cells in the last stages of degeneration. Thus certain stages of perilymphatic fibrosis were traced *at different points along the length of the same lymphatic*. The two fascial foci of cancer just described were the only ones present along the proximal 25 millimetres of the strip. Beyond this point we leave the zone of perilymphatic fibrosis and enter that of permeation. Permeated lymphatics are now found at short intervals. They are present at 28, 29, 31, 35, 35.5, 38, 39, 43.5 millimetres, and inconstantly (in the series of sections from this block) at 49 millimetres. The zone of permeation at this point was thus about 21 millimetres wide. Distension and rupture of the permeated lymphatics are visible towards the proximal border of the zone, while towards its distal border the lymphatics become smaller, since they are filled but not yet distended by the cancer cells. From 49 millimetres to its termination 83 millimetres from the edge of the ulcerated growth all the layers of the parietes were entirely free from growth. In particular a series of sections taken from the block immediately beyond the microscopically determined growing edge was entirely free from cancer.

Muscle—The muscle has escaped invasion except at one point 38 millimetres from the proximal end of the strip. Here a small permeated lymphatic can be traced in longitudinal section for a long way down into the muscle. Since the parietes here are quite thin cancer might thus invade the perirenal fat and reach the lumbar glands (*cf.* Lecture III.).

The outstanding fact which emerged from the comparison of those two radial sections of the parietes was that in their proximal portion permeated lymphatics had disappeared from the deep fascia and that further from the growth an advancing edge of fascial permeation was present. These two radii were taken in random directions from the primary neoplasm and there is no reason to doubt that radial sections in any other directions would have given similar results. If this be admitted the existence of an annular area of permeation surrounding the growth at some distance from its macroscopic edge must be taken as proved. Permeation was absent over a wide zone, intervening between the zone of permeation and the primary growth. But that permeation had been present in this region, and passing beyond it had given place to perilymphatic fibrosis, was conclusively shown at a few points where all the stages of the metamorphosis could be traced. In Case 2 the three zones so clearly seen in Case 1 are foreshortened and confused but still recognisable. Owing to the absence of nodule formation in the layers adjoining the deep fascia, the zone of active perilymphatic fibrosis is better seen than in Case 1. But the most important new link in the chain of evidence was that the various stages of perilymphatic fibrosis were shown not in different lymphatics but at successive points along the length of the same lymphatic.

One difficulty has still to be met. In some sections invasion of the skin had extended slightly beyond fascial invasion and it may be said that cancer was extending along the skin and only secondarily extending from the skin to the deep fascia. The explanation is simple. Some of the fibrous septa along which permeation extended to the skin from the zone of perilymphatic fibrosis ran obliquely in a distal direction to a point on the skin beyond the narrow advancing edge of fascial permeation which formed the true growing edge of the cancer.

[The lecturer next described the histological results derived from Cases 3 and 4. These cases, though less completely examined, confirmed in general outline and in some respects extended the conclusions reached from Cases 1 and 2. He continued:—]

We have now studied cases in which parietal extension was moderately rapid and cases in which it was slow. In the case now to be described parietal dissemination was very rapid and had reached an extreme degree.

CASE 5.—Six months before death the patient first noticed a lump in the left breast. Subcutaneous nodules soon appeared, at first near the breast. A fortnight before death they were scattered universally, though irregularly, over the whole body except upon the distal portions of the arms and upon the lower extremities. At death nodules were present on both thighs as far as six inches below the anterior superior spine of the ilium. In this case, therefore, the clinical evidence for centrifugal spread appeared conclusive and an increase in the size of the invasion circle was directly observed during the last fortnight of life. The histological characters of the growth were peculiar. Its cells were of moderate and uniform size with round and vesicular nuclei and displayed a marked tendency to vacuolation and

degeneration. The growth was classified as an endothelioma. The following parietal strips were removed and examined histologically along their whole length: (1) from the right acromion down the right arm to a point six inches above the wrist; (2) a coronal strip of the scalp from the vertex to the ear; and (3) a median ventral strip from the chin to the pubes. In these strips numerous isolated nodules were found, on the one hand in the subcutaneous fat and on the other hand in the muscle. The deep fascia was nowhere found permeated but it presented at some points fibrous areas which were probably fibrosed lymphatics but which possibly represented nerves. The skin had almost everywhere escaped invasion. No sign of invasion of the blood-vessels was seen. It could be made out with some probability that the muscles were first invaded on their superficial aspect, for the two youngest muscular foci were situated just beneath the deep fascia. Even the negative results of this case, which cannot in any case outweigh the positive evidence of Cases 1 to 4, are best explained by the theory of permeation. I am not aware of any theory but that of permeation which will explain the centrifugal extension so clearly manifested in this case by the clinical evidence. And as regards the microscopical evidence, it is at least possible that the strips examined, long though they were, failed to pass beyond the zone of isolated nodules into the outlying zones of active fibrosis and of permeation.

PARIETAL DISSEMINATION A SERPIGINOUS PROCESS.

The general resemblance between the mode of spread of cancer of the breast in the parietes and the mode of spread of certain annular and serpiginous forms of skin disease cannot escape notice. But the spreading ring of cancerous permeation usually leaves in its track here and there isolated nodular foci which give rise to macroscopic nodules. It is probable, however, that this is by no means invariably the case,—that perilymphatic fibrosis, while unable to overtake the spreading ring of fascial permeation, may be successful in preventing nodular invasion of the adjoining layers. Possibly, too, the ring of permeation might die out at some portion of its circumference and continue to advance only as the arc of a circle. In such cases years of apparent health might in the end be followed by recrudescence at some remote vulnerable point, towards which in the meantime the process of permeation had steadily been creeping in a latent and microscopic form. It appears to me that permeation thus affords a rational explanation of the unsolved mystery of late recurrence.

THE "CURE" OF CANCER.

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Is a surgeon ever justified in claiming that he has *cured* a patient of cancer?

A surgeon may truly say that he has cured a person of a broken thigh-bone, or of an abscess in the hand, for by treatment he has relieved him of his trouble once and for all. But with cancer it is different. For a patient with cancer the surgeon may promise that he will "do" his "best"; but more than this he must not, cannot promise. And to "do his best" he makes a wide sweep of the growth with his knife, getting so far beyond it, indeed, that he may well hope and believe that, together with the tumour, he has taken in every cancer-germ. But, notwithstanding his wide sweep, he can never be sure that none of these germs had passed beyond it. And a cancer-germ adrift in the lymphatic stream is like a message thrown out to sea in a bottle: it may be found years afterwards—goodness only knows when or where.

In an almost pardonable wish to show forth the results of his operative-work in an attractive form, the surgeon is sometimes tempted to set up for himself a "time-limit," and then to say, "If after operation there is no sign of return of cancer in any part of the body within this period, I shall count the case as *cured*." After all, this time-limit of his is but arbitrary. One surgeon may fix for himself a ten-years' limit; whilst another who is, perhaps, more sanguine, or who is possessed by a greater natural anxiety to show pleasant results, makes his a three-years' limit.

And if *three years*, why not *three months*? But could a surgeon who looks at facts, rather than at figures and fancies, regard the three-year group of operations-cases or even the ten-year group as *cures*? I think not. It may be much more than ten years before that little mass of drifting cancer-cells is, by chance, found cast up in an ovary or in the uterus. And if when the unwelcome discovery was made the *Table of Results* which counted that particular case amongst the *Cures* had not been already published, an important change in its appearance would have reluctantly to be made.

Far be it from me to write as one without hope with regard to the cure of cancer; but neither aspirations nor statistics can alter plain pathological facts. And it seems to me that just now Surgery (with, perhaps, a becoming wish to remove attention from her red-stained apron, and to show herself less unpleasing to the public eye) is growing a little too free in the use of the word *cure* in connexion with the treatment of cancer. Surgery should remain cold and unemotional, and, though full of hope, should not go in advance of facts. And one fact is this, that at present it is beyond her power to undertake to *cure* cancer—neither can *x-rays* nor Finsen's light, nor can any drug or nostrum taken internally or applied locally, do this. Treatment is, unfortunately, not the same thing as cure, and the most effectual treatment for cancer is still removal by the knife. Certainly for anything more serious than a small surface-growth, no measure is so trustworthy. And the great advantage which this method has over all others is that it enables the surgeon to take away also the neighbouring lymphatics, and the outlying lymphatic glands. It is by the greater freedom and thoroughness of modern methods of operating, that Surgery has of late made such great advances in the treatment of the disease. That she has advanced, and is still advancing, is beyond dispute.

And though Surgery is still unable to lay claim to curing cancer, operation, if done early and freely, and repeated again and again if need be, can, in certain cases, bring lasting relief. The following report serves as a good example of this ability:—

In May, 1876, Sir William (then Dr.) Broadbent sent to me a domestic servant with cancer of the right breast. And in doing so he asked me, if I thought fit, to try the effect upon the growth of injections of acetic acid—a method of treatment in which he had formerly been much interested. The patient, Mrs. —, was 55 years old, a widow, who had never borne a child. She said that she had noticed the lump in the breast for about three months, and that for a long time before this she had been much troubled by feelings of pin-pricking there. The lump was very hard: there could be no mistake as to its nature. I very willingly carried out Dr. Broadbent's suggestion, making injections at six different times. But finding that the tumour was steadily getting larger, I freely removed the breast with the knife in the following July. After the operation I cut the tumour across: it was as if one were drawing the knife through an unripe pear.

Fifteen months later, namely, in October, 1877, she came up again because a hard lump of the size of a large walnut had grown upon the scar. This was freely removed by the knife, but very soon afterwards another growth appeared, which I dealt with in the same way in February, 1878. In December, 1879, she was again in trouble with the scar, so I once more operated by a clean sweep; and as at this time there were some enlarged glands in the arm-pit, I did a more thorough operation, clearing away all the axillary lymphatics. This was the last operation done upon her, and soon afterwards she asked me to fill up a schedule so that she might become a pensioner at the Royal Hospital for Incurables. This was rather more than a quarter of a century ago, and she has ever since been happily drawing her pension.

In answer to a letter from me, she wrote on March 24th, 1905, as follows: "You will be pleased to hear that I am wonderfully well and active, in my 84th year. Just now I am busy knitting night-socks for a kind lady."

If I kept statistics of operative work—a dangerous thing for some of us—I think that I should be almost tempted to claim this particular case as a cure of cancer by operation. And no one, I believe, would accuse me of undue haste in reporting the case or of arrogance in making the claim. I have other cheering cases which, were I a surgical statistician with a time-limit, I might be inclined to place with it. But, as it is, I shall let Mrs. —'s case stand

by itself, and shall content myself with saying that in the other cases there is at present "no sign of return"—and this, in my opinion, is as much as a surgeon is ever justified in claiming as the best result of his treatment of cancer. For, unfortunately, the "cure" of cancer seems still to be as far off as ever.

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CYLLIN INHALANT.

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CONSIDERING the importance attaching to the presence of micro-organisms such as the staphylococcus pyogenes aureus and the streptococcus pyogenes in the purulent contents of the bronchial branches in pulmonary tuberculosis it was interesting to ascertain whether the new drug termed "cyllin inhalant" (which is not to be confused with the ordinary cyllin) has any germicidal influence on the above microbes. Experiments were therefore made with the staphylococcus pyogenes aureus in the following manner. Two surface agar plates were infected in the same manner

and at the same time from the same active culture. One of the plates was kept as a control, while the other was operated upon in a Bulloch chamber with the "cyllin inhalant" for ten minutes, after which period of time it was left in the closed chamber exposed to the residual cyllinised air for one hour. The plate was then taken out and placed with the control