

psychology. From this groundwork six main paths have developed. The theory of knowledge has been explored and tested mathematically by Spearman and his colleagues, with the result that the two-factor theory—that intelligence depends on a factor of general ability interacting with certain special abilities—has become the foundation of modern education. The drive towards conduct has been elucidated in many ways, notably by the psycho-analytic school of Freud and its derivatives, who have studied the impulses and urges which act as a *vis a tergo*, and also by the hormic or purposive school—its most notable exponent is McDougall—who study the goal or purpose of conduct. Both of these schools lay stress on the dynamism of emotion and feeling in contradistinction to the old conceptions of the forceful influence of ideas. The Gestalt school has studied the method of apprehension of experience, attempts to correlate psychological with physiological concepts, and seeks to prove (with considerable success) that the mind works in terms of wholes which may be subsequently analysed into component details and does not work by a simple synthesis of irreducible units. The older method of introspection has been elaborated and developed, while a special school of behaviourists has striven to work entirely by objective methods and by excluding consciousness from their field of observation.

At first sight it would appear that all these different schools of thought merely bite their thumbs at each other and can only agree to differ, but more recently there is no doubt that in their practical application they are beginning to come together, for in many respects those who deal with applied psychology are finding that they can usefully draw from all these fields of inquiry. Modern psychology is proving its use in many respects: notably in education, both in the grading of intelligence and capacities and in the formulation of special methods; in industry, in the study of fatigue and its avoidance, and in fitting the individual for his job and in finding a suitable job for the individual. In medicine the study of the psychoses and psychoneuroses has been much advanced, but apart from this there is a considerable improvement in the understanding of how individual patients suffering from all sorts of illness react to their environment. In criminology and law it is being realized that many crimes are expressions rather of disease and maladjustment than of vice, and so a fresh impetus is given to ensuring prevention of crime before it is too late.

As to the future, we may look for a simplification and a greater exactitude of psychological language, which is very desirable, and a *rapprochement* between the various schools so that the science of

psychology may become coherent. Much still requires to be done to enable feeling and will to be understood and tested as can knowledge at present, and the conceptions of the dynamism of the unconscious and the wholeness of mental apprehensions promise fruitful fields for future research.

THE NATURE OF THE ROUS AGENT

Is the immediate stimulus to malignant proliferation chemical or microbic? This is perhaps the greatest question in cancer research at the present day, and both the possible direct and the unqualified answers to it have their adherents, while, needless to say, there are others not prepared to affirm that all malignant disease has any single cause. It is beyond question that much human cancer is due to the action of chemical "irritants," and the disease can be produced experimentally both by these and even more readily with the more recently discovered carcinogenic hydrocarbons. On the other hand, a number of malignant tumours in fowls and several innocent tumours in other animals are unquestionably caused by an agent which is recoverable from a filtrate of the tumour itself and is generally regarded as a living virus. Attempts have been made to reconcile these facts and to formulate a unified conception of the origin of cancer by assuming that the immediate and persistent cause of malignant neoplasia is always a living virus, and that when chemical stimuli appear to be the cause of cancer they act only by rendering cells susceptible to this virus. There are a few workers who take quite the opposite view and, far from belittling the chemical stimulus and exalting the virus to a position of universal significance, seek to attack the virus in its own stronghold of the fowl tumours by questioning its living nature. The agent of the Rous sarcoma, the first discovered and best known of these tumours, has been submitted to almost every conceivable form of physical and chemical treatment in order to elucidate its nature, and there are records of the preparation of active extracts of such tumours by methods which might be expected to eliminate or destroy a living micro-organism. Further experiments on these lines are now reported by Jobling, Sproul, and Stevens,¹ who have produced tumours with the material obtained by extracting dried tumour tissue with various lipid solvents. They attribute their positive results to precautions connected with temperature, rapidity of manipulation, and protection from oxidation during the process. Only those familiar with such operations are qualified to judge the significance of this result, which naturally depends on a good deal of technical detail, but the authors' statement that similar treatment applied to material containing the vaccinia virus gave an inactive product adds some weight to their argument. The description of their numerous experiments is accompanied by a condensed review of foregoing work on the nature of the fowl-tumour viruses, and by an elaborate and far-reaching argument which it

¹ *Amer. J. Cancer*, 1937, **30**, 667, 685.

is far from easy to accept. That active extracts can be obtained from the Rous tumour which contain very little protein or carbohydrate, but consist mainly of lipoids, is a proposition which this work carries a stage further towards acceptance, and it is one which cannot easily be explained away. But it is more questionable whether these facts have any relation to the high lipid content of tumours generally, to the effect of lipoids on the growth of existing tumours, or to the chemical structure of known carcinogenic compounds. The last word on this subject is a long way from being said, and for those without too rigid convictions the position is full of interesting possibilities.

BEGINNINGS OF BRITISH OPHTHALMOLOGY

The belief that English ophthalmic literature began in 1622 with the publication of Richard Banister's *Breviary*, and that at the start was tainted with literary piracy, was questioned by Mr. Arnold Sorsby at the last meeting of the Ophthalmological Section of the Royal Society of Medicine. There was quite a considerable English ophthalmic literature before that date, and the charge of plagiarism could not be brought against Richard Banister. In its early stages, English ophthalmology was closely bound up with that of France, to its great advantage, for French ophthalmic literature favourably dominated the specialty till well-nigh the middle of the nineteenth century, when progress in the study of eye disease took on a more international character. The beginning of an independent French ophthalmology dates back to the publication in 1585 of *Maladies de l'Œil* by Jaques Guillemeau. A few years later, at any rate before 1590, an English translation appeared, going into at least two editions, and was apparently unobtainable by 1622, when Richard Banister, with full acknowledgement, brought out a third edition and added a *Breviary* of his own. Previous historians seem to have been more concerned with charging Banister with plagiarism than with assessing his own contributions to ophthalmology—and these were of no mean order. He has left two highly important documents on the social status of oculists in the seventeenth century, one being his *Breviary* and the other an unpublished manuscript recently discovered by Mr. R. R. James. He must also be credited with the first description of hardness of the eye, antedating Mackenzie's rediscovery by over two hundred years. Not only is there no reason to charge Banister with plagiarism and with quackery, as Hirschberg and Casey Wood have done, but there is proof that he was a qualified and skilful practitioner, a good observer, and a pioneer in a new branch of knowledge. Banister was not alone in his pioneer efforts. Later in the century there was Daubigney Turberville, who was the first to recognize colour-blindness, and the first to use a magnet to extract a foreign body embedded in the eye. There was also William Briggs, the first to describe the optic disk and to name it papilla and to contribute to ocular physiology the discovery of corresponding points in the

retina. Throughout that early period there were a number of lesser publications on the hygiene of the eye, of no great significance ophthalmologically, and unauthorized and unacknowledged reprints of previous work. The acme of literary piracy was reached with Sir William Read, oculist to Queen Anne and well known to his contemporaries as a charlatan. Of the two books credited to Read one is supposed to have gone into two editions and the other to be no longer extant. This latter volume Mr. Sorsby was fortunate enough to discover in the library of the Royal College of Surgeons, and was able to show that the three publications are all one and the same, the only difference being substituted title pages. The incongruity of its contents led him to the further discovery that the book passing under Read's name was nothing but an unauthorized and unacknowledged reprint of Banister's *Breviary* and the third edition of the English translation from Guillemeau that Banister had brought out in 1622. The only additional material in Read's book consisted of a series of case reports on miraculous cures obtained by Read's "styptic water" and "dextrous hand." The ophthalmic literature of the sixteenth and seventeenth centuries thus represents an incongruous mixture of important original observations, insignificant expositions of ocular hygiene, and an active trade in plagiarism. That there was piracy cannot be doubted, but overshadowing it is the excellent seamanship of seventeenth century pioneers of British ophthalmology.

THE TRAINING OF NURSES

There is something wrong with our system of training nurses. At a time when medical science is advancing in every direction, when new opportunities are always opening up for the well-qualified nurse, and when other careers are overstocked with applicants, nursing appears to be losing its popularity and its appeal. Numbers of our hospitals report a shortage of applicants, and almost all of them admit that they are failing to attract the better-educated type of student. So writes Dr. Harold Balme as a justification for his little book of criticisms and suggestions.¹ In seeking the reason for this state of affairs he finds that the present method of training nurses is both antiquated and inadequate. It tends to stultify intelligence, not to educe it; to repress initiative, not to encourage it; to dry up personal sympathy, not to foster it; to place the major emphasis upon *how* to perform certain duties, not on *why* they are important; and, in short, to develop quick and mechanical action rather than intelligent understanding in the fight against disability and disease. He is a caustic critic of autocratic rule in hospitals. "Many a young probationer has told me of occasions when she has been 'dressed down' by a sister in a way which no mistress, however provoked, would dream of using towards one of her maids unless she was prepared to see the girl walk straight out of the

¹ *A Criticism of Nursing Education, with Suggestions for Constructive Reform.* By Harold Balme, M.D., F.R.C.S. H. Milford, Oxford University Press. (2s. 6d.)

house." He maintains that the root of failure in the existing system lies in the attempt to combine the education of young probationers with the need for utilizing their labour in order to carry on the existing work of a busy hospital. It is this that accounts for the long hours of duty, the inadequate opportunities for rest and study, and the various vexatious restrictions to which it gives rise. This leads Dr. Balme to his conclusion: That we can never hope to have an ideal nursing college nor a really satisfactory method of training until nursing education is entirely separated from the responsibility of providing the nursing services of the hospital with which it is connected. In other words, such a hospital must be adequately staffed with its own trained nurses, and must not depend to more than a limited and minor extent upon such assistance as it may derive from the duties performed by the student nurses during their course of training. He maintains that there is no question that what is deterring educated girls from taking up nursing as a career is the arduous and antiquated conditions which exist in the hospitals, and that if these were removed and the whole status of nursing raised to a professional level by the shutting down of non-approved training schools there is every reason to expect a large influx of well-educated student nurses. This is a book to be read by hospital governors, be they laymen or members of the medical profession, and it will no doubt be brought to the notice of the Interdepartmental Committee on Nursing lately set up by the Minister of Health and the President of the Board of Education.

Q CAMPS

The problem of dealing with young people who offend against the law is one of the most pressing of these times. So much of what is called juvenile delinquency results, not from real weakness, but from a wrong attitude to life. The delinquent offends against the law because he has never been trained in a sound moral and social outlook. Prison is the worst possible thing for offenders of this kind—and, indeed, for offenders of most kinds—but the trouble is to know what to do with young people who need moral training. Borstal takes a good many of the more troublesome ones, but its methods are drastic and expensive. Q Camps is the name of an organization which suggests one possible solution for certain boys and youths. It is still in the experimental stage. "Q" is meant to suggest a quest of inquiry and to obviate the drawbacks of a descriptive title. There is as yet only one camp, situated in twenty-six and a half acres of land in a rural district not far from London. It was started in May, 1936, and is conducted on the principle of affording the fullest possible scope for learning a satisfactory mode of life by experience. The camp chief is helped by an educational director and a specialist in gardening, farm work, and handicrafts. There is room for about fifty members; at present about thirteen are in camp. They live under canvas in summer and in wooden huts in winter; they grow vegetables and flowers, look after poultry and goats, do

elementary carpentry and building, cooking and handicrafts, play games, act plays, and learn many other kinds of activity. They are between 16½ and 25 years of age and come from social organizations, the courts' probation officers, or at the invitation of friends. They apply their own discipline themselves through the camp council. The staff have the advice of a number of practising psychiatrists, whose word is important in the selection of cases. The tolerant atmosphere of the camp is said by Dr. Dennis Carroll, one of its chief exponents,¹ to afford scope for a non-social member to discover with the minimum of resentment that the achievement of his wishes depends very largely on his degree of co-operation with his fellows. The success of such an experiment depends upon personal ability and achievement. This venture has yet to prove its practical value, and judgement must be suspended until it has been allowed time to do so.

TULAREMIA

A few months ago A. P. Thomson, G. H. Wilson, and S. McDonald² described three cases of a disease, apparently contracted in Ireland, in which lesions suggestive of tularemia were present in the liver of one of them. Certain features presented by these cases—the long incubation period, the presence of a marked eosinophilia, and the absence of specific antibody for *B. tularensis*—definitely disposed of the idea that they were infections with that organism. Dr. Thomson and his colleagues, although admitting this, suggested that the condition described might have been due to infection with a hitherto unrecognized bacterium related to *B. tularensis*, and this very naturally has aroused a keener interest in tularemia in this country. Apart from the fact that it was a hitherto unknown bacterial species, the discovery of *B. tularensis* by McCoy and Chapin in 1911 attracted interest mainly because the disease caused by it in ground squirrels in California presented post-mortem appearances closely resembling those of plague. Even when some years later the researches of Francis showed that human infections with this organism were occurring in the United States, the source of this infection being certain species of wild rabbits, the interest in this country still remained a somewhat detached one; apart from one or two laboratory infections tularemia was unknown in these islands. Since that time the situation has changed materially. It is true that naturally occurring authentic cases of tularemia have yet to be found in Great Britain, but the geographical distribution of the disease has extended considerably. It has been reported from most parts of America; the rabbit fever studied by Ohara in Japan has been shown to be tularemia; and cases have occurred in Siberia and in various parts of Europe, including Norway and Sweden. The report of the session of the Permanent Committee of the International Health Office³ in May, 1937, draws attention to the extension of tularemia in

¹ *Lancet*, 1937, 2, 1002 and 23.

² *Ibid.*, 2, 9.

³ Office Internat. d'Hyg. Pub., 1937, 20, 1091. (See *British Medical Journal*, 1937, 2, 388.)

Lower Austria and its spread thence to Czechoslovakia, as well as to an outbreak among the garrison of Luleburgaz in Turkish Thrace. There is thus evidence that the disease is widespread in both the New and the Old Worlds, and when one adds that the host range of this bacterium now includes hares, wild rabbits, water voles, and some species of grouse, as well as ground squirrels, and that some of these susceptible mammals are indigenous in this country, the possibility of tularemia arising here is by no means remote. Man becomes infected either through direct contact with an infected rodent or through the intermediary of a biting insect, and infection enters the body by various routes: the skin—particularly through cuts and abrasions—the conjunctiva, and the mucosa of the nose and throat. The disease takes various forms, which fall into two main groups—the typhoidal and the glandular. In the former, lesions at the portal of entry are minimal or absent and the infection becomes generalized from the start with the formation of multiple foci in the different organs, particularly in the lungs. In the glandular type of the disease there is considerable resistance to the infection, as evinced by the development of a marked primary lesion and the enlargement of the glands draining the primary focus. This type of tularemia is further divided into the ulcero-glandular, the oculo-glandular, and the glandular, according to the site of the primary lesion; the first of these is by far the commonest form for tularemia to take. Pneumonia may be a prominent feature—in an analysis of 400 cases by Foshay¹ it was present in 18.2 per cent.—and many authorities consider this complication the chief cause of death from tularemia. Foshay points out, however, that pneumonic lesions are present in only half the fatal cases, and attributes the chief cause of death to septicaemia. When on the lookout for cases of tularemia the points to bear in mind are that it occurs in those whose occupation brings them in contact with infected rodents—gamekeepers, rabbit catchers, poultrymen, cooks, butchers—and that the commonest form for the disease to take is an ulcer on the skin, usually of the hands or forearms, associated with enlarged lymphatic glands and fever. The laboratory investigation of the human disease is concerned with the demonstration of specific agglutinins in the patient's serum, providing evidence which is invaluable in the making of a correct diagnosis.

RADIOLOGY OF THE CARDIOVASCULAR SYSTEM

Before the advent of radiology little could be discovered regarding the morbid anatomy of the heart during life. Moderate or gross enlargement of the heart and aorta could be determined by clinical methods, but slight changes in the size of the heart, various changes in its shape, and a majority of lesions in the great vessels could at best be suspected or inferred from groups of clinical data. The use of x rays in the study of the cardiovascular system has shown that the deductions drawn from certain clinical methods, notably per-

cussion, have been erroneous. In a recent monograph Dr. H. Roesler¹ has assessed the value of the various radiological methods of studying the heart and blood vessels, and has brought together the great mass of researches that have been undertaken during the last quarter of a century. The earlier chapters are concerned with the radiological study of the anatomy and dynamics of the normal cardiovascular system; teloradiography, orthodiagraphy, and arteriography are discussed, while such newer methods as volumetric reconstruction and kymography receive attention. Succeeding portions of the work deal with the radiological aspects of cardiovascular disease from the point of view of aetiology, the structural changes in disease, the use of the x rays in the examination of the aorta and pulmonary artery, and the radiology of pericardial disease and peripheral vascular disease. Dr. Roesler's exposition of these problems reveals the complexities that have always surrounded the radiological study of the heart. Whereas this method in other departments of medicine has remained largely qualitative (as in diseases of the lungs and digestive tract) here the matter has become one of intimate anatomical relation and mensuration—for example, the deviations produced in the trachea and oesophagus by enlargements of the heart and aorta and the determination of the limiting dimension of the silhouettes of the various structures in relation to age and build. Further, these radiological studies have shown the close relationship that exists between the efficiency of the heart and the vascular state of the lungs. The author shows on every page his intense interest in his subject, and this treatise bears the stamp of careful thought and personal observation.

HONORARY PHYSICIANS TO THE KING

The King has made six appointments as Honorary Physician to His Majesty from the members of the medical profession engaged in public health work, both in central and local government. The appointments are made for a period of three years, and the following have been appointed in the first instance: Sir Arthur MacNalty, Chief Medical Officer, Ministry of Health and Board of Education; Sir Edward Mellanby, Secretary of the Medical Research Council; Dr. J. H. Hebb, Director-General of Medical Services, Ministry of Pensions; Dr. J. C. Bridge, Senior Medical Inspector of Factories, Home Office; Sir Frederick Menzies, Medical Officer of Health and School Medical Officer to the London County Council; and Dr. A. S. M. MacGregor, Medical Officer of Health for Glasgow.

The eighth annual reports of the National Radium Trust and Radium Commission for 1936-7, including a statistical report, are issued to-day as a Command Paper (Cmd. 5612), price 1s. 3d. net. Further reference to this publication will be made in an early issue.

¹ *Arch. intern. Med.*, 1937, 60, 22.

¹ *Clinical Roentgenology of the Cardiovascular System.* By Hugo Roesler, M.D. Baillière, Tindall and Cox. (34s.)