(*b*) Too great enthusiasm in radium is apt to lead the doctor who possesses any to use it too much, and thus deprive the patient of the benefits of other treatments which have already proved their utility, especially surgery.

At this point I wish to separate myself from those who extol radium beyond reason. I have been content during the last five years to watch over, observe, and classify the facts, and that is all that must be done at present; any definite conclusion concerning large cases of cancer would be quite premature.

When a doctor who possesses radium is consulted in a case of cancer he should proceed as follows:

(*a*) In cancers of the skin which are localized, superficial, non-inflammatory, and of rather small dimensions, radium is of great benefit, and he can, without exaggeration, assure the patient of a cure, but only on condition that the patient binds himself to come once each month for a long period to see the doctor, to catch the first trace of any relapse; but the patient must be told also that many other means exist—such as surgery, *x* rays, etc.—which cure just as well.

(*b*) In all other cancers, whatever their nature, the doctor must first consider if these other means cannot do better. If surgery can do better (as in excision of the breast for an operable cancer, or in excision of a commencing and operable cancer of the tongue, etc), then radium can be suggested to consolidate the cicatrix after the operation; treatment by radium is then an auxiliary to surgery, and I consider it better than the *x* rays on account of the penetrating power of the radiations.

If surgery is powerless because the cancer is too advanced, extensive, and consequently hopeless, then radium can be employed as a last resource to alleviate pain and prolong life; it can also be applied after the chief part of the growth has been removed by the knife, but in those cases the patient's relatives must be duly warned of the temporary nature of the relief.

If the surgeon cannot intervene on account of the seat or the depth of the lesions, then he can resort to the knife to open the way for the more direct application of radium apparatus (chelotomy, etc.) by means of a catheter.

If the surgeon is unable to intervene on account, not of the gravity of the cancer, but because the condition or age of the patient prevent, or because he refuses an operation, then radium can be applied. It is in these rare conditions in which radium can be applied to less advanced lesions that this method would progress and show what results it can produce, and give statistics which would warrant a bolder intervention in other cases.

Such is the line of treatment I have followed to the present time.

When dealing with a new therapeutic agent which has given such brilliant results from some points of view, one must be armed with all one's *sang froid*, and observe the facts with justice. The question thus presented of the part which radium is actually able to play in the fight against cancer places it, in spite of the reservations enumerated, in a good position, because it is a valuable auxiliary in sufficiently experienced hands and in certain cases which one must know how to distinguish.

The future is still more promising; the results I speak of I have obtained with considerable doses, it is true, as compared with those of the first investigations, but these doses are diminutive in comparison with what will soon be available. In the first instance 1 mg. or 1 or 2 cg. of pure radium was employed, now we use 5 to 50 cg.; soon we shall be able to count on several grams. The progress observed between the first two phases gives some idea of what may perhaps be realized in the future.

At all events, at the present time it would be unjust, in judging the value of radium-therapy, to limit its advantages to its action on malignant tumours; it must be considered as a whole, and especially in its action on angiomata of a prominent and erectile kind; on cutaneous vascular tumours, cheloids, certain rebellious forms of eczema, obstinate tuberculous glands, certain forms of lupus; and then, considering the ground already won, it is difficult, without any exaggeration, not to recognize that radium-therapy, as I have often repeated, has won its place in the therapeutic armamentarium, that the fine French discovery of Curie and of Madame Curie has borne definite and certain fruit in the medical field.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A SIMPLE METHOD OF COUNTING LEUCOCYTES.

THE following method is easy, simple, and capable of rapid completion. The implements cost only a few pence; the results are much more uniform (in my experience) than those of the Thoma Zeiss apparatus; it is far less tiring than the old methods; and accurate results can be obtained by those who only seldom have occasion to count leucocytes.

The method depends on the obvious fact that when equal-sized drops of diluted blood are placed on a clean slide they should cover equal areas and contain equal numbers of cells. The question of the different degrees of viscosity of different samples of blood may be neglected on account of the high dilution used.

The blood is drawn in the usual way, and diluted ten or twenty times with water, which had better be distilled. Any of the recognized mixing pipettes may be used, but the following method is good and simple:

By means of a capillary tube and teat a measured quantity of blood is drawn up, and, in the same way, ten times as much water. The fluids are blown out into a watch-glass, and upon the little pool thus formed a stream of air is blown through a capillary tube. The jet of air, when properly managed, forms a most efficient stirrer. A fair-sized drop of blood must be drawn if uniform results are to be obtained—enough to fill an inch and a half of capillary tubing is a suitable amount. If the blood has been mixed in a pipette it must be blown out into a watch-glass as soon as the mixing is finished.

Drops of the mixture are transferred from the watch-glass on to a slide by dipping the rounded tip of a glass rod into the watch-glass, and then touching the slide with the wet rod-end (an old clinical thermometer forms a convenient glass rod). The slide and rod should be free from grease; I generally pass them through a flame before use. The drops are placed in line on the slide, separated from each other by small intervals. A fresh dip must, of course, be made for each drop transferred. At each descent of the rod on to the slide or watch-glass a faint click should be produced by the contact. If attention is given to this trivial point the drops are more likely to be all of one size. It might be thought that more accuracy would be attained by measuring each drop out by means of a graduated pipette; but, practically, I think the above method is the better.

Ten or a dozen spots should be thus transferred to the slide, which is then dried in the sunshine or before a fire. Too quick drying may cause cracking of the films.

The dried slide is now very gently agitated in a dish of plain water until all the blood pigment is washed off and the slide may be held up to the light and examined. It will be seen that the place of each little spot of blood is marked by a small round film. If the slide is now examined under the microscope, with a small-aperture diaphragm, each spot will be seen to consist of a faint haze of débris evenly besprinkled with dark, conspicuous leucocytes. The clearness of the demonstration may be increased by staining the films with a watery solution of methylene blue. The enumeration may be done by counting the cells in several fields under a $\frac{1}{6}$ objective; but, owing to the comparatively small portion of each film that can be thus covered at one time, it is necessary to count a large number of fields if high uniformity is aimed at. I find the following method more accurate and less fatiguing:

A stiff paper obturator is cut to fit into the eyepiece tube the microscope. The paper is pierced with ranks of holes made by a large needle. The middle hole should be large to facilitate focussing and finding. Twenty or more perforations should be used, and they should be of such size as to show two or three leucocytes per hole on an average with normal blood. The obturator should be fitted into the middle of the eyepiece tube; a little manipulation will soon show the best position.

A low power should be used in counting, for then a wider field is covered, and the result is more representative of the whole film. If there are ten films on the slide, it is plain that by counting a field from each film one obtains a very good test of how well the blood has been mixed. I have never found any but the smallest variations when

the mixing has been done by the method described above. Two to four fields, each from a different film, is a quite sufficient number to count for ordinary purposes. To do this takes only a very few minutes. The field should be chosen approximately at the centre of each film.

The average number per field for normal persons is noted. It of course stands for about 8,000 cells per c.mm., and the degrees of leucocytosis are calculated from this. Or a standard may be established by comparing the first few counts with those of a Thoma-Zeiss or other haemocytometer.

Of course the same glass rod and obturator must be used for all counts.

V. T. CARRUTHERS, M.B., Ch.B., F.R.C.S.Edin.,
Colombo, Ceylon. Lieut. R.A.M.C.

Reports

ON

MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

GENERAL HOSPITAL, WOLVERHAMPTON.

PARTIAL RESECTION OF THE BLADDER FOR EPITHELIOMA.

(By W. F. CHOLMELEY, F.R C.S., Honorary Surgeon to the Hospital.)

A man, aged 69, came under my care at the end of May, 1909. He complained of a great deal of pain at the end of micturition, felt in the penis, chiefly at the tip. He gave a history of passing a few drops of blood at the end of micturition. Urine was passed about a dozen times during the day, and two to three times at night. His urine during the time he was in bed under observation contained a small amount of blood, but was sometimes free of it.

On May 26th I examined the bladder with a cystoscope, and saw a growth on the right side reaching down to within a short distance of the orifice of the right ureter. The examination did not cause much bleeding. I proceeded at once to open the bladder above the pubes so as to get a better view of the disease, and to ascertain if it was possible to remove it. I found an obviously malignant growth, about 2½ inches in its largest diameter. It had apparently invaded the muscular wall, but, as the bladder felt very movable, I did not think it penetrated any deeper, and so should be easily removed. I first divided the right rectus muscle to give more room, and then separated the bladder from the peritoneum and tissues on the right side with my fingers. This was done with comparative ease and little bleeding. At the same time I removed with scissors the growth, together with a fair margin of healthy bladder, including the whole thickness of the bladder wall. The resulting wound in the bladder reached to within ½ in. of the orifice of the right ureter. I closed the gap in the bladder with a continuous suture of catgut, except at the top, where I put in a rubber drainage tube. I also sutured the divided rectus, and placed a tube into the tissues on the right side of the bladder, and a small gauze drain into the prevesical space. The abdominal wound was closed at the top and bottom with silkworm gut. A catheter was passed into the bladder through the urethra, tied in, and connected with a Cathcart apparatus to keep the bladder as empty as possible.

The after-history was quite uneventful, and on July 19th he was discharged, passing all his urine the right way. He can now, six months after the operation, hold his water for three hours during the day, and I have no doubt that, as time goes on, he will be able to hold it much longer.

It is early yet, of course, to say whether he is going to be free from recurrence; but I am certain that the recurrence will not take place in his bladder, as the removal was so free. One cannot be so certain about the pelvic tissue and glands. I could not at the operation feel any enlarged glands, but that, unfortunately, does not prove that they were not infected. I did not completely sew up the bladder, as I know so well that, no matter how carefully one may drain it by a Cathcart apparatus, there is a great danger that the catheter may become stopped up by some blood clot in cases where a certain amount of oozing is to be expected. Should that happen the bladder suture will give way and there will be an extensive infiltration of urine into the tissues round the bladder. An extensive leakage in this case would have been very serious, if not fatal, as the pelvic tissue was so freely opened up.

A piece of the growth was sent to the Clinical Research Association, which reported as follows:

This is an epithelioma derived from the stratified epithelium of the bladder. It invades the muscular wall by means of solid ingrowths containing here and there modified cell nests.

Reports of Societies.

MEDICAL SOCIETY OF LONDON.

Monday, December 13th, 1909.

SAMUEL WEST, M.D., F.R C.P., President, in the Chair.

The Anatomy of the Heart.

A PAPER on recent researches on the anatomy of the heart was communicated by Dr. ARTHUR KEITH and Dr. IVY MACKENZIE. Dr. Keith, in reading the paper, said that some three years ago he published, together with Dr. Martin Flack, a paper on the muscular connexions between the various parts of the heart, and summed up the results of other researches which had been published at that time. In that paper there was described a small mass of peculiar muscle and nerves—a mass little bigger than a grain of wheat—which was constantly found at the termination of the superior vena cava in the right auricle, to which they gave the name of sino-auricular node. Because of its intimate connexion with nerves and the peculiar structure of its muscle fibres —similar to those of the auriculo-ventricular node described by Aschoff and Tawara at the commencement of the bundle passing from auricles to ventricles—they supposed that the sino-auricular node might prove to be the starting point of the heart's contraction. The sino-auricular node had no special muscular connexion with the auriculo-ventricular node except through the general musculature of the auricle. They were still of opinion not only that those nodes were devoid of a special connexion, but that they represented two quite different autogenetic systems in the heart. All those areas of specialized or primitive musculature, such as had been described as nodes, were really areas where the musculature of the heart came into an extremely intimate contact with the nervous system; nodes, indeed, were really neuro-muscular contacts. They found that those areas of the heart of the tortoise which Gaskell found to have the greatest power of originating the heart's impulse, and those of the eel which MacWilliam found were the most automatic, were areas made up of a mixture of nerve and muscle fibres. The appearances led to the belief that in these areas the nerve fibres became actually continuous with the muscle fibres, and that there were nucleated fibres which, from their structure and staining reaction, appeared to be intermediate between nerve and muscle fibre. To the cardiac areas which they regarded as made up of nerve and muscle fibres they proposed to give the non-committal name of "nodal tissue." Experiments would show that the auriculo-ventricular bundle was not only for the conduction of impulses from auricle to ventricle, but that through the bundle the condition of the ventricle was continually affecting the condition of excitability of the auricle. The bundle appeared from its nature to be not only a conducting but a co-ordinating mechanism. One of the chief results of their investigation had been to impress upon them the necessity of studying the special musculature of the heart in its relation to the extraordinarily abundant nerve supply of that organ. The excitable regions of the heart were those where the nerves came into a specially direct connexion with the specialized tissues which they had named "nodal." They had not touched on the abundant nerve supply to the sinuses of Valsalva at the commencement of the aorta and round the auriculo-ventricular orifices, which they regarded as end stations for sensory reflexes. The nerve plexuses at those regions were so close that zigzag experiments could not possibly

reward. (*b*) Again assuming Mr. Pomeroy's statements as to the mortality in the small-pox outbreak of 1901–2 to be correct, his estimate that 16.82 per cent. is about the same as the death-rate from the disease before vaccination was heard of, is sufficient to show that he has not taken the trouble to learn the elements of the subject. In England alone the bills of mortality show that during the years between 1667 and 1722 the average number of deaths from small-pox was 72 per 1,000 of the total number of deaths from all causes. It has been calculated that the death-rate from small-pox in England during the last half of the eighteenth century was such that if applied to the present population it would give an average of 70,000 deaths a year. In pre-vaccination days it was estimated that two-thirds of all the children born were attacked. Before the introduction of vaccination, one-half to three-fifths of the total mortality among children was in some years due to small-pox. What has never been estimated is how much in the way of fees the medical profession has lost by the introduction of vaccination. Perhaps Mr. Pomeroy will look into that question; the results might perhaps enlighten him. (*c*) As regards his Bedminster case, we should like to have the statements of the doctors; we should also be glad if Mr. Pomeroy would take the trouble to make up his mind whether it is Dr. Walker Hall or Dr. Hall Walker to whom he refers. But assuming that the opinion of Dr. Creighton and Dr. Hadwen was correct, will Mr. Pomeroy tell us what relation there could be between cancer in the pelvis and vaccination? Lastly, Mr. Pomeroy shows the graceful courtesy of his nature and the manliness (*virtus*) of his motto by the manner in which he refers to Miss Martha Adams. On this we need not comment; his noble qualities speak for themselves. We need only add that it was a part of his *fortuna* that he got a jury of the same degree of intelligence as himself. But no jury's verdict can obliterate the effect of the evidence given by this "honourable" and fortunate gentleman.

Universities and Colleges.

UNIVERSITY OF OXFORD.

The following candidates have been approved at the examinations undernoted:

First B.M. Examination.—*Organic Chemistry*: H. E. A. Boldero, C. H. Carlton, F. B. Chavasse, W. T. Collier, L. M. Davis, J. C. Dixey, K. M. Dyott, V. T. Ellwood, L. Gameson, O. H. Gotch, W. J. Hart, J. W. Horan, M. R. Lawrence, P. A. Martin, T. S. Nelson, A. L. Pearce-Gould, E. Scott, G. P. Selby, N. A. Sprott, C. P. Symonds.

Human Anatomy and Physiology: W. H. Bleadon, A. Booth, A. Jackson, E. E. Mather, H. G. Morris, H. M. Pope, M. O. Raven, J. Sainsbury.

Final B.M.—*Pathology*: G. E. Downs, A. D. Gardner, G. W. Johnson, C. Newcourt, E. L. Pearce-Gould, A. F. Sladden.

Forensic Medicine and Public Health: R. F. Bridges, G. H. Hunt, S. F. Moore, H. P. Newsholme.

Medicine, Surgery, and Midwifery: F. J. Aldridge, Magdalen; H. G. Butterfield, Wadham; G. H. Cross, Balliol; D. C. Dobell, Christ Church; G. J. Z. Jessell, Univ. Coll.; S. F. Moore, Trinity; C. Newcourt, St. John's; H. P. Newsholme, Balliol.

UNIVERSITY OF CAMBRIDGE.

Degrees.

The following degrees have been conferred:

M.D.—O. May, St. John's; S. J. Steward, Downing.

M.B.—K. A. Lees, King's; B. Day, Caius; H. B. Elton, Caius.

B.C.—K. A. Lees, King's; B. Day, Caius; G. A. F. Heyworth, Trinity.

Appointment.

Mr. J. E. Purvis, M.A., St. John's College, has been appointed University Lecturer in Chemistry and Physics in their application to Hygiene and Preventive Medicine.

NATIONAL UNIVERSITY OF IRELAND.

The President of the Dublin University College, Dr. Denis J. Coffey, has issued a circular giving a general scheme for scholarships and other prizes for the session 1909-10, and a scheme of fees. In the Faculty of Medicine it is proposed to give scholarships and exhibitions in each of the five years of the same value, namely:

Two scholarships of £25 each, tenable for one year.
Two exhibitions of £25.
Two exhibitions of £15.
Other prizes to amount of £20.

The scholarships will be awarded soon after the opening of the session, the exhibitions at the close of the session.

Fees: Provisional Scheme.

As the scale of fees for the various classes cannot be completed before regulations have been made in regard to the university courses in the session 1909–10, the following arrangements have been provisionally adopted by the governing body of the Faculty of Medicine:

The amount payable for attendance on the courses of instruction given in the college for the primary medical degrees of the National University of Ireland will be £14 per annum if the courses are equally distributed over a period of five years. In the ordinary distribution of the subjects for professional examinations in certain years the subjects required are greater in number than in other years, so that the fees in those years would vary accordingly.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary council was held on December 9th, Mr. Butlin, President, in the chair.

Diplomas.

Diplomas of Fellowship were issued to 28 candidates found qualified at the recent examination. Diplomas of the Licence in Dental Surgery were issued to 36 candidates.

Admission of Women to the Museum.

Certain modifications in the above regulations were adopted by the council, to the following effect:

"The museum is also open on Friday and Saturday to qualified medical women; to women medical students; to nurses; and to women obtaining orders of admission from the Secretary or Conservator.

"Women holding other medical or surgical qualifications than those of the college, and women medical students desirous of admission on other days, must make application in writing to the Secretary or Conservator. The application must be accompanied by a letter from the Dean of the applicant's medical school (in the case of a medical student), recommending that a ticket of admission be granted. Tickets of admission, which are not transferable and must be produced on application for admission, are granted for six months; at the expiration of this time application must be made for their renewal.

"On other days than Friday and Saturday women who do not hold a medical qualification or who are not medical students can only be admitted on the personal introduction of a Fellow or Member of the College, or Trustee of the Hunterian Collection, who will accompany them during their visit."

The Odontological Collection.

Mr. J. F. Colyer was appointed Honorary Curator of this collection (see Journal, December 11th, p. 1686).

Recognition of Medical Schools.

The London School of Medicine for Women and the Edinburgh School of Medicine for Women were added to the list of recognized medical schools. The Royal Free Hospital was added to the list of recognized hospitals.

The Public Health Laboratories of the School of Medicine of the Royal College of Physicians and Surgeons of Edinburgh were added to the list of laboratories recognized for the course of instruction for the diploma of Public Health.

The Midwives Act.

The President called attention to the report of the Departmental Committee appointed by the Lord President of the Privy Council to consider the working of the Midwives Act, 1902. It was decided that a communication should be addressed to the Privy Council urging the need for early legislation to give effect to the recommendations of the committee.

Appointment of Examiners, etc.

Mr. Herbert F. Waterhouse was appointed a member of the Court of Examiners in the vacancy occasioned by the retirement of Mr. Bernard Pitts.

Dr. G. F. Blacker was appointed Examiner in Midwifery under the Conjoint Examining Board in the vacancy occasioned by the death of Dr. W. R. Pollock.

Mr. R. J. Godlee was appointed to represent the college in the Senate of the University of London in the vacancy occasioned by the death of Mr. H. H. Clutton.

Mr. A. P. Gould was appointed a member of the Executive Committee of the Cancer Research Fund in the vacancy occasioned by the death of Mr. H. H. Clutton.

The late Sir William Ferguson.

A cabinet for instruments used and made by the late Sir William Ferguson, Bart., was presented to the college by Mr. Bernard Pitts.

The Fellowship.

The following candidates were admitted to the Fellowship:

J. W. G. Grant, D. L. Davies, H. B. W. Smith, W. S. Edmond, W. G. Howarth, A. D. Griffith, F. R. Hotop, A. S. B. Bankart, J. E. H. Roberts, H. S. Souttar, J. P. Hedley, W. R. Bristow, R. N. Coorlawala, A. B. Rooke, A. P. Bacha, R. L. Spittel, M. D. D. Gilder, G. V. Deshmukh, W. W. Treves, J. J. Abraham, A. B. Aitken, H. G. Anderson, A. Gough, F. F. Muecke, M. L. Scott, A. Spong, H. G. Thompson, A. S. Worton.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting on November 11th the following gentlemen were elected to the Fellowship:

E. C. Bevers, H. H. Bywater, A. J. Evans, W. A. Fairclough, W. Girdwood, J. P. Granger, R. H. Harris, R. B. D. Hird, J. Husband, Captain, I.M.S.; A. W. B. Livesay, Staff Surgeon, R.N.; T. R. McKenna, H. J. McLean, S. W. McLellan, J. Morris, W. J. Morton, A. N. Palit, J. Raffan, J. M. Renton, J. Russell, C. P. Sapsford, C. J. Smith, G. M. Smith, J. A. M. Smith, W. Taylor, and O. H. Williams.