

## **Report : 1945 / Mount Vernon Hospital and Radium Institute.**

### **Contributors**

Mount Vernon Hospital and the Radium Institute (Northwood, London, England)

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ANNUAL REPORT.

Mount Vernon Hospital  
and The Radium Institute

For the year 1945.

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A National Centre for the Treatment  
of Patients suffering from Cancer.

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"It is admitted on all hands that with modern methods of treatment, properly applied, many, if not yet all, cases of Cancer are curable if seen in a sufficiently early stage."

\* \* \* \*

"The first thing to banish from the lay mind is *fear*: once the public has been persuaded that Cancer need not of necessity be a cause for dread, the battle will be half won."

EXTRACT FROM THE  
"BRITISH MEDICAL JOURNAL."



22501619852

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Annual subscribers, by filling up the following form of agreement for seven years, enable the Hospital to recover income tax on their subscriptions, and can themselves deduct the amount of the subscription from their super-tax return.

I, ..... of  
HEREBY COVENANT with MOUNT VERNON HOSPITAL AND THE RADIUM  
INSTITUTE, that for a period of seven years from the ..... day of  
....., 194,  
or during my life, whichever period shall be shorter, I will pay annually to the said Hospital  
such a sum as will after the deduction of income tax leave in the hands of the Hospital  
a net sum of £..... (.....) such sum to be  
..... (words)  
paid from my general fund of taxed income so that I shall receive no personal or private  
benefit in either of the said periods from the said sum or any part thereof.

IN WITNESS whereof I have hereunto set my hand and seal this  
..... day of ..... 194

Signed Sealed and Delivered by the said

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Signature

Address

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L. S.

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- (d) the contributor can deduct £10 10s. 0d. from his return for super-tax.

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# BANKERS' ORDER FORM.

N.B.—Will the intending Subscribers kindly sign this order for the payment of their annual subscriptions and return to the Secretary.

It avoids all future trouble in renewing the payment;

It avoids postal risks;

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**Please pay** to Messrs. **BARCLAYS BANK LTD., 1, Pall Mall East, S.W. 1,**  
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**RADIUM INSTITUTE** my Subscription of £..... and continue the  
same on the ..... day of ..... annually until further notice.

*Signature* .....

*Address* .....

£ : :  
.....

N.B.—All that is needful to be done with this is to fill in the name of your Banker and the amount, sign the order, and return it through the post to the Secretary, at the Offices,  
1, Riding House Street, W. 1.

This Order entails no liability beyond the Annual Payment, and may be withdrawn at any time.



Mount Vernon Hospital

AND

The Radium Institute.

NORTHWOOD, MIDDLESEX,

and Riding House Street, London, W. 1.

**For the Treatment of Patients  
suffering from CANCER.**

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## REPORT

FOR THE YEAR 1945,

With Accounts for the Year  
ending 31st December, 1945.

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OFFICES:

1, Riding House Street, W. 1.

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1946.  
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LONDON :

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# MOUNT VERNON HOSPITAL AND THE RADIUM INSTITUTE.

HOSPITAL AT NORTHWOOD, MIDDLESEX.

*Offices and Out-patient Department:—*

1, RIDING HOUSE STREET, LONDON, W.1.

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The Rev. C. G. C. Walker, M.A.

### **Matron.**

Miss Priscilla Sanderson, O.B.E.

## REPORT 1945.

The Council have the honour to submit to the Members their report for the year 1945, together with the accounts audited by Messrs. J. M. Winter & Sons.

The Report is again curtailed but the work of the Hospital has been actively carried on throughout the period under review, despite the difficulties caused by the war and serious shortages of staff.

The Council have throughout the year been actively considering the part the Hospital could most usefully play in the future National Health Service and to that end have been in negotiation with other hospitals with a view to Mount Vernon taking its proper place as a Regional Radiotherapy Centre specialising in Cancer Research.

The Council record with deep regret the death during the year of Lord Dawson. Lord Dawson became a member of the Committee of The Radium Institute in 1932 and was an original member of the Council of the present Association formed by the amalgamation of The Radium Institute and Mount Vernon Hospital. His wide experience was of the greatest value to the Hospital and his death is a severe loss to it. His memory will be treasured with great gratitude.

Through resignation the Council has also lost the services of Mr. R. C. Davis who had been a member for many years. Mr. Davis felt compelled to resign as he had lately found it impossible to attend the Council meetings. His resignation was accepted with sincere regret and with deep appreciation of his many and invaluable services.

The Council extend a very hearty welcome to Sir Ernest Rock Carling, Mr. Douglas Harmer and The Rt. Hon. Lord Llewellyn who accepted invitations to join the Council. Their wide administrative experience will be of great value to the Hospital in the necessary post-war reorganisation. The return to civil life from war duties of several members of the Council is also greatly welcomed.

The Council are happy to report the return from service in the Forces of several members of the Honorary Medical

Staff and desire to express their heartiest congratulation to Air Vice-Marshal Sir Stanford Cade on the conferment on him of a Knighthood and to Lt. Col. Mitchell-Heggs on being made a member of the Order of the British Empire.

Owing to ill-health Surgeon Rear-Admiral H. C. White-side resigned his position as Medical Superintendent on the 30th June. He had occupied the position for  $5\frac{1}{2}$  difficult war years and had invariably carried out his duties with the utmost devotion and in the best interests of the Hospital. He has been succeeded by Lt. Col. H. G. Alexander (I.M.S. retd.) F.R.C.S., an officer of great administrative experience.

Mr. T. A. Garner resigned his position as Clerk to the Council on the 31st December. He had rendered long and faithful service for 32 years first to The Radium Institute and later to Mount Vernon Hospital and The Radium Institute. His resignation was accepted with deep regret and with the best wishes of the Council for a healthy and happy retirement. His duties will be undertaken by the Secretary, Mr. F. A. Watson.

The Council greatly regret to report the death on the 4th October of Dr. J. C. Mottram, the Director of Pathological Research. He had been in the service of The Radium Institute and then of the Hospital for 26 years. His death is not only a great loss to the Institution but to the world of science and cancer research.

It will be seen from the Statistical Tables on page 43 that the average number of In-patients during the year was slightly higher than in 1944. Several convoys of wounded service patients and prisoners of war were received during the first few months of the year and the total number of service patients admitted was 1,812.

All demands made by the Emergency Hospital Scheme have been met and in addition the Hospital has continued without interruption its normal function of treating patients suffering from Cancer. For the first time since the outbreak of war it is possible to publish an abbreviated medical report of the activities of the Cancer Departments and this appears on p. 14.

The E.M.S. Radiotherapy Unit at the Hospital, opened in 1942 at the request of the Ministry of Health, has been working to capacity throughout the year.

The Physio-therapy and Occupational Therapy Departments have again been used to the utmost and the latter has proved a valuable addition to the Hospital.

The number of cases dealt with in the Out-patient Departments at Riding House Street and Northwood have again increased considerably and it was found necessary to provide additional accommodation for this purpose at Northwood.

The Council feel that with the treatment of Cancer as their primary object they need not stress the fact that the Research work of the Hospital has been vigorously maintained and indeed now that the war is ended the staffs of the Research Departments are being considerably increased. This would not be possible without the continued generous support of the British Empire Cancer Campaign, to whom the Council desire to express their gratitude not only for the valuable financial assistance given by them but for their interest in the Hospital's Research activities.

The Statement of Accounts will be found on page 38A, from which it will be noted that the Income exceeded the Expenditure by less than £1,000 and that the Hospital still owes its Bankers £10,000. The Council are most anxious to repay this loan, and they earnestly appeal to their supporters for special donations for this purpose.

The Council greatly appreciate the generous way in which all those friends of Mount Vernon have continued to support the work of the Hospital by maintaining their subscriptions and donations. When possible the Council will resume the practice of printing the lists of Subscribers and Donors. Their gratitude for benefits received is none the less sincere because of the present omission of such lists.

The part played by Patients themselves in giving what financial assistance to the Hospital they can by joining the Hospital Saving Association and other contributory schemes is yearly increasing. In this connection the

Council desire to take the opportunity to state that the Hospital is at all times open for the admission of patients who, on enquiry, are found to be unable to make any contribution towards the cost of their maintenance during their stay in Hospital.

Allocations permitted to the Hospital under the Regulations of the London County Council have been made by Cinema proprietors out of the proceeds of the Sunday opening of Cinemas and the Council are much indebted to these Cinema Proprietors who have so kindly nominated the Hospital for this purpose.

The Council again desire to place on record their indebtedness to the King Edward's Hospital Fund for London for a grant of £2,000 and their sincere appreciation of the kindly interest which the Fund invariably shows in the welfare of the Hospital.

The grateful thanks of the Council are also due to the Metropolitan Hospital Sunday Fund who again made a grant to the Hospital of £400, thus continuing the substantial support they have given to the Hospital for many years.

The Special Hospitals Flag Day was held on the 2nd October when a sum of £310 4s. 4d. was collected. This record result was due to the indefatigable efforts of our Matron, Miss Sanderson, and her kind assistants, to whom the Council desire to express their sincere thanks.

The grateful thanks of the Council are due to the Matron and Miss Knight, the Assistant Matron, on the successful completion of their self-imposed effort to raise a sum of £1,000 to endow a bed in the Hospital for the use of members of the nursing staff.

The Council desire to place on record their acknowledgment of the invaluable help given to the Hospital by the British Red Cross Society and Order of St. John of Jerusalem. Throughout the war its members have rendered much help in many ways and of particular value has been the assistance they so readily gave when convoys of patients were being admitted.

The Council extend their gratitude also to the very many friends of the Hospital who have responded so generously to the appeal for blood donors. They have undoubtedly been the means of saving the lives of many patients.

The sincere thanks of the Council are also due to Mrs. J. G. Leonard, who, on the outbreak of war inaugurated a Wounded Forces Comforts Fund and throughout the war raised sufficient money to supply all service patients in the Hospital with cigarettes, newspapers and other comforts as well as providing them with many entertainments and outings.

The grateful thanks of the Council are due to the American Ambulance, Great Britain, who very generously presented an ambulance to the Hospital. It has already proved of the greatest help to many patients.

The Council are in entire agreement with the recommendation made by the Ministry of Health and other interested organisations concerning the necessity for improving, when possible, the accommodation provided for resident nurses in Hospitals and to that end have recently purchased "The Close" a large modern residence, situated near the Hospital. For the past six years this residence has been very kindly loaned to the Hospital by its former owner, Mr. H. J. Hawes, for use as a nurses' hostel and was found to be very suitable for this purpose. The Council desire to place on record their sincere appreciation of Mr. Hawes' generosity in this matter.

The Council are glad to place on record once again their gratitude to all who work for them—all members of the Medical, Administration, Nursing and Domestic Staff have given of their best at all times—grateful letters from discharged patients frequently testify to this. The Council are proud, in these difficult times, to be associated with assistants who have splendid ideals, which they pursue with such constant devotion and energy.

DONOUGHMORE.

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## MEDICAL REPORT.

(CANCER SECTION).

### INTRODUCTION.

This is the first Medical Report dealing with Cancer to be published since the outbreak of the Second German War, and any description of such work carried out in 1945 must include some mention of the conditions which have obtained during the years of war.

At the outbreak of war the hospital became an E.M.S. institution in Sector 5—the Middlesex Hospital sector. The general work of the hospital rapidly increased and accommodation was provided by the building of a number of huts, to contain in all 1,000 beds. The treatment of malignant disease became an even more important part of the work of the hospital, and extra equipment and staff had to be provided. In 1942 a Radiotherapeutic Centre was set up by the E.M.S. with Professor Windeyer as its director, and extra X-ray therapy apparatus was provided by the Middlesex Hospital. This centre was formed in order that the staffs of several of the London hospitals could make use of it, if their own hospital was put out of action. In fact the Middlesex and Mount Vernon Hospital were the only two hospitals who treated a considerable number of their patients at the centre.

Since then patients suffering from malignant disease have been treated by the combined staffs of Mount Vernon and the Middlesex Hospitals, and the co-operation between the staffs has been most successful.

A weekly clinical meeting is held every Thursday at 3 p.m. at which members of the Staff present interesting or difficult cases, and at which diagnosis and treatment are discussed by the Staff as a whole. These consultations are followed by a meeting at which the work of the Unit is reviewed week by week, and at which discussions take place on subjects of interest, such as radio-therapy, surgery, medicine, pathology, and radiation-physics. Members of the staffs of other hospitals attend these meetings and have been invited to open such discussions which have been well

attended by the physicians, surgeons, radiotherapists, physicists, anæsthetists and other members of the staff.

During the winter fortnightly lectures on the Early Diagnosis of Malignant Disease were organised by Colonel Alexander primarily for the general practitioners in the neighbourhood, although they were also attended by members of the Staff and medical students. The speakers were Mr. Gabriel, Mr. Ogilvie, Air Vice-Marshal Sir Stanford Cade, Mr. Fitzwilliams, Dr. Donaldson, Mr. Tudor Edwards, Mr. Douglas Harmer, Professor Hugh Cairns, Mr. Ogier Ward, and Dr. Mitchell Heggs. The final meeting was a demonstration with patients treated by deep X-ray therapy and radium implantation by Professor Windeyer and Mr. Durden Smith. Apparatus was also shown. These were very well attended and it is likely that as a result of this innovation similar courses of lectures will be organised by the B.E.C.C. in other cancer centres.

There is a special committee to supervise the health of all nurses and members of the staff who are working with Radium and X-rays and its reports are sent to the Council each quarter.

#### RECORDS DEPARTMENT AND GENERAL STATISTICAL REVIEW.

The importance of an efficient Records Department can hardly be over estimated. During 1945 the department was completely re-organised with Miss Taylor in charge and experience shows it to be working very satisfactorily. The chief need at present is for extra clerical assistance for the medical staff, as the basis of all statistics is accurate recording on the patients' case sheets. During 1944 a Punch Card System was evolved and it has been in use throughout 1945. These Punch Cards are used in conjunction with a code and special record sheets. It is perhaps unnecessary to explain that this system obviates a very formidable expenditure of time as it provides information which otherwise could only be acquired by a tedious review of each case sheet. During 1945, 1,221 cases suspected of having malignant disease were registered at the hospital and the Radium

Institute. Of these 59 proved to be non-malignant. Of the malignant cases 95 did not receive any specific treatment for the disease; of these, 54 cases were too advanced; 26 cases had already been treated and it was considered that no further treatment was necessary, 8 cases refused treatment; 7 were transferred elsewhere for treatment.

Every patient who has been diagnosed as suffering from Cancer is "followed up" and examined at intervals. Most of them are seen by the members of the Staff by whom they were treated, but where this is impossible reports are obtained from the doctor who is looking after them elsewhere.

This report is divided into "sections" corresponding to the classification layed down in the Punch Card records. As the cases registered in 1945 were the first of a new series these sections will not contain any detailed analysis of results but will give some indication of the work being done and the techniques that have been adopted.

The figures shown on Table 1 on pages 34—35 do not represent the complete work of the hospital in 1945 as they refer only to new patients registered in 1945. In addition, 114 patients registered prior to 1945 returned for further treatment; of these, 84 were treated by radiotherapy only, 4 by surgery and radiotherapy, 21 by surgery only, and 5 by palliative measures.

#### THE PHYSICS DEPARTMENT.

In any institution where Radiotherapy forms part of its activity, the Physics department must be of vital importance. The following is a brief description of some of the work carried out under Dr. L. H. Gray during 1945. It is with very great regret that the Council of Mount Vernon have heard that Dr. Gray is leaving the hospital to work with the Medical Research Council. Dr. Gray has during the last 13 years built up a magnificent department. The Council realise that it is only right that Dr. Gray's experience and knowledge should serve a wider field, and they wish him every success in his new sphere of activity.

In order to deliver as large a dose of X-radiation as possible to the tumor with the minimum damage to sur-

rounding healthy tissue, it is usual to employ crossfire techniques in which the tumour is irradiated from several directions consecutively. To use such techniques to the best advantage it is obviously necessary to know the resultant dose at all points throughout the irradiated tissues when beams of X-radiation are super-imposed, each of which is decreasing in intensity in a characteristic manner from the skin to the tumour.

Hitherto, a dose at selected points has been computed by rather tedious mathematical procedures—and only a few selected cases can be fully investigated. During the past year Mr. Banfield has been working full time along the lines suggested by Dr. Gray in an attempt to devise an equipment for the visualisation and rapid estimation of the dose distribution throughout the block of tissue irradiated by a number of X-ray beams.

In principle the method employed consists of substituting for each X-ray beam, a beam of light of suitable colour which will be absorbed in a solution of a coloured dye in the same manner as X-rays are absorbed in the body. The resultant light intensity at any point is measured by a specially designed photoelectric cell, so that the readings of an instrument recording the total photoelectric current when all the lights are switched on simultaneously, is a measure of the dose which would result from the irradiation of the corresponding point in the body by the X-ray beams. The first working model is in operation and has established the feasibility of the method.

#### *The Effect of Ionising Irradiation on Living Cells.*

Alongside the researches already described which aim at assisting the radio-therapist to use X-rays and radium with greater precision, prolonged research has also been devoted to the fundamental problem of the manner in which X-rays and other ionising irradiation which might be used for the treatment of cancer act on living cells.

To this end Dr. Gray and Dr. Read, with the financial support of the B.E.C.C., started in 1936 to construct the first neutron generator in this country to be used exclusively for medical research. The generator was in operation by the

end of 1937 and the effects of neutron irradiation on a variety of biological systems were studied and compared with comparable doses of X-radiation and of the gamma-radiation from radium. Chick embryo fibroblasts in tissue culture, root tips, mouse tumours *in vivo* and certain colloids were among the materials irradiated with neutrons. Large differences between the effect of neutrons on the one hand and gamma-radiation on the other were found which in some cases gave a clue to the manner in which the observed effects were being brought about. For example, it had been known for a long time that the growth of roots, as of most living structures, was greatly interfered with by irradiation of the rapidly dividing cells of the root tip which in some respects may be considered analogous to the rapidly dividing cells of tumours and it had been found that the effect of neutron irradiation was nearly ten times as great as that of an equal dose of gamma-radiation. This result could be correlated closely with those of American workers who had found similar differences between the effects of neutrons and gamma-rays on the individual chromosomes of the pollen cells of certain plants.

During the war this clue has been followed up as fully as circumstances permitted, roots have been exposed to four different types of radiation, the dose and duration of exposure, as well as other factors, being separately varied for each radiation. In all many thousands of roots have been studied. The roots have also been examined microscopically by Mrs. Scholes. Some types of chromosome injury produced by irradiation are easily observed under the microscope, others are much more difficult to observe and to interpret, and their study has become a special branch of cytology. Mr. Thoday who had previously specialised in this work has joined our staff and has been examining the root tips irradiated under the conditions used in the growth rate studies. The whole of the evidence so far obtained leaves little room for doubt that in this particular tissue the reduction in growth rate brought about by ionising radiations, which in the case of large doses amounts to complete cessation of growth and is followed by the death of the root, derives mainly from certain types of primary injury sustained

by the individual chromosomes. The various types of injury are produced to a different extent by different radiations; moreover, some are affected by a variation in the duration of exposure while others are not.

It remains to be seen how far similar results will be obtained with animal tissues and in particular with tumours. All the indications are that chromosome injuries are among the most important of the effects of radiation on tumour cells and that studies along lines similar to those followed in the case of root tips would provide a valuable guide to the best method of employing each type of radiation so as to secure a particular type of response in the cells irradiated.

## PHYSICS DEPARTMENT.

### I. CLINICAL.

The close collaboration between medical staff and physicists continues to be an essential feature of the treatments given at this Centre. A very comprehensive method of recording details of radium treatment has been developed and has been in satisfactory use for over a year. The ready availability of full details of dosage has proved particularly helpful at "follow-up." The exact determination of dosage by various means is now highly developed. All applicators are subjected to direct physical measurement, while interstitial implants are when necessary completely reconstructed following X-ray methods of localisation, so that detailed calculations or measurements can be performed.

At the same time, research work continues on new methods of using radium in order to get better and more exact distributions of radiation. Thus the applicator designed by Dr. Neary in association with Dr. Donaldson for the treatment of carcinoma of the cervix uteri not only gives a greatly extended and improved field of irradiation, but it eliminates entirely the errors and uncertainties in the positioning of radium which are inherent in previous intracavitary techniques. Similarly, an improvement in the interstitial use of radium will be made possible by the unequally loaded radium needles designed by Mr. Stewart. This attractive idea has long been entertained as a theoretical

possibility by various workers, but this is the first occasion on which such needles have actually been designed and made. A set of needles will shortly be coming into use here and it is anticipated that by their aid, much more satisfactory radium implants will be possible in various difficult sites.

Another new development concerns the beta-ray applicators extensively used at The Radium Institute. Experimental work of a physical nature has now enabled the dosage with these applicators to be expressed in terms of the röntgen, the accepted unit for ionising radiations.

Exploratory work is in progress which aims at the direct determination of dose by inserting into the irradiated tissues a slender probe containing a Geiger counter or similar device.

On the X-ray side, the planning of the treatment of other than routine cases is carried out by clinician and physicist in co-operation. This work is made possible by the fact that complete isodose charts are now available for all the X-ray applicators used, a method for the simple production of such charts having been developed in collaboration with the staff of the Physics Department of the Christie Hospital and Holt Radium Institute. In some cases special mechanical devices to facilitate accurate treatment are required, and the well-staffed and well-equipped workshop is of great value on these occasions.

Lastly, a careful and well organised check is kept on exposure of staff to radiation. Thanks to the careful instructions given and the special handling devices provided, the routine tests always reveal that there is a large margin of safety for all concerned.

#### GYNAECOLOGICAL SECTION.

The gynæcological cases are treated by a group of doctors who have laid down certain lines of treatment to be followed so that the results of such treatment can be obtained.

##### *Carcinoma of the Cervix.*

In the case of carcinoma of the cervix, however, five lines

of treatment had been undertaken before 1945 and it was therefore considered advisable to continue these different techniques for a time. This has the advantage of encouraging independence of thought, but has the very serious disadvantage that each series is so small that many years must elapse before sufficient numbers can be collected to be of any statistical value. Of the five lines of treatment, two are modifications of the Stockholm Technique, one is the Paris Technique, one consists of X-rays followed by radium, and in the fifth technique the same "dose" is used as has been used in another series of 493 cases, but instead of the usual Stockholm interrupted irradiation, the irradiation is continuous for 72 hours. During the year the Neary radium applicator has been used in a certain number of cases. This applicator gives a very much more even field of irradiation and increases the dose far out in the parametrium compared to that obtained by other applicators. During the year, 106 cases of carcinoma of the cervix were treated and 4 were too advanced for treatment.

#### *Carcinoma of Corpus Uteri.*

The routine treatment in M.V.H. is to do a diagnostic curettage and treat with 50 milligrams of radium for 48 hours. This is followed by panhysterectomy and bilateral salpingo-oöphorectomy, and then a course of X-rays. A number of patients are sent from elsewhere, most of whom have already had some sort of treatment. Forty patients were treated during the year and of these 19 had previous treatment elsewhere. Three were too advanced for treatment.

#### *Carcinoma of Vulva.*

The routine treatment is to perform complete vulvectomy followed by excision of glands in all operable cases. Inoperable cases are treated by diathermy and glands removed if possible later. If glands are inoperable they are treated by X-rays.

#### *Carcinoma of the Vagina.*

These cases are treated by radium, if possible giving a minimum of 6000r. 12 were treated during 1945.

*Carcinoma of the Ovary.*

Malignant ovarian cysts are treated by exploration and X-rays. 34 were treated, and one was too advanced for specific treatment.

## MALE GENITALIA.

Thirty-five cases of malignant disease of the testis were treated by radio-therapy, the primary tumour having been removed by surgery prior to the patient's admission to Mt. Vernon Hospital. In one case the primary was removed at Mt. Vernon.

Seven cases of malignant prostrate were admitted, and 4 were treated by radio-therapy, one by surgery, and two were too far advanced for specific treatment.

Five cases of carcinoma of the penis were treated, 2 by radio-therapy alone, 2 in combination with surgery, and one by surgery alone.

## BREAST:

Of the 190 cases treated during the year no less than 169 were treated by radio-therapy alone. This high figure is due in part to the large number of cases sent to the radio-therapy department for post-operative irradiation following a radical mastectomy elsewhere (74). Of the remainder 73 were treated with a view to radical cure of the disease and 22 as a palliative measure. As regards cases which on arrival had not previously received any treatment the method of treatment adopted in cases without distant metastases, i.e., Stage I and II, has varied. Parallel series of cases have been treated by different methods; thus 15 were treated by surgery alone, 6 by surgery followed by radio-therapy, and 9 by radio-therapy alone. The site of the primary tumour has some bearing on the choice of method of treatment, and tumours arising in the upper and inner quadrant are not submitted to radical mastectomy as the lymph drainage extends backwards into the chest, and not outwards into the axilla. Such cases are treated by radio-therapy. Of those cases which had palliative treatment 29 were treated for the relief of pain due to bone metastases, and except in the case of widespread secondary

deposits in bone such cases are treated by X-ray therapy as a routine, as by such means relief of pain is almost always achieved. During the coming year a series of more advanced cases will be treated by Oestrogens under the ægis of the Joint Scientific Committee of the Royal Society of Medicine and British Empire Cancer Campaign.

There were 2 cases of duct carcinoma proved by histological examination during the year. The difficulty of accurate diagnosis in these cases is well known, discharge from the nipple being sometimes the only sign. This difficulty is emphasised by the fact that no less than sixteen cases of disease of the breast presented for treatment had discharge from the nipple, and these consisted of chronic mastitis, duct carcinoma, duct papilloma, carcinoma simplex, and squamous carcinoma. Radio-therapy in cases with blood-stained discharge from the nipple has not on the whole proved satisfactory, and simple mastectomy has been regarded as the treatment of choice.

## ALIMENTARY CANAL.

### *Lip.*

The treatment of cases of carcinoma of the lip has consisted, in general, of subjecting the primary lesion to radio-therapy, no treatment being given to the glands unless they are enlarged, when bilateral supero-hyoid block dissection is done on the operable case. Radio-therapeutic methods have included contact X-ray therapy, deep X-ray therapy, and interstitial irradiation with radium needles.

### *Mouth.*

Cases under this heading include malignant disease of the floor of the mouth, alveolar processes, hard and soft palate, cheek and fauces.

Methods of treatment necessarily vary with the site of the growth, but in general the more accessible growths—which are as a rule the more highly radio-resistant—have been treated by interstitial radium, while carcinomata of the soft palate and fauces are submitted to deep X-ray. As regards the cervical glands, it has been the rule, as in the tongue, to submit cases to block dissection in two groups of cases—

(1) those in which there are no palpable glands, (2) those in which the glands are palpable, but movable. Cases with fixed glands are submitted to deep X-ray.

*Tongue.*

More than half the cases of carcinoma of the tongue occur in the anterior two-thirds, including those which also involve the floor of the mouth. In this group the primary lesion is treated as a rule by interstitial radium, while the glands are submitted to block dissection as described above (mouth). Growths in the posterior one-third—which are, as a rule, more radio-sensitive, are treated by deep X-ray, the associated glandular areas being treated at the same time as the primary lesion.

Primary lesions which transgress the mid-line in the anterior two-thirds of the tongue or floor of mouth have had bilateral superohyoid block dissection done as a rule, but it is not regarded as certain that this is the ideal treatment; it is probable that bilateral block dissection of the neck is the method of choice. The mortality of block dissection operations at this Hospital is less than 2 per cent.

CARCINOMA OF STOMACH, OESOPHAGUS  
AND PANCREAS.  
COLON, RECTUM, AND ANUS.

*Stomach.*

There were eighteen cases treated during the twelve months; of these one was operable and seventeen were inoperable. The former was treated by radical gastrectomy. Of the inoperable cases, four were too advanced even to justify exploratory laparotomy and had no special treatment, while two more were treated by palliative External Irradiation. One other was explored, but no palliation treatment was possible. Of the remaining ten inoperable cases, in two the disease was thought to be sufficiently localised at exploration to be treated by Direct Irradiation, which was carried out at the time using two tubes simultaneously. (Fairchild and Shorter, *Lancet*, 1945, ii, p. 5, 22.) In two more the disease was too extensive, so a palliative Gastrectomy was performed. In three a palliative Gastro-

jejunostomy was performed, while two had a palliative Gastrostomy and one a palliative Jejunostomy.

*Oesophagus.*

Fifteen cases of this disease were treated during last year. Of these, one was considered operable and was transferred to another hospital for operation. Of the remaining fourteen, no special treatment was given to two, seven were treated with External Irradiation, three had a palliative Gastrostomy and two had a Souttar's tube inserted. Of these latter two, one was treated also with intra-cavitary radium and the other with Stilboestrol.

*Pancreas.*

Two cases were treated, one with a palliative Cholecyst-gastrostomy, the other with a palliative Jejunostomy as well as External Irradiation.

*Colon.*

Twenty patients with carcinoma of the colon were treated, 11 by radical surgery, 1 by palliative surgery, and 8 by radio-therapy.

*Rectum.*

Twenty-nine patients suffering from malignant disease of the rectum were treated, 4 by radical surgery, 9 by palliative measures, and 16 by radio-therapy.

*Anus.*

Three cases were treated, 2 by radio-therapy and 1 by surgery.

#### UPPER AIR PASSAGES.

This group includes cases of malignant disease in widely varying sites including the oral and naso-pharynx the larynx, both intrinsic and extrinsic, and the accessory nasal sinuses. The large majority of cases in this group was treated by X-ray therapy either to the primary only or to both primary lesion and glands. The use of radium was confined to carcinoma of the antrum, and intrinsic carcinoma of the larynx. In one case partial pharyngectomy with block dissection of the glands was the treatment given to a localised carcinoma of the lateral pharyngeal wall. The fact that only 4 cases in this group were regarded as being beyond the help of treatment of any kind does not mean

that the group as a whole was seen at an early stage. In many of the sites represented the reverse was the case.

Forty-nine such cases were treated, and 3 others were too advanced for specific treatment. It is not considered necessary to divide up the various sections forming this group this year, but full details are kept in the punch card system.

### GENITO-URINARY SYSTEM.

#### *Cancer of the Bladder.*

Of the 14 cases of bladder cancer, 7 occurred in men and 7 in women. All these cases were advanced and were either beyond the reach of surgery or had already undergone cystectomy, and were sent for treatment of recurrence. Ten cases were treated by X-ray therapy, 2 of these being subjected to high intensity radiation. One case was treated by the insertion of radon seeds. Two cases were too advanced for treatment—1 died before radiation treatment was complete. Although some palliation is achieved in this disease, the clinical material is, as a rule, poor, and the cancer far advanced at the time patients are first seen. There is evidence that treatment by the supra-pubic implantation of radon seeds, sometimes in combination with deep X-ray achieves the best results, but the number of cases which are early enough to admit of such treatment is small.

#### *Hypernephroma.*

Six patients were treated, all of them advanced.

### RETICULO-ENDOTHELIAL NEOPLASIA.

The nomenclature of Reticulo—entothelial Neoplasia is not yet stabilised, but diseases histologically classified as Lymphadenoma, Lymphosarcoma and Reticulum-cell Sarcoma, together with the variously named Generalised Lymphoid Reticuloses, are regarded as one group from the therapeutic aspect.

In The Mount, Vernon Radiotherapy Department the methods of treatment are those advocated by Dr. Ralston Paterson, of Manchester. For involvement of one group or adjacent groups of lymph nodes, deep X-ray therapy is used

to deliver a tissue dose of 4,000r. in 21 days to a large area which includes the involved nodes and those feasibly widely beyond on all sides. For any cervical involvement, the whole neck is irradiated from the base of the skull to below the clavicles. In this site it is thought important to deliver the optimum dose to 4000r. in 21 days, because in Lymphosarcoma or Reticulum-cell Sarcoma of the nasopharynx or cervical glands there is a chance of permanent freedom from recurrent disease. For more extensive involvements, regional irradiation is similarly given over 21 days, but the lesion dose may have to be reduced to 3000r. for large areas. When the disease is generalised, X-ray bath technique is used, the total lesion dose being small and determined by the leucopenia produced. Past experience has shown that, except as a terminal event, the disease rarely recurs in an area which has received a dose of 4000r. in 21 days. Large fields have been routinely used for some years, and it is reasonable to suppose that some nodes were not involved at the time of their irradiation, yet it is the whole of the irradiated area which escapes recurrence. This suggests the possibility of prevention by means of irradiation, and certain early cases of Lymphadenoma are now being selected for investigation. Because of the inevitable fatality of Lymphadenoma, because abdominal involvement so often heralds the terminal stages, and because a subdiaphragmatic mass cannot be detected until it attains considerable size, it is considered justifiable to treat the upper abdomen on the slightest suspicion of its involvement. Grounds for suspicion are demonstrable mediastinal involvement, or unexplained symptoms of dyspepsia or backache. The area treated is a 10cm. midline strip from the xiphoid to the umbilicus, and a dose of 3600r.—3800r. in 21 days is given. It remains to be seen whether the progress of the disease will tend to be altered, either by fastforming fatal outcome, or by inexorable advance into other untreated reticulo-endothelial tissues.

In the E.M.S. Radiotherapy Centre the method of treatment of these diseases differs from the above except for the use of the X-ray bath technique for generalised disease.

Palpable nodes are given deep X-ray therapy by means of small direct fields, a daily skin dose of 200r. being repeated until the swelling subsides, which requires a total skin dose of 1500r.—2000r. Recurrences in the treated area or elsewhere are similarly treated when they appear. Lymphosarcoma of the nasopharynx is treated by small multiple fields to the nasopharynx, which is given a lesion dose of 3000r.—3500r. in 28 days.

The total number of cases treated was 63. In 28 of these patients a full course of radio-therapy was given with a view to a radical cure, in one a surgical removal of the glands was carried out, and in 34 palliative X-ray therapy was given.

#### THE SKIN.

Radiotherapy is the treatment of choice in most cases of skin epithelioma, except in malignant melanome, which should always be excised widely and without delay. Radiotherapy is not only more conservative but cosmetically gives results which cannot be obtained by any other method. The success of radiotherapy depends not only on accessibility but on the marked difference which exists between the susceptibility of the cancer cells and that of the normal skin. Surgical removal is equally effective in some cases, but from a cosmetic point of view, complete excision, even of a small growth is difficult in those situations commonly affected. In fact, of the 181 cases of rodent ulcer treated in 1945 only 3 cases were treated by surgery, and surgery was employed only in 5 cases out of a total of 28 cases of squamous epithelioma. In malignant melanoma, surgery was used either alone, or in combination with radio therapy in 7 of 10 cases.

Most of the smaller lesions not exceeding 2cms. in diameter were treated by a single application of X-rays, or by means of a radium plaque. Using 95 KV. with an inherent filtration of 1mm. Al. a tumour dose not exceeding 2200r. is given, and in order to achieve this it is seldom necessary to subject the skin to a dose exceeding 3000r. For contact surface radium full strength plates are used. These plates consist of solid plaques which vary in size, and shape, and

contain .5 millegrammes of radium element per square centimetre. When it is necessary to irradiate the more superficial layers of the skin only, an unscreened applicator is used.

Large areas are usually treated by a "split dose" X-ray technique or by gamma radiation. Using 95 KV. or 140 KV., the total dose is divided into four or six exposures. The total dose is increased up to a maximum 4000r. to the skin. When gamma radiation is used suitable plaques or moulds are constructed on the lines suggested by Patterson and Parker and others, using a screen of at least 0.5mm. of platinum. Multiple foci are arranged in such a way as to produce a homogenous irradiation at the level of the growth. In a few cases, interstitial irradiation has to be used, either in the form of radium needles with a low linear intensity, or by means of radon seeds, which can be employed in many situations where it would be impossible to apply needles. In a large number of rodent ulcers equally good results can be obtained with radium or with X-rays. In the present series 105 were treated with radium and 73 with X-rays.

Preference has been given to X-ray therapy in squamous epithelioma. Of the 28 cases under review 21 were treated with X-ray, 5 were excised, and 2 treated with surface radium. Most squamous growths run a slow course, and spread to the neighbouring lymphatic glands is usually late. In the large majority of cases the question of treating the glands does not arise. When glands are present they should be dissected if operable. If the histology indicates the presence of growth post-operative X-ray therapy to the glandular area is indicated.

A very large percentage of all epitheliomata of the skin are cured by radiotherapy. The failures occur in those cases of advanced rodent ulcer involving the underlying bone or cartilage; and in those squamous celled growths with metastases.

A summary of cases treated in 1945 is given on page 34.

## LUNG AND BRONCHUS.

Forty-nine cases of carcinoma of the bronchus were seen during the year, of which only 14 were considered suitable for radical radio-therapy. An additional 23 received palliative treatment. Some of the cases had already undergone thoracotomy and proved inoperable. Secondary deposits were occasionally subjected to palliative treatment to relieve pain. It is to be hoped that the further use of penicillin will increase the number of cases suitable for radical treatment by combating pulmonary sepsis which is so often a contra-indication.

## NERVOUS SYSTEM.

In 1945 37 patients suffering from disease of the nervous system were treated by the three radio-therapeutic teams at Mount Vernon Hospital. One case was treated by Miss Ross, 5 by Dr. Fairchild and 32 by Professor Windeyer and Dr. Shorvon. Analysis of the cases shows that 24 were cerebral tumours, 5 were spinal tumours, 7 were syringomyelias (including 1 case of syringobulbia) and 1 was an interesting and very rare condition, at least in this country, namely toruloma of the brain.

The case treated by Miss Ross was a cerebral tumour of the right fronto-temporal region. She delivered an estimated tumour dose of 6799r. in 43 days using 7 fields, 190 K.V. 16 M.A., H.V.L. of .9 mm. Cu. and a dosage rate of 38r./m.

Dr. Fairchild's cases consisted of 3 cerebral tumours (a pineal tumour, a spongioblastoma multiform and an astrocytoma) and 2 spinal cord tumours (an astrocytoma and malignant melanoma). For the cerebral tumours he usually employs 5 fields and delivers a tumour dose of 2500-3000r. in about 10 days. The other factors in his treatment are 250 K.V., 40 M.A., H.V.L. 2.05 mm. Cu. and a high dosage rate of over 300r./m. for the spinal cord tumours he uses 3 or 4 fields and delivers 2000-3000r. to tumour, the other factors being the same.

Of the 32 cases treated by Dr. Shorvon and Pro. Windeyer, 20 were cases of cerebral tumour, one a toruloma, 3 spinal cord tumours and 7 syringomyelias. Of the cerebral tumours, 5 were tumours of the pituitary (2 chromophobe and 3 eosinophil adenoma). These were treated by 5 or 6 small fields (each 5 cm. 1 or 6 x 4 cms.) and a tumour dose of about 5500r. was usually delivered in some 40 days. The other factors were 190 K.V., M.A.6, H.V.L. of 1.09 mm. Cu. and a dosage rate of 30-35 r./m. Fourteen other cases of cerebral tumour (7 astrocytomas, 2 oligodendrogliomas, 1 meningioma, 1 pineal tumour, 1 calcified angioma, 1 spongioblastoma and 1 without histology) were treated with the same factors as for pituitary neoplasms, but using larger fields and an estimated minimum tumour dose of 5000-5500r. was delivered. The remaining case of cerebral tumour was very interesting. The patient was admitted with a diagnosis of cerebral tumour secondary to carcinoma of rectum. He showed marked signs and symptoms of involvement of the frontal lobe—was irrational and semi-moribund. After treatment by deep X-ray to the brain he became apparently normal and thorough examination then showed no signs of primary growth in rectum or elsewhere. His condition was probably a primary frontal lobe tumour.

The toruloma of the brain was situated in the cerebellum. The patient also had lobular infection of the lung. His condition was very poor. He had been treated previously at the Radcliffe Infirmary with sulphadiazine and was given penicillin and irradiation. He died three weeks after admission, probably from meningitis and unfortunately permission for a post-mortem was not forthcoming.

The 3 spinal cord tumours (glioma, sarcoma and angioma) were treated with the same factors as cerebral tumours except for fewer fields and smaller tumour dose.

The 7 cases of syringomyelia included one in which the brain system was also involved. In these cases the neurologist marks out for us the area of the cord involved and we are in the habit of giving about 2000r. to skin over the affected area. It may be necessary in cases of syringo-

myelia to repeat the course of irradiation at intervals depending on the neurological findings.

In the majority of cases treated we were greatly helped by preliminary decompression and partial removal of tumour. This is of great value in making irradiation safer, in localising position of the growth and in giving material for histology. Very valuable assistance was also obtained from the neurologists, Drs. McAlpine and Sandifer who saw the cases before and after treatment.

It is of course far too early to give long term results of treatment. In a few cases however (in comatose and semi-comatose patients) the immediate results were dramatic and gratifying and in many other cases marked symptomatic relief was noticeable.

#### THE PHYSICO-CHEMICAL DEPARTMENT.

The previous experiments on the bio-chemistry of benzpyrene led to the scheme:—

Benzpyrene X1 and X2 on the one hand, and F1 and F2 on the other have similar chemical constitutions respectively. Methods have been developed by which it is now possible to estimate quantitatively the amounts of the various derivatives in mixed extracts from various tissues. They make it possible to follow exactly the mechanism of the metabolism in the liver and digestive tract, kidney and lung after intravenous and intraperitoneal inoculation of benzpyrene, in the tissue after sub-cutaneous inoculation, and in the skin after painting with the carcinogenic hydrocarbon. A quantitative micro-method allows the estimation of the metabolites even after the application of benzpyrene after death of the mouse.

#### PATHOLOGICAL DEPARTMENT.

Some idea of the work done in the pathological department in connection with malignant disease can be gained from the fact that of 113 post-mortems performed during 1945, 77 were for patients with malignant disease. 1,306

microscopic slides of clinical material were prepared, and of these 65 per cent. had to do with malignant cases. Of the 12,550 general blood and bacteriological examinations 40 per cent. were for malignant conditions.

During the year pre- and post-radiation cell counts have been carried out by the Strangeways Laboratory, Cambridge, in our cases of carcinoma of the cervix.

#### PUBLICATIONS BY MEMBERS OF THE STAFF.

The following Papers have been published during the year by members of the Staff:—

- FAIRCHILD, G. CRANSTON and SHORTER, ALAN (1945). "Direct Irradiation of Cancer of the Stomach and other Viscera Exposed Temporarily at Operation." *Lancet*, 2,522.
- GRAY, L. H. (1944). "Dose Rate in Radiotherapy." *Brit. J. Rad.*, 17,327.
- GRAY, L. H. and READ, J. (1944). "The Effect of Ionising Radiations on the Broad Bean Root. Part VI. Summation of the Effects of Radiation of Different Ion Density." *Ibid.*, 17,271.
- MOTTRAM, J. C. (1945). "A Diurnal Variation in Tumour Yield." *J. Path. Bact.* (In press.)
- MOTTRAM, J. C. (1945a). "On Benign Warts becoming Malignant." *Brit. J. Exp. Path.* (In press.)
- MOTTRAM, J. C. (1945b). "The Production of Endomitosis in Bean Roots." *Nature*, 154,828.
- MOTTRAM, J. C. (1945c). "On the Disappearance of Benign Warts in Benzpyrene Painted Mice." *Ibid.* (In press.)
- WEIGART, F. (1945). "Metabolism of 3: 4—Benzpyrene in Mice." *Ibid.*, 155,479.
- WEIGART, F. and MOTTRAM, J. C. (1945). "The Biochemistry of Benzpyrene, I and II." *Cancer Research.* (In press.)
- BRITISH EMPIRE CANCER CAMPAIGN, Twenty-second Annual Report, 1945.
- DONALDSON, M. "Some New Facts Concerning the Prognosis and Treatment of Carcinoma of Cervix." *Royal Society of Medicine*, Nov. 1945, Vol. XXXIX.

**Summary of NEW Cases treated in 1945.**

	Total No.	Treated	Not Treated	Alive Jan. 1946	TREATMENT							
					Radiotherapy Alone		Surgery Alone		Surgery and Radiotherapy			
					Radical	Palliative	Radical	Palliative				
<b>REPRODUCTIVE SYSTEM :—</b>												
Female, Ovary ...	35	34	1	26	22	8	3	...	...	1	...	1
Vulva ...	12	12	0	11	5	2	2	...	2	1	...	1
Vagina...	8	7	1	8	4	2	...	...	...	1	...	1
Cervix Uteri ...	110	106	4	98	98	8	...	...	...	...	...	...
Corpus Uteri ...	43	40	3	40	30	2	...	...	...	...	...	8
Male, Penis ...	5	5	...	4	2	...	1	...	...	...	...	2
Prostate ...	7	5	2	6	2	2	1	...	...	...	...	...
Testis ...	35	35	...	29	31	3	...	...	...	1	...	1
BREAST ...	207	190	17	196	147	22	15	...	...	...	...	6
<b>ALIMENTARY CANAL :—</b>												
Lip ...	25	24	1	23	20	1	...	...	...	...	...	3
Mouth ...	32	29	3	27	23	4	1	...	...	1	...	1
Tongue ...	28	27	1	20	10	9	2	...	...	2	...	6
Oesophagus ...	16	13	3	11	9	...	1	...	3	...	...	...
<b>GASTRO-INTESTINAL AND ABDOMINAL CAVITY :—</b>												
Stomach ...	19	13	6	7	...	1	9	...	...	...	...	3
Pancrea ...	2	2	...	1	...	1	...	...	1	...	...	...
Colon ...	23	20	3	13	4	4	11	...	1	...	...	...
Rectum ...	37	29	8	24	10	6	4	...	9	...	...	...
Anus ...	3	3	...	2	2	...	1	...	0	...	...	...
Peritoneum ...	2	2	...	2	1	1	...	...	...	...	...	...
<b>RENAL TRACT :—</b>												
Kidney ...	6	6	...	5	5	1	...	...	...	...	...	...
Bladder ...	13	12	1	8	9	1	...	...	1	...	...	1
Urethra ...	5	5	...	4	3	2	...	...	2	...	...	...



## Summary of New Cases BENIGN treated by Radiotherapy, 1945.

	Total No Regis- tered	Treated	No Treated	TREATMENT			
				Radiotherapy Radical	Radiotherapy Alone Palliative	Surgery and Radiotherapy	Surgery
<b>SKIN :—</b>							
Keloid ... ..	18	18	...	17	...	1	...
Naevi ... ..	69	67	2	57	...	10	...
Other Conditions ...	353	353	...	353	...	...	...
<b>HERPES ... ..</b>	4	4	...	4	...	...	...
<b>UTERINE HÆMORRHAGE ...</b>	79	78	1	77	...	1	...
<b>SPONDYLITIS ... ..</b>	52	50	2	50	...	Fibroids also	...
<b>OSTEOARTHRITIS ... ..</b>	19	19	...	19	...	...	...
<b>BONE :—</b>							
Paget's Disease and Other Conditions ...	6	5	1	5	...	...	...
<b>GLANDS :—</b>							
Tuberculosis ... ..	15	15	...	14	...	1	...
<b>EYE CONDITIONS ... ..</b>	2	2	...	2	...	...	...
Dypytrens ... ..	2	2	...	2	...	...	...
Contracture ... ..	...	...	...	...	...	...	...
Pituitary Tumours ...	6	5	1	5	...	...	...
<b>BREASTS :—</b>							
Mastitis, but referred as Carcinoma ... ..	12	9	3	3	...	1	5
Parotid Tumours ... ..	6	4	2	3	...	...	1
Thyrototoxicosis ... ..	2	2	...	2	...	...	...
Myasthena Gravis ... ..	3	3	...	3	...	...	...
	648	636	12	616		14	6

## Directions to those seeking admission to the Hospital.

1.—All applicants must be approved by the Medical Council before acceptance. The Secretary will send report forms in the case of applicants from the country.

2.—Applicants are not admitted for a definite period of time.

3.—Visitors (not to exceed two in number) to patients are admitted between the hours of 2 and 4 on Sundays and Wednesdays.

NOTE.—Special private rooms and cubicles are reserved for paying patients.

Particulars may be obtained on application to the Secretary at the

*Offices* : 1, Riding House Street, London, W. 1, or the Hospital, Northwood, Middlesex.

**N.B.**—The Hospital is about one mile from Northwood Station, London and North-Eastern and Metropolitan Railway, and fifteen miles from London. Departures from Marylebone L. & N.E.R. or Baker Street (Met.) at frequent intervals.

The following Wards and Beds in the Hospital have been specially named

- THE "HELENA" WARD.  
 THE "HENRY HARBEN" WARD.  
 THE "HENRY IRVING" WARD.  
 THE "ANNIE ZUNZ" WARD.  
 THE "EDITH CAVELL" BED.  
 THE "ELIZABETH RUNDLE CHARLES" BED.  
 THE "J. C. GEISELBRECHT" BED.  
 THE "GORE-LLOYD" BED.  
 THE "HAMPSTEAD" JUBILEE BEDS (2).  
 THE "IN MEMORIAM GEORGE FIELD" BED.  
 THE "JOHANNA STEINKOPFF IN MEMORIAM" BED.  
 THE "SAMUEL ENGEL" BED.  
 THE "M. HARKER-SMITH" BED.  
 THE "W. AND S. ROPER" BED.  
 THE "LADY LOUISA GOLDSMID" BED.  
 THE "IN MEMORY OF MRS. MAUDE ASHLEY" BED.  
 THE "ISABELLA CAMPBELL" BED.  
 THE "THOMAS WODEHOUSE" BED.  
 THE "HENRY JOHN" BED.  
 THE "PERCY FREEMAN" BED.  
 THE "JOHN WESTGATE" BEDS (2).  
 THE "ELIZABETH WILLS ALLEN" BED.  
 THE "H. E. DAVID" BED.  
 THE "LADY LUCY" BED.

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GIFTS IN KIND.

Gifts of game, fruit, flowers, books, etc., which are always acceptable and greatly appreciated by the patients, should be accompanied by the name and address of the Donor, in order that their receipt may be acknowledged.





**MOUNT VERNON HOSPITAL AND THE RADIIUM INSTITUTE.  
LEGACIES.**

*ACCOUNT for the year to 31st December, 1945.*

	£	s.	d.
To Free Legacies Received	...	8506	2 8
	...	...	...
	...	8506	2 8
	...	...	...
By Transfer to General Fund Capital Account	...	8506	2 8
	...	...	...
	...	8506	2 8

We have examined the above Account with the Books and Vouchers of the Association and certify the same to be in accordance therewith.

JOHN M. WINTER & SONS,  
*Chartered Accountants,*

7th March, 1946.

39, St. James's Street, London, S.W. 1.

**SAMARITAN FUND.**

*STATEMENT OF RECEIPTS AND PAYMENTS for the year to 31st December, 1945.*

	£	s.	d.
RECEIPTS.			
Dividends	...	31	4 0
Donations	...	2	16 0
	...	...	...
	...	34	0 0
	...	...	...
	...	34	0 0
PAYMENTS.			
Grants	...	10	12 0
Balance...	...	23	8 0
	...	...	...
	...	34	0 0

We have examined the above Account with the Books and Vouchers of the Association and certify the same to be in accordance therewith.

JOHN M. WINTER & SONS,  
*Chartered Accountants,*

7th March, 1946.

39, St. James's Street, London, S.W. 1.

# MOUNT VERNON HOSPITAL AND THE RADIUM INSTITUTE RESEARCH LABORATORIES.

STATEMENT OF ACCOUNT WITH THE BRITISH EMPIRE CANCER CAMPAIGN,  
for the Year to 31st December, 1945.

	£	s.	d.
INCOME.			
To Grants received ...	2504	16	0
Balance 31st December, 1945 ...	366	9	7
	2871	5	7
EXPENDITURE.			
By BALANCE as at 31st December, 1944 ...	449	19	9
SALARIES:			
Physical Chemist ...	600	0	0
Physicist ...	550	0	0
Clerical Assistant for Clinical Cancer Re- search ...	250	0	0
Assistant to Dr. Gray	250	0	0
Salaries, Apparatus and Equipment, Neutron Research ...	288	5	8
Pathological Depart- ment Salaries ...	345	0	0
	2283	5	8
Instruments, Renewals and Repairs, Drugs, Chemicals, etc. ...	38	0	2
Library ...	60	0	0
Fuel, Power and Lighting ...	30	0	0
Water ...	10	0	0
	£2871	5	7

We have examined the above Account with the Books and Vouchers of the Association and certify the same to be in accordance therewith.

JOHN M. WINTER & SONS,  
*Chartered Accountants,*  
39, St. James's Street, London, S.W. 1.

7th March, 1946.

**MOUNT VERNON HOSPITAL AND THE  
RADIUM INSTITUTE.  
INVESTMENTS ON CAPITAL ACCOUNTS.**

*Book value as at 31st December, 1945.*

	£	s.	d.		£	s.	d.
<b>(A For Special Purposes:—</b>							
<b>(a) Hospital Endowments:</b>							
£2107 7s. 2d. 4% Funding Loan, 1960—90 ... ..	2307	15	0				
£4101 2s. 1d. 3½% West Riding York- shire Redeemable Stock, 1950—70	4275	14	0				
£2107 7s. 2d. 2¾% Funding Loan, 1952—57 ... ..	1906	13	4				
£5683 7s. 8d. 3¼% Ceylon Govern- ment Inscribed Stock, 1934—59	4290	19	4				
£1875 4% Southern Railway Deben- ture Stock ... ..	1462	10	0				
£2125 4% London & North-Eastern Railway Debenture Stock ...	1604	7	6				
£202 4% London Midland & Scottish Railway Guaranteed Stock ...	150	7	11				
£1500 4% London & North-Eastern Railway 2nd Guaranteed Stock...	1065	0	0				
£1500 4% London & North-Eastern Railway 1st Preference Stock ...	982	10	0				
£1600 5% Southern Railway Prefer- ence Stock ... ..	1400	0	0				
£5900 4% London Midland & Scottish Railway Preference Stock ...	4100	10	0				
£100 Scinde, Punjaub and Delhi Railway Annuity (Class B) ...	1800	0	0				
£2881 6s. 8d. 3½% Conversion Loan Stock ... ..	3107	7	6				
£1000 3% Savings Bonds 1960—70	1000	0	0				
					29,453	14	7
<b>(b) Other Special Purposes:</b>							
<b>Samaritan Fund:</b>							
£360 4% London Midland & Scottish Railway Debenture Stock ...	280	16	0				
£231 4% London & North-Eastern Railway First Preference Stock...	151	6	1				
£168 4½% London Transport "A" Stock ... ..	157	13	7				
					589	15	8
<b>Findlay B. Anderson Trust Fund:</b>							
£1006 1s. 0d. 5% New Zealand Gov- ernment Inscribed Stock, 1946 ...	1000	0	0				
					1000	0	0
Carried forward ... ..					31,043	10	3

	£	s.	d.	£	s.	d.
Brought forward ... ..				30,393	10	3
Cancer Research Account:						
£668 16s. 7d. 3½% Conversion Loan, 1961 ... ..	500	0	0			
£3150 Savings Bonds 1960—70 (Newham Account) ... ..	3150	0	0			
Staff Benefit Fund:				3650	0	0
£203 4s. 2d. 3½% Australia Stock, 1954—59 ... ..	196	1	10			
£846 4½% London Transport "A" Stock ... ..	793	12	6			
				989	14	4
(B) For Buildings and Equipment:—						
Savings Bonds 1955-65 ... ..	7000	0	0			
104 National Savings Certificates ...	78	0	0			
Savings Bonds, 1960—1970... ..	16200	0	0			
				23278	0	0
(C) For General Purposes:—						
£400 3½% War Stock, 1929—47 ...	400	6	3			
£530 3% Lon. County Cons. Stk, 1920	320	13	0			
£633 6s. 6d. Metropolitan Water Board "B" Stock ... ..	389	9	4			
£387 4% London Midland & Scottish Railway Debenture Stock ...	301	17	2			
£1281 4% Southern Railway Deben- ture Stock ... ..	999	3	7			
£692 4% London Midland & Scottish Railway Guaranteed Stock ...	515	12	8			
£900 4% London & North-Eastern Railway First Preference Stock ...	589	10	0			
£1000 5% Southern Railway Prefer- ence Stock ... ..	875	0	0			
£23 Great Indian Peninsular Rail- way (Class B) Annuities ... ..	530	9	0			
£1000 Buenos Ayres Great Southern Railway Co. Ordinary Stock ...	240	0	0			
£100 Buenos Ayres Western Rail- way Co. Ordinary Stock ... ..	170	0	0			
50 Prudential Assurance Co. "A" Shares ... ..	1500	0	0			
£7000 Central Argentine Railway Co., Consol. Ordinary Stock	1260	0	0			
3% Savings Bonds 1955—65 ...	1250	0	0			
£500 Savings Bonds 1960—70 ...	500	0	0			
9 National Savings Certificates ..	6	15	0			
£814 5s. 8d. 3½% Australia Stock 1954—59 ... ..	785	17	2			
£660 4% Fundling Stock 1960—90 ...	740	0	6			
				11374	13	8
				£70,335	18	3

(Market value as at 31st December, 1945 = £76,171 8s. 8d.)

# STATISTICAL TABLES.

*Statistics for year to 31st December, 1945.  
Compared with those of previous year.*

## 1. — IN-PATIENTS

### (a) Number of Beds and In-Patients.

	Numbers in 1945	Numbers in 1944
1. Beds : (a) Complement at 31st December .....	932	1016
(b) Average Daily Complement during the period.....	932	1016
(c) Average daily number closed during the period, owing to—		
(i.) Re-building or Extension.....	<i>Nil</i>	<i>Nil</i>
(ii.) Repairs, Cleaning, etc.....	<i>Nil</i>	<i>Nil</i>
(iii) Other causes .....	<i>Nil</i>	<i>Nil</i>
(d) Average daily number open during the period .....		
(i.) E.H.S. Casualty Beds.....	844	949
(ii.) Other Beds .....	88	67
(e) Average daily number occupied during the period.....		
(i.) E.H.S. Casualty Beds .....	518	528·2
(ii.) Other Beds .....	79	59·4
2. Number of In-Patients in the Hospital at the beginning of the period.....	629	546
3. Number of In-Patients admitted during the period .....	6498	6880
4. Number of In-Patients in the Hospital at the end of the period .....	492	629
5. Average number of days each Patient was resident [Ascertained by dividing the total of daily accounts viz. 217,950 by the number of Patients treated to a conclusion, i.e. (2) plus (3) minus (4).]	32·89	31·6
6. Number of Patients admitted and discharged during the period who were resident for—		
(i.) only 1 day .....	106	96
(ii.) 2 and 3 days.....	224	177

802 Beds have been added under the Emergency Hospital Scheme.

## LEGACIES received since 1936.

					£	s.	d.
1936.	„	Ferrier, E. V., Esq.	...	...	2	12	11
	„	Hicks, Mrs. P. S.	...	...	50	0	0
	„	Seaforth, The Lady	...	...	2700	0	0
1937.	„	Ferrier, E. V., Esq.	...	...	2	9	2
	„	Seaforth, The Lady	...	...	225	0	0
1938.	„	Lucy, Sir Henry	...	...	3557	6	1
	„	Peel, Miss E.	...	...	5	0	0
1939.	„	Lucy, Sir Henry...	...	...	14	5	4
1940.	„	Henderson, J. S., Esq.	...	...	1500	0	0
	„	Westrik, Theodore	...	...	33,000	0	0
1941.	„	Henderson, J. S., Esq.	...	...	200	0	0
	„	Ferrier, E. V., Esq.	...	...	2	0	10
	„	Strike, Miss F. S.	...	...	39	0	0
	„	Archbutt, Miss Jeanette	...	...	200	0	0
	„	Hebblethwaite, Mrs.	...	...	1	0	0
	„	Thrower, H. S., Esq.	...	...	111	10	10
	„	Louis de Las Casas, Executors of the late	...	...	100	0	0
1942.	„	Owers, Ernest, Esq.	...	...	285	0	0
	„	Hardy, Mrs. Kathleen	...	...	100	0	0
	„	Lloyd, Arthur, Esq.	...	...	1500	0	0
	„	Patmore, William, Esq.	...	...	200	0	0
	„	Bolus, Mrs. Mary M.	...	...	100	7	4
	„	Ferrier, E. V., Esq.	...	...	3	3	9
	„	MacMahon, Edward, Esq.	...	...	317	14	6
	„	Nathan, Miss Dora K. G.	...	...	100	0	0
	„	Lucy, Sir Henry	...	...	21	9	10
	„	Newham, Edward Henry, Esq.	...	...	3000	0	0
	„	Hyam, Edward Elias, Esq.	...	...	25	0	0
1943.	„	Baker, Mrs. Harriet Ellen	...	...	5	0	0
	„	Adams, Miss Lilian Grace Robina	...	...	9	17	4
	„	Bain, Miss Mary Helen	...	...	45	0	0
	„	Ferrier, E. V., Esq.	...	...	1	12	11
	„	Blencowo, Mrs. H. M.	...	...	100	0	0
	„	Dodd, Miss L. C.	...	...	50	0	0
	„	Westrik, Theodore, Esq.	...	...	3053	2	9
	„	Owers, Ernest, Esq.	...	...	265	0	0
	„	Spinney, Mrs. Hilda	...	...	100	0	0
	„	Newham, Edward Henry, Esq.	...	...	121	2	3
1944.	„	Guy, Mrs. Ruth	...	...	10	0	0
	„	Owers, Ernest, Esq.	...	...	1008	6	8
	„	Rothwell, H. J., Esq.	...	...	60	0	0
	„	Winne, St Andrew, St. John, Esq.	...	...	120	0	0
	„	Johnson, W. T., Esq.	...	...	5490	0	0
	„	Ferrier, E. V., Esq.	...	...	1	14	0
	„	Snowdon, Mrs. L.	...	...	1350	0	0
	„	Spencer, W. L., Esq.	...	...	200	0	0
1945.	„	Ferrier, E. V., Esq.	...	...	1	13	5
	„	Fouracres, Walter, Esq.	...	...	100	0	0
	„	King, Mrs. Jessie (per C. Hardy Bentley, Esq.)	...	...	1000	0	0
	„	Owers, Ernest, Esq.	...	...	5234	2	4
	„	Pratt, Frank, Esq.	...	...	100	0	0
	„	Skinner, Mrs. M. J.	...	...	146	10	4
	„	Trimby, Mrs. Alice	...	...	225	0	0
	„	Ward, Miss M. A.	...	...	958	16	1
	„	Westrik, Theodore, Esq.	...	...	740	0	6



