THE NATURAL HISTORY OF PULMONARY TUBERCULOSIS.

The incidence of pulmonary tuberculosis over large areas has been frequently studied, and many generalizations have been made with respect to it, more especially with regard to its influence on foreign races, but looking nearer home there is much yet to be learnt. An interesting inquiry has recently been reported, in the form of a presidential address to the Society of Medical Officers of Health, by Dr. A. K. Chalmers of Glasgow. Limiting his investigations to Scotland, he found that the incidence of the disease upon the various counties has changed in a most remarkable degree during the last forty years. Death registration was not carried out before the Sixties, and during that decade—1861-1871—the death-rate from consumption was very high, but after the latter date it fell with great rapidity and in much higher proportion than the rate for other diseases. During this period of industrial prosperity the larger towns were invaded by a great immigration of workers from rural districts, such as had in earlier days been generally followed by outbreaks of epidemic disease. The fall in the tuberculosis death-rate, however, was steadily maintained after the maximum was reached in 1871, and proceeded with slight fluctuation to the year 1910. In the meantime the relative susceptibility of the urban and rural populations would appear to have undergone a striking change. The highest death-rate is now to be found in rural districts, such as Sutherland and Kirkcudbrightb, counties which contain a comparatively sparse population and vast tracts of unoccupied moorland. These facts are difficult to explain, but they suggest many considerations. The sudden improvement after 1871 cannot be attributed to the adoption of modern methods of treatment, since they were not then in vogue; nor can the steady improvement in sanitary conditions be held sufficient to account for it, since no corresponding effect was produced upon other diseases.

The great increase noted in the early days of registration might be supposed to have produced a back-wave of immunity amongst the town-dwellers, and this is strikingly borne out by a further investigation as to the relative frequency of the disease among the native-born town-dwellers and those who had been introduced from neighbouring counties or from greater distances. Statistics for the actual period are not available, but it has been found from more recent figures that consumption occurs far more frequently among alien inhabitants than among the native-born or among the children of alien mothers and native fathers. Dr. Chalmers pointed out that these facts and considerations (which he illustrated with numerous maps, tables, and charts) cannot be immediately translated into practical lessons, but they open up the whole question of the unseen movements of disease among populations which deserves as much study in Great Britain as in China and Japan.

ULCER OF THE STOMACH.

The problem that has always faced those who have tried to explain the production of ulcer of the stomach is, Why does not the gastric juice digest the healthy mucous membrane? A favourite explanation has been that in those cases in which an ulcer develops the gastric juice is excessively acid, and consequently exercises a more intense action upon the tissues than in health, and that the localization of the ulcer is due to some accidental cause—traumatism, thrombosis, or infant, by which the special area involved has had its vitality still further reduced.

This is the theory which has of late years received most support, but there is evidence that there is some special property of the mucous membrane of the stomach which protects it in normal circumstances from the digestive action of this secretion, but which is not possessed by other organs and tissues.

We may draw attention some time ago to the observations of Katzenstein and Fold, who believe in the existence in the gastric mucous membrane of a special ferment, to which they gave the name of "antipepsin." Katzenstein has recently brought the subject forward again. He stated that a series of experiments had convinced him that the wall of the stomach possesses a special power of resisting peptic digestion. When parts of it were invaginated into the cavity, they were not digested, but other organs similarly treated—for example, the appendix, the spleen, and loops of intestine—disappeared in a few days in consequence of the digestive action of the gastric juice. The duodenum, and to a less degree the upper part of the jejunum, possess a similar power of resistance, which he suggests may be due, at least in part, to that produced by antipepsin. His former experiments were criticized on the ground that the vitality of other organs which had been digested had been weakened by dragging upon their blood vessels. To test this he first injected the animals with atropine, and found that the organs remained undigested; a similar result was obtained when the animals were fed on a non-acid diet of fats and vegetables and poor in albumin. As antipepsin has very little power of resistance to acids or to heat he produced lesions in the stomach walls by acids, alkalis, and caustication, thinking that if his theory were correct lesions due to the first and last should ulcerate, while the second should heal, and he found this to be the case even when the lesions were produced in the same stomach. Even a feeble acid was sufficient to determine the formation of an ulcer, as he showed by using acid phosphate of soda. In a further experiment he introduced dog's gastric juice into the stomach of a rabbit, an animal that possesses very little pepsin and scarcely any antipepsin. Its stomach is not capable of resisting an active gastric juice, and in every experiment an ulcer formed. A practical deduction that Katzenstein makes from his observations is that in the ulcer of the stomach of young girls it is undesirable to give such a diet as that of von Leube or Lenz hartz, which stimulates the
secretion of gastric juice; he advocates one composed of cereals, vegetables, and fat, and urges that after a gastro-enterotomy a similar regimen should be followed. He holds that in order to prevent the occurrence of a vicious circle after gastro-enterotomy the pylorus should always be closed whenever the state of the patient permits it, and as this operation is nearly as troublesome as resection, he prefers the latter in a great proportion of cases, since it has the advantage of getting rid of the diseased part entirely; in giving this advice he evidently refers to cases in which the ulcer is situated in the immediate neighbourhood of the pylorus.

In the discussion that followed the reading of Katzstein's paper Professor Boas, who urged the importance of early medical treatment, said that operation was very often followed by fresh haemorrhage, owing to the impossibility of preventing hyperchlorhydria and hypersecretion, and that after operation the patients should be referred back for medical treatment. Professor Bier argued that a vicious circle did not occur when the operation consisted of a large posterior gastro-enterotomy with a short loop. He maintained that the recognition of occult haemorrhage facilitated the differentiation of an open ulcer from a scar, but attached little importance to the estimation of the amount of acid. Professor Kraus, from a study of the operation consisted of a large posterior gastro-enterotomy with a short loop. He maintained that the recognition of occult haemorrhage facilitated the differentiation of an open ulcer from a scar, but attached little importance to the estimation of the amount of acid. Professor Kraus, from a study of the operation consisted of a large posterior gastro-enterotomy with a short loop. He maintained that the recognition of occult haemorrhage facilitated the differentiation of an open ulcer from a scar, but attached little importance to the estimation of the amount of acid. Professor Kraus, from a study of the

BEIT MEDICAL RESEARCH FELLOWSHIPS.

A MEETING of the trustees of the Beit Memorial Fellowships for Medical Research was held on December 17th. Dr. P. Gowland Hopkins, F.R.S., Reader in Chemical Physiology in the University of Cambridge, was elected a Fellow in Biochemistry at Trinity College, was appointed a member of the advisory board, in the place of Sir William Osler, resigned. The Francis Galton Eugenics Laboratory was recognized as a place of research. The fifth annual election to Beit Fellowships was made. Each Fellowship is of the annual value of £250, payable quarterly in advance. The usual tenure is for three years, but the trustees have power in exceptional cases to grant an extension for one year. This year there were thirty-five candidates, and eleven were elected, three of whom are women. Last year ten were elected, of whom five were women. The following are the names of the successful candidates, with the subjects of their proposed researches and the places where it is intended they should be carried out:—Dr. J. O. Walskin Barratt: Nature and mode of action of substances contained in or derived from blood plasma and taking part in plasma or serum reactions; cytological studies (Lister Institute). Dr. Myer Coplan: Immunity, with special reference to the action of the silicates (including the asbestos minerals, slag, wool, and the zoolithes) on bacterial and allied substances (Lister Institute). E. C. Grey, D.Sc., Fellow in biological chemistry, with special reference to the relation between bacterial enzymes and chemical configuration (Lister Institute). J. R. Marrack, M.B., B.Sc.Camb.: The Chemical pathology of arthritic diseases (1) the estimation of the uric acid in the blood of patients suffering from certain types of arthritic disease; (2) continuation of the work on calcium metabolism and organic acid excretion (Cambridge Research Hospital). V. H. K. Moorhouse, M.B.Toronto: The investigation of the metabolism of animals as indexed by the respiratory quotient under various conditions, with special reference to the question of diabetes (Institute of Physiology, University College, London). G. Nicholls, D.Sc.: Continuation of research on the investigation of the structure and function of the subcommisural organ and Reissner's fibre, which up to the present time has been principally concerned with the lower vertebrates; study of the pineal region of the brain (Biological and Physiological Laboratories, King's College, London). Anno Porter, D.Sc.Lond.: On the parasitic eotozoan, more especially protozoa and helminths infecting vertebrates and certain invertebrates (Quick Laboratory, Medical School, Cambridge). J. S. Mill, M.R.C.S., Liverpool, Fellow in animal medicine; and, if possible, the King Institute of Preventive Medicine, Madras, or the Wellcome Research Laboratories, Khardu). J. G. Priestley, M.B.Oxon.: Investigation into the factors concerned in the regulation of the excretion of urine (Physiological Department, Oxford). Jane Isabel Robertson, M.B., Ch.B.Glasg.: The comparative anatomy and physiology of the heart in the first instance; also the study of the vertebrate nervous system (Victoria Infirmary, Glasgow). Marjory Stephenson, Cambridge Natural Science Tripos, Part I (Chemistry, Physiology, and Zoology): The metabolism of fats and its relation to that of carbohydrates in the animal body, having special regard to the light afforded by the study of the fat metabolism of diabetic animals (Institute of Physiology, University College, London). J. G. Thomson, M.B., Ch.B.Edin.: The cultivation of protozoa (the intention is to obtain knowledge of the toxins elaborated by these and the antibodies formed); the cultivation of tumour tissues (Lister Institute). All correspondence of Fellows and candidates should be addressed to the Honorary Secretary, Beit Memorial Fellowships for Medical Research, 35, Clarges Street, W. At the meeting it was announced that Dr. T. R. Elliot, one of the Fellows, had been elected F.R.S.