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X-RAY DIAGNOSIS.

AT page 595 this week we print the text of a paper by Mr. H. J. Paterson entitled "The fallacy of *x* rays in abdominal diagnosis," and at page 598 another paper, under the same heading and read on the same occasion, by Dr. F. Hernaman-Johnson. A report of the joint discussion on these two papers by the Sections of Surgery and of Radiology and Physiotherapeutics at the Cardiff Annual Meeting appeared in our issue of August 11th (p. 249). We venture to express the opinion, after carefully reading all the communications, that a wrong name has been used to describe the happenings with which they deal. Fallacies in *x*-ray diagnosis there may be, but it seems to us that almost all the "fallacies" enumerated and discussed at Cardiff would be more correctly described as "mistakes."

There is, however, one real fallacy connected with *x*-ray work which has grown with the development of radiology, and to a large degree exercises a crippling influence even to-day. Its consequences have been disastrous and far-reaching. It has existed since the beginning, when radiology was looked upon as an interesting toy of the medical profession, when sapient physicians and surgeons impressed upon hospital committees that, of course, the hospital must have some sort of quarters for an *x*-ray apparatus, but that, equally of course, anyone—medical, pharmaceutical, or otherwise—was good enough to "run the show" as long as he did not spend too much money and was also duly impressed with the diagnostic acumen of his colleagues. This is the false idea which even now survives. No hospital, of whatever kind or size, is regarded as complete unless it possesses an *x*-ray plant of sorts and an *x*-ray department. Money can always be found for these. Then the question, the quite secondary question, arises as to who shall take charge of the department and be responsible for its work. In the old days any enthusiast who offered his services was promptly accepted; even now in far too many places the hospital authorities consider that any medical man—or perhaps a layman—is fully qualified, without any special knowledge and without any special training, to be put in charge of the radiological department. As evidence of this, not so very long ago a public body advertised for a radiologist for a hospital, "a D.M.R.E. preferred"; although more than one applicant possessed this diploma another candidate without it was appointed.

The fallacy—a serious one—is, therefore, that special knowledge is not required to qualify for the very responsible post of officer in charge of a hospital *x*-ray department. We have it on high authority that at the present time, in many of the smaller hospitals of this country (and even in some of the large teaching hospitals too), a vast amount of radiographic work is being done which is so unsatisfactory, both technically and from the point of view of diagnosis, that it is a definite danger to the community. Technique is the first essential for accurate *x*-ray work. Without it the finest radiological diagnostician must make numerous mistakes; with it his mistakes will be lessened in number, for none of us is infallible, and no method of diagnosis is free from risk of error. The other point, so often overlooked, is that even with the finest technique a man's opinion is apt to prove unreliable unless he has a very comprehensive knowledge of diseases and of the pathological conditions which can give rise to the various findings seen on a screen or recorded on films. The fact that it is possible nowadays to get such magnificent radiographs has made interpretation even more difficult than in the early years of radiology. Much slighter deviations from the normal are relied on as evidence of disease, and more remote regions of the body have been explored. Perhaps the greatest difficulty at the present time is to find specially qualified medical men or women for all these hospital posts. In many districts there is not enough work in private practice to maintain a radiological specialist. A remedy that has been suggested is that in some places a whole-time well-paid expert might be appointed to take charge of the *x*-ray departments of several neighbouring hospitals.

Besides the papers to which we have already referred, two others on *x*-ray diagnosis appear in this issue. One of these, by Dr. Ffrangcon Roberts, on chest radiography, is of great interest in showing how mistakes may be made on chest films owing to distortion of shadows. His plea for long-distance radiography in the examination of the thorax seems to be well founded. The other paper, by Dr. Hubert Williams and Mr. Thurstan Holland, is a striking example of a difficulty in accurate diagnosis which occurs in renal stone work. Mistakes there will be, a few of them quite unavoidable, even when the most scrupulous care is used and when every possible means of making a correct diagnosis is taken; the radiogram does not lie, but interpretation must in some cases be a matter of opinion, and then a wrong diagnosis may follow. Apart from this, the chief of all sources of error is reliance upon technically poor films and an incomplete examination. Other preventable mistakes are for the most part due to want of knowledge.

We cannot agree with those who say that there is no such thing as an *x*-ray diagnosis. A mere glance on the screen sometimes suffices, while over and over again in practically all the conditions for which an *x*-ray examination is made the films alone show, beyond dispute, what the pathological condition is. Probably, indeed, no other special method of examination will by itself yield so many positive diagnoses as will the *x*-ray method. This, however, is not said with a view to urging that purely *x*-ray diagnoses should be the rule, and we cordially agree that consultation between the practitioner in charge of the case and the radiologist is of the utmost value; if this were always possible many mistakes would not be made. Unfortunately, however, this ideal state of affairs is almost unattainable, especially in large hospitals. It is difficult enough for the part-time and honorary radiologist to keep continuous control over the routine work; he cannot spare the time to attend consultations or operations. The consulting physician or surgeon is no better off, and he finds it impossible to visit the *x*-ray department as a routine. Individual cases, especially those of unusual interest, may lead to a consultation, but the more ordinary everyday work has to take its chance without.

No doubt papers on mistakes—or fallacies, if that term is preferred—serve a useful purpose, inasmuch as they show how many of these occurrences are preventable; but such papers would themselves be a mistake if they were written with the intention to

belittle a method of examination which, in the short space of thirty years, has revolutionized diagnosis and has taught us that many diagnostic points about which it was customary to dogmatize were based on very frail grounds. When all is said and done, two things are needed to make a successful practitioner of medicine or surgery: a knowledge of the subject, and, perhaps more important, common sense.

PAIN AND OXYGEN DEFICIENCY.

Insufficient supply of oxygen to the body is a very common result of disease. Although its effects upon the various organs and systems have received the concentrated attention of physiologists, pathologists, and clinicians, little or no attempt has been made to correlate the several aspects of their work. Since oxygen deficiency is so frequent both in health and disease, and since pain is the commonest obtrusive manifestation of perverted bodily function, a relation between oxygen lack and pain might well be predicted; in any case, an inquiry into this matter may serve to link up facts that have been established by the study of particular organs.

Considering first the effects of alterations in the oxygen content of the environment, the account given by Barcroft[1] of the symptoms experienced by members of his party at an altitude of 12,000 feet on the Andes is worth attention. On reaching this height every member complained of severe headache, and in the majority this was the most prominent symptom. If further search is made in this report for the incidence of pain, it is found that four of the party of eight experienced precordial pain, while a fifth had pain in the abdomen. Nor are the less highly developed structures of the body exempt from this same relationship; the severe cramp occurring in untrained muscles with undue exertion, and the painful intermittent claudication arising at times with even slight effort in subjects of arterio-sclerosis, are alike the outcome of insufficient oxygen supply. Furthermore, the relationship of cause and effect has been shown experimentally by MacWilliam and Webster,[2] who shut off the blood supply of the arm by constriction and demonstrated the simultaneous occurrence of pain with active muscular contractions. No organ, however, signalizes the onset of anoxaemia in more dramatic fashion than the heart; and the view that oxygen lack is invariably the fundamental factor in the production of true angina pectoris is ably expounded by Keefer and Resnik[3] in their recent study of the pathogenesis of angina. These authors review critically the theory of Allbutt that disease of the aorta is the cause of pain; although aortic disease is usually found at necropsy, it is not invariably present, and, moreover, true angina may arise in adolescent subjects of rheumatic aortic incompetence in whom no involvement of the aortic wall is demonstrable. Against Mackenzie's theory of myocardial exhaustion is raised the cogent objection that in those cases in which insufficiency of the myocardium is most marked—that is, in cases of cardiac failure—angina is a rare symptom, and tends to disappear even if it has originally been present. Indeed, were this the cause of angina all patients dying from failure might be expected to suffer from such pain.

That coronary disease is present in the majority of sufferers from angina is no new observation, and this fact is the principal argument in favour of myocardial anoxaemia as the causative agent in angina pectoris. The advocates of this theory, however, are confronted with the objection that coronary disease is not invariably discovered, although in its absence aortic incompetence is nearly always present. Since with this lesion the diastolic pressure is usually low, and as the coronary arteries fill during diastole, it is seen that such regurgitation is a potential cause of myocardial oxygen lack. It may further be argued that the preponderance of angina in syphilitic as opposed to rheumatic aortic incompetence supports the anoxaemic theory, since coronary obstruction is more likely to complicate the former than the latter, while a measure of stenosis may partially stem the backflow in rheumatic valvular disease of the aorta, and so aid coronary filling. More light is thrown upon the subject by a study of acute coronary obstruction. In this condition the pain is usually identical with that of angina in character, position, and radiation, the principal difference being the prolongation of the attack. It is known that pain in acute coronary obstruction results initially from permanent interference with the oxygen supply, and it seems reasonable to infer that the brief pain of angina is due to transient oxygen deficiency. Of interest in this connexion are the observations of Herrick,[4] who has recorded four instances of the association of typical anginal pain with severe anaemia. Since with decrease of the anaemia the seizures of pain also abated in frequency and severity, the conclusion may be drawn that in these cases oxygen deficiency was a contributory factor, if not the sole cause of angina pectoris.

In summarizing the results of clinical and experimental research on oxygen deficiency in the body, it may be remarked that, while all tissues must be affected deleteriously by imperfect oxygenation, it is principally the motile organs and those most constantly functioning which give rise to pain on this account. Far beyond all others in severity and gravity is the pain arising in the heart, for an attack of such pain only too often terminates with complete disorganization of the rhythm of the heart and inevitable death.

[1] *Respiratory Function of the Blood*, 1925, p. 19.
[2] *British Medical Journal*, January 13th, 1923.
[3] *Archives of Internal Medicine*, June, 1928, p. 769.

OCCUPATIONAL AND PHYSICAL THERAPY.

In the years immediately following the war the re-education of the injured received a great deal of attention in this country and in America, and admirable results were achieved. With the closure or reduction in number of the special institutions and departments devoted to this after-treatment much of the ground gained was lost, because it was not fully realized that the physically injured or mentally sick civilian needed this special treatment as urgently as the disabled soldier. Recognizing the existence of this need, the American Medical Association formed a Council (or, as we should call it, a committee) on Physical Therapy, which has recently given its official approval to an important paper[5] by Dr. Harry Mock and Mrs. Mary L. Abbey. Occupational therapy has been defined as any mental or physical activity which is intended to hasten the recovery of any individual from disease or injury necessitating a long stay in hospital. Dr. Mock and Mrs. Abbey define three types: (1) diversional, (2) purposeful or curative, and (3) prevocational. Moreover, occupational therapy may be prescribed in the treatment of the neuromuscular system or in the cure of morbid states of mind. As an example of the successful treatment of a purely

[4] *American Heart Journal*, 1927, ii, p. 351.
[5] Occupational Therapy. By Harry E. Mock, M.D., and Mary L. Abbey. Chicago: *Journal of the American Medical Association*, September 15th, 1928, p. 797.

mental condition of hypochondriasis with phobias entirely unconnected with trauma, the history of a case is given by the authors in which congenial occupation of the fingers abolished long-cherished fears of cancer and other diseases. The chief field of operation for occupational therapy is, however, afforded by cases of injury the treatment of which involves protracted residence in an institution and probably immobilization, and by those cases, so familiar in military orthopaedic hospitals, in which damaged and long-rested muscles and joints have to be re-developed, or new actions have to be made familiar to undamaged muscles or groups of muscles. In the United States the movement to forward occupational therapy has gone far and has produced striking developments. The National Association of Occupational Therapists, which was founded in 1917, has 900 members, 7 per cent. of whom are "physicians." (It may be necessary to remind the British reader that in the United States "physician" is used generally as an equivalent to "qualified medical practitioner," and does not exclude those practising surgery.) In addition to the association, or connected with it, are twenty local or State societies and seventeen training schools, so that it will be seen that the organization of this form of treatment is well advanced. It is difficult, however, to estimate the extent to which the activities thus outlined are covered in this country by the Chartered Society of Massage and Medical Gymnastics, and the various schools of massage and physiotherapy. Diversional therapy implies anything in the way of occupation or amusement that will divert a patient's mind from his illness. It may therefore include a game of bridge, the perusal of a detective novel, or the solution of a jig-saw puzzle. Drawing is specially advised by Dr. Mock and Mrs. Abbey, since it is not only an amusement, but leads on to vocational work. Above all, occupation in the hospital workshop is strongly recommended, because of the complete change of environment, the practical value of the work done in muscle training and rehabilitation, and the importance of fitting artisans to resume their old or commence new callings. For tuberculous patients occupational therapy is very valuable, on account of its moral more than its physical effects. In conclusion, it is held that there is a strong case for the recommendation that occupational therapy should be employed as a matter of course in every hospital and convalescent home as a part of the course of treatment, often as important as that which finds its place in the operation theatre or in a surgical or medical ward.

THE RISKS OF MERCURIAL POISONING.

THE danger of chronic mercurial poisoning in certain industrial processes is notorious, but the possibility of mild degrees of poisoning occurring in laboratory work is not so well known. Some recent articles by Stock[1] indicate that this is a real danger. Fleischmann[2] concluded that a daily intake of mercury of less than 10 γ (γ=0.001 mg.) was sufficient to produce definite toxic symptoms. It must be mentioned, however, that this conclusion has been denied by other workers, and that Fühner[3] concluded that ten times the amount mentioned was required to produce any injurious effect. Stock refers to the notoriously bad effects on health produced by poorly ventilated laboratories. He points out that in an old laboratory the dust is usually full of the mercury that has been spilt from time to time. He suggests that the ill health suffered by many of the most illustrious physicists and chemists was due to mild mercurial poisoning. The symptoms he attributes to mild mercurialism are: first, such symptoms of general ill health as lack of energy, headaches, and loss of appetite; secondly, more specific effects associated with the nasal and oral mucosa, such as sore gums, decay of teeth, liability to nasal catarrh and sore throats, and gastro-intestinal disorders. He quotes the case of one person who suffered from working in a room containing mercurialized dust; symptoms commenced after about six months, and were aggravated in the succeeding six months, but ceased as soon as the room was cleansed thoroughly. Mercury in laboratory dust constitutes a danger to only a very limited class, but mercury amalgam as used in dentistry is a possible danger to a large section of the community. Fleischmann and Borinski showed that there was an undoubted risk to dentists and dental mechanics, for the air in school dental clinics contained quantities of mercury, which reached in one case the surprising figure of 0.3 mg. per cubic metre; Fleischmann detected a definite lymphocytosis in 80 per cent. of the attendants, and in many cases found definite symptoms of mercurial poisoning. The possibility of a person absorbing from amalgam dental fillings quantities of mercury sufficient to produce deleterious effects is, however, a much more important question, because such a risk affects a large proportion of the community. Fleischmann found demonstrable quantities of mercury in the urine of patients with amalgam fillings; it appears to be generally admitted that traces of mercury can be absorbed from such fillings. The question of practical importance is whether these minute quantities of mercury affect the health of many out of the millions of persons who have amalgam fillings in their teeth. Stock considers that there is evidence that such poisoning does occur, but it is obviously almost impossible to decide with certainty whether rather vague symptoms of mild ill health are correlated with these stoppings. We are doubtful if any case has been made out against dental amalgams, but the danger of spilling mercury about laboratories seems obvious. Chemists and physicists who are constantly working with mercury are usually aware of this risk, but workers in biological laboratories nearly all use mercury in small quantities for one purpose or another, and are apt to forget that it is dangerous for the dust of the rooms in which they spend their days to be impregnated with this metal.

[1] Stock: *Med. Klinik*, 24, 1114 and 1154, 1928.
[2] Fleischmann: *Deut. Med. Woch.*, No. 8, 1928.
[3] Fühner: *Klin. Woch.*, 1927, 6, 1545.

THE FATE OF INFANTS OF TUBERCULOUS MOTHERS.

A DANISH physician, Dr. H. Heckscher,[1] has followed up the inquiries of Kjer-Petersen and Ostenfeld by investigating the fate of the 400 living infants born of 141 tuberculous mothers in the maternity department A of the Rigshospital in Copenhagen since 1918. The mothers were, in 82 instances, suffering from active pulmonary tuberculosis when admitted to the maternity hospital, while in the remaining 59 cases they had shown definite signs of pulmonary tuberculosis in adult life, but presented no evidence of active disease at the time of confinement. The fate of only 13 mothers and 32 infants could not be ascertained. The survivors among those whose fate was ascertained were examined clinically. Of 75 mothers confined in hospital in the period 1919–26, and showing signs at that time of clinically definite pulmonary tuberculosis, 11 were found to be well, 31 to be still suffering from tuberculosis, 32 to have died of tuberculosis, and 1 of some other cause. Of the 53 mothers who had been confined during the same period, and who had during these confinements suffered from latent or inactive pulmonary disease, none was found subsequently to have died, 48 seemed to be perfectly healthy, and only 5 showed signs of active disease. With regard to the fate of the 204 infants born to the 75 mothers suffering from active pulmonary tuberculosis at the time of confinement, it was found that 102 were healthy, 46 showed signs of tuberculosis, 11 had died of this disease, 38 had died of other diseases, while the fate of

[1] *Ugeskrift for Laeger*, July 19th, 1928.

the remaining 7 was unknown. As for the 164 infants born of the 53 mothers with signs of arrested tuberculosis at the time of confinement, the subsequent investigation showed that 119 remained healthy, 16 showed signs of tuberculosis, 3 had died of tuberculosis, 25 had died of other causes, and the fate of 1 remained unknown. It should be noted that in these two groups there was a very large mortality (63 deaths) from causes other than tuberculosis; as many as 48 of these deaths occurred during the first year of life. Only in 8 of these cases were there records of a necropsy at which signs of tuberculosis had not been found. It is therefore conceivable that such causes of death as broncho-pneumonia and bronchitis (21 cases) were misnomers, the real cause of death being, perhaps, tuberculosis. Adding the figures in one class to those in the other, the author finds that only 14, or 3.8 per cent., of the 368 infants born to the 128 mothers suffering from active or inactive tuberculosis died from this disease. Even if to these 14 there be added the deaths which might conceivably have been due to tuberculosis, the death rate from tuberculosis was still not greater than 9 per cent.—a rate far below that said by Calmette to apply to infants born in France to tuberculous mothers. It is a pity that the author was unable to ascertain in each case the degree of infection to which these infants were exposed.

NOISE.

Our readers will recall that at the Annual Representative Meeting of the British Medical Association at Cardiff a resolution moved on behalf of the Edinburgh and Leith Division was adopted calling for measures to be taken for the suppression of unnecessary noise in the interests of public health. Although this resolution made no mention of specific noises, its terms plainly indicated that the reference was to aggressive sounds and vibrations produced by traffic in our streets. The matter was discussed in a leading article in our issue of August 25th (p. 346), and the Medico-Political Committee, at its recent meeting, decided to take prompt action in pursuance of the Cardiff resolution. The Ministry of Health has been asked to receive a deputation, and Branches and Divisions of the Association will be urged to stimulate their local authorities to make use of existing powers to deal with the nuisance and to apply for fresh powers where necessary. In the meanwhile, following an assurance given by the Home Secretary in the House of Commons, a conference has been held at the Home Office between the Secretary of State, the Minister of Transport, and the heads of both departments. According to a statement issued on Tuesday by the Home Office, the purpose of this conference was to consider what steps could be taken in order to mitigate the ever-growing nuisance of noise in the streets, not merely in the metropolis, but throughout the country. "The increase in the volume of noise is largely due to the increase of motors, and of the uses to which motors are put, and to the abuse of various types of horns. The powers and duties in this matter are divided between the two Ministers: the Minister of Transport has the power to make regulations, and the Home Secretary is concerned, as the central police authority, with the measures to be taken for their enforcement. In the result, the Ministers have now decided that draft regulations, directed to abating the nuisance of motor traffic noise, should be prepared. Such regulations will be the subject of consultation between the Minister of Transport and the motoring organizations and representatives of public authorities, whose views will be carefully considered. After the regulations have been made the police will be advised by the Home Secretary as to the steps to be taken to ensure their observance, with a view to decreasing the nuisance from which so many people now suffer." This is a move in the right direction. But, unless we are much mistaken, continuous prods by the public will be needed to keep the authorities awake. Whether fresh legislation is required or not will probably depend a good deal upon the attitude taken up by the motoring organizations. We are glad to learn, therefore, that the Automobile Association has stated in advance its willingness to support any reasonable proposals to reduce noise.

SUPERVISION OF FOODSTUFFS AND DRUGS.

Two reports[1] by Government departments dealing with the supervision of foodstuffs and drugs have just been issued—the report of the Government chemist, Sir Robert Robertson, for the year ended March 31st, and a report on the Sale of Food and Drugs Act, containing the relevant extracts from the annual report of the Ministry of Health for 1927–28 and an abstract of the reports of public analysts for 1927. These reports are in large measure complementary, for, while the major part of the work of Sir Robert Robertson's department consists of analyses for the Board of Customs and Excise in connexion with the assessment of duty and "drawback," it has also some responsibility for the examination of foodstuffs as to quality and freedom from adulteration. The total number of samples examined at the various Government laboratories—being the whole or part of the chemical work of some eighteen or twenty departments—was 491,039, an increase of 21,397 on the previous year's total. A considerable amount of imported dairy produce came under scrutiny, and, in addition, many other kinds of food—fruit and vegetables (pulped, canned, and dried), sweetmeats, custard powder, pickles, etc.—were also examined for the presence of preservatives. Seventy samples were reported as contravening the regulations; 44 contained benzoic acid, either in excess of the quantities permitted or where its use is forbidden. It was noted that the use of boric acid as a preservative for butter has practically ceased. Examinations of tea in respect of its fitness for consumption also constituted a task of some magnitude; while, in addition to analyses of alcoholic liquors for excise purposes, the department safeguards the interest of the consumers by the examination of samples of beer "as retailed" for evidence of dilution. In certain cases of proceedings under the Food and Drugs Act, samples may be submitted to the Government chemist; 26 such cases arose last year, 19 relating to milk. The report calls attention to the need for exceptional care in the sampling of milk supplied in the modern type of bottle, which lends itself to the formation of a layer of cream, and, by the absence of air space above the milk, renders difficult the mixing of the cream layer with the remainder. In one case the public analyst called for the prosecution found 2.07 per cent. of fat in his portion of the sample, while the portion sent to the Government chemist contained 1.50 per cent., and the defendant's portion 6.68 per cent. of fat. Numerous examinations of food and medicinal preparations were made for various public departments, and in other directions the laboratories dealt with a bewildering variety of substances and executed many surprising tasks. Spindle oil was examined in connexion with mule-spinner's cancer, radium was recovered from disused gunsights, sheep's teeth were received for inquiry regarding the nature of a metallic deposit erroneously believed to be gold, insurance stamps were tested in cases of suspected fraud, sea water was analysed in its bearings upon fishery research work—these are but a few of the varied activities carried on at the laboratories. The Ministry of Health report is a prosaic document of more restricted scope, and, we may add, somewhat highly priced at eighteen-

[1] London: H.M. Stationery Office, or through any bookseller. 1928. 1s. 6d. net each.

pence for twelve pages of print. It states that of the "record" number of 124,264 samples of food and drugs reported upon by public analysts in 1927, 5.5 per cent. were reported as adulterated, compared with percentages of 5.8 and 6.5 for 1926 and 1925 respectively. More than half the specimens examined were milk samples, 6.9 per cent. being below standard or adulterated; the corresponding percentages for 1925 and 1926 were 8.3 and 7.4 respectively. Of over 10,000 samples of butter only 1.4 per cent. were reported against. Other foodstuffs inspected included cream, margarine, lard, cheese, bread, flour, jam, marmalade, vinegar, spirits, and beer. During the year, 4,981 samples of 120 different varieties of drugs were examined, 283, or 5.7 per cent., being found to be adulterated or not up to standard, compared with 4.5 per cent. in 1926. The most interesting case, the report states, was that of some cod-liver extract tablets, sold by a well-known firm of druggists and advertised as being rich in vitamins A and D. The analyst was of opinion that vitamin A was present, if at all, in such a negligible amount as to render the tablets practically valueless as a substitute for cod-liver oil; the deficiency of both vitamins was confirmed by biological experiments, and the vendors were convicted and fined £30 and £75 costs.

MENTAL DEFICIENCY IN NEW ZEALAND.

SOME time ago a very influential committee, set up by the Government of New Zealand, inquired into the question of mental deficiency in that Dominion. In a leading article (September 12th, 1925, p. 486) we commented on the report of that committee, pointing out, amongst other things, that the opinions expressed therein were more favourable to sterilization of mental defectives than was the case with informed opinion in this country. Following upon that report, the New Zealand Government this year introduced into the House of Representatives a Mental Defectives Bill based upon the committee's recommendations. The actual text of the bill is not available, but from a summary of its main provisions published in the *Times* it seems that in the bill the term "mentally deficient person" was extended to include "one who suffers from mental deficiency associated with or manifested by anti-social conduct, and who requires supervision for his own protection or in the public interest." If the words quoted are the actual definition of persons to be dealt with under the Act, the latter phrase appears pleonastic and the former sufficiently indefinite to give rise to a good deal of dispute in practice. The bill provided for the setting up of an appropriate board for the supervision of mentally defective persons. The board is to compile a register of such persons, and is given power "to investigate the cases of prisoners or accused persons believed to mentally defective, epileptic and mentally defective children, and children whose mental development is retarded two years or more." The bill further sought to authorize sterilization with the consent of the patient or of the parent or guardians, and under the direction of the board; to provide special institutions for the segregation of registered defectives; to forbid marriage with registered persons without consent of the board; and to prohibit carnal knowledge of, and the supply of intoxicating liquor to, a registered person. The bill met with considerable opposition in the House of Representatives. It was eventually passed last week, but not until the Minister of Health, Mr. J. A. Young, had withdrawn the more drastic or questionable proposals—namely, those relating to sterilization, to the prohibition of marriage with defective persons, and to the authorization to examine children whose mental development is retarded to the extent of two years or more. The Prime Minister, Mr. Coates, stated that he wished the country to have a further opportunity of considering these proposals. This was certainly wise, for it requires a good deal of evidence yet to establish their value as practically effective measures, and the Act, even without them, is calculated to achieve its main purpose—the proper supervision and control of mentally defective persons.

ERGOSTEROL.

INFORMATION concerning the nature and properties of vitamin D is at present of very considerable interest, and there is no dearth of communications dealing with the matter. In the same number of the *Biochemical Journal* there appear two papers: one by Rosenheim and Webster,[1] which seems to show that ergosterol is (probably) the only precursor of vitamin D occurring in nature; the other by Havard and Hoyle,[2] recording observations of the serum calcium and blood phosphate in normal adult human beings to whom ergosterol was administered. The last-mentioned paper is of interest because, as the authors point out, a seasonal variation of blood phosphate has been noted in human beings and in animals, which might be due to the greater exposure to ultra-violet light during the summer months. It was found, however, that neither the administration of 8 mg. per diem of irradiated ergosterol for a period of twenty-one days, nor periodic exposure to carbon arc lamps for sixteen days, caused any significant change either in the blood phosphate or the serum calcium. The experiments were, of course, carried out during the winter months. This work seems effectively to dispose of the view that the undoubted seasonal rise in blood phosphates is due to any effect of ultra-violet light, and it therefore leaves an interesting problem for solution.

ROYAL SOCIETY OF MEDICINE.

As mentioned on September 15th (p. 504), Sir William Bragg will deliver the sixth Lloyd Roberts Lecture on November 29th, at the house of the Royal Society of Medicine, 1, Wimpole Street. It is now announced that Sir William Bragg has taken for his subject "Faraday's diary," which will be of particular interest as illustrating the life of one of the pioneers of science, the more so since the diary has not yet been published. Some of Faraday's original apparatus, and pages from the diary, will be on view in the library of the society during a reception, which will be held at 8.30 p.m., prior to the lecture at 9.15. Admission will be by ticket, application for which should be addressed to the secretary of the Royal Society of Medicine. It is also announced that the annual dinner of the society will be held on Thursday, November 15th, at 8 p.m., at the May Fair Hotel, Berkeley Street, W.1, when the principal guests of honour will be the Chancellor of the Exchequer and Mr. Rudyard Kipling.

WE have to announce, with great regret, the death of Dr. D. Noël Paton, F.R.S., late Regius Professor of Physiology in the University of Glasgow. We hope to publish an obituary notice in an early issue.

[1] Rosenheim and Webster: *Biochem. Journ.*, 22, p. 762.
[2] Havard and Hoyle: *Biochem. Journ.*, 22, p. 713.

THE annual Corporate Communion of the Guild of St. Luke will be held at the Grosvenor Chapel, South Audley Street, W.1, on St. Luke's Day, October 18th, at 8.15 a.m.; it will be followed by breakfast at Lipton's Café, 484, Oxford Street, if sufficient members signify their wish to attend. The annual general chapter will be held on the same day at King's College, Strand, at 5 p.m. The Rev. Canon C. S. Woodward will preach at the annual service in Westminster Abbey, on October 21st, at 6.30 p.m. Further information may be obtained from the Secretary of the Guild, King's College, Strand, W.C.2.