capacity for storing it, it is within the bounds of possibility that tissues or organs that have retrograded physiologically, and, by losing their differentiation, have reverted to a more primitive type, should under these conditions take upon themselves the function of secreting it when they would, of course, do so in the cellular form followed by the normal reproductive tissue. This, it may be said, is a return to the old "spermatic theory" of carcinoma, and it is so to some extent, but yet with an important difference, in that the older writers assumed a conversion of the normal tissue of the part into tumour tissue, whereas, in the view I put forward the masses of the tumour cells are not a tissue at all, but are cells thrown off by altered somatic cells in the elaboration of a special secretion. And, if I am correct in this conclusion, then in carcinoma we have a tissue secretion to deal with, in relation to which the fat of the body probably acts as a middleman just as lymph does in ordinary nutrition. This being so, I do not see that we should take too pessimistic a view of the therapeutic position in connexion with the disease or despair altogether of its successful treatment.

Gentlemen, nine years have elapsed since I last addressed this Society on the subject of carcinoma, and during that period it has occupied much of my thoughts. To-night I have again ventured to lay before you the trend of that thought and how the problem of this disease is presenting itself to me at present. As on the previous occasion I had to ask your indulgence for stating much that was theoretical and problematical, so again I feel I must do the same. I can only plead in excuse the conditions under which in this matter we have all to work. Carcinoma is a great mystery, and in its elucidation progress can only be made by observation and by forming a good working hypothesis. If facts in sufficient number and importance tally with that hypothesis, then one is justified in raising it to the dignity of a theory. I dare say I am premature in taking that step at present, but I conscientiously believe that all the indications point to a germinal (reproductive tissue) theory of cancer.

MALIGNANT DISEASE OF THE FUNDUS UTERI

TREATED BY X RAYS THROUGH THE ABDOMINAL WALL:
RECOVERY.

By ARTHUR J. CLEVELAND, M.D., M.R.C.P.,
Honorary Electrotherapist, Norfolk and Norwich Hospital.
WITH A NOTE ON THE CASE

By DONALD D. DAY, M.B., F.R.C.S.,
Honorary Surgeon, Norfolk and Norwich Hospital.

It has been stated dogmatically, and the opinion is generally held, that the treatment of all but quite superficial malignant growths by *x* rays is useless; and without affirming that this view is disproved by the case I now record, or that the case is undoubtedly one of a deep-seated cancer cured by *x* rays, I think it is worthy of attention even if it should only have been a coincidence that recovery followed the treatment.

History.

The patient, a married woman of 40, who had always enjoyed good health, and had been born and had spent her youth in India, was seized with pain in the lower part of the abdomen and sickness in September, 1903. This attack was immediately preceded by a menstrual period accompanied by an excessive loss. Prior to this the menstrual functions had been normal. During the next few days she had a temperature of 99° to 101°, was very constipated, and had much pelvic pain and tenderness.

On October 6th, 1903, she was seen by Mr. Donald Day, who has very kindly written some notes for me on the case. He thus describes the condition of the patient and the operation performed:

"She was in a state of great debility and anaemia induced by frequent uterine haemorrhages. The uterus was somewhat enlarged, and the fundus could easily be felt bulging to the left and tender to pressure. Per vaginam the uterus felt fixed, especially on the left side; the cervix was patulous, and a probe passed 4 in. A diagnosis of carcinoma of the body of the uterus was made.

On November 9th laparotomy was performed in the Norfolk and Norwich Hospital, but, as was feared, it was found that removal was out of the question. The fundus was occupied

by an irregular mass like a small orange, which grew into the left broad ligament, was adherent to the pelvic wall, and implicated the sigmoid flexure, where it crossed the broad ligament.

Removal of the growth would have necessitated resection of some inches of the sigmoid, and considering the fixity of the mass and the impossibility of removing the entire disease, this was considered inadvisable. No doubt existed in the minds of those present that it was a malignant growth. Recovery from the operation was uneventful, but no improvement occurred in her symptoms until she came under Dr. Cleveland's treatment. I examined her again last summer (1904) and found the uterus of normal size and freely movable. No sign of disease existing in it or the broad ligament could be detected and she was apparently completely recovered. I consider that the entire credit for this must be ascribed to the *x*-ray treatment."

Treatment.

On December 12th, 1903, the patient came to me, and as a "forlorn hope" she agreed to try *x*-ray treatment. She had recovered well from the operation but was suffering considerable pain, had a bloody vaginal discharge, which had been foul, was constipated, and occasionally passed blood per rectum. The pain caused insomnia and necessitated opium both by mouth and rectum. She was occasionally sick and ate badly. Her weight was 8 st. 3 lb., about a stone below the normal. A hard mass could be felt in the left iliac fossa extending to the middle line and downwards into the pelvis. This was tender, and walking a short distance caused pain in it.

I treated her with a moderately high tube excited by a mica-plate static machine, applying the rays directly over the pelvis for fifteen minutes at a time, three times a week, the tube being about 6 in. distant from the skin of the abdominal wall. After thirteen exposures she developed some dermatitis and I discontinued treatment.

On January 9th her weight was the same, and her general condition unaltered. She had some haemorrhage and pain when the bowels were opened, often wanted opium at night, and used to have attacks of constipation with abdominal distension.

Towards the end of January she began to improve, and the pain and discharge became less. As she had had a fairly sharp reaction to the rays I did not recommence treatment till February 5th, and then gave her another twelve exposures, causing some more dermatitis. She was by this time getting much better, sleeping well, and could walk two or three miles without pain. Her weight on March 16th was 9 st. 7 lb., a gain of 13 lb.

From March 9th till April 9th she had no treatment, and during the latter part of this time the pain and haemorrhage returned. She got depressed and ate badly, but her weight was maintained. Under further treatment all these symptoms quickly disappeared, and in June she weighed 9 st. 8 lb., could walk four or five miles, and one day played two sets of tennis. Mr. Day examined her on June 4th, and said that he could find no tumour, and the uterus was freely movable.

Since June she has had treatment from time to time, and has been as well as ever she was in her life. Menstruation is quite normal, and there is no discharge from either rectum or vagina. She has maintained the gain of 1 st. in weight, and has just started for India. Beyond a little opium when necessary and an occasional purge she had no other treatment than that described.

Remarks.

There is no strict scientific proof that the very happy result which followed the application of *x* rays was entirely due to it, for it has often happened that tumours diagnosed as malignant at an operation and left as irremovable have remained quiescent for a long time, and the accuracy of the diagnosis consequently called into question. Whether in certain rare instances an exploratory operation can have the same effect on a cancer as it can on a tuberculous affection of the peritoneum need, I think, hardly be considered in this case, for it was not until ten weeks after the operation that any sign of improvement was manifest—and, indeed, during this time the disease was apparently progressing. Again, in March the cessation of treatment was accompanied by a return of the symptoms, and a resumption of it followed by a rapid amelioration. It is difficult to explain these results on the hypothesis that the operation was the beneficial factor in the case.

The other point for discussion is, Was the disease really of

a malignant nature? I was not present at the operation, and as x-ray treatment was not thought of at the time no portion of the growth was removed for examination.

As Mr. Day says in his notes, which I have already quoted, there was no doubt in his mind or in the minds of those assisting him at the operation that the disease was of a malignant nature, and the clinical history of the case during the eight or ten weeks immediately following the laparotomy seems to justify that conclusion.

THE POINTS OF INCIDENCE COMPARED IN CANCER, LEUCODERMA, AND SCLERODERMA.

[WITH SPECIAL PLATE.]

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In my two previous communications¹ upon this subject I have referred to three points: the genesis, the incidence, and the spread of cancer when considered apart from the secondary deposits.

In my last paper I pointed out that on the trunk rodent ulcers appeared on points at which nerves became cutaneous; which points also correspond to the maximum points described by Dr. Henry Head. I said I had not sufficient cases to enable me to determine whether the same thing was occurring in the face. Dr. Sequeira has kindly supplied me with the points of incidence in 138 cases of rodent ulcer on the face; the two do not coincide, but it will be seen later that rodent ulcers in the face appear most commonly on points at which nerves become cutaneous, notably the infraorbital, infratrochlear, temporo-malar, and lachrymal. Further, it will be seen that it is on the points at which the smaller branches become cutaneous that rodent ulcer appears commonly on the face and body.

Since writing my last paper I have had the advantage of more than one conversation with Dr. Head, and I learnt from him that maximum points are chiefly of importance when two or more are affected with disease—say herpes zoster—on the same nerve area, hence demonstrating a central cause; but should only one maximum point be affected, then the disease is due to a probable peripheral cause. Now, I can only show cases on the trunk where one maximum point on the same nerve area is the seat of a rodent ulcer; hence, according to Dr. Head, the change ought to be peripheral rather than central—that is to say, if I am right in suggesting a relationship between the two facts. In future I shall not use the term maximum point, but only refer to it as a point on which the nerve becomes cutaneous.

I propose in the present article to consider only the points of incidence in which the cancer process begins on the skin. And I wish to draw attention to the fact that the point of incidence must have an important etiological bearing on the actual genesis of cancer.

I shall confine my example of cancer to rodent ulcer, partly because squamous epithelioma is even more rare on the trunk and because there are no complicating factors connected with secondary deposits, which do not, as a rule, occur in rodent ulcer. I publish all the reproductions of rodent ulcers on the trunk which so far I have been able to collect. As I have already said, points of incidence of primary cancer occur at points on which the nerves become cutaneous, and in this article I wish to strengthen that statement by pointing out that the points of incidence in rodent ulcer on the face and trunk are common to the points of incidence of the so-called neurotrophic diseases—leucoderma and scleroderma; and hence I wish further to indicate that the points of incidence in the latter diseases correspond also to those points at which nerves become cutaneous. In the simple and more localized forms of leucoderma and scleroderma there is, as a rule, only one maximum point of a nerve area affected, and therefore, according to Dr. Head, the neurotrophic factor is probably peripheral.

HEAD AND FACE.

Fig. 1 represents a diagram of the points of incidence in 138 consecutive cases of rodent ulcer of the face collected with most careful investigation by Dr. Sequeira* from his

*Dr. Sequeira says: Fig. 1 is reduced from a large diagram on which the point of origin of 138 rodent ulcers of the face has been marked. It shows (1) a greater tendency for the right side of the face to be affected; (2) that the common sites are the alae nasi, the inner and outer canthus of the eye; (3) that nearly all arise in the middle of the face; (4) that there is no special predilection for Head's "maximum points."

large clinic at the London Hospital, and I must thank him for allowing me to publish this work in my paper. Dr. Sequeira's own observations I have placed away from my paper not because they are unimportant, but because I do not wish to complicate the sequence of my observations.

Now, it will be seen that the points of incidence on which rodent ulcers are most common in Dr. Sequeira's cases are identical with points of incidence in cases of leucoderma seen in Figs. 2, 3, and 4, and with the nasal point of incidence in scleroderma in Fig. 5, all of which points are seen to be skin areas at which small branches of the fifth nerve become cutaneous—namely, the infraorbital, infratrochlear, temporo-malar and lachrymal nerves (see Fig. 6).

Perhaps the most striking thing in comparing them is to note the relation of the diseases to the ala of the nose and eyelid, where the incidence of rodent ulcer is also most frequent (Fig. 1).

Before leaving the cases represented by Figs. 3 and 4 I would like to remind the reader that I have previously pointed out that the primary growth of cancer in lip and eyelid occupies the same oral and palpebral regions respectively as does leucoderma and scleroderma in these regions.

TRUNK.

Figs. 7 to 15 inclusive represent different cases of scleroderma; Figs. 16, 17, and 18, 2 cases of leucoderma; Figs. 19 and 20 are anatomical figures showing the distribution of cutaneous nerves in the trunk reproduced from Professor Cunningham's *Textbook of Anatomy*, with the kind permission of the publisher, Mr. Young J. Pentland, Edinburgh.

With these figures I am now going to compare all those rodent ulcers of the trunk the reproductions of which, so far, I have been able to collect.

Compare the rodent ulcer scar in 21 with the case of scleroderma in Fig. 11 and the anatomical diagram, Fig. 20.

Before leaving Fig. 11 I would like to remind the reader that the lesions shown in the drawings of the ears represent also points of incidence in rodent ulcer, and their spread in front of the ear corresponds to the spread of rodent ulcer when it occurs in front of the ear. The position of the rodent ulcer in Fig. 22 compares with the point of scleroderma in the lower photograph in Fig. 7 and the anatomical Fig. 20.

Fig. 23 represents a rodent ulcer the site of which compares with the same picture as the rodent ulcer represented in Fig. 22.

Fig. 24 is a rodent ulcer which arose in the internal division of the posterior branch of the third dorsal nerve. Compare Fig. 20.

Of the extensive rodent ulcer seen in Fig. 25 I have no history, but its area of occupation corresponds to the posterior branches of the first to the seventh dorsal nerves. See Fig. 20 and compare with Fig. 9.

The rodent ulcer in Fig. 26 compares in position with the top patch of scleroderma on the right side of Fig. 9, also compare Fig. 20. The position of the rodent ulcer in Fig. 27 compares with that of the upper patch of scleroderma in Fig. 8. See also Fig. 20.

The rodent ulcer in Fig. 28 began on the spot where the first sacral nerve becomes cutaneous. See Fig. 20.

Dr. Pusey, U.S.A., who kindly sent me the photograph reproduced in Fig. 29, did not state the exact point of its incidence, but the distribution occupies the areas supplied by the internal divisions of the posterior branches of the dorsal nerves of both sides from about the third to the twelfth. Compare with similar distribution of leucoderma in Fig. 16.

Fig. 30 is a rodent ulcer which started on the right side on the coccygeal nerve area.

The rodent ulcer of Fig. 31 began at the point of the arrow seen in the figure; compare the point of incidence of scleroderma in Figs. 12 and 15, and compare it also with an anatomical diagram (Fig. 19).

Fig. 32 represents a rodent ulcer in the axilla—compare with scleroderma in Figs. 12 and 14, and leucoderma in Fig. 18, and the nerve supply in Fig. 19.

Fig. 33. A rodent ulcer on the point at which the second dorsal nerve becomes cutaneous in Fig. 19.

Fig. 34 shows a rodent ulcer and its point of incidence in the figure below it. Compare with scleroderma in Figs. 10 and 14 and with Fig. 19.

Fig. 35. Rodent ulcer; although I cannot find a case in which to compare the point of incidence with leucoderma and scleroderma the ulcer evidently began in the same line (longitudinal with the body) as the scleroderma in the upper