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.]

By G. LENTHAL CHEATLE, C.B., F.R.C.S.,
Surgeon, King's College Hospital and Italian Hospital.

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

Fig. 1.—Dr. Sequeira's diagrammatic representation of the points of incidence in 138 cases of rodent ulcer.

Fig. 2.—Leucoderma. Royal College of Surgeons Museum.

Fig. 3.—Leucoderma. Royal College of Surgeons Museum.

Fig. 4.—Leucoderma. Royal College of Surgeons Museum.

Fig. 5.—Scleroderma. Dr. Whitfield's case.

Fig. 6.—The 1st and 2nd division of the 5th nerve. The auriculo-temporal nerve is abnormal. Fritz Frohse.

Fig. 7.—Scleroderma. Dr. Whitfield's case.

Fig. 8.—Scleroderma. Royal College of Surgeons Museum.

Fig. 9.—Scleroderma. Royal College of Surgeons Museum.

Fig. 10.—Scleroderma. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 11.—Scleroderma. From Mr. Hutchinson's collection at Polyclinic.

Fig. 12.—Scleroderma. Kaposi, *Hand-atlas der Hautkrankheiten*.

Fig. 13.—Scleroderma. Royal College of Surgeons Museum.

Fig. 14.—Scleroderma. Royal College of Surgeons Museum.

Fig. 15.—Scleroderma. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 16.—Leucoderma. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 17.—Leucoderma. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 18.—Leucoderma. Dr. Montgomery's case, from the *Journal of Cutaneous Diseases*, January, 1904.

Fig. 19.—Cutaneous nerves of the trunk. From Prof. D. J. Cunningham's *Textbook of Anatomy*.

Fig. 20.—Cutaneous nerves of the trunk. From Prof. D. J. Cunningham's *Textbook of Anatomy*.

Fig. 21.—Scar of rodent ulcer cured by x rays. Dr. Jacob's case.

Fig. 22.—Rodent ulcer. Dr. Sequeira's case.

Fig. 23.—Rodent ulcer. From Mr. Hutchinson's collection.

Fig. 24.—Rodent ulcer on left of middle line. Mr. A. Reid's case.

Fig. 25.—Rodent ulcer. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 26.—Rodent ulcer on upper and inner extremity of scapula. Mr. A. Reid's case.

Fig. 27.—Rodent ulcer. Dr. Étienne Henard's case. From the *Archives d'Électricité Médicale*.

Fig. 28.—Rodent ulcer. Sir Victor Horsley's case.

Fig. 29.—Rodent ulcer. From the collection of Dr. W. A. Pusey (U.S.A.).

Fig. 30.—Rodent ulcer. From the collection of Dr. Norman Walker (Edinburgh).

Fig. 31.—Rodent ulcer. Dr. Mill's case.

Fig. 32.—Rodent ulcer. Mr. McAdam Eccles's case.

Fig. 33.—Rodent ulcer. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 34.—Rodent ulcer. Upper photograph shows the distribution on the side of the chest. The figure below shows its point of incidence. Dr. Jacob's case.

Fig. 35.—Rodent ulcer. Dr. Sequeira's case.

Fig. 36.—Linear scar marking the site of removal of a rodent ulcer. The dot marks the position of the anterior superior iliac spine. Sir Victor Horsley's case.

Fig. 37.—Rodent ulcer on right side of abdomen. From Mr. Hutchinson's collection at the Polyclinic.

Fig. 38.—Rodent ulcer (groin). Royal College of Surgeons Museum.

photograph in Fig. 7 and in Figs. 10 and 14. Compare the fourth dorsal nerve distribution in Fig. 19.

Figs. 36 and 37 are rodent ulcers on points comparable to scleroderma in Fig. 14, leucoderma in Fig. 17. See also Fig. 19.

In Fig. 38 the rodent ulcer occupies the region of the ilio-inguinal nerve's distribution on the skin. See Fig. 19 and compare with the indistinct distribution of scleroderma on the right side in Fig. 13.

The observations contained in this paper strengthen the opinion which I have already expressed, namely, that the incidence of cancer may be due to the direct or indirect nervous influence of the area in which it occurs: as we now believe is the case in leucoderma and scleroderma.

Further, if I am right in believing that the rodent ulcers on the face and body coincide in incidence with scleroderma and leucoderma, and that these points of incidence are due to direct or indirect nervous influences, then I am right in saying that the tenability of part or all of the cleft-inclusion theory is threatened. In support of this I point out that the points of incidence of rodent ulcer on the trunk are not usually on the position of clefts as we know them.

As I have already said, I have never seen a rodent ulcer appearing on two or more points at which the same nerve root becomes cutaneous on the trunk, but only a rodent ulcer on one of the points. Hence the nervous influence, if present, which affects its incidence is probably either peripheral or a peripheral modification of central influence and not only segmental. The spread of rodent ulcer on the trunk, as it does on the head and face, appears on the whole to resemble the spread of scleroderma and leucoderma, and hence the spread as well as the incidence of rodent ulcer on the body is under a nervous influence which, if present, is peripheral.

Can this investigation throw any light upon the vexed question of the germ theory of cancer?

I have already pointed out that there are areas, around the mouth for instance, which are common to the spread of disease in processes known to be infective and of scleroderma, leucoderma and rodent ulcer. But there are others which are not common to them all, but only to leucoderma, scleroderma, and rodent ulcer.

Moreover, I have shown previously cases in which the spread of rodent ulcers have ceased in areas which had become denervated. And, finally, I cannot obtain sufficient evidence to support the idea that processes known to be purely infective are more liable to select those points of the skin at which nerves become cutaneous. However, on the whole time is not ripe for a definite statement on this point, although the little evidence I have just given appears to me to oppose rather than support the theory that cancer may be entirely due to the effects of a micro-organism.

Finally, I have to thank Sir Victor Horsley, Dr. Sequeira, Captain Pinch of the London Polyclinic, Dr. Pusey of Chicago, Dr. Norman Walker, and Mr. Hall-Edwards for many pictures of rodent ulcers.

REFERENCE.

1 BRITISH MEDICAL JOURNAL, April 18th, 1903, and December 12th, 1903.

CINNAMIC SALTS IN THE TREATMENT OF CANCER.

An Address Delivered before the Beckenham and Penge Medical Society.

By LOVELL DRAGE, M.D. OXON.,
Hatfield.

At the outset of this discourse it is necessary to apologize for venturing to believe that there is a possibility of the treatment of cancer becoming more generally recognized than it is at the present time by the members of our profession. The mere attempt at a treatment of the disease by any other method than that by the knife brings down on him who makes it a certain amount of discredit—to put the matter in the least objectionable manner.

In addressing a society of gentlemen engaged in the general practice of the profession, I have much less fear of such an attitude of mind than I should have in addressing many assemblages. We general practitioners tread out the corn after surgery has had its fill, and we know only too well what difficulties must be faced when the much-vaunted knife has had its swing. What matters it to us when pursuing our calling, and using our best endeavours, if we leave no remedy untried which may bring palliation to those who may be

numbered amongst the failures of surgery. What man amongst us can foretell if we who are cutting new furrows may not lay a foundation upon which the successful treatment of cancer, without the aid of surgery, can be made?

Sodium Cinnamate or Orthocoumarate.

It is my purpose to attempt to explain my position with reference to the treatment of cancer by the subcutaneous injection of a 10 per cent. solution of sodium cinnamate, or of a 22 per cent. solution of the orthocoumarate of the same base. Perhaps it will be well to state at once that the dose of the former is 30 minims, administered once or twice a week, and that of the latter 25 minims administered at the same interval.

For many years the problem presented itself to me, as it must have done to each of you—this problem of the treatment of cancer. It cannot be asserted that surgery, great as its triumphs undoubtedly have been, can be looked upon as providing the most scientific method.

The resort to surgery is to my mind nothing less than a confession of defeat. Here is a disease consisting of degeneration of cells, or, if it be preferred, a retrogression to the genetic type of cell. If this is accepted, it must occur to most minds that if the environment of the cells affected can be profoundly changed in that direction which leads to an arrest of this degeneration or retrogression, a successful result is not only possible, but certain. It is common knowledge at the present moment that it is perfectly easy to profoundly change the environment of cells by the artificial alteration of the composition of the blood. Thus, the experiments of Riether and Spiro, confirmed by Batty Shaw, prove that, at all events in cats, a very considerable leucocytosis can be produced by the intravenous injection of sodium cinnamate. This leucocytosis has been proved to be not the result of depriving the blood of a certain amount of liquid, but is the result of stimulating the simpler lymphocytes to transformation into the polymorphonuclear cells and intermediate forms.

So far as my observation is concerned—and it is supported by Dr. Randell, of Beckenham—both the coumarate and the cinnamate of sodium produce in the human subject a leucocytosis of this class.

The working hypothesis, then, upon which the whole treatment is based is this: If it is possible to make, artificially, a large increase in the most organized cells—I mean those most endowed with the properties of living cells—it is probable that such an alteration will be made in the environments of cells which have reverted to the genetic type that an arrest in the reversion is possible and probable.

Having arrived at this point, the first difficulty which presents itself is the provision of clinical material, surgery claiming all cases in early stages, but here is a point which I desire to especially emphasize: Do something more than removal by the knife in early cases of the disease when operation has been decided upon. Inject either of these drugs into the circulation before operation and for three months afterwards.

One of my cases, which made a great impression upon my mind, was that of a woman whose breast I removed for scirrhus. She was treated with the oil of cinnamon for a fortnight before operation, and for three months afterwards. That woman made a recovery from the operation of simple removal of the breasts, which impressed me very much, was at work in a short space of time, and has remained well after four years have nearly elapsed, although well past middle life. More than this, some eighteen months after the operation she showed me an old sebaceous cyst on her back which presented all the signs of scirrhus cancer in a state of atrophy, and this cyst has given no trouble, and has healed up under a scab.

Since this case a forward step has been taken, following upon the discovery of the therapeutic action of cinnamic acid. Cinnamon oil is practically a mixture of cinnamic aldehyde and cinnamic acid, and the aldehyde is rapidly oxidized into cinnamic acid when introduced into the circulation.

It may here be stated that the most active chemical substance at present investigated is believed to be the cinnamic aldehyde. Its administration, though less painful than the other chemical substances investigated, is exceedingly painful within twenty-four hours of administration, and has been given up for the present. My friend Dr. Morgan, of the Royal College of Science, South Kensington, first obtained for me the glycerine solution of sodium cinnamate, and then the sodium salts of the three isomeric coumaric acids.