of a greater functional activity of this lobe. Marcano found a greater or lesser degree of basophilic wandering into the posterior lobe in nineteen cases of hypertension, but in thirty other cases there was no significant difference from the controls. This finding is related to the fact that the passage of basophils occurs in waves, and that in these thirty cases death had taken place between two such waves. Marcano also sought for a relation between the clinical picture of cerebral haemorrhage from hypertension followed by death and the appearance of basophils in the posterior pituitary. Of nine such cases, however, a definite wandering of basophils was found in only two. In six cases in which periods of from four to forty days had elapsed between the death of the patient and the time of recording a blood pressure of about 200, there was an excess of basophils in the posterior pituitary. A similar passage of basophils was not, on the other hand, found in a series of four cases in which the blood pressure had not exceeded 160 systolic—estimated one to fifteen days before death. In a further six cases in which the blood pressure had exceeded 220 systolic (estimated a few days before death) the passage of basophils was detected. The author rightly concludes that there is no constant relation between the degree of basophil wandering and the height of the blood pressure. He is led to believe that the increased activity of the posterior pituitary cannot be the sole cause of the hypertension, but that it may precede the increased activity of another endocrine, probably the adrenal.

#### FRENCH TUBERCULOSIS FIGURES

The annual report of the Statistical Bureau of the Comité National de Défense contre la Tuberculose for 1934 is a medico-social document that will repay study. It sets forth, in a way that grows more interesting the more one reads it, the position of the tuberculosis service in France, which differs considerably from that in England in that it is largely voluntary, and the results are collected by a central committee in Paris, and not by a Government Department. The organized control of tuberculosis in France began considerably before the war, but in 1918 the great majority of the Départements had no dispensary organization. To-day there are 834 dispensaries, of which 95 per cent. send their reports to the National Committee. A glance at the map shows that the dispensaries are most thickly organized in and around Paris, in the Rhine basin, and in Brittany, where the tuberculosis death rate is highest. Corsica and Morocco, however, are not forgotten. Like the number of dispensaries, that of actual patients goes up and up. Over 600,000 cases came under observation during 1934, and of these some 260,000 remain on the books at the end of the year. Such general figures mean little unless one has something with which to compare them, and the dispensary organization seems to vary greatly in efficiency in the different Départements upon which the administrative life of France is based. Thus the Department of the Seine, with nearly five million inhabitants, has sixty-one dispensary centres

<sup>1</sup> *Klin. Woch.*, 1935, xiv, 1529.

<sup>2</sup> *Ibid.*, 1935, xiv, 1525.