ROY WARD: INOPERABLE SARCOMATA TREATED WITH RADIUM.

FIG. 1.

FIG. 2.

FIG. 5.

FIG. 6.

FIG. 3.

FIG. 4.

FIG. 7.

FIG. 8.

Primary or "Residual" Cystitis.

By this is meant an inflammation of the urinary tract entirely confined to the bladder; either it is a primary cystitis, or it is secondary to pyelitis, pyelonephritis, etc., which has been cured. Cystoscopy shows the cystitis, while the urine obtained from each kidney (by means of a ureteral catheter) is free from pus. If the bladder is constantly reinfected by septic urine, then the source of the sepsis in the kidney must be attacked before local treatment to the bladder is of any use.

Primary or residual cystitis, with or without ulceration, can be cured, or at any rate the distressing symptoms can be abated, by treatment with antiseptic emulsions. The details of the treatment are as follows.

Twice weekly a catheter is passed and the bladder distended under the usual strict aseptic precautions with either solution 1 or solution 2. The iodoform emulsion (No. 2) is too irritating to use too often. Solution 1 is used three times to one of solution 2—that is, solution 1 is used on the 3rd, 6th, 10th, 17th, 20th, and 24th days of a month, while solution 2 is used on the 13th and 27th days of a month. The solution is allowed to remain in the bladder for thirty minutes, when it is micturated. I carry out the treatment for eight weeks, or longer if a cure has not then been obtained. The composition of the solutions is as follows.

Silver-Iodide Emulsion, or Solution 1.

Potassium iodide ... 21.66 grams in 150 c.cm. water.
Silver nitrate ... 21.66 grams in 150 c.cm. water.

These solutions are mixed with 150 c.cm. of mucilage of Irish moss.

Iodoform Emulsion, or Solution 2.

Iodoform ... 45 grams.
Glycerin ... 315 grams.
Aq. dest. ... 90 c.cm.

The emulsions are made up for me by Messrs. Brady and Martin, Newcastle-upon-Tyne.

Examples of Primary or Residual Cystitis.

CASE A.

A married woman, aged 48, had had for twenty years periodic attacks of cystitis, obviously exacerbations of a chronic cystitis. She had had three severe ones during the previous twelve months. There was increased frequency of micturition day and night accompanied by pain; she took very little fluid as "she was afraid to." The urine contained albumin and pus cells.

Medicines, vaccines, and the ordinary bladder irrigations had all failed to cure her.

Cystoscopy showed acute ulcerative cystitis in a contracted bladder; the pyelograms were normal, and urine collected from each kidney was free from pus cells.

The view taken was that the trouble was now entirely in the bladder, and that if the ulcers could be induced to heal she would be cured. She was treated by the emulsions and she quickly responded to treatment.

CASE B.

A married woman, aged 75, had for some years been troubled with severe attacks of urinary stranguy accompanied by pain and haematuria. So acute was the pain that she was frequently reduced to tears, and life was a misery to herself and her relations. Treatment was of no avail and nothing could be done to relieve her distress, even morphine having no beneficial effect.

Cystoscopy showed general ulcerative cystitis; the ureters were not catheterized, as the bladder distension occasioned distress to the patient.

Although a diagnosis of primary or residual cystitis was not definitely established, treatment by the emulsions was recommended and carried on for three months; by the end of that time the pain, stranguy, and haematuria had disappeared. Her urine contained pus cells, therefore she was not cured, but the relief of her symptoms restored her interest and pleasure in life. Her degree of relief can be gauged by a recently received letter, where she states:

"I thought I would like you to know how grateful I feel for all you did for me. I've had no pain for four months—before that, I had it pretty badly for over four years. Of course, I know it will probably return at my age, but it is something to be free for a time, and I feel most grateful."

"Please do not think it necessary to answer this note. I just thought I would like you to know how thankful I feel."

INOPERABLE SARCOMATA TREATED WITH RADIUM.

BY

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(With Special Plate.)

THE object of this paper is to give the clinical data of a series of thirty cases of sarcomata treated at the London Radium Institute. All the growths recorded were inoperable, and only those cases in which a histological investigation had been made are included. There might be added many cases of sarcomata diagnosed clinically, by x rays or by the subsequent progress of the disease, and such cases might prove of considerable interest to the less critical. It has been difficult to get information about many patients treated before the "follow-up" scheme was introduced at the Radium Institute.

The treatment of all forms of sarcomata is best carried out by the use of gamma radiation. Certain known clinical facts are as follows:

1. Many sarcomata will disappear under the effect of gamma radiation, the malignant cells being destroyed by doses which do not harm the surrounding tissues.
2. Some sarcomata are more susceptible to the rays than others. In the case of lymphosarcomata too great an importance should not be attached to the rapid disappearance of the primary growth, and the patient should be kept under observation for some considerable time so that the appearance of any metastases may be promptly dealt with.
3. The same type of tumour in different parts of the body does not always react in the same way.
4. Radium rays have only a local effect. Separate metastases may be treated, but widely disseminated recurrences when present will eventually gain the upper hand.
5. There comes a time when tumours which have previously reacted well will no longer respond to radiation, even when there is no evidence of metastases.
6. Relief of symptoms and prolongation of life are seen in most cases, and some patients remain in good health for long periods, the growth becoming shrunken and fibrosed.

TREATMENT.

Comparatively little can be said of the "dosage" owing to the varied situations and extent of the growths, but the treatment must be vigorous. Both needles and surface applicators are employed and a large quantity of radium should be used. Speaking in general terms, it is best to give a maximum dose at the first exposure; if it be necessary to repeat the treatment the strength of the subsequent exposure must be diminished.

Surface applicators are rectangular, square, or circular, with superficial areas ranging from 1 to 30 sq. cm. The applicators used in these cases are of two strengths, containing either 1.25 or 2.50 mg. of radium element per square centimetre. They are disposed in such fashion as to obtain a cross-fire of focal radiation in all parts of the growth. All external applicators should be screened with 2 mm. of lead or its equivalent, and covered with rubber. These are applied over a thick layer of wool. The needles used contain 1, 2.5, 5, 7.5, 10, or 25 mg. of radium element, their lengths varying from 1.2 to 4 cm. and the wall of the needle varying from 0.3 to 0.5 mm. of platinum or 1 mm. of silver. Recently needles with a wall of 0.4 mm. of Monel metal have also been used.

The action of large doses is to produce progressive degeneration. It has been suggested that with very small doses it is possible there may be stimulation of certain types of growth, but there is no certain evidence on this point. The time factor has been much discussed of late. At the Radium Institute the principle underlying the treatment is to give a large dose for a comparatively short time—seldom longer than forty-eight hours. It seems, however, quite possible that weaker doses for a longer time would give equally good results. There are many obvious difficulties in keeping needles in some situations for perhaps a week; a very common and serious complication is that of sepsis. Tissues subjected to radium rays are very susceptible to attack by bacteria, and every aseptic precaution should be taken when introducing needles into any tumours.

Case 1.—A woman, aged 62. On May 21st, 1913, a swelling of the right clavicle was explored and found to be an inoperable sarcoma. When seen at the Radium Institute on June 6th there

was a firm prominent tumour growing from the superior and posterior surfaces of the right clavicle, filling up the outer three-quarters of the right supraclavicular fossa. The tumour measured 10 by 6 by 2 cm. (see Fig. 1). The tumour rapidly disappeared under radium treatment (see Fig. 2). Her doctor reported on November 3rd, 1927, that the patient was in excellent health.

Case 2.—A man, aged 34. In August, 1912, a growth was removed from the right side of the neck. In June, 1913, a recurrence was removed at St. Bartholomew's Hospital. He had further operations for recurrence in December, 1913, and March, 1915. In July, 1916, microscopical section showed mixed spindle- and round-celled sarcoma. When seen at the Radium Institute on July 3rd, 1916, there was a hard fixed mass 5 by 6 cm. involving the right sterno-mastoid muscle. He received radium treatment with steady improvement until February, 1922, and then remained in good health until May, 1926, when the growth recurred and extended deeply until, in January, 1927, infiltration of the growth caused gradual paralysis of the tenth, eleventh, and twelfth nerves, and the cervical sympathetic. The patient died on March 8th, 1927.

Case 3.—A woman, aged 50. On September 18th, 1916, an operation was performed for the removal of a round-celled sarcoma of the ethmoidal region. This resulted in an apparent cure, but on March 19th, 1918, when the patient first came to the Radium Institute, she had a smooth oval fixed swelling 4 by 5 cm. in the right temporal fossa. All three swellings disappeared under treatment, but a second hard mass appeared between the right globe of the eye and orbit, and later a third swelling appeared in the right temporal fossa. All three swellings disappeared under radium treatment, and she remained well until May, 1923, when a tumour developed on her head. Since this time there have appeared at intervals at least a dozen different tumours of the scalp, which have disappeared rapidly under radium treatment. She was last seen at the Radium Institute on October 31st, 1927, when she was treated for a tumour in the right suboccipital region. Her general health was excellent.

Case 4.—A woman, aged 65. In March, 1920, the left upper jaw was excised for a sarcoma. She first attended the Radium Institute on December 6th, 1920, complaining of diplopia. On examination a nodule was seen in the region of the inferior turbinate. Treatment was continued until June, 1922. In December, 1926, she returned. A mass of glands below the angle of the left jaw, and a swelling of the left side of the soft palate, were present. Treatment was continued. She was last examined on October 31st, 1927. Her general health was excellent. The mass of glands in the neck had disappeared, but the tumour in the mouth is still present, although much smaller.

Case 5.—A woman, aged 35. A tumour of the sternum was explored and found inoperable. When first seen at the Radium Institute on September 24th, 1921, there was a prominent, diffuse, irregular-shaped tender swelling over the centre of the sternum and extending on the third and fourth costal cartilages. The mass measured 6 by 4 cm. and there were palpable glands in both axillae. X-ray examination showed an abnormal shadow at the hilum of the right lung. The growth disappeared completely under treatment, but in December, 1923, three secondary metastatic growths appeared in the chest wall, and glands were palpable in both axillae. All these swellings disappeared under treatment. In July, 1924, enlarged glands appeared in both sides of the neck. Those glands in the right side responded well to treatment, but those in the left side persisted for some months, causing much swelling of the left arm and forearm. They responded to further treatment, and in May, 1925, when the patient was examined, there was no evidence of disease anywhere. However, in February, 1926, there were signs of metastatic growth both in the mediastinum and spine. After an initial improvement the patient began to go downhill in spite of treatment, and died on November 11th, 1926.

Case 6.—A woman, aged 64, first noticed a lump in the left groin in August, 1921. In January, 1922, an attempt was made at the Elizabeth Garrett Anderson Hospital to remove this mass. This was found impossible owing to the fact that the femoral vessels were involved in the growth. Microscopical report showed the growth to be a small round-celled sarcoma. Radium treatment was commenced on February 13th, 1922, and continued at intervals. The patient remained in excellent health until March, 1925, when the growth gained the upper hand in spite of treatment, and the patient died on May 17th, 1925.

Case 7.—A youth, aged 17. On November 15th, 1922, a spindle-celled sarcoma was removed from the nasopharynx. Recurrence speedily took place. Radium treatment was commenced on January 19th, 1923. The growth responded well at first, but in October, 1923, the growth became so large that it interfered with swallowing and breathing. Each radium treatment caused apparent disappearance of the growth for a short time. The growth was thus kept in check with repeated applications of radium and the boy remained in excellent general health. In October, 1927, he was referred back to the University College Hospital with a view to having the growth excised.

Case 8.—A woman, aged 45. In November, 1922, an operation was performed at the Central London Throat and Ear Hospital for a sarcoma affecting the left antrum of Highmore and turbinate bones. This was followed by a recurrence, and on February 12th, 1923, she was admitted to the Radium Institute for treatment. She improved steadily, and radium treatment kept the growth under control until July, 1927, when the tumour began to spread along the upper alveolar margin. She was last seen on October 27th, and, although there was a little change in the local condition, her general health was failing and she looked ill and cachectic.

Case 9.—A man, aged 78. On June 9th, 1923, a lymphosarcoma was removed from the left orbital cavity. It was found to spring from the periosteum of the orbit, and infiltrated the inner and upper external ocular muscles and periosteum, but not the globe itself. When first treated, on June 25th, 1923, at the Radium Institute, there was a small vascular nodule at the inner extremity of the upper eyelid. On August 12th, 1925, two metastatic growths were present, one growing from the chest wall, and the other from the abdominal wall. These disappeared rapidly under treatment. In August, 1926, another growth appeared over the left scapula. This responded well to treatment, but in December, 1926, there were signs of growth in the cellular tissue between the rectum and bladder. This caused retention of urine. Bronchitis followed, and the patient died in January, 1927.

Case 10.—A woman, aged 48. In April, 1923, a mass of glands was excised from the left inguinal region for supposed tuberculous adenitis. A recurrence speedily took place and was excised in October, 1923, at the Royal Northern Hospital. The microscopical section gave the appearance of a sarcoma of high malignancy. The growth recurred again, and when first admitted to the Radium Institute for treatment she had a hard fixed mass in the left inguinal region, and oedema of the leg. Treatment at intervals has arrested the progress of the disease. On examination on October 23rd, 1927, there was some thickening to be felt. She complained of some pain in this region, but there was no evidence of active disease and she was in excellent general health.

Case 11.—On March 17th, 1924, an osteosarcoma was removed from the left malar bone of a girl aged 5 at Walthamstow Hospital. It recurred rapidly, and on June 7th, when she was first seen at the Radium Institute, the tumour was much larger than it was prior to its removal. She was treated at intervals until March, 1925, when treatment was discontinued as there was no apparent disease present. She was last examined on October 26th, 1927, when there was no evidence of recurrence.

Case 12.—A boy, aged 4. On May 22nd, 1924, a section was taken from a tumour, which appeared to arise from the superior maxilla. Microscopical investigation showed it to be a fibro-sarcoma. He was treated at the Radium Institute on July 14th, 1924, on account of a local recurrence. Treatment was continued at intervals until February, 1925. On November 1st, 1927, the father reported that the child was now in hospital, having had an operation on the nose for a supposed recurrence.

Case 13.—A woman, aged 41. In 1917 a sarcoma in the mid-line of the neck was excised. In 1921 an operation for recurrence was performed. On June 2nd, 1924, a further recurrence was removed. When examined at the Radium Institute on September 1st, 1924, there was a hard resistance felt in the region of the scar and there were palpable glands in both supraclavicular fossae. Under treatment the disease was kept in check, but in October, 1927, it was reported that the patient had had the skull trephined for a secondary sarcoma of the brain, and she was not expected to recover.

Case 14.—A woman, aged 64. On October 1st, 1924, a sarcoma of the skull was explored and found to be inoperable. X rays showed invasion of the cranial bones by the growth and loss of continuity of the bony outline. She was first treated at the Radium Institute on October 20th, 1924. Over the upper surface of the right parietal bone there was a conical swelling 8 cm. in diameter, pulpy to the touch, and fixed to the surrounding structures. (See Fig. 3.) No glands were palpable. She responded remarkably well. She was last heard of on November 2nd, 1927, when her doctor wrote: "I have to report very favourably. The crater has taken a long time to granulate over, but is now covered with fine granulation tissue, which occasionally crusts over, but her general condition is excellent." (See Fig. 4.)

Case 15.—A woman, aged 34. On September 24th, 1924, a tumour of the cheek 1 inch in diameter and half an inch in thickness was excised at the Prince of Wales's Hospital, Tottenham. The tumour recurred, and the patient was admitted to the Radium Institute on November 10th, 1924. The treatment was continued at intervals until October, 1926, when on examination no evidence of disease could be detected. This patient was seen last on October 26th, 1927, when she was found to be in excellent health and free from recurrence.

Case 16.—A girl, aged 3. On November 4th, 1924, a small round-celled sarcoma was removed from the leg beneath the soleus muscle. When seen at the Radium Institute there was a large palpable gland in the groin, although there was no sign of local recurrence. This disappeared after treatment, and the patient remained well until March, 1925, when recurrences appeared in the groin and in the popliteal space. This was followed by improvement, and when examined in June, 1925, there was no evidence of disease. Recurrences in the calf muscles, popliteal space, and groin occurred later in the year. The child's condition became rapidly worse, and she died in August, 1926.

Case 17.—A man, aged 44. In February, 1924, a small growth in the region of the right upper canine fossa was excised at St. Bartholomew's Hospital. This recurred in June, 1924, and in August was treated with diathermy. When first treated at the Radium Institute, on December 10th, 1924, the patient presented the following appearance. (See Fig. 5, taken after 22 needles had been inserted into the palate and superior maxilla.) There was marked swelling of the upper lip and cheeks, especially the left; the swelling was hard to the touch, and had definite margins; the floor of the nose was bulged upwards; the anterior half of the palate was occupied by a hard nodular growth; at a point corresponding to the foramen incisum there was a small sequestrum. Both antra were completely dark to transillumina-

tion. This patient responded well to radium treatment. (See Fig. 6.) He was last seen on October 27th, 1927, when he was in excellent health and there was no sign of disease.

Case 18.—A woman, aged 56. On January 11th, 1925, a tumour of the left patella was explored and found inoperable. A piece was excised for microscopical examination and found to be sarcoma. It was thought that even a high amputation would be hopeless; in any case the patient's health was not good enough to stand the operation. Radium treatment was therefore advised. She was first seen at the Radium Institute on January 27th, 1925. A prominent purple soft hemispherical swelling was present over the left patella. The skin was ulcerated and there was a discharging wound. (See Fig. 7.) There was considerable infiltration of the soft tissues on the inner aspect of the knee-joint, and commencing rarefaction of the left internal condyle. There were no glands palpable at this time, but in May, 1925, a gland was removed from Scarpa's triangle, and on microscopical examination proved to be sarcoma. Radium treatment was continued. General improvement in the local condition followed. In March, 1926, the contour of the knee was almost normal, and the patient was in excellent health. (See Fig. 8.) In September, 1927, the patient wrote to say that her general condition continued to improve, and that she was able to walk half a mile with the aid of sticks.

Case 19.—A woman, aged 64. In October, 1924, an inoperable sarcoma of the ethmoidal region and left antrum was diagnosed and confirmed by microscopical section. In December, 1924, as much growth as possible was removed through a modified lateral rhinotomy. She was first treated at the Radium Institute on February 4th, 1925. The whole of the left side of the face was infiltrated with growth, and there were palpable glands on both sides of the neck. The disease was very advanced and did not respond to radium treatment. The patient died on August 17th, 1925, without deriving any benefit from the treatment.

Case 20.—A woman, aged 34. On January 2nd, 1925, a growth in the region of the left ascending ramus of the jaw was explored at St. George's Hospital, and found to be inoperable. Microscopical section showed the tumour to be a spindle-celled sarcoma. She was first treated at the Radium Institute on March 30th, 1925, when she had a hard, smooth, fixed rounded mass measuring 12 cm. in diameter. Treatment was followed by almost complete disappearance of the tumour, and the patient remained in good health for about a year, when the growth started to gain the upper hand in spite of treatment. The patient died in August, 1927.

Case 21.—A woman, aged 53. On April 14th, 1925, a round-celled sarcoma, spheroidal in shape and half an inch in diameter, was removed from the right middle turbinate. Recurrence took place, and on May 25th, 1925, a piece was removed for section at Guy's Hospital. She was treated at the Radium Institute on June 17th, and five weeks later the tumour had diminished in size to such an extent that the case was considered operable. Excision was performed at Guy's Hospital on July 29th, and she was readmitted to the Radium Institute on August 12th, 1925, for prophylactic treatment. There was no sign of disease when she was last examined on October 26th, 1927.

Case 22.—A man, aged 53. On January 6th, 1925, a mass of glands was removed from the right side of the neck. Recurrence speedily took place. On July 8th, 1925, the mass was explored, and found to be inoperable. Microscopical examination showed the growth to be lymphosarcoma. He first attended the Radium Institute on July 15th, 1925, and treatment was continued at intervals. Radium treatment was followed by a general improvement until the disease was apparently cured. He was last examined on October 27th, 1927, when he was found to be in perfect health, and no sign of disease could be detected.

Case 23.—A man, aged 23. In August, 1924, Syme's amputation was performed for a sarcoma of the foot. A year later this was followed by secondary growths in the popliteal fossa and in the groin. The recurrence in the popliteal region was excised. When first seen at the Radium Institute on August 24th, 1925, there were a number of glands palpable in the groin, but there was no sign of occurrence in the popliteal space. Both the groin and the popliteal fossa were irradiated with large quantities of radium. All signs of disease disappeared, and the patient remained quite well until October 19th, 1927, when a solitary hard gland appeared in the left groin, and on microscopical examination proved to be sarcomatous.

Case 24.—A man, aged 54. On July 27th, 1925, a mass of cervical glands was removed at the Prince of Wales's Hospital, Tottenham, and when examined under the microscope was found to be a lymphosarcoma of the small-celled type. When first seen at the Radium Institute on September 4th, 1925, he had a recurrence at the operation site. The enlarged cervical glands disappeared under radium treatment, and he remained well until April, 1926. Recurrence took place a few months later, and the patient died on January 1st, 1927.

Case 25.—A woman, aged 38. The patient first attended the Radium Institute on October 19th, 1925. She had a sarcoma of the right ethmoidal region, which disappeared entirely under radium treatment. In April, 1926, she complained of pressure beneath the right eye, and on examination was found to have a recurrence involving the right maxillary sinus and ethmoidal region. Excision of the superior maxilla was advised; this was done, but unfortunately the patient died shortly after the operation.

Case 26.—A woman, aged 43. On November 3rd, 1925, an exploratory operation at the Norfolk and Norwich Hospital revealed an inoperable spindle-celled sarcoma growing from the right orbital

plate. She was first treated at the Radium Institute on December 9th, 1925, and subsequently had three further applications of radium at two-monthly intervals. The growth did not respond well, and gained the upper hand in spite of treatment. The patient died on August 29th, 1926.

Case 27.—A man, aged 52. On November 10th, 1925, the region of the left wrist-joint was explored at the Royal United Hospital, Bath, and an inoperable osteosarcoma of the lower end of the radius was discovered. This was proved by microscopical section. Amputation was advised but refused. He first attended the Radium Institute on February 1st, 1926; x rays showed a pathological fracture of the lower third of the radius with dislocation of the wrist-joint. There was much pain, and the patient was unable to use his arm in any way. The circumference of the wrist at the site of the tumour was 9½ in. There were no glands palpable in the axilla. Amputation was again advised, but operation was refused. Radium appears to have arrested the progress of the disease. He was last examined on October 28th, 1927. He has been working as a general labourer for the past twelve months. His general health is excellent. There are no glands palpable in the axilla. The tumour has become bony hard, and measures 8½ in. in circumference.

Case 28.—A man, aged 45. On April 15th, 1926, the patient had an operation at the Central London Throat Hospital for a sarcoma of the left antrum of Highmore. On September 16th, 1926, an operation for recurrence was performed at the same hospital. Before attending the Radium Institute he was treated with radium in May and October, 1926. Recurrence speedily took place, and when admitted to the Radium Institute on November 16th, 1926, the growth filled the left nasal cavity. The whole of the left side of the cheek was swollen, and the alveolar margin of the jaw was thickened by the growth. The case responded well to treatment. He was last seen on November 3rd, 1927. His general health was excellent. Radiation appears to be checking the progress of the disease, as there are no definite signs of recurrence at present.

Case 29.—A boy, aged 12. This patient was first seen at the Radium Institute on September 27th, 1926. He had a sarcoma of the nasal septum, which perforated the hard palate and extended into the surrounding tissues. Although he improved to a remarkable degree at first, and remained fairly well for about six months, the disease started to gain the upper hand, and when seen on September 5th, 1927, he was much worse, and it was thought wise to discontinue radium treatment owing to the extensive infiltration of the growth into the bony structures.

Case 30.—A woman, aged 20. A growth was removed from this patient's left nostril in July, 1926, at the Bolingbroke Hospital. Recurrence speedily took place, and in September, 1926, a similar operation was again performed. She attended the Radium Institute on March 31st, 1927. She then had a firm, well defined mass, 5 cm. in diameter, continuous with the anterior surface of the right upper jaw. Growth was also visible in the right nostril, and in the floor of the nose. Microscopical section showed the tumour to be a round-celled sarcoma. The growth responded rapidly to radium treatment. She was last seen on October 28th, 1927. She was then in excellent health, and there were no signs or symptoms of disease.

RESULTS.

The results of radium treatment can only be judged by the number of years the patient lives after the first treatment. This gives some idea of the prolongation of life to be expected.

Summary of Cases; showing Period of Survival after First Treatment.

Case No.	Period since First Treated.	Result.
1	14 yrs. 5 mths.	Living; no evidence of disease.
2	10 " 7 "	Died.
3	9 " 7 "	Living; disease kept in check.
4	6 " 11 "	Living; disease kept in check.
5	5 " 2 "	Died.
7	4 " 10 "	Living; disease kept in check.
8	4 " 9 "	Living; going downhill.
10	4 " 0 "	Living; no evidence of disease.
9	3 " 7 "	Died.
11	3 " 5 "	Living; no evidence of disease.
12	3 " 4 "	Living; disease kept in check.
6	3 " 3 "	Died.
13	3 " 1 "	Living; going downhill now.
14	3 " 0 "	Living; no evidence of disease.
15	3 " 0 "	Living; no evidence of disease.
17	2 " 11 "	Living; no evidence of disease.
18	2 " 8 "	Living; no evidence of disease.
20	2 " 9 "	Died.
21	2 " 5 "	Living; case became operable, and operation apparently successful.
22	2 " 3 "	Living; no evidence of disease.
23	2 " 2 "	Living; disease kept in check.
16	1 " 9 "	Died.
27	1 " 9 "	Living; no evidence of disease.
24	1 " 4 "	Died.
28	1 " 1 "	Living; no evidence of disease.
29	1 " 0 "	Living; going downhill; derived no benefit.
26	— " 10 "	Died; derived no benefit.
19	— " 7 "	Died; derived no benefit.
30	— " 7 "	Living; no evidence of disease.
25	— " 6 "	Died following operation.