

## Reports of Societies.

### THE CLINICAL RESULTS OF DEEP X-RAY THERAPY.

At the meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine on March 21st a discussion took place on the clinical results of deep x-ray therapy. Dr. W. J. TURRELL was in the chair.

Dr. WILLIAM MITCHELL (Bradford), in opening, said that in November, 1922, a symmetry apparatus was installed in the Bradford Royal Infirmary for administering deep x-ray treatment. The technique he had used was that published by Professor Wintz. Owing to an unwise discussion in the press many false hopes were raised, and the hands of those responsible for the treatment were almost forced by the public feeling that the widest advantage should be taken of the treatment even in cases which were virtually hopeless. During the first sixteen months he treated at the infirmary 133 cases of carcinoma of various kinds, including about 30 breast cases. Of the 133 cases, 48 were perfectly hopeless from the start. At the end of the first year 41 had ceased attending for reasons unfavourable to the treatment. Among the cases which were improved were two of cancer of the cervix uteri. One of these cases, in which there had been considerable invasion of the vaginal walls, was still living and well. In this case a full course of treatment was given, the second application six weeks after the first, and the third three months after the second. Two cases of carcinoma of the pelvic colon seemed to get on well; one, he knew, was living to-day. One case of carcinoma of the bladder had had six treatments, each time with a full dose. After each treatment the urine became clear, and remained so for two or three months, and then haematuria asserted itself again in a marked degree. He had found lymphadenoma respond well. During the past year, when it had been possible to exercise more selection of cases, he had treated 55, but it was too soon to speak of results at present. Of these cases, 16 had ceased attendance for reasons unknown to him; 23 appeared well, and 9, hopeless from the start, had died. He had come to the conclusion that it was useless to promise cures in any case by means of deep x-ray therapy. The only cases which really did well were those in which the general condition was good, with a good blood count and a good haemoglobin index. In a large general hospital, of course, it was impossible to treat the patients under the same conditions of control as existed at Erlangen. With regard to septic cases, his experience was that if a tumour, say of the jaw, got septic infection, the whole thing broke down and death followed from toxæmia. He found that under x rays all cases, including those in which the general state of health was bad, got temporarily better, but so far as any results other than temporary were concerned his experience did not justify the optimistic accounts from Erlangen. With regard to such conditions as rodent ulcer, he invariably used diathermy, and found that he got better results thereby than with any method of radio-therapeutic treatment.

Mr. SAMPSON HANDLEY declared that the time was past when surgery alone could claim to deal with malignant disease. The help of the radiologist was necessary in nearly all cases, but he was not quite clear that deep x-ray therapy was the sort of help that surgeons would ask for from the radiologist. He would hesitate to advise a patient who had been operated on for cancer of the breast to subject herself to deep x-ray therapy. The effects of deep x rays on patients who had malignant disease required discussion under two heads: the effect upon the patient, and the effect upon the growth. The first of these effects required more study than it had yet received. At Middlesex Hospital Dr. Dodd had taken a few of Dr. Webster's cases and investigated them thoroughly. In the speaker's opinion such an intensive method of investigation of particular cases was the only way of tackling the subject which was likely to be effective. One thing which was discovered was that while irradiation of the head, neck, or thorax had little effect on the urine, irradiation of the abdomen profoundly modified the urine, which was diminished in

amount and in the daily excretion of its normal constituents. This was ascribed to the temporary inhibition of the principal abdominal glands. In the blood a marked fall in the blood-urea content was found. Patients subjected to heavy x-ray dosage suffered from a profound asthenia and a loss of vitality which was greater than could be accounted for by the disease for which they were being treated. This was in striking contrast to the stimulating effect of radium on the general condition. Deep x-ray therapy, in amounts such as were necessary for the treatment of deep-seated tumours, had effects which were undesirable and deleterious. Turning to the effects of the treatment on the tumour itself, the speaker said that in his experience undoubted benefit took place in certain cases, but in others there was sometimes actual stimulation of the growth. He described three cases he had seen, of persons subjected to deep x-ray therapy, in which within a few months superficial metastases developed within the area which had been subjected to the treatment. One of these was a case in which he had excised the greater part of the stomach for a gastric carcinoma, and deep x-ray therapy was applied as a prophylactic measure because he had felt sure that his operation must have been an incomplete one. Within two months of the beginning of the treatment masses could be felt deep down in the abdomen. In another case—that of a medical man—a growth was found in the descending colon and small nodules in the left lobe of the liver. The speaker performed a lateral anastomosis so as to relieve obstruction, and the patient then went to Erlangen and had treatment there. As a result of that treatment the lump in the colon diminished very much in size, and at first the patient felt much better. The symptoms, however, recurred, and the patient had lately died. In another case—that of a retired colonel—of carcinoma in the pelvic region, radium was embedded and the case improved, though masses were still to be felt, and the patient developed glands in the right iliac fossa. After the one radium application he was treated with x rays. This patient was still alive, although death might have been expected about a year ago if the disease had run its natural course. The speaker's general conclusion was that a mean must be found in the application of deep rays. At the one extremity was a dosage which was inadequate for acting on the growth, at the other a dosage which was harmful for the individual. He did not think that the balance had yet been struck. It must be recognized also that the use of buried radium in suitable cases, where the area was small, had advantages over x-ray therapy. With radium a maximum irradiation of the growth was obtained with a minimum irradiation of the tissues generally, whereas in deep x-ray therapy irradiation of the tissues generally was hard to avoid, and this was generally deleterious in its effect.

Dr. GEORGE COOPER (Leeds) said that his experience of deep x-ray therapy extended over eighteen months and comprised 400 cases. These cases represented the most varied types of malignancy. In the majority of cases there was a marked improvement in the general health of the patient, a sensation of well-being, and a return of strength for a short period after the first treatment. The patient's constitution appeared able to reassert itself, and the toxic action was stayed. It might be said that the radiation stunned the growth—scotched the snake, if not killed it. The relief of pain was a very constant result, and in certain cases there was a cessation of any discharge. The use of hard rays was more stimulating to the formation of fibrous tissue than the use of soft. Although the general opinion was that the harder rays had nothing to recommend them beyond the fact of their penetrability, he had found a dose of hard rays set up healing in simple lesions more quickly than protracted doses of soft rays, and this he attributed to the stimulation of the fibrous tissue. The general factors controlling the results obtained by radiation included the stage which the growth had reached, the situation of the growth, the condition of the patient, especially with regard to his blood, the nature of the neoplasm, and the volume and quality of radiation administered. His own best results had been obtained in genito-urinary conditions and pelvic conditions generally. Cancer of the cervix had shown a definite tendency to relapse after a first improvement. Cancer of the prostate had not reacted very well; he had been much more

successful in treating cancer of the bladder. The treatment of cancer of the rectum had yielded encouraging results. The most definite result of all, however, was in the improvement of the general health. Cancer of the stomach he had found most unsatisfactory, except in one case where the treatment was given at the time of the operation on an exposed surface. In inoperable cases of cancer of the breast he had had some excellent results. The results must be judged chiefly by the duration of the effects obtained. It could not be claimed that  $x$  rays were a cure for cancer, but it could not be denied that  $x$  rays had a definite lethal and controlling effect on the malignant growth. In estimating the present position of deep  $x$ -ray therapy it must be remembered that since the advent of this method radiologists had been called upon to treat cases of a much more advanced and desperate character than were formerly sent to their departments. There was no doubt that more had been done for the treatment of malignant disease since the introduction of deep  $x$  rays than had hitherto been obtained outside the domain of surgery.

Dr. ROBERT KNOX reminded the gathering that  $x$ -ray therapy was not a new thing. It did not originate in Erlangen. Radiologists in this country had been developing their own technique on perfectly sound lines, and this should be borne in mind. It was on the observations made while treating superficial conditions in the early days that the theory of deep therapy was evolved. It was assumed that if a particular lesion of the skin reacted to a certain dosage, a deep-seated lesion would respond similarly if the same dosage could be projected to its site. Deep therapy was simply the application at a depth of dosage equivalent to what would produce an effect in a similar condition on the surface. Deep therapy, therefore, was an extension of superficial therapy, and the matter resolved itself into a question of wave-length. The principal points to which he wanted to direct attention were based on Mr. Sampson Handley's work on cancer of the breast. The task to which the radiologist had to direct himself was to supplement Nature's efforts of repair, instead of depressing them, to encourage them in every way to overcome the disease. He had observed for years the effects of radiations on various lesions, and had classified such effects according to the conditions of the disease. Thus, in enlarged lymphatic glands the response was very rapid; in lymphosarcoma it was rapid, but not quite so rapid, and there was greater tendency to recurrence; in sarcoma there was a fairly rapid reaction, but not certain; and in carcinoma the action was much less certain. He proceeded to describe and to illustrate by photographs the results obtained in a few cases. One was a laryngeal case, apparently of epithelioma, which was completely healed and the growth arrested under treatment without operation. The case was one which came under the care of Sir StClair Thomson. It was treated by  $x$  rays in 1921. The full 200,000 voltage installation was not used, but one of about 140,000 voltage. The rays were filtered through 8 mm. of aluminium, and the total dose over a period of three months was something like sixteen hours. During the whole of this treatment the skin remained uninjured. The speaker saw the patient two days ago, and the larynx was perfectly normal. Another case was that of a patient who, six years ago, had a testicle removed for a carcinomatous condition. He received the ordinary prophylactic treatment given at that time, and did very well for about three years, when he turned up with a large mass in the abdomen. A fairly heavy dose was given, and the mass disappeared very rapidly. At the beginning of last year the patient appeared with a mass of glands in the supraclavicular region and a very large mediastinal tumour. He was treated with penetrating rays, and this condition cleared up. There was no doubt about the primary condition being carcinoma.

Dr. REGINALD MORTON said that although he had treated many hundreds of cases he could give no summarized statistics at the moment, and would content himself with a few general impressions. To his mind the chief advantage of  $x$ -ray treatment was that it enabled one to deal with deep lesions with even more efficiency than formerly one dealt with superficial ones. With regard to the possible stimulation of the growth by  $x$  rays, he confessed himself in

some doubt; he had had to revise his opinions, but his present feeling was that if there were growths which were stimulated to increased activity by a certain dose of  $x$  rays they formed a very small proportion of the whole. But so long as any uncertainty remained on this point he meant to continue giving the single full dose unless there were contraindications. Among his reasons for preferring the single dose was the fact that it permitted a smaller margin of error in dosage. Beyond the fact that modern developments had extended the range of the radiologist's activities, he doubted whether he had been given greater control of malignant disease. From all the evidence which was available to him it would appear that the percentage of successful results had not increased to any marked extent. The effect of  $x$  rays on the living tissue was for all practical purposes independent of the wave-length, always assuming that they were using rays of medium or greater hardness, and that the correct exposure was given for that particular wave-length. The determining factor in the result of an  $x$ -ray application was unknown; it was not a physical or a technical one. Some of the best results were obtained in pelvic cases where greater evenness of irradiation was possible than in breast tumours, which could rarely be irradiated evenly to one's satisfaction. Among the most unfavourable cases were those involving the neck or the air passages, especially the larynx. He did not think that in carcinoma of the larynx they were justified in applying the full radiation—the full carcinoma dose. Cancer of the rectum at times responded very favourably. As to after-effects, sickness was occasionally troublesome in the distant irradiations; in this respect the length of exposure was an important factor. Ever since he had modified his apparatus so that all his exposures were shortened, being only three-quarters of the time previously taken, this effect had become much less prominent.

Dr. CURTIS WEBB said that his own experience with deep therapy—he was working with the Erlangen apparatus—extended over eighteen months. This was far too short a time to form any definite conclusions, but he had been very much encouraged by the use of this treatment in cases that could be considered at all suitable. He had had three cases of malignant disease of the cervix; the first was treated about fourteen months ago, the last about eight months ago; all three were considered inoperable, they were all suffering a good deal of pain and discharge, and the result of the treatment had been that they had all put on weight, the discharge had ceased, and the fungation disappeared. He had employed the Erlangen massive dose, as opposed to the divided dose as generally practised in France, and he advanced some arguments in favour of the former. He also mentioned the unsatisfactory results very generally obtained in mouth and stomach cases. According to the theory which was held at Erlangen, the main efficacy of the deep treatment depended on the secondary radiation obtained from the hard rays, which was not forthcoming to the same extent from the soft rays; therefore, in cases where the site of disease was the stomach or intestines, or, again, the tongue, the fact that the site was surrounded by air prevented the same secondary radiation from being forthcoming as in the case of, say, cervical or uterine carcinoma. It was the difficulty of getting the secondary radiations to an efficient amount that, if not entirely at any rate to a considerable extent, tended to make the results in these situations less satisfactory than the results in what might be called the solid organs.

Dr. N. S. FINZI said that, as Dr. Knox had pointed out, this deep therapy was nothing new. It was largely a question of difference of method in recent years, though by the old methods very successful results were forthcoming. The question was, Were these modern methods better than the old? He unhesitatingly declared that they were. Dr. Reginald Morton was apparently in some doubt on the point, but the test was whether Dr. Morton would go back to the old methods. He did not believe that any of the radiologists who were using the new methods would go back to the old, and they would not go back to the old simply because they were getting better results with the new. A large number of the bad results were due to their own faulty technique. There was too much of the feeling that

either  $\alpha$  rays or radium must be used. Why not combine the two? Much was to be gained by a combination of methods in these cases. Much had been done in radium therapy of recent years by getting a large number of separate foci, and so securing a more homogeneous irradiation, and he was certain that radium treatment was advancing *pari passu* with  $\alpha$ -ray treatment. In France and Belgium they were so convinced of the success of radio-therapeutic methods that they were starting a number of cancer centres in which the chief treatment given was not surgery, but radium and  $\alpha$  rays. With regard to the effects of  $\alpha$  rays upon the system, he agreed that the changes in the blood had been exaggerated, not, however, in the case of irradiations of the upper abdomen, because there the most profound changes in the blood did result. In ordinary breast or neck cases the changes in the blood were not nearly so remarkable as people had been led to suppose. In treating prophylactic cases he used intensive methods. He had several times, in treating carcinoma of the breast, seen a reinfection of the irradiated area, but in all such cases he had been able to demonstrate by skiagram enlarged glands in the mediastinum, and he thought that in all these cases there was a spread along the mediastinum back to the area which had been treated. With regard to radiation sickness, he found that it helped considerably if one insisted that the patients at the time of treatment should have plenty to drink and little to eat, and if the room was ventilated as much as possible.

Dr. LOUISA MARTINDALE said that she had been doing the Erlangen technique for the last eighteen months. She could not say that she had noticed a great deal of sickness. In every case she had prepared the patient as for an abdominal operation, and the patient had had nothing more than a cup of tea about two hours before the treatment was given. In castration cases, of which she had done about fifty, there had been surprisingly little sickness.

Dr. DOUGLAS WEBSTER thought that radiologists should study carefully all that the pathologists or surgeons who knew a great deal about pathology had to say. Lately Professor Ewing in the United States had published an excellent article summarizing the effects of radiation on malignant disease, in which he considered the subject from various points of view, such as the effects on embryo and on adult growths. Lymphoid tissues and lymphosarcoma were affected by changes in the actual cells themselves, without any effect on the connective tissue, and in this type of case one might hope to have a radiation cure. The speaker had about twenty or thirty cases which would bear scrutiny as to their final result; several of them were cases of sarcoma. He had three or four cases of inoperable cervix tumour; in one of these the last treatment was given a year or so ago, and the patient was still in health and the growth appeared to have been restrained. He had had a few cases of primary breast tumour; those which did best were those in which the patient was seen very frequently. In all cases the best results appeared when radiotherapy was combined with some form of general treatment or when the patient was living an open-air life in the country.

The President (Dr. TURRELL), in closing the discussion, said that it had been one of the best discussions on deep therapy held in this country. The first enthusiasm for this treatment had now passed away, and they were all able to approach it more logically and scientifically. On only two points did he himself wish to touch. The first was that in combined treatment diathermy might have been more used. The second point related to deep therapy and the menopause. It did not appear to him that deep therapy was justifiable for the treatment of fibroids near the time of the menopause. From Bordier's table it appeared that the treatment of fibroids by means of small repeated doses produced the menopause in some cases with four such treatments, and in other cases only after as many as fifty, but when the subject was near the menopause the small number of treatments—not the large—was required. If one used the massive dose which produced castration at a single application, one must be employing in some of these cases ten times the necessary dose to produce the cessation of the periods. Not much was known about the endocrine functions of the sexual glands, but it was known that the glands exercised some important function, and therefore

he thought it very advisable to give as small a dose as was possible in order that the endocrine function might escape undue injury. Very small doses on the Bordier principle had brought about the menopause in the most excellent way.

### LYSOZYME EXPERIMENTS.

At a meeting of the Pathological Section of the Royal Society of Medicine, held on March 18th, Dr. V. D. ALLISON read a paper on the effect of administration of vaccines on the lysozyme content of tissues and secretions. Three series of experiments were carried out on man and animals, using vaccines of (a) organisms very sensitive to the bacteriolytic action of lysozyme—namely, *M. lysodeikticus*; (b) organisms moderately sensitive to lysozyme—for example, a faecal streptococcus; and (c) organisms almost insensitive to lysozyme action, such as *B. typhosus*, *B. paratyphosus* A, and *B. paratyphosus* B. The faecal streptococcus vaccine was given subcutaneously to man, while the other organisms were given intravenously to rabbits. The bacteriolytic titres and the bactericidal power of the tears and serums of the test subjects were tested against the homologous organisms, both before the commencement of inoculation and during the course of the experiment, but there was no change in the lysozyme content of the tears or of the serums throughout. One rabbit which received massive doses of *M. lysodeikticus* intravenously and one control rabbit were killed, and extracts were made of various organs and tissues; the extracts from the immune and control animals were tested for lytic power on the indicator organism, and the lytic titres were found to be identical in the immune and in the control animals. In the case of the rabbits immunized with the typhoid group of organisms, the tears and serums were tested for lytic power not only with the homologous organism but also with *M. lysodeikticus* and the faecal streptococcus already mentioned; no change in the lytic power was observed. These results led to the conclusion that the lysozyme content of the tissues and secretions of the living organism could not be increased by active immunization with vaccines.

A paper was also read by Dr. A. B. ROSHER on the effect of inoculation of heterologous antigens on a steady agglutination titre with reference to the diagnosis of enteric in inoculated subjects. Various antigens, both living and dead, were injected into rabbits, the serums of which showed steady agglutination titres as a result of injections of vaccines. The titre was only appreciably affected when the secondary antigens were in close serological relationship to the primary ones, and this was brought forward as evidence in favour of the reliability of the repeated agglutination method as a means of the diagnosis of enteric in the inoculated subject.

### SUPPURATIVE DISEASES OF THE FRONTAL, ETHMOIDAL, AND SPHENOIDAL SINUSES.

At a meeting of the Section of Laryngology of the Royal Society of Medicine on March 7th, with Mr. H. J. BANKS-DAVIS in the chair, a discussion was held on the subject of suppurative diseases of the frontal, ethmoidal, and sphenoidal sinuses, and illustrative cases and specimens were shown.

Mr. MUSGRAVE WOODMAN in his opening paper drew attention to the need for further investigation of the borderland territory which lay between the upper sinuses of the nose and the meninges of the brain. Below the rhinologist looked upwards and above the physician held sway, but the connexion between the sinuses and the brain, which so frequently resulted in meningitis, was to a large extent a borderland and hitherto unexplored territory. Looking first at the frontal sinus, he gave the analogy of the gall bladder, in which drainage normally was adequate and from its most dependent portion; its troubles, like those of the gall bladder, arose principally from obstruction outside and in the neighbourhood of the duct. He was extremely interested in osteomyelitis following operative procedures in this sinus, and drew attention to the

very extensive connexions between the external, diploic, and meningeal veins, which had their anastomoses in this region. Turning to the ethmoid, he described it as the key position to the antrum and frontal sinus in its anterior portion, and the sphenoidal sinus in its posterior portion. Attention was drawn to the sponge-like nature of its cellular framework, its close relation to the eye, its influence on the sphenopalatine ganglion, and the production of neuralgia of the fifth nerve from infection locked away in its posterior portion. Lastly, in dealing with the sphenoidal sinus, he reminded the audience of the great importance of the observation of Sluder in 1912, that the first and second branches of the fifth could be anaesthetized by painting the sphenoidal wall with cocaine, and the deduction from this that acute or subacute infection of this cavity must have very considerable influence on the production of neuritis of this nerve. Attention was called to the proximity of the pituitary and the necessity for further research in the influence of this gland on suppuration in the sinuses. In conclusion an appeal was made for further research work on the influence of suppurative disease in the sinuses, both in the production of neuritis of the fifth nerve and of meningitis.

Dr. W. T. GARDINER gave a lantern demonstration of the various steps in Sluder's method of opening the ethmoid cells and sphenoidal sinus intranasally, under local anaesthesia obtained by blocking the sphenopalatine ganglion and the nasal branches of the ophthalmic nerve with the application of cocaine.

Dr. DOUGLAS GUTHRIE demonstrated specimens and lantern slides illustrating the variations of the cribriform plate and its relation to the upper nasal sinuses. He had found that the anterior part of the cribriform plate was the more easily penetrated. On examining 200 skulls he found in 74 per cent. that the ethmoidal cells rose above the cribriform plate and the olfactory groove was deep, while in the remaining 26 per cent. it was shallow.

Mr. HERBERT TILLEY said that sphenoidal sinus disease was much more common than was usually thought, and headache and a dry pharyngitis were the most common symptoms of it. He made reference to cases of osteomyelitis of the frontal bone, apart from operations on the sinus.

Mr. ERIC WATSON-WILLIAMS showed a number of skiagrams of cases with frontal sinus disease, and discussed the symptoms and treatment.

Dr. LOGAN TURNER referred to the results of the consideration of answers to a questionnaire which he had sent out, with reference to intracranial complications of sinus disease and osteomyelitis. He divided the complications into two groups, spontaneous and post-operative; out of 125 cases 77 were spontaneous and 48 post-operative, the former occurring in patients under the age of 30; 34 were complications of acute and subacute sinus suppuration, and 40 of chronic suppuration. The post-operative complications occurred chiefly after operations for chronic sinus suppuration—only in 10 per cent. was it after acute sinusitis. Osteomyelitis occurred in 58 per cent. and not only as a sequel of the external operation.

Sir STCLAIR THOMSON said that he had observed in his clinic a number of what he regarded as spontaneous cases of osteomyelitis, some of whom gave a history of having been recently in a swimming bath.

Mr. W. S. SYME described his operative methods of treating sinus suppuration, and pointed out that in dealing with the ethmoidal cells the great necessity was for thoroughness.

### SUDDEN DEATH FROM INHIBITION.

At a meeting of the Medico-Legal Society on March 18th, Dr. Percy B. Spurgin and Sir Bernard Spilsbury discussed cases of sudden death from inhibition and their medico-legal bearings.

Dr. SPURGIN presented notes on the case of a young man who died suddenly in Regent's Park last October after two separate bouts of fisticuffs with another man. The latter was convicted of manslaughter at the Old Bailey, and sentenced to four days' imprisonment. Dr. Spurgin himself conducted the *post-mortem* examination in this case, and

came to the conclusion that the man died of inhibition due to irritation of the vagus nerve from repeated blows on the left side of the neck above the clavicle.

Sir BERNARD SPILSBURY presented notes on the death of a child aged 3, who gave a slight cough, fell back in her chair unconscious, and died ten minutes later. The *post-mortem* examination, which he himself made, revealed a thin skull and a large brain, the finger-nails and lips being livid. Such findings were not uncommon in cases of inhibition. There was nothing to show the cause of death, and his conclusion was that it was due to inhibition, probably excited by the entrance of a crumb into the air passages. Sir Bernard Spilsbury mentioned another case where a man died after receiving a blow on the abdomen. The explanation of inhibition was based on the normal physiological functions of muscles and nerves, the nervous system bringing certain muscles into action, thus causing the inhibition of opposing muscles.

An interesting discussion followed. Sir WILLIAM WILLCOX said in a considerable number of cases it was very difficult at necropsy to find the cause of death, especially in cases of sudden death where, after a hearty meal, vomiting ensued with violent inspirations. A small portion of the vomit became inhaled in the air passages, and the cause of death was probably asphyxia. Deaths from submersion in water were by no means cases of drowning always; 30 per cent. were probably due to inhibition. Mr. R. F. LEVY, Dr. JOBSON SCOTT, and Dr. BRONTÉ were among the other speakers.

Replying to the discussion, Sir BERNARD SPILSBURY said in cases of apparent inhibition artificial respiration ought immediately to be applied. He knew of a case where an electric shock prostrated a man, and where prolonged artificial respiration proved successful.

### CHRONIC DIARRHOEA.

A MEETING of the Derby Medical Society was held on March 21st, the President, Mr. J. E. KILVERT, being in the chair.

Dr. J. A. RYLE read a paper on chronic diarrhoea, which, he said, although not a prevalent complaint, was a symptom common to a great variety of diseases, and might be very difficult to analyse and treat. The incidence of certain infective types had increased in consequence of the wide extent of our Empire and the recent ravages of war. On a rough anatomical basis chronic diarrhoeas might be grouped as those originating in the stomach, the small bowel, the large bowel, and rectum; those due to pancreatic or gall-bladder disease or to disease of the lymphatic absorbent system; and those due to reflex or other external nervous stimuli. It was important to recognize that diarrhoea was not necessarily a primary bowel symptom at all. The methods of investigation might be subdivided into: (a) simple clinical methods, such as microscopic inspection of the stools and rectal examinations; (b) other methods falling within the scope of the clinician, such as proctoscopy and sigmoidoscopy, microscopic examination of the stools for blood, pus, meat fibres, etc.; and (c) specialist methods, including chemical analyses, search for parasites, bacteriological procedures, and radiography with opaque meals or enemata. Gastric diarrhoea was nearly always associated with achylia or achlorhydria, and occurred in Addison's anaemia, chronic gastritis and cirrhosis, and many other conditions. Diarrhoea might be the only symptom of achylia, and the earliest symptom of Addison's anaemia, often preceding the development of the anaemia by many years; it was almost always relieved by the therapeutic administration of dilute hydrochloric acid. Another form of gastric diarrhoea followed over-successful gastro-enterostomy. Diarrhoea originating in the small bowel was generally the result of ileal tuberculosis, and was therefore commonest in the later stages of pulmonary or abdominal tuberculosis. The colonic diarrhoeas constituted a wide group and included the chronic phases of amoebic and bacillary dysentery, other forms of ulcerative colitis, and colonic and rectal carcinoma. In all of these examinations of the stools and sigmoidoscopy were of the first importance. Some spurious diarrhoea due to

constipation or abuse of purgatives might also be included in this group. Pancreatic diarrhoea was very rare and was associated with the passage of oily or fatty coagula; other evidences of pancreatic deficiency should be sought. A far more common cause of fatty stools, in which the fat was largely present in split form and intimately mixed with the stools, was disease of the lacteals or mesenteric glands, commonly tuberculous. The very similar stools of coeliac disease and sprue were possibly due to other forms of lacteal obstruction. Mesenteric glandular tuberculosis also produced a simple form of mild chronic diarrhoea in children and young adults, and might be the earliest evidence of tabes mesenterica. In all the gastric, pancreatic, and small intestinal diarrhoeas undigested meat fibres might be present in excess in the stools; reflex diarrhoeas might accompany chronic appendicular disease and cholecystitis. Diarrhoea might occur as a visceral neurosis in anxious-minded persons, but originated not uncommonly in a digestive or infective diarrhoea. Rational treatment must depend on careful grouping and accurate diagnosis, and when diagnosis was accurate purely symptomatic measures were seldom necessary.

### DUODENAL OBSTRUCTION.

A MEETING of the Section of Medicine of the Royal Academy of Medicine in Ireland was held on March 7th, the President, Dr. T. G. MOORHEAD, in the chair.

Dr. G. E. NESBITT read a paper on duodenal obstruction, pointing out that partial duodenal obstruction could be demonstrated in a large proportion of cases in which there were chronic dyspeptic symptoms. The cause of the obstruction varied, but the most common cause was compression by the superior mesenteric artery, which, in his experience, was nearly always associated with an abnormal condition of the colon. Mobility alone, due to the possession of a mesentery, was not sufficient and some other factor was necessary, such as descent over the pelvic brim, chronic constipation, or loss of tone in the abdominal muscles. The medical treatment for this condition consisted in regular emptying of the colon, with support for the latter by an efficient abdominal belt. Failing improvement on these lines, colopexy was indicated, or possibly duodeno-jejunoscopy.

Mr. McCONNELL said he had found constipation present in duodenal cases during attacks of pain, but between the attacks the patients were fairly normal and did not suffer greatly from constipation. The attacks were often precipitated, however, by a period of constipation: the colon became loaded and heavy, dragged on the duodenum, and, in his opinion, brought on the attack of pain, and therefore medical treatment was of great value in a large number of cases. He personally thought it was a great mistake to open a patient's abdomen unless a fairly definite diagnosis had been made beforehand by a physician. Sometimes medical treatment brought relief during the attacks, and sometimes after prolonged medical treatment patients recovered completely, and escaped an operation. Some patients who had six hours' residue in the stomach were found at the operation to have no obstruction, but to have a very dilated duodenum; in other cases there was no retention at all, but the patient continually vomited, and such cases were certainly relieved by operation. He did not agree that duodenal symptoms were always associated with mobility of the colon; many other factors would explain these cases. Allaying the symptoms was no good for the patient; cure should be attempted and an early and thorough examination, including the use of *x* rays, should always precede and not succeed treatment.

The PRESIDENT said that although there was no doubt at all of the existence in some patients of a dilated duodenum, he could not accept the existence of a loose colon as an adequate sole explanation of the symptoms described by Dr. Nesbitt, nor did he believe that fixation of the colon would relieve these symptoms. The symptoms and conditions described were hardly distinguishable from the familiar syndrome of enteroptosis. He had seen the rise and fall of many procedures which were at first held up as a panacea for all chronic abdominal troubles, and it

was not so long since loosening the colon was regarded as the one thing necessary, whereas now it was held that the colon should be fixed. Fixing the kidney, removing the appendix, gastro-enterostomy, and excision of the colon had all had their day, and although each of these procedures was advisable in certain well defined cases none of them had retained the vogue prophesied at their first introduction.

Mr. CHANCE said that by lifting up the colon, and fixing it, the pressure on the ascending mesenteric artery would be relieved, but he felt that by doing this they were only removing a very small part of the trouble in cases of duodenal obstruction.

Dr. V. M. SYNGE said that if Dr. Nesbitt's explanation of symptoms in cases of duodenal obstruction was correct it was curious that these cases were not much more common; since he had heard this condition described two years ago he had looked out for it in his practice, and had only come across two cases. He thought the symptoms described by Dr. Nesbitt were found in most patients suffering from chronic abdominal trouble.

Dr. NESBITT, in reply, said he did not mean to put forward this conception as an explanation of all abdominal cases, but it had thrown a good deal of light on cases which had previously puzzled him greatly. In his experience the condition was very common, and he had come across a great many cases which, when examined by *x* rays, showed pictures similar to those exhibited that evening. Mobility alone was not always part of the picture, but it was essential that the caecum should descend over the pelvis. In some cases, if the colon was thoroughly emptied, the patient lost all symptoms for the time, but later on they came back again, whereas if operated on the cure was permanent. Sometimes the obstruction might be due to pyloric spasm, or retention of the stomach contents in the stomach.

### *Paroxysmal Tachycardia.*

Dr. LEONARD ABRAHAMSON described a case of paroxysmal tachycardia.

The patient was seen first on July 11th, 1922. She presented a mitral lesion, the result of acute rheumatic infection, and was in the middle of an attack of paroxysmal tachycardia, due to a series of nodal extra-systoles (200-205 per minute), which lasted for two days. Her history, until November 23rd, 1923, included a number of short paroxysms of extra-systoles; between the paroxysms the heart was usually irregular, and this irregularity was found to be due to the occurrence of extra-systoles, arising at different levels in the region of the *a-v* node. On this last date symptoms of heart failure became more marked, and examination showed the supervention of auricular fibrillation; treatment by quinidine sulphate was ineffectual, but the patient progressed favourably on digitalis until December 22nd, when she developed symptoms of cerebral embolism and died on the following day. At the necropsy the heart showed a mitral stenosis with enlargement of both ventricles and fibrosis of the right auricle.

Dr. Abrahamson discussed the question of the relationship between extra-systoles and fibrillation; and, in reply to points raised by Dr. ALFRED PARSONS and Dr. G. E. NESBITT, said that there was a presystolic murmur in the case described, but it did not appear when fibrillation supervened. He had got good results by the use of quinidine, although in some cases it did not stop the fibrillation. One patient after taking quinidine for two years was still free from fibrillation, and he attributed this to the drug. In about 40 per cent. of cases he had restored normal rhythm by giving quinidine, and he thought it was a drug which was well worth trying.

### ANAESTHETICS.

At a meeting of the London Association of the Medical Women's Federation held on March 11th, Miss M. CHADBURN, the President, in the chair, papers on anaesthesia and anaesthetics were read.

Dr. H. N. PAYNE, discussing general anaesthesia, preferred ether to chloroform or chloroform mixtures, on grounds of easy administration and safety; patients liked induction by nitrous oxide, which followed by closed ether,

was her routine method. In the case of toothless patients in the Trendelenburg position, in the late stages of long operations, in abdominal cases where the patient was acutely ill, and in thyroid operations she made use of the open method, and gave chloroform only to patients who appeared unsuitable subjects for ether by reason of chest complications, age, or stoutness. She did not use scopolamine and morphine before an anaesthetic, and atropine only in selected cases.

Mrs. A. GILLIATT, dealing with anaesthetics for ear, nose, and throat operations, detailed the modifications necessitated by an obstructed airway, the difficulties being least in ear operations. The use of open ether was not altogether satisfactory, and she preferred induction with chloroform or C.E. mixture.

Mrs. TINDAL-ROBERTSON discussed spinal anaesthesia, which was useful in cases of operation at the level of the umbilicus or below, especially in asthmatic and bronchitic cases; for prostatic operations and for the amputations of diabetic gangrene it was the method of choice, as it was also when combined with twilight sleep or general anaesthesia, in Wertheim's operation and excisions of rectum. The injection of stovaine was liable to cause a fall of blood pressure which might be dangerous when the patient was suffering from shock before operation; apart from this spinal anaesthesia diminished shock, and a patient who had had injections of hyoscine, morphine, and atropine before being brought into the theatre was already drowsy and remained asleep if not aroused by noise. If the operation were delayed or the patient difficult, very slight chloroform inhalations sufficed to put her to sleep.

Dr. ENID MOORE, in a contribution read by Miss IDA MUNN, described the technique of gas and oxygen anaesthesia, laying stress on the importance of slow induction; in the case of an alcoholic patient, the introduction of ether vapour into the mixture was desirable. At the Infants Hospital, gas and oxygen was used invariably for abdominal operations, and the statistics indicated fewer fatalities than with other methods; in cases of congenital pyloric stenosis it was of great value. Since an infant was liable to become deeply anaesthetized suddenly and without warning, it was wise to give a proportion of one of oxygen to two of nitrous oxide, instead of one to four as in adults. The introduction of small quantities of ether vapour appeared occasionally to be stimulating. For adults, gas and oxygen was useful in stomach, thyroid, and head operations, in Caesarean sections, in bronchitic patients, and in cardiac cases without myocardial degeneration.

Mrs. BRADY, discussing ethyl chloride anaesthesia, demonstrated the Loosely apparatus for closed administration, which she used; she had found it not difficult, and a useful halfway house between nitrous oxide and chloroform. The advantage of dental anaesthesia in children was that the child came once only, instead of several times, for multiple extraction, but caution was needed, since ethyl chloride was a quick anaesthetic. Change in respiration was, in the speaker's experience, far the most useful of the signs to watch, and another danger signal was a change of colour, especially to a waxy, pale appearance. The drug had a cumulative effect, and it was not wise to push it till the pupil was fixed, central, and dilated; the lessening rigidity of the jaw muscles was a useful and practical sign of increasing depth of anaesthesia.

Miss L. ALDRICH-BLAKE spoke of anaesthetics from the point of view of the surgeon and of the patient. Nearly all patients disliked the smell of ether, and therefore induction by gas or some other method was an advantage, both to the patient and the surgeon. In future there would be probably a combination of local anaesthesia with some less toxic form of general anaesthetic than those in routine use at present. She had found the injection of 2 per cent. novocain into the abdominal wall, and into extraperitoneal tissue of the rectum, very useful in diminishing shock. From the surgeon's standpoint, where good relaxation was required, it was necessary to obtain and maintain the free airway. Miss Aldrich-Blake quoted statistics from the records of nearly 700 consecutive patients operated on by her at the Elizabeth Garrett Anderson Hospital, to show that no appreciable risk of

pulmonary complications after ether anaesthesia need be feared. Of these patients, only twelve had developed pulmonary complications which might possibly be attributable to the anaesthetic, none of them being fatal.

Dr. MINA DOBBIE said that the advisability of twilight sleep during labour was still a matter of controversy; many of the arguments used against it were formerly employed against the use of chloroform. The method of induction, the dosage, and the purity of the drugs varied so much when twilight sleep first came into use that the arguments used then were now out of date. Most of the conditions mentioned by J. S. Fairbairn in 1917 as special indications for its use had been given by early observers as contraindications. For women nervous of pain it was an ideal method, and was safe so long as it was remembered that amnesia and not analgesia should be the objective. Dr. Dobbie traced the history of twilight sleep, and gave details of the technique of the three schools: (1) the single dose school, (2) the standard dose school, and (3) the individual dose school.

Dr. HANDLEY-READ, in connexion with dental surgery, discussed the patient's usual preference for an anaesthetic which would enable several teeth to be extracted at the same time; this necessitated a general anaesthetic other than gas and oxygen. The disadvantages were the difficulty of obtaining a suitable, firm, reclining couch, even in a nursing home, where such an operation should be done, the danger that a portion of tooth or debris might pass down the throat, the shock following multiple extractions, and the danger of several open sockets in a septic mouth.

At a meeting of the Royal Medico-Chirurgical Society of Glasgow on March 7th, with the President, Dr. A. MAITLAND RAMSAY, in the chair, Mr. G. H. STEVENSON made a communication on the treatment of ununited fractures and other bone defects by bone grafts and bone comminution. After a brief survey of the causal factors in the cases of non-union under consideration—chiefly war wounds—Mr. Stevenson discussed the conditions determining the choice of operative treatment, and drew attention to the contrast afforded in this respect between the upper and lower limbs. The operative technique was then described in detail—the use of the electric saw, the source of the grafts, the types of graft, the methods of fixation, etc. Preference was expressed for the massive inlay graft taken from the tibia, combined with a partial intramedullary method in some cases. The importance of secure fixation was urged, and the various methods of effecting this discussed. For after-treatment he had found that plaster-of-Paris fixation was the most satisfactory, and to avoid irritation he employed Rutherford Morison's "bipped" silk to close the skin. Renewal of the plaster and "valving" to permit of massage carefully controlled was advisable. The latter part of the paper was devoted chiefly to the method of bone comminution, the technique of which was described in detail, and the importance of very thorough and "brutal" comminution was urged. Reference was also made to the repair of defects in the skull by bone grafts. In the ensuing discussion Messrs. ARCHIBALD YOUNG, WILLIAM RANKIN, DONALD DUFF, JAMES RUSSELL, and J. SCOULER BUCHANAN took part.

THE annual report for 1923 of the Ophthalmic Hospital in Jerusalem, which is maintained by the Order of St. John of Jerusalem in England, contains interesting details of what was in some ways a record year of work. The number of new out-patients—1,915 in the year, operations 4,169, and admissions as in-patients 1,524—were all an increase on previous years. The bulk of the patients were suffering from one or both of the two prevalent eye diseases in the East—trachoma, with its complication, trichiasis, and acute conjunctivitis. A large number of Jews and Arabs attended the hospital for treatment of trachoma, in order that they might emigrate to North or South America after being cured. The unusually dry and dusty weather throughout the year increased the amount of eye disease, and another factor in producing the pressure of work was the closing down of the Government travelling ophthalmic hospital. It was only possible to deal with about 50 per cent. of patients requiring operation—the remainder had to be sent away; the services of a third surgeon are urgently needed. A scheme is under consideration for co-operation with the Government of Palestine in establishing ophthalmic clinics in the outlying towns and districts. The hospital will be represented in the British Empire Exhibition at Wembley by an illuminated panoramic view—one of a series illustrating the history of the Order.