Rodent cancer : with photographic and other illustrations of its nature and treatment / by Charles H. Moore.

RODENT CANCER.

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RODENT CANCER

WITH

Photographic and other Illustrations

OF

ITS NATURE AND TREATMENT

BY

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PREFACE.

The very gratifying favour accorded to my endeavours to throw light on the nature of Cancer, encourages me to publish further observations upon the subject. There are various elements constituting that disease, which are not all present in each particular example of it. In the extensive ulcerations of the face which are distinguished by the graphic epithet Rodent, I think that I recognise a Cancer devoid of every one of the characters which make up our ideal of a cancerous disease, except such as are purely local. These great and disfiguring maladies, a combination of growth and ulcer, possess all the essential qualities of an ordinary scirrhus, without any or with very little of the faculty for dissemination in the body

which may towards the close of life render Cancer universal. By permanently retaining, as scirrhus also may do, only a local character, they show how far from essential to Cancer is any constitutional property. They present just such a form of the disease as might be looked for, if we do not exalt the multiple attributes of one case into a standard for others which are more simple, but rather trace out severally to their causes the independent processes, both local and remote, which combine with varying constancy in different cases. And they especially encourage us not to encumber our research with the theory that Cancer subsists apart from and prior to its first manifestation as a tumour.

There has been another object in the preparation of the following pages. I was attracted to a special study of the Rodent facial ulcerations by unexpected success in the treatment of some advanced and apparently hopeless cases. Besides setting forth the grounds, therefore, for the conviction that they have a close alliance with Cancer, I am desirous also of furnishing illustrations of their fitness for adequate surgical operations. That in its early stages the disease can be got rid of is a fact already known;

but I have found it also capable of being removed, notwithstanding its long previous duration and its great extent. For the verification of this latter fact I have thought it right to illustrate some of the cases by photographs.

C. H. M.

102 Piccadilly:
October 1, 1867.

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BY CALEDONI STECHER.

RODENT CANCER.

NATURE AND TREATMENT.

A DISEASE more repulsive and distressing can hardly be conceived than a Rodent Cancer of the face. Commencing in some trifling manner in the skin, and then sometimes producing so little irritation as scarcely to attract notice, it spreads abroad in all directions with a slow but unswerving advance. It grows and ulcerates. It ulcerates but never heals. The skin suffers most widely from its ravages, but no structure arrests its progress. It removes whole organs, but restores nothing. In its front all is healthy: behind it is vacancy and frightful disfigurement. Whilst eroding integument, cartilage, or bone, the disease is not, or is little, painful; but when eyelids disappear, when the eye or the inner ear is invaded, when branches of the fifth nerve are exposed, or are ulcerating, pain, and sometimes severe pain, is added to the deformity.

Although the disease cannot be said to be of frequent occurrence, yet its duration leads to its being long under observation, and the Cancer department of the Middlesex Hospital, in which hopeless cases are retained until their death, is rarely without one or more examples of the disease. Usually at the very admission of the patients the erosion of the face has been so far advanced that all treatment has been deemed hopeless, except such as might alleviate the mode of dying. Either the destruction of the face has been too extensive to justify, perhaps even to suggest, any attempt to extirpate the morbid parts —the Surgeon having a natural repugnance to any treatment which must augment the already dreadful deformity—or the invasion of some important organ, as the cranium or its membranes, or even the brain, has seemed peremptorily to forbid any interference. Surgical art supplied no remedy which could be regarded otherwise than as an unwarrantable intrusion.

Whilst yet of moderate extent, it has long been deemed proper to operate upon these Rodent diseases, and permanent cures have been obtained. But when such treatment has not been adopted at an early period, or has been inefficiently performed, the continuous ravages of the disease have carried it apparently beyond control. It is a part of my object in this essay to show that even these cases are not hopeless, but are capable of being relieved at the hand of

the Surgeon. Originally undertaken with no prospect beyond that of alleviating one of the worst examples of the disease, by postponing the loss of an eye, one of these great operations proved to be remarkably well borne, and the extirpation of the disease was complete and the comfort permanent. The operation, in similar and even in worse cases, has consequently been deliberately repeated. It is found to be applicable to very advanced and formidable instances of the disease, without even the precaution, which I took in my most extensive case, of lessening the shock by dividing it between two distinct operations. For the constitutional disturbance is very slight; and it is equally a matter of surprise, that the system should tolerate an operation on so wide a superficial area, and that a ready and complete removal can be ensured by so shallow a destruction of the morbid substance.

Under various titles the disease has been referred to or described in some of our surgical works. Its most common names are Rodent ulcer, Cancroid, Lupus exedens, Noli me tangere, Ulcère chancreux. And these appellations have been given it with the object of asserting an essential distinction between it and Cancer. Dr. Jacob described it as 'An ulcer of a peculiar character, which attacks the eyelids, and other parts of the face.' Mr. Cæsar Hawkins, however, includes it among cancerous

diseases. Had the title Cancer originated with scientific men, and been first employed with a precise signification, there would be no difficulty in testing the fitness of it as a name for Rodent disease. But the word has always been indefinite in proportion to the ignorance of the times, and it has even yet not settled to a precise use. The characters of the recognised Cancers are partly shared by other tumours, and the propriety of ranking any particular tumour with them must be determined by the preponderance of their resemblances over the differences which distinguish them. My own opportunities of observation have been sufficiently numerous and prolonged to show me a more real identity of the Rodent disease with Cancer, than is assigned to it in published accounts. It is accordingly a second and principal object with me to furnish proofs of this character of the disease, and to justify denominating it Rodent Cancer.

It is rare to see the actual commencement of the disease. The patients usually describe it as attracting their attention by some trifling change in a small spot of skin which previously had not been quite natural. Some mole, or wart, or minute thickening of the skin, which they had always known to exist, or some pimple which had grown up unnoticed, began to itch or to be tender when touched; and a slight scab, which showed already

a breach of the surface, was found to have formed upon the spot. One patient had a mole from infancy, in which the disease began at sixty-five years of age. In another a pimple first formed at fifty, and then ulcerated. The disease sprang up in a third on the scar of a pustule, which remained from an attack of small-pox thirty years before. The first sign of any ailment in another case was the escape of blood from a small crack on the edge of the eye-lid. In most cases, however, a single solid growth was observed to have formed, or was known to have existed for some time before scabbing and ulceration.

It is not conceivable that Cancer should have existed in a mole for sixty-five years, or that anything cancerous should have been imported into the healing of one small-pox pustule. The origin of this disease, like its continuous progress, is that of a local textural ailment; and it appears to resemble many cases of Cancer in starting forth at the meeting-place of dissimilar structures. Thus, at the edge of the lip, which is a tissue intermediate between mucous membrane and skin; at the orifice of a duct, which texturally is in transition from one kind of mucous membrane to another; at the top of the cheek, where the skin somewhat abruptly changes from thick to thin, and still more markedly in the cases before us, where natural integument abuts upon that which is

morbid, as in a mole, or upon a rigid scar; in such places it is that tumours form; and they possess at first, and appear to maintain, different characters, which correspond not to any peculiarities of constitution, but with the particular textural defect out of which they sprang.

The disease once established, it continues to increase, extending in all directions into a wider area. It spreads by the growth of the original solid 'pimple,' advancing upon, and involving with itself, the adjoining healthy structures. The central crack, or excoriation, too large to be longer concealed by a scab, becomes a distinct ulcer. Thus the aspect of the disease changes, though not its nature. At first a cutaneous nodule, with a superficial and central ulceration, the solidity claimed most attention, and it was named a pimple; but as the growth spreads deeply and abroad, its thickness not increasing with its area, while the scabbed excoriation widens into a cavity, the loss of substance attracts most notice, and the disease is miscalled an ulcer. Did the disease only spread in the skin by growth, it would form a broad tough plate, resembling keloid; but it is as keloid with all the central part of the flat plate ulcerated out. If it spread without a preceding solid growth it would be rightly called an ulcer. The hard substantive margin and base are indeed sometimes not observed at all, and the disease is for this

reason also erroneously held to be an ulcer. This is particularly liable to occur during the emaciation of the last part of life, and in the subsequent drying of the open surface; in consequence of which there is sometimes no solid base to be discovered in the examination after death.

The thickness of the solid margin and base varies, both with the conditions which favour or resist its increase, and with the rate of the succeeding ulceration. In the diploe of a bone growth exceeds destruction, and the tumour becomes a broad and thick plate of the characteristic morbid substance. The brain likewise favours the accumulation more than the ulceration of the deposit, which consequently reaches in that organ a thickness of a quarter of an inch. There is also a difference in the quantity of solid material in the early and the later years of the disease. In recent cases the margin is comparatively thin; but after a long duration, and in the decline of the general strength of the patient, the morbid edge becomes half an inch thick, and is but little firm. Again, the secondary ulcerative process in some parts follows the growth slowly, and the hard margin of the cavity attains a thickness of more than a quarter of an inch: elsewhere ulceration is rapid, and nearly or completely overtakes the growth. In the latter case the appearance resembles that of an ordinary sore before the formation of granulations; its edge

becomes quite soft, and it may begin to cicatrize; but after a time solid growth arises in it anew, or advances upon it from adjoining parts of the margin, and eventually disease is re-established everywhere. The sweeping of erysipelas over the sore occasionally affords an illustration of this statement. During the activity of that disease the solid edge of the ulcer is wholly absorbed, but it is always eventually reproduced.

When ulceration thus breaks out afresh after a partial cicatrization, the situation in which it sometimes occurs is peculiar. It does not always recommence at the edge of the sore, where granulations and scar adjoin, but at the line where the scar is continuous with the skin. The result is to sever the last formed cicatrix from the skin by a new line or trench of ulceration. Though somewhat resembling a healing wound and scar dragged open by the contraction of the granulations, the appearance suggests rather that the process of ulceration is specifically associated with the remnant of solid deposit in the texture of the skin. It is an ulceration conspicuously independent of the existing ulcer, and it appears to be a repetition of the first excoriation of the original pimple.

Neither the advance of the solid growth, nor the ulceration succeeding it, occurs at a uniform rate. On the contrary the progress of the growth is very

unequal, and in the skin its edge accordingly presents a serrated appearance, from the alternately greater and less destruction of the integuments. The ragged outline produced by these ridges and intervening notches is well expressed in the title, Rodent. The notches, which correspond to the more rapid extension of the disease, are sometimes an inch further from its original centre than are adjoining portions of still undestroyed integument; and on the cheek, one part of the destructive process may be three inches in advance of that next it.

The growth of the solid disease is not limited to the integuments around the ulcerated cavity; it advances in depth as well as in superficial area, involving all the structures it encounters. It infilters the glandular textures and the bony, it spreads by the mucous and the fibrous tissues, and after perforating the skull, it will still grow into the very substance of the brain. In the succeeding ulceration these structures are likewise removed, and the excavation becomes deep as well as wide. There is here again a considerable inequality in the rate at which different textures are destroyed. No tissue yields so quickly as the skin, and the great superficial extent of the disease is thus often its chief characteristic. The eyelids sometimes are slowly destroyed by the creeping of the disease over them, long before any but catarrhal and traumatic changes occur in the exposed eyeballs. Bone

is somewhat easily invaded by the growth, in which it either becomes necrosed or is absorbed or crumbles away. Cartilages long resist the encroachment of the disease. The relative progress through different textures can be measured by the contrasts of its rate in different directions. During the extension of it in skin from a central pimple over the entire forehead, upper eyelids, and nose, the frontal bone was perforated, but no part of the tarsal or nasal cartilages became affected. In a somewhat similar case, the frontal bone was perforated, and the substance of the brain was destroyed to the depth of more than an inch, whilst the skin was being removed over an area equal to a woman's open hand. An excavation in another case reached the mastoid process in one direction, and nearly as far as the corner of the mouth in the other, without penetrating the bones of the cranium. It had during the same period almost entirely removed the pinna of the ear and the parotid gland, and had occasioned a complete paralysis of the facial muscles of the same side. Again, whilst the central parts of the surface were being destroyed between the eyebrow and the lip, and half the cheek on the right side, the entire substance of the subjacent superior maxillary bone, with the teeth and palate, was removed, and only the soft palate remained, supported by a slender bridge of the hinder portion of the palate bones. Meanwhile the

cartilages of the left side of the nose were but partly destroyed. The septa of the facial air cavities soon yield, being thin and involved in the double destruction of their mucous coverings. I have had no opportunity of noticing the comparative resistance of the bony and the cartilaginous septa.

The diseased substance is almost invariably concentrated into one mass. However far it may spread in the tissues, and whatever gap may have been produced by intervening ulceration, there has been a continuity of its growth from the original pimple to the furthest margin of the disease. On one occasion, however, I observed an outlying nodule beneath the skin, separated from the growing margin of the original disease by a quarter of an inch of apparently healthy integument. Mr. Paget also once saw a similar isolated nodule of this disease.* The occurrence resembles that which is by no means uncommon in Cancer, in which seemingly isolated nodules of the disease spring up in the vicinity of the original tumour. Though distinct from that tumour, so far as we can perceive by grosser modes of examination, they are yet virtually continuous with it, having in all probability originated from the detachment and conveyance of minute fragments of the original tumour, or from its easier growth along some single intervening structure.

* Holmes' System of Surgery, vol. i. p. 211.

A distinction is at once apparent between the solid substance constituting the margin of the Rodent disease and the material of an equally firm Scirrhus. The latter possesses eminently the character of contractility, draws towards itself all adjoining extensile structures, and produces thereby a pitting and cupping even of its own cut or exposed surface: the Rodent substance, on the contrary, is entirely devoid of this quality. As it advances along a lip or an eye-lid, it does not alter the contour or the position of the yet undestroyed segment. It will perforate the face at the junction of the cheek, upper lip, and ala of the nose, without causing any deviation of the outline of either of them. Or if half of a lip or an eye-lid have been removed, the remaining portion, bordered by the solid deposit and the ulcer, hangs in its natural position. The ulcerated cavity thus measures precisely the extent of the destruction of the natural parts. No contraction of the soft tissues takes place except as a result of cicatrization, between which process and the inelastic state of the Rodent disease there is a very great contrast, which is most remarkable in the lessening of the disfiguring cavity during healing after an operation. Between Epithelial Cancers of the skin and the Rodent Cancers there is little, if any, difference in respect to the contractility of their solid growth, the former disease possessing very little of this quality in whatever part of the surface it occurs.

The microscopic characters of the solid infiltrating substance, which constitutes the disease, are not precisely those of any natural texture; yet they do not ordinarily so much deviate from the appearances of cutaneous epithelium and of granulations, as to be entitled to the epithet, malignant. In some respects, however, the descriptions of the microscopic characters of Rodent disease, which are to be read in published works, differ from those which I have observed. I have found parts of the diseased substance, presenting a minute textural composition, precisely answering to that of the epithelial form of Cancer. A portion of the solid substance taken from the interior of the frontal bone showed just such appearances as the ordinary Cancer of the lower lip; epithelial cells, brood cells like the section of an onion, many fragments of cells and nuclei, very distinct, round, dark, granular cells, and oil. An equal resemblance to epithelial Cancer was noticed by my colleague, Mr. Hulke, in the microscopic examination of fragments which I removed with the globe of the eye in one of the cases, detailed in the Appendix. As it sometimes shows itself in skin, the disease is made up of such innocent microscopic corpuscles that it has been likened to a chronic ulcer of the leg, and to a perforating ulcer of the stomach. But, even if it were satisfactory to decide the innocency of a disease by its microscopic, apart from its clinical characters, that

decision is no longer conclusive, in the case of Rodent disease. It is never spontaneously curable, and not always microscopically innocent.

The foregoing paragraph contains the results of my own observations of this disease, but since writing it I have met with a remark by M. Lebert which, in conjunction with my own observations, suggests a new consideration. It appears not improbable that the nature of the morbid process may differ at different parts of the disease. His remarks are in the following paragraph.

'Although a rodent ulcer is the most common termination of cancroid of the face, it nevertheless most frequently begins with a little pimple, like a wart, the structure of which exactly resembles that of the lip. Its epidermal surface is soon shed and ulceration established, and then, especially in the malar and suborbital regions, can be very well perceived the papillary structure of these vegetations, which precede a deeper ulceration. And here we have to call attention to a very remarkable fact, for which we should have some difficulty in accounting; it is the structure of these papillæ in the inferior palpebral region. The epithelium which formed their circumference, or greater part, was elongated and narrow, and much resembled fibro-plastic fusiform elements. In the malar region we have found more resemblance to cancroid of the lower lip, whilst on the nose we

have scarcely ever met with these fungous excrescences formed by the papillæ. The base of these ulcers was smooth and compact, and their surface presented no elements but those of suppuration mingled with a little epidermis.' *

This remarkable observation of M. Lebert corresponds with that made by myself, that the portion of a Rodent disease occupying the interior of the frontal bone presented distinct microscopic characteristics of epithelial Cancer, which, though not always absent, are not usual in the more superficial parts. Taken together, they appear to show that the disease deviates from health in different degrees at its several parts. At its commencement in the first pimple, the minute structure is identical with that of the epithelial Cancer of the lower lip. Portions of the advancing growth retain that character, whilst the larger part loses it. Yet, as this part also, in its ceaseless growth and ulceration, arrives at certain situations or in convenient textures, the microscopic appearances of the epithelial Cancer are resumed. The influence of natural texture is probably represented in the production of the entire morbid result; and this inference seems borne out by some of the phenomena of ordinary Cancer; as where, for a time, in an open scirrhus, cicatrization advances over masses of morbid cells; or, where, in the early extension of Cancer

* Lebert, Traité Pratique, 1851, p. 658.

along the skin, non-nucleated cells are found filling the meshes of the cutaneous fibrous texture, though afterwards the microscopic elements would be like those of the advancing primary tumour.

Rodent Cancer is perhaps not quite the tardiest of the Cancers in destroying life, but it is always a disease of long duration. Its entire course usually occupies not less than five years, and it may extend beyond twenty years. The duration, in some degree, varies with its place. It lasts long on the face, where no vital organ is within its reach; but in the forehead, temple, and neck, there is danger of earlier death, on account of the proximity of the brain and the vessels. The moderate exhaustion which this disease sometimes occasions is well shown in one of the cases of M. Lebert. A poor woman at Bex, in the Canton de Vaud, had a 'cancroid ulcer,' which, in ten years, had excavated the nose and cheeks both widely and deeply, but had not, in that time, altered her general health, or caused emaciation, or prevented her reaching the age of 99 years. When the ulcerated surface is very large, the long-continued suppuration is apt to be exhausting, and when such an ulcer is situated over some considerable portion of the skull, it may be expected that so enormous an issue would produce some injurious influence on the brain. I have watched for symptoms of this kind from the presence of a vast ulcer discharging some-

times copiously on the side of the head. There were no fits of any kind in that case, but a feebleness of mind, a little slowness in collecting his thoughts to answer questions, and some hesitancy in utterance. There was, moreover, some muscular weakness during the more rapid progress and copious secretion of the great ulcer, symptoms which all lessened when the activity of the disease was subdued, and which were perhaps not more than the general exhaustion accounted for. There was, at the same time, no paralysis, excepting from the destruction of the portio dura in the ulcer. Death, in most of the cases, is the issue of increasing and protracted exhaustion, but it is sometimes brought on suddenly by hæmorrhage.

In most cases the disease commences during the decline of life. It rarely arises before fifty years of age, though in one instance which came under my care, the growth first appeared as early as at thirty-three years of age. Mr. Hutchinson also observed a case in which the patient, when first attacked, was only a year or two older than that age.

General healthiness, as a rule, has been the prevailing condition of the persons in whom this disease comes on. One man expressed this by saying to me, 'I never had fingerache nor toothache for forty years.' Syphilis had left its mark on the persons of some of the patients who were under my observation, either

in a slight thickening of the shin of the leg or in a scar on the penis, but Syphilis was not an universal precursor of the Rodent disease. Neither did it appear that unusual exposure of the face to rough weather had preceded the disease, for, although it presents itself only on skin not covered by dress, none of my patients had been sailors, and nearly half of them were women.

THE STATE OF THE ABSORBENTS IN RODENT CANCER.

It is not usual to find any disease of the subordinate glands in connection with Rodent Cancer. Not only are they commonly without enlargement during life, but after the disease has endured for years, and has reached a fatal termination, they may prove, on examination, to be free from any morbid deposit. That which exists at the borders of the ulcer is not usually transferred to the glands. Indeed, it is not by any means infrequent to find the lymphatic glands of even less than their natural size. They appear to be in a state of emaciation rather than of increase, and are difficult to discover in their natural situations. But they are not always in that condition. They occasionally enlarge, not with the soft, tender, and œdematous swelling of glands that are inflamed,

but with hardness as great and as abrupt as that of the marginal substance of the disease itself. Occasionally they very slowly subside again, but sometimes not until they have first softened and evacuated their contents by a kind of suppuration. In two cases of Rodent Cancer I have had the opportunity of watching an absorbent gland, which in the course of months attained to three or four times its natural size, and assumed a hardness which would have been held to be unquestionably characteristic of Cancer if found associated with a Cancer of the breast. The hardness and enlargement in one case slowly disappeared after the removal of the adjoining primary disease, and they did not recur. In the other case, the gland, which was over the splenius muscle, shrank as the disease slowly encroached on the nape of the neck. Mr. Bowman has informed me that he also has met with an instance of glandular disease below the jaw in connection with a Rodent Cancer of the forehead, and that, after enlarging considerably and then softening, the gland discharged its contents and subsided. Some years afterwards, when the primary disease reappeared, and the patient was committed by Mr. Bowman to the care of Mr. De Morgan, I had the opportunity of ascertaining that there remained no disease whatever in the submaxillary region. Mr. Hutchinson showed me a man under forty years of age, from whom he had removed a Ro-

dent Cancer of the forehead, and he also had found disease arise in a gland in the corresponding parotid region. In my own cases the disease of the glands did not present the character of ordinary inflammatory engorgement or proceed to suppuration; and the account given me by Mr. Hutchinson and Mr. Bowman of the morbid process in the glands of their patients was rather that of a slow, dense thickening and gradual softening than of inflammatory suppuration. Hence these exceptional instances, though possibly peculiar glandular abscesses, appear to supply just that rare proof of the cancerous nature of Rodent disease which is consistent with its slight malignancy, and is therefore ordinarily wanting.

THE DIAGNOSIS OF RODENT CANCER.

In making distinctions between diseases which have some important features in common, it is necessary to regard those characters only which manifest their essential differences. For it would be possible to discriminate so minutely as to separate from one another diseases identical in their nature. Now the Rodent Cancer has this in common with Lupus, Syphilis, and Epithelial Cancer, that it progressively invades the structures of the face, and destroys, without repairing them. Yet they are

all distinguishable, in certain broad and practical particulars.

The distinction of Rodent Cancer and lupus is shown both in the persons whom they attack, and in the characters of the local ailment. Lupus occurs in the young adult, Rodent Cancer in the decline of life. Lupus is exclusively a strumous disease, Rodent Cancer originates in persons previously healthy. Whilst both diseases arise in the skin, lupus is peculiar to thin and fair integument, Rodent Cancer to skin of ordinary firmness and colour. The aspect of the two diseases is different at their commencement in the skin, and not less so in their later progress. Lupus begins as a pink, low, tuberculous elevation of the skin, Rodent Cancer as a firm, uncoloured nodule in it. In lupus there may be more than one tubercle, and the intervening skin may be healthy, or pink, or scaly, or œdematous: the pimple of Rodent Cancer is solitary. The surface of lupus first scales or peels before it breaks; the Rodent Cancer excoriates, and then scales or bleeds. Both ulcerate; the lupus at one or at several of its tubercles, the Rodent Cancer by the mere deepening of its central scabbed excoriation. Lupus may cicatrise and cease at any time; Rodent Cancer proceeds with at most but a temporary and partial healing near its edge. When both are far advanced, the lupus has a superficial ap-

pearance, though it have destroyed the whole nose; Rodent is precipitous and excavated. Lupus possesses, Rodent Cancer is without any, contractility. The margin of lupus, though thickened, is low, and bevilled both outwards by œdema and inwards towards the shallow ulceration; that of Rodent Cancer is firm, and is commonly, in both directions, abrupt. The ulceration of lupus is smooth, and may be multiple, being divided by scars; that of Rodent is single and rugged. In the vicinity of lupus, there are separate, rather soft tubercles, and an area of pink scaly integument; around the Rodent disease the skin is healthy; and if a separate nodule do exist, it is compact, firm, and in great part subcutaneous. Lupus is not invariably limited to the face, but may, at the same time, appear on the hands or elsewhere; Rodent Cancer is eminently local and centrifugal. The most virulent lupus may, though it rarely does, cause death; Rodent disease is always eventually fatal. Like an old issue or a chronic ulcer, lupus is liable, after many years, to a rapid growth of Epithelial Cancer in its ulcers and scars; the march of Rodent Cancer may be accelerated towards the end, but its character is not thereby altered.

The ravages of syphilis in the face are easily distinguished from those of Rodent Cancer. Both alike may excavate an entire cheek, or the lateral

halves of the lips with the adjoining parts of the nose. But the rate of such destruction is measured in syphilis by weeks, and in Rodent Cancer by years. In three months the ulcer of syphilis scooped out of a patient of Mr. De Morgan's the left cheek and lips, from the mesial line to the masseter, and from the ramus of the jaw to the cartilage of the nose. The whole thickness of these parts was removed, and the teeth and gums of both jaws were exposed. An excavation of about the same superficial area in one of my cases of Rodent Cancer occupied a period of thirteen years. Dissimilarity of the diseases is also clearly manifested upon a comparison of their local appearances. There is no solid border in syphilis, but a sharp edge of skin abruptly separating between the striking colour differences of the ulcer and the skin. Beyond the edge is a violet halo of injected skin; within it a rugged ulcer, bright with spots of yellow pus. The lurid skin may be raised by a little œdema, but there is no hardness or even firmness in it, and the finger meets no abrupt thickening, as it is pressed from the healthy skin up to the edge of the ulcer.

In the early stage of a case of Epithelial Cancer of the face it is not easy, if it is possible, to distinguish it from the Rodent disease. The Rodent always, the epithelial sometimes, begins in the skin; but whilst the Rodent springs up on the free surface of it, the

epithelial almost exclusively originates where that structure is continuous with mucous membrane, or on the mucous membrane itself. Until infection of the glands facilitates the recognition of epithelioma, there is but little certain in its character to distinguish it from the Rodent disease. They have alike a solid edge and base limiting a scabbed excoriation or a rugged ulcer, without a distinctive difference of thickness or firmness. Perhaps the epithelial disease has a somewhat less irregular outline than the Rodent, and it possesses in a small degree the power of contractility, which the Rodent absolutely wants. In appearance they are equally cancerous, and they are equally destructive to the natural textures, but slowness characterises the growth of the Rodent Cancer, and the microscope invariably displays in the Epithelial Cancer cells of exaggerated epithelium, which are usually though not constantly wanting in the Rodent. So soon as the glands are affected from a primary Epithelial Cancer, the diagnosis is established; for glandular Cancer is an early, an extensive, and a vital complication in epithelioma, but it is late and slight, and it may be transient, in the Rodent. Advanced cases of the two diseases could hardly be confounded. There is at that period much more solid substance in the epithelioma, and the gaps which it makes by destroying the normal parts, though equally great, are less openly cavernous than in the Rodent

Cancer; which latter, moreover, after excavating the features, contributes nothing in the way of contraction to close the gap. The extension of Rodent is pretty equal in all directions, except for the inequalities in the edge from which it receives its name. If it began in the face, it will therefore remain limited to the face. But Epithelial Cancer tends downward, and encroaches on the neck. It does so in two ways; partly by the transfer of morbid material to the cervical glands, and its rapid increase in those organs, and partly by readier growth on the proximal and more vascular than on the distal side. I had lately a marked illustration of this preference of growth for the lower side of the tumour. A man, aged 42, was sent me by Mr. Solly for a globular mass of Epithelial Cancer of the cheek. At the lower and posterior parts of the tumour, from which the escape of the lymph and venous blood was free, the rounded outline of the tumour was rather abrupt, and the parts immediately below it possessed their natural suppleness; but in front and above the tumour the cheek was swollen, and only gradually subsided, being œdematous from obstruction to the circulation. There was no glandular disease. In removing this tumour I carried my incisions carefully below it in the soft and seemingly healthy structures; but above I cut intentionally through the œdematous cheek, being persuaded that the disease ceased far below

the limit of swelling. This expectation was borne out by the mode of the renewal of the morbid growth, for it was limited to the inferior parts which had previously appeared to be healthy, whilst the higher tissues, which had been œdematous, were never cancerous or œdematous again. In a very broad recurrent Rodent Cancer I have also noticed the same tendency after operation, the distal parts either very slightly or never resuming their characteristic morbid growth, whilst the disease recommenced in the course of a couple of years throughout the remainder of the unhealed edge. It appears therefore, that in both, but far more in the Epithelial than in the Rodent Cancer, the tissues on the proximal side of the disease are not so really as they are apparently free from infiltrated cancerous fragments. This observation is of the greatest practical importance in respect to the conduct of operations for the removal of either disease. At the same time the circumference of the Rodent Cancer is more uniform than that of epithelioma both in the concentration and in the thickness of the solid marginal disease.

CONCLUSIONS AS TO THE NATURE OF RODENT CANCER.

It is not until after long observation of Rodent Cancer that the principal facts in its natural history can be collected. The changes are slow in progress, and in some respects peculiar; but the essential characters of it correspond, it appears to me closely, with those which distinguish any superficial Cancer. For it is not primarily an ulcer with an eroding edge, but rather an edge of a particular nature with a following ulcer. It is composed of a solid growth, which, having no limitation by a cyst, infilters among and supersedes the natural textures, which exhibits a power of continuous increase, and sometimes of forming a detached and not ulcerated nodule of the same disease, and which so far infects the adjoining parts that an incision, where they appear healthy, is yet followed by a return of the disease. The new growth in time degenerates and disappears, destroying with itself all the tissues which it had penetrated. Measured by the interval between its deposition and ulceration, the birth and death, so to speak, of any particular cell, the vitality of the growth is not less than that of ordinary Cancers; but in other respects, it appears to be composed of a more feebly vital material. For the slow rate of its increase prevents it from accumulating in so thick a mass as those which

grow faster than they die, and it is so little capable of a firm maintenance of life as to be rapidly removed by a transient erysipelas. Slow though it be, however, its power of growing is greater than that of the normal parts, being not arrested by any natural texture, and continuing and indeed increasing in its rate throughout the remainder of the patient's life. In accordance with its feeble vital energy, as compared with the more active malignant growths, the occasions are rare in which it imitates the cancerous character, by passing on to a subordinate lymphatic gland. The occurrence does sometimes happen, but the resemblance in dissemination never goes further, and the gland, however long enlarged and hardened, eventually softens or again subsides. Though the disease originates in skin, it is not limited to that texture, but corresponds with Cancer eminently in the particular faculty of indiscriminately invading all the tissues which it meets. Added to these, there are further indications of its cancerous nature in the occasional identity of its microscopic elements with those of the Epithelial Cancer and, since, so far as we know, it is never spontaneously curable, in its tendency to produce a fatal result.

An advantage of practical importance is gained in tracing the nature and alliances of this disease, when attention is thus withdrawn from the merely subordinate process of ulceration, and fixed upon the

substantial deposit. A yet greater advantage accrues, and one which is of value in the study of Cancer generally, when the unessential distinctions are disregarded, by which Cancer has been arbitrarily severed from other diseases, or when, at any rate, by a correct perception of its order and mechanism, the actual nature of its differences and its real alliances are discerned. The question, What constitutes Cancer? at one time capable of solution only in the disseminated stages of the disease, is now more early and more truly answered. But at the same time, the former notions of what is essential to it are much modified, as, on the one hand, it is perceived that the property of being conveyed alive to distant parts of the body, and there resuming growth, is found to be shared with Cancer by other active tumours, and, on the other hand, as certain tumours which never pass beyond their original site are recognised as Cancer by their local progress alone. In any given quality Cancer has its parallel with some other disease; and it has that quality, not because it is Cancer, but because it uses, in common with the disease which it resembles, some function in the body to which that quality is due. Many diseases infect glands besides Cancer, and for the same reason, that the lymphatic system equally serves them all. Pyæmic abscesses are as widely dispersed, and thus as constitutional, as the most general Cancer, for the

circulation is a highway alike in the one disease and in the other. And, if hereditariness proved a pre-existent tendency to Cancer before the outbreak of the first tumour, such tendencies are too common to prove Cancer constitutional. Warts, and cysts, and various innocent tumours, are as distinctly hereditary as Cancer sometimes is, and also, like Cancer, they may occur in one member only of a family: there is nothing purely or essentially cancerous in the mere repetition of a disease in persons alike in their textures. So again with curability; other ailments, besides Cancer, will come again if they be imperfectly removed, and will thus pass for incurable with no better reason than Cancer. To characterise Cancer as incurable, or as originally a constitutional or necessarily a general or systemic disease, or as having for an essential quality the capacity of diffusing its elements into the adjoining lymphatic glands; to distinguish it by the greater proportion of its solid part as compared with its ulcer, or by its microscopic cell, would indeed separate it from the Rodent disease, but only by a *catatomy* which would also dissociate one recognised Cancer from another. Some of these misconceived distinctions will bear a little further discovery.

Curability constitutes but an accidental distinction between tumours, not one original and essential to their nature. Any tumour is incurable, so long as

the inadequate operations performed for the removal of it leave fragments behind which are capable of continued growth. The argument which would distinguish Cancer by our failure to eradicate it is applicable also to other tumours, even to fatty tumours, of which growing portions left in the tissues sometimes produce a third and a fourth recurrence.* That argument transfers to the disease a defect which, without fault in the Surgeon, really attaches to the operation.† Cancer and Rodent disease may both be locally eradicated. The distinction between them is in the facility of the extirpation, but though of great value in practical surgery, it is not decisive of an essential difference between them. Indeed, it is questionable on another ground, whether it be distinctive as a fact. The Rodent disease, at its commencement, may undoubtedly be extirpated, but in its later stages exemption from recurrence after apparently complete removal is less absolute than the usual success of operations would lead us to suppose. For the cicatrix may reopen, and without throwing up the distinct separate hard margin which characterises the ulcer in cutaneous texture, may ulcerate again widely. Should this fresh ulceration, however, arrive at skin again, the peculiar solid marginal rampart is reformed. Seemingly healthy parts

* De Morgan, Hulke, and Curling, Pathological Transactions, 1867.

† The Influence of Inadequate Operations on the Theory of Cancer. By Charles H. Moore. Medico-Chirurgical Transactions, 1867.

around the scar may likewise become diseased anew, and that event, as in what is called true Cancer, may be delayed until some time after the supposed cure. Usually, no doubt, recurrence takes place in or near the scar, the Rodent disease resembling Cancer in this also, that it shows most intensity at its original site. But rare instances present themselves in which a separate growth does form in a part somewhat removed from that site; in which case apparently healthy structure intervenes between the primary and the detached disease. Whether the whole intervening structure were really healthy, it is not possible to say, or whether the renewed growth have a continuity with the old by some single diseased tissue. The occurrence, however, resembles that with which we are familiar in Cancer, in which an inappreciable yet real halo of disease surrounds the abrupt limits of the tumour. Thus this distinction between the Rodent and other Cancers is reduced to but one of degree, and intelligible from the mechanical conditions of the two growths. The limits of Rodent can be overpassed in an operation: those of scirrhus may not be.

The usual exemption of the lymphatic glands from enlargement is regarded as constituting a fundamental distinction between the Rodent and malignant diseases. But the conclusion appears to be as erroneous as that obtained by overlooking the import of the solid deposit in the natural textures

which precedes the Rodent ulceration. Enlargement of the glands is so usual in Cancer as to be one of its most useful and decisive characteristics, but it is not an invariable occurrence; and to look upon the power of infecting glands as essential to Cancer would be to confound Cancer with enchondroma or tubercle, which do the same, or even with a bit of tattooed gunpowder. It would also force an artificial separation between tumours identical in nature, especially scirrhus of the mamma, some of which fail altogether to travel beyond their original site, or, without infecting the glands at all, invade the liver. The cause and nature of the usual contamination of glands with Cancer are, indeed, not wholly understood, and the occasional healthiness of those subordinate organs still less so; but it is clear, without further knowledge on this subject, that a separation of the Rodent from other Cancers cannot be founded on that distinction. In its progress as a local tumour Cancer infiltrates indiscriminately all the natural textures, and this power equally characterises the Rodent disease. That it does not possess the additional and accidental property of dispersion with the lymph or the blood, or of growing if so dispersed, is not a reason for detaching it from the Cancers, which it resembles equally with a scirrhus that continues as a solitary tumour until death.

Apart from any structural peculiarity of the disease, there appear to be obvious mechanical reasons for the usual failure of the Rodent Cancer to be repeated in the adjacent lymphatic glands. On the one hand, the stream of natural lymph to the glands must be progressively diminished, as the textural area from which the lymph should come is scooped away; and that stream, on the other hand, can be but little replenished with the scanty material which is derivable from a growth so slow, and at the same time so perishable, as the solid margin of a Rodent Cancer. Moreover, not only are the natural textures reduced in quantity, but those which still exist are usually attenuated. The demarcation of normal and abnormal structure feels the more abrupt because of the emaciation immediately adjoining the disease, there being, except in particular situations, not even œdematous swelling. There is, consequently, little material which might pass from those textures to the glands. Again, since the principal increase of every cancerous tumour is on the exterior, and is mainly due to the tense compression of its oldest central substance and contained bloodvessels, and the consequent forced filtration of its growing materials into the looser textures surrounding it, then in the Rodent Cancer that condition also is in great part wanting. The filtration must set the other way, inasmuch as so

little substance intervenes between the growing and the ulcerating surfaces of the solid marginal deposit. Superfluous matters tend to escape on the freer open surface, and thus avoid the glands.

But it may be that there are causes in the nature of the disease itself which explain its failure to infect the glands. The matters which it yields to them are not viable. In the growth itself there are not usually masses of exuberant and rapidly growing cells, but such as at best have but a feeble and precarious life; all the less, therefore, can those fragments of it which may be dislodged retain any power of further development in the new and less propitious circumstances into which they may be transplanted. They have never any of that activity of growth which is characteristic of ordinary Cancer in glands, but are only those scanty, liquid, and effete parts of the primary disease, which, as they enter the lymphatics and traverse the glands, are eliminated without harm and without being noticed in their transition.

Were there, however, always, as there appears sometimes to be, in the Rodent disease a material as ready to produce secondary deposits as is met with in ordinary scirrhus, its failure to infect the glands would still be not without parallel in certain cases of that disease. For glandular infection, as has been already stated, is not an invariable accompaniment of

true Cancer. In scirrhus it is the rule, not without exceptions, for the glands to be secondarily diseased; in Rodent, the rule, equally liable to exceptions, is for the glands to be unaffected. To explain this, if even it can be explained, would require a long investigation into the relation of the glands to Cancer. I may, however, briefly state some conclusions, to which the observation of different cases has led me, respecting the manner in which glands sometimes escape infection from a primary Cancer.

It being allowed that such infection is mechanical, then those organs fail to share the primary disease either—

1. Because by the compactness and excessive slowness of its growth the Cancer furnishes nothing for distribution.

2. Because materials which are distributed are inert.

3. Because, when itself withering, the primary tumour yields nothing which could grow elsewhere.

4. Because, though growing, its elements find no convenient outlet towards the glands.

5. Because the lymphatics are shrunken. Or,

6. Because the stream in them is sluggish, or is diverted.

In either case, some requisite condition for the infection of the glands is wanting. If the absence of it suffice to explain the occasional exemption of the

glands from scirrhus, the explanation is all the more applicable to the Rodent disease, in which those conditions fail in the most eminent degree.

The property possessed by most Cancers of infecting the subordinate lymphatic glands being usually absent from Rodent disease, it is a mere extension of this distinction between them to find the one capable of further dispersion, and the other not so. Rodent is a Cancer concentrated in its first site, and spreading only by contiguity of growth. Whilst some Cancers do no more than this, others detach fragments endued with separate vitality, and able to multiply where they next adhere. Between these extremes there is every variety and degree of endogenous growth within the body. It depends upon the accident of dispersion, whether the secondary Cancer shall appear in one or other distant part of the body. First, and most frequently, glands lodge the travelling cell, but all parts are liable to the intrusion of it. Nothing can seem more complex than those problems relating to the dissemination of Cancer which are not yet solved, and among them is the question whether the cancerous matter, as it accumulates in the system, tends to any special organ for its elimination. But, whatever the progress of Cancer when once established in the body, its origin is simple, and need not be complicated by its subsequent progress. I have elsewhere endeavoured to

distinguish these questions from one another, and have concluded that Cancer originates where it first appears, and becomes a constitutional disease only after it has been primarily a local one.* It is a confirmation of this opinion, that there is a disease presenting every local character of Cancer, but failing in that quality of ubiquitous reproduction, which depends upon the mobility or the superior vitality of the material of which it is composed.

There is an especial and considerable similarity in some points between the Rodent disease of the face and the very slow 'phagedænic' Cancer of the breast. Both are very concentrated, and of very slow growth, and both show a marked preference for extension by the skin. In both, also, the process of destruction almost keeps pace with the new formation, and their meagreness prevents their dissemination. Only in the modes of their destruction are they unlike. Instead of ulcerating, which the Rodent growth readily does, the mammary cutaneous Cancer tends to wither after a certain duration of life. It thus presents the appearance of a solid slowly growing margin, with a central or following shrunken tough scar, or with here and there a very superficial ulcer. The truly cancerous nature of the mammary disease would appear as doubtful as that in the face, if, after

* The Antecedents of Cancer, 1865.

a duration of perhaps twenty years, it did not somewhat rapidly grow, and destroy the patient by a widely spread local, or by constitutional Cancer. The Rodent disease, likewise, towards the end of life, though it does not spread to distant parts, yet does advance locally with a more rapid solid growth, and presents a more distinctively cancerous ulceration.

Under the name of Cancroid, M. Lebert has grouped with the Rodent disease of the face various other growths and ulcerations. Relying upon the character of ulceration, he associates with it the perforating ulcer of the intestinal tract and the Rodent ulcer of the uterus; and in consequence of dissimilarity in their microscopic elements, he ranks with the Rodent disease, and not with scirrhus or medullary, all epidermal or epithelial productions, however their clinical progress be analogous to that of Cancer. Hence his group includes alike the rapidly diffused and fatal Cancers of the genitals, epithelial tumours of the arachnoid, epithelioma of the uterus, and—though he has never traced its origin to an epithelial growth, and though, by his own statement, it frequently heals—a gastric ulcer. The alliances of these diseases with one another are far less striking than the connections of some of them with ordinary Cancer; and in nothing more distinctly than in this, that fragments of them, though formed

in the generative organs, or in the skin, retain their vitality, and grow largely when transplanted to the liver or the lungs. The gastric ulcer is not one of these. Whatever be its nature, it fails in those characters which connect the ulcer in the face with Cancer. The perforating ulcer of the stomach has a marginal thickening, but none of the solidity of the Rodent disease, neither is an epithelial microscopic element detected in it, the presence of which is a strong reason for placing Rodent disease among the Cancers. The gastric ulcer appears to be arrested in its progress by its thickened edge, which is therefore a curative part of it; but the solid exterior of the Rodent ulcer is the means of its extension. On this difference it depends that the gastric ulcer deepens more than it spreads abroad, there being little or no solid substance at its base; while the Rodent ulcer extends in every direction; nowhere without its preceding solid base, and furthest where that is most easily formed. Hence also the gastric ulcer is a deep and often circular pit; whilst the characteristic of the Rodent is its width. Considering these fundamental distinctions between the ulcer of the stomach and intestinal tract, and the Rodent facial disease, I should exclude that ulcer from amongst the Cancers and the Cancroids; but at the same time I should join M. Lebert in connecting the Rodent with the other diseases which make up his group

of Cancroid, and should add to them that form of fatal and infecting cell-growth which sometimes comes on in chronic ulcers. In these various forms of epithelial growth and decay, most British Surgeons recognise the nature of the disease which is designated Cancer. M. Lebert's grouping and my own observation of the characters of Rodent disease of the face agree in showing its title to be held as Cancer.

The tongue has been found partly occupied with a tumour which existed in a state of ulceration for many years, and after death presented a dense thin margin, in which there were no microscopic cancerous elements. Such a tumour appeared to Dr. Bristowe and Mr. Jonathan Hutchinson, who examined it, to be of the nature of the Rodent disease of the face. I am led by another case, however, to think it probable that this disease was essentially cancerous. A gentleman, aged about 64, was committed to my care by Dr. Crompton, of Manchester, with a mass of rather rapidly growing Cancer, as large as a small chestnut, in the left side of the tongue, the anterior pillar of the fauces, and the adjoining portion of the lower jaw and gum. In the digastric triangle were two hard and enlarged glands. The history of the case was, that Mr. Paget had removed a tumour from that situation, which was entirely devoid of microscopic cancerous elements, and that the patient

had been perfectly well for the four following years. Then, on a recurrence of the tumour, a second excision was performed, after which the wound healed slowly, and the resulting scar was hard. The date at which I first saw this patient was four months after the second operation, and at that time there could be no question of the cancerous nature of the existing disease, although that first removed, as in the previous case, might have been held to be innocent.

Of these principal characters, which exhibit the alliance of Rodent with other Cancers, one has been very clearly stated by Mr. Cæsar Hawkins, when writing of warty tumours in cicatrices in the nineteenth volume of the 'Medico-Chirurgical Transactions.' After having distinguished 'Lupus and the corroding ulcer of the uterus,' as diseases which do 'not contaminate either the surrounding parts or the absorbent glands, by the formation in them of a *new structure*, like that developed in the seat of the primary disease,' and which also do not establish 'a similar disease in another part of the body by means of this contamination,' he proceeds: 'But it seems to me, that we want some word for those diseases which *do form a new structure*, capable, apparently, of contaminating the surrounding parts, so that the removal of the whole of the altered structure is necessary, but which *do not*, as far as I know, produce

any contaminating influence upon the absorbent glands, and have no tendency whatever to reappear in a distant and unconnected part of the body. Such a disease is familiar to most Surgeons in the skin of the face of elderly persons, and is often, but I think erroneously, called *cancerous* and *malignant*, since, if the new structure at its basis be completely taken away, there need be no apprehension of any return of the disease, either in the same part or elsewhere; or at least, if the new structure really possesses the nature of *Cancer*, it must be clearly understood that the disease is *cancerous* and *malignant* in the very lowest degree.'

It is thus not only by the power of forming new structure, that the alliance of Rodent and other Cancers is manifested, but also by those additional resemblances in its subsequent progress, which have been detailed. The disease appears indeed, in accordance with the alternative which Mr. Cæsar Hawkins allows, to be a Cancer in the very lowest degree; and it is just such a form of that disease as we should expect to exist, if Cancer be primarily a local malady. For, whilst there are Cancers of high vitality and rapid growth, and capable of very wide diffusion in the body, there should be others, which being concentrated in their texture, or devoid of the means of disseminating themselves, are traceable only in the neighbourhood of their first outbreak. The

local characters of such diseases being alike, those dependent on the power of dissemination should be superadded in some of them. Just such, in general terms, is the difference between the Rodent and other Cancers. The Rodent Cancer is an exquisite instance of a local ailment, being almost uninterruptedly continuous in its growth, from the solitary pimple in which it originates, over an area of half the face. At the same time, however, that it has every local quality of Cancer, it is so meagre a growth, that it has no superfluous material for circulation in the blood to distant parts, and very little for the lymphatics and the textures nearest to it.

The natural history of moles and molluscous tumours needs further enquiry. Why should one on the scrotum produce melanosis, one on the face originate Rodent, of which diseases the former becomes universal, the latter remains local; one invades, and the other fails to contaminate the glands? Given the power of a single cell to produce a mushroom in a night; and one need not be surprised at the vigour of any morbid growth in a well-nourished body. But the extent which the growth will reach in one or other situations, since it is not determined by any manifest difference in the two moles, may depend on the natural vigour or feebleness of the textures adjoining it, in the contest of which for nutrition with the structures of the mole, Cancer arises. In

some degree Cancer does depend on vitality of site for its origin, so that it rarely occurs on the skin of the back, but arises commonly in that of the face.

THE TREATMENT OF RODENT CANCER.

THE distinction of the Rodent, and other ulcers, is in no respect more plain than in the effect of treatment upon them. These, in some period or condition, are curable by remedies applied to their surface, or by the correction of their constitutional cause; but the Rodent disease is neither healed by superficial applications, nor ever in any material degree improved by constitutional alteratives. Once only after an operation, in which a great Rodent disease was removed, and in which there appeared to be a renewal of the growth, I found the continuous use of small doses of the iodide of potassium improve the general health and reduce the marginal thickening. The essential part of the disease is, in fact, not the ulcer, but the solid substance beneath it; and that treatment only is efficacious by which its deepest limits are exterminated.

This fact has long been familiar to Surgeons, and it has been customary, upon the failure of anti-syphilitic remedies, or those which cure scrofula, or which

simply invigorate the health, to spread a caustic upon the sore, and to assure the patient that, with the few hours' pain thus produced, his disease and suffering will be at an end. Those who recognise the nature of the disease lose no time in the use of ineffectual general treatment, but at once destroy the growth. The caustic burns through the entire depth of the solid disease, and, upon the casting of the subsequent slough, cicatrisation is rapidly completed.

For the production of this effect any of the ordinary caustics is adapted, provided only they be such as penetrate the tissues, and be used in a quantity adequate to the particular case. On a small sore the powder of arsenic is sometimes applied, either as Justamond employed it, or in the form of Plunket's paste, or in the combination with calomel with which the name of Dupuytren is associated. But it is always well to avoid the possibility of the absorption of arsenic, and to use rather the chloride of zinc, or the potassa fusa, or the Vienna paste, or the nitrate of silver, or the acid nitrate of mercury. There is no ulterior advantage in the employment of one rather than another of these caustics, and each Surgeon will select that with the action of which he is most familiar. I have been, myself, most satisfied with the chloride of zinc, and have the opinion that the temporary wasting of the natural textures adjoining those which its action destroys, tends to exhaust the

vitality of any morbid fragments which may remain in them, and thus to diminish the probability of a return of the disease.

It may be possible to employ caustics in a diluted state, and gradually, and with less pain, to effect the destruction of the disease. For this purpose the carbolic acid appears suitable, in the mode of application suggested by Dr. John Barclay, of Banff. He advised the following formula in the 'British Medical Journal,' for April 21, 1866.

Acidi carbolici	℥jss.—℥ij
Spiritus vini rectificati . . .	℥j.
Aquæ ad lbs.	ij.

It soaks into the morbid structure, and, without causing a slough, occasions a more than naturally rapid ulceration. I cannot say however, that in the instance of Rodent Cancer this increase of ulceration is exempt from pain. In the single case in which I tried it, a man who had an extensive and very painful ulcer of the temple, considerable suffering ensued, and the ulceration did not at once cease upon the withdrawal of the acid. Neither did the parts subsequently heal. The diluted chloride of zinc may be used with the same object.

The failure of ordinary mild superficial applications has been abundantly proved in the treatment of these cases. I have tried many of them, but have found no reason to attribute to them the slightest curative

effect. Mr. Middlemore obtained some advantage, though not a cure, from the employment of the black and yellow washes: my observation of the effects of the black wash corresponds with this. I have been lately informed by Mr. Luke that he had succeeded in curing some cases of Rodent disease of the face by means of the mercurial ointment, and I have consequently employed it in two patients. The effect under my observation was not curative. Only a more than usually rapid and painful ulceration was produced, and eventually the disease proceeded unchecked by this local treatment.

The treatment by caustics is readily applicable to cases in which the disease is of moderate extent, but not after its increase beyond the area of a half-crown or crown piece. At the latter dimensions it has been thought better to excise the growth, and since the introduction of anæsthetics into practice it has been not very unusual to adopt that plan of extirpating it. Mr. Hutchinson, in his very complete 'Clinical Report on the Rodent Ulcer' in the 'Medical Times,' has recounted twelve cases in which excision was practised. The treatment proved successful in nine of these, so far as the time following the operations allowed the result to be stated. Two of the nine remained well a couple of years after the operation, and two others three years after.

In a few instances the excision of the disease may

be supplemented by a plastic operation, for the purpose of filling the gap in the features. There can be no doubt of the propriety of this method in suitable cases, and there is no reason to think the transplanted healthy flap likely to hasten, but rather to retard, a return of the disease. Mr. Hutchinson lately showed me a man aged 37, in whom he had made a perfect transplantation of a flap of skin to fill a space in the forehead, from which he had excised a large Rodent Cancer. The surface of the flap was even, and the line of union remarkably narrow and indistinct. In this case there was disease of the lymphatic gland in the parotid region. The only instance of a plastic operation among the cases in Mr. Hutchinson's report proved eventually unsuccessful. The disease was very extensive, and the patient died, after its recurrence and a later operation, in the Middlesex Hospital.

The employment of ether spray in the manner made available by Dr. Richardson, appears well adapted for the removal of Rodent Cancers of moderate size by the knife or by the potassa fusa. In either case, the operation is a superficial one, and within the limits of the chilling action of the local anæsthetic. If the disease be extensive, it is more convenient to narcotise the patient with one of the general anæsthetics, in order to follow out with precision every ramification of the morbid deposit.

Moreover, when it is designed to proceed, after excision, to a plastic operation, it does not appear advisable to apply cold, as the subsequent union of the transplanted flap mainly depends upon the preservation of the parts, as much as possible, in their natural condition.

The foregoing methods of treatment are applicable to cases of moderate extent; but there are others in which, by strange indifference on the part of the patients, or through the inadequacy of early measures, the disease has reached an apparently hopeless state. Can anything be done for these cases, which Surgeons have hitherto abandoned?

On reviewing the cases in which attempts to extirpate this disease have been made, it is to be remarked that they present differences from the ordinary cases of Cancer, both in the frequency of operations which they allow, and also in the proportion of cures which result. Many times a caustic application may be repeated, and excision may be practised over and over again. Yet the disease recurs in the same place, and advances with but little increase of its rapidity. For a Cancer, it is eminently a local disease; it is also eminently a curable disease; and yet it very often recurs after removal. Incisions, or the action of caustics, are carried into apparently healthy parts, into parts so nearly healthy that granulation and cicatrisation follow, and the wound

remains well for a year or more; but in or near the scar the old disease breaks out again, and pursues its former course. Like Cancer, in fact, the Rodent disease is less concentrated than it seems to be. Portions of it exist in the structures outside its perceptible limits, and the extirpation is not completed by the removal of the solid marginal disease.

The success attending the treatment of the recent cases is intelligible, because, in its early stages, the morbid growth is confined to the skin and to the subjacent loose tissue, and because caustics, which are then commonly selected, completely penetrate the shallow disease. But as deeper textures are involved, the morbid parts are less easily reached by any method of treatment. This is particularly the case with the bones, which are easily perforated by the deepening growth, and which also protect from the knife the soft fragments of it lying in their recesses and canals. It is not enough to cut or scrape from the surface of a facial bone the pale thin granulations which cover it; the bone itself must be taken away to a depth exceeding that which has yielded to the disease. Recurrence is otherwise inevitable.

In these advanced cases it has been usual to forbear from operating altogether, and to abandon the patients to the progress of their disease; for neither did it seem possible to remove the whole of it with the knife, nor right to attempt to overtake it by

caustics. The thought has occurred, and has been even expressed, that it is an unkindness to prolong life in circumstances so dreadful as those of an advanced case of Rodent Cancer.

It is, however, unnecessary to adopt so gloomy a view of these cases. The knife and caustic may be so combined that the Surgeon shall extirpate the disease in a very advanced stage, protecting the patient absolutely from pain and shock by the use of chloroform and the subcutaneous injection of morphia, and supplying by a suitable mask the shrunken gap which is left after the cicatrisation of the wound. I first found how far such an operation can be carried in the case of Mary H., in which I removed all the margin and contents of the right orbit, with the bridge of the nose, and laid a paste of the chloride of zinc upon the freshly cut surface, which still presented fragments of the disease in the exposed portions of the bones. Before the patient awoke from the effects of the chloroform, I injected morphia beneath the skin, and under its influence she remained asleep for six hours, and awoke free from pain. In five weeks the inodorous slough came away, the wound healed, and the patient lived three years in comfort, wearing a vulcanite mask, which was skilfully moulded and painted to represent the defective features. Another patient, who was under the care of Mr. De Morgan, after as extensive an opera-

tion, completely recovered, and afterwards not unfrequently enjoyed a day's shooting.

Such an operation demands a very careful study of the whole of the boundaries of the disease. In a region naturally so complicated as the face, the morbid growth extends in many directions, each one of which requires attention, since a fragment overlooked in the operation is sure to continue to grow, and to reappear in or near the scar.

The advantage of this method of treating Rodent Cancer appears to consist in the completeness of the caustic action of the chloride of zinc. There is no expenditure of it upon the dense margin of the disease, but it acts directly upon the soft textures which are exposed by the incisions. These apparently healthy but really morbid parts are readily permeable by the caustic, and they can be destroyed to any depth which may be deemed requisite. From a fear of augmenting the already great deformity, it is likely that a sufficient quantity of the zinc may not be applied, and, indeed, it is possible to lay on too much. As a matter of fact, however, there is little need to withhold it, except in certain situations, since, notwithstanding the loss of substance due to both knife and caustic, the subsequent contraction of the scar reduces the chasm in the features to a less size than it had before the operation.

The parts requiring particular caution in this use

of the caustic are those near the eye and the brain, the nostrils and mouth. It would be easy to destroy the eye by a reckless application of it, or by so placing the head of the patient in bed that some of the caustic should trickle over the globe. Caution is necessary in this respect, both in having a paste so concentrated as not of itself to run, and in securing it from passing into the nostrils and throat if the moisture of the wound should render the caustic too liquid. The effect upon the brain and its superficial appendages requires a more exact notice.

In almost all the cases in which the chloride of zinc has been applied to the cranium, or to a diseased surface of the dura mater, an epileptiform fit has ensued. This has usually taken place within one or two days of the operation, but it is sometimes later. The ordinary convulsion is slight, the unconsciousness endures from three to ten minutes; after a little sleep the patient regains his usual health, and has no repetition of the attack. Sometimes there has been no fit after the operation, especially when the portion of the skull-cap, though destroyed in its entire thickness by the caustic, has been small. In one case no fit occurred till six days after the operation, and it was afterwards repeated without any certain connection with the state of the wound. On one occasion, in the practice of Mr. De Morgan, after the application of zinc to that part of the ulcerating surface which

lay next over the brain and pulsated, the cerebral symptoms in the night following the operation were extremely threatening. The consciousness of the patient did not return immediately upon the subsidence of the first fit, but he passed into a state of coma and deep exhaustion, alternating with regularly recurring fits, from which he did not rally until after eight or nine hours. He then awoke and took food, but two days elapsed before he quite regained his usual manner and mental vigour.

It is clear, from the state of the brain near the wound or scar in those who have subsequently died, that the fits are not necessarily due to any injurious action of the caustic upon that organ itself. There is sometimes a clear arachnoid space beneath the dura mater, and the membranes and the brain are in the same healthy state near the region to which caustic was applied as they are elsewhere. This was clearly the fact in the case of Luke H., who had no fit till the sloughs were separating, six days after the application of the caustic. His brain was quite healthy, and the zinc was found to have not completely penetrated the roof of his orbit. Upon the dura mater itself the effect is the same, whether the zinc be applied upon its exposed surface or first reach that membrane after penetrating the bone. In either case the epileptiform fits occur within a few hours of the application of the caustic. But from the case just

mentioned and from others which are subjoined, it appears clear that fits also occur when only a superficial layer of the cranium is necrosed. They are then, however, sometimes postponed until the exfoliation of the thin sequestrum begins. Fits came on in Luke H. on so slight an occasion as the puncture of his œdematous eyelid. It is clear, therefore, that irritation of a more superficial structure than the dura mater is sufficient to produce them. They remind us of cases in which fits are induced by touching the skin at the extremities of particular nerves; and though formidable in appearance, they imply no serious affection of the brain.

It is remarkable that the result of this irritation should be so slight and so transitory as it almost invariably is. When originating in a disease of the bone, irritation is sometimes much more injurious than this, and it may even be fatal. I insert among the cases in the Appendix, an example of death from such disease, and also an instance in which the application of zinc to an exposed bit of healthy skull preceded fatal cerebral abscess. That it does not lead to this issue when the chloride of zinc is itself the cause of the fits, is probably due to the complete quiescence of the healthy parts adjoining those into which the zinc has infiltered. So soon as that infiltration is over, there is no longer any irritation, but usually a moderate vascularity, and a quiet detachment of the part which has been deprived of its vitality.

Judged, then, merely by the effects of the operation upon the disease, there can be no doubt of the propriety of removing even large Rodent Cancers of the face by the combined method of incisions and caustics. But when the cranium is involved, and so formidable a result may ensue from the action of the caustic as an epileptiform attack, it is open to question whether it is proper to interfere. The liability to this occurrence is, however, not universal, and the severity of it in those cases in which it has taken place is uncertain. In no case is the patient the worse for the attack, and most commonly it is slight and transitory. Even when, without a previous incision, the zinc is laid upon the diseased and pulsating dura mater, the subsequent fit is not usually more severe or continued than when the application is made to the cranium. In Mr. De Morgan's case, already alluded to, it was, however, extreme in its severity, though the patient eventually recovered from it, left town in a state of comfort, and was afterwards able to go out shooting. Considering the alternative of abandoning these cases without treatment and the satisfactory result when it has succeeded, there is reason to conclude that the treatment is applicable in all persons who are not already reduced, by the long duration and great extent of the disease, to a condition of hopeless general feebleness.

A perusal of the following cases will show that the exhaustion of the patient may be very decided indeed,

before the attempt to remove the disease becomes improper. Notwithstanding hæmorrhage during the operation and the subsequent use of the cautery and the chloride of zinc, the patients usually pass a good night, and the next morning are at ease, without depression, and ready for food. The absence of shock, after these operations, is very striking, even in cases in which I had previously doubted the propriety of operating at all. When the operation is over, the process of healing goes on rapidly, being facilitated by the high vitality of the face, and in some situations by the number of points from which cicatrisation starts. On the side of the head, on the contrary, there appears to be a mechanical obstacle, in the firmness of the skull, to the complete healing of a large sore.

APPENDIX OF CASES.

APPENDIX OF CASES.

CASE I.—*Rodent Cancer of the face, extending into the orbit, and destroying the right eye. Removal of the disease. Recovery.*

MARY H., aged 70, was admitted, under my care, into one of the Cancer Wards of the Middlesex Hospital, Dec. 16, 1861. She was thin, but in good general health. She presented a deep ulcerated excavation between the globe of the eye and the bones at the inner side of the right orbit. The lids were detached by the ulceration from their internal connections and partly destroyed. What remained of them was fixed in the solid outer wall of the ulcer. The eye was shrunken and sightless, having apparently been perforated through the sclerotic by the ulcer. The margins of the ulcer reached the upper and nearly the lower edges of the orbit, and terminated about the mesial line upon the bony nasal ridge. From the level of its edge, the central chasm had a depth of nearly an inch; its breadth was half as much, and it passed backward close to the lachrymal and adjoining bones; none of which, however, were bare.

The disease presented the ordinary characters of

Epithelial Cancer. Dry scab, or pale pink nodules, which could not be called granulations, covered the ulcerated surface. The edge was pale and sinuous, and was everywhere formed by a firm, solid, new material, which increased the soft skin to a thickness of about one-eighth of an inch. A detached tubercle of similar substance, and of about the size of a large pea, existed also in the upper eyelid. There was no glandular disease.

From her infancy she had had a mole on the right side of her nose, situated a little below the inner canthus of the eye. About four years and a half ago this became very sore and rather raised, and a small vesicle formed at its base, which bursting, discharged a watery fluid. The scab became very hard. With the exception of occasional slight oozing, it remained stationary for about two years, and then, gradually spreading with hardness and ulceration, it attained its present state. Having suffered but little pain from it, she had not cared to seek any treatment.

She had usually been healthy, but about two years before her admission to the Hospital she had a sudden fit while in bed, and on recovering she found herself deprived of the use of her right hand. That hand remained permanently weaker than the other, but was not so feeble as to prevent her dressing and otherwise helping herself. Again, before admission she had an epileptic fit, falling suddenly as she stood in her shop. She had no fits in her childhood or at any time before two years ago.

For two months, various local applications were made to the ulcer, and to the parts adjoining it, but with no definite advantage. The disease continued to increase. She was, therefore, ordered minute doses of Donovan's solution of mercury, iodine, and arsenic, and she continued to take that remedy from February 20 to April 14, 1862. Although there did at first appear to be less thickening around the ulcer, yet, in the whole period of this treatment, the disease decidedly increased. A greater extent of the lids disappeared, and the solid deposition which presaged ulceration advanced over the forehead and cheek. But the most serious change in the disease was its progression inward. It crossed the bridge of the nose, and reached within three-eighths of an inch of the inner commissure of the healthy eyelids. This advance, as was evident, threatened the destruction of the remaining eye.

Had the patient been unhealthy, and likely to live but a short time, it might have been little worth considering whether she should undergo any operation for the sake of preserving her sight. But in the opposite circumstances, when the general health was sound, and the prospect of life good, I thought it important to interrupt the progress of the disease, at least toward the sound eye; even though I should be compelled to leave it to its natural course in other directions. The plan adopted was as follows.

On the 23rd of April, nine days after she had ceased to take the Donovan's solution, she was put under

the influence of chloroform, and I made an incision in the healthy skin immediately surrounding the whole disease. The incision was carried beyond the bony margin of the orbit, both on the forehead and cheek, but descended on the outer side through the external remnant of each eyelid. On the inner side, it included all the structures from the forehead to the higher part of the nasal cartilages, and passed down the nasal bones at the distance of a quarter of an inch from the left tendo oculi.

The parts included within this irregular incision were severed from the bones, and, with the globe, the ulcer, and its walls, were excised. The bleeding mostly stopped under pressure; in parts where it continued, it was arrested by the actual cautery and the perchloride of iron.

Upon examining the cavity, it appeared that the disease had not been completely extirpated by the knife. The nasal, lachrymal, and ethmoid bones, near which the growth had first sprung, were perforated in several spots, and prolongations of cancerous disease were found in the apertures. Neither the frontal nor the cheek bones, moreover, were safely divested of the morbid growth, although none of it could be discerned upon them or on their periosteum. Over the whole of the surfaces which could be suspected of being diseased, I accordingly laid cotton-wool spread with a paste of the chloride of zinc, and took precaution against any of the paste, itself, or diluted with blood and serum, passing into the left

eye. Before the patient awoke from the chloroform, I had a minute quantity of a saturated solution of morphia injected under the skin of the arm.

The patient was taken to bed, and slept soundly for several hours. On awaking, she had no pain in the wound. No bleeding took place. The zinc and blood, the tissues and wool all hardened together, and became an inodorous mass, which came away only with the subsequent slough.

On the 24th, she had one epileptiform fit. She lost consciousness for about ten minutes, struggled, foamed at the mouth, and bit her tongue. Upon recovering, she was quite sensible, spoke freely, and complained of pain in the loins. Pulse 96.

The pain in the loins was her only complaint from that time forward. It prevented her from moving, kept her awake at night, and was the subject of loud and seemingly exaggerated complaint whenever she was spoken to. Of her head and of the wound she never complained. Her urine was found healthy, both in appearance and on chemical examination. The seat of the pain shifted from day to day, and it appeared to be muscular. In a few days it was found not to interfere with her sleeping or her appetite; and in the course of a month, it slowly declined, though she continued for all that time vehemently to complain of it.

The entire slough was loosened in about five weeks from the time of the operation, and I had no difficulty in lifting it off. It included almost all the soft

contents of the orbit which had not been removed by the knife, and a circle of bone, of varying thickness, from the whole circumference of the orbit. A part of the orbital plate of the frontal bone as large as a shilling had been detached; and rather more of the floor of the orbit, together with both the nasal bones, and some of the septum of the nose, and of the thin osseous plates which had enclosed the air-cells. No trace of the original disease appeared in any part of the wide excavation disclosed by the removal of the slough.

The cicatrisation of the greater part of the wound was rapid, as it started forth, not only from the skin, but also from many edges of exposed mucous membrane. Only at the roof of the orbit was healing at all delayed.

The gap left by the operation was of considerable size; but less deep than it would have appeared but for the loss of the edge of the orbit. It reached laterally from the ascending plate of the left superior maxillary bone to the right temple, and from the depressed superciliary ridge downwards to about the middle of the body of the right superior maxillary bone and the nasal cartilages. Exposed in the gap were the antrum, the orbital plate of the sphenoid, the pulsating cranial wall in the place of the defective orbital plate of the frontal bone, some ethmoidal air-cells, parts of the three right turbinated bones, and, through the aperture in the septum, some of the inferior turbinated bone of the left side.

The cicatrix and the exposed parts were little sensitive, and not at all painful, when touched; and the local applications rarely even made her sneeze. The forehead, malar region and ala of the nose, and upper part of the right cheek, were numbed; but the upper lip readily perceived a touch. The superior maxillary nerve was, therefore, partly destroyed, the nasal, malar, and frontal wholly.

The method of operating adopted in this case was the combination of excision with the action of caustics, and an inspection of Figure 1. manifests the extent to which parts in this region may be safely removed. The resulting disfigurement gives an exaggerated impression as to that extent and as to the severity of the operation; for much of the area of the cavity which is left was originally occupied by air-cells. Judged by the danger to life which it involved, the severity of the operation lay in the death of the bony plate at the roof of the orbit; and probably the fit on the day succeeding the operation was due to the irritation then suffered by the dura mater. Had that membrane been exposed, instead of being covered, as it was, by a slough mixed with the antiseptic chloride of zinc, the exposure might have been fatal.

Long before the cicatrisation of the wound was completed, Mrs. H. was able to be up daily, and appeared to be in comfort and health. She was not more feeble than was natural at 71 years of age, and she soon was able to walk in the garden. Mr.

Turner, one of the Dentists of the Hospital, moulded a mask of vulcanite, in the form of the missing features, and filled the gap in her face with it. When wearing this, she was able to appear in public without exciting attention, and she habitually attended Divine service in the Hospital. She took cold occasionally, perhaps more frequently than other persons. When catarrh was coming on, the mucous membrane which was exposed to view swelled with remarkable rapidity, being apparently raised by a submucous effusion of serum. All the hollows among the air-cells were quickly filled up, and looked like pale thin bubbles, rather than mucous cells. The aperture in the right antrum, though half an inch in diameter, became completely closed by the œdematous swelling. On the subsidence of the attack, which was usually speedily over, the membrane resumed its healthy, red appearance.

She went on well until Oct. 11, 1863, when she had an epileptic fit, which lasted ten minutes. After resting in bed for a day or two, and procuring some relief of the bowels, which had been confined for the two preceding days, she regained her usual health.

She had another attack Oct. 24, 1864. It was slight, very transient, and unaccompanied by convulsion or foaming. She regained her comfortable feeling, and was up as usual.

On February 12, 1865, she was chilly all the morning; and at half-past two in the afternoon she lost consciousness, frothed a little at the mouth, and

had some slight convulsion of the muscles of the mouth. She recovered in a quarter of an hour, and then vomited freely. The next day (a very cold day) she shivered a little, and felt sick, and her appetite was poor; but she soon recovered. She had no headache.

After this attack she appeared a little less vigorous, and was less disposed to leave the floor on which she was warded. She was, however, always up, free from discomfort, and she enjoyed her food. On the 15th of April she lost appetite and vomited a clear yellow bitter matter. The vomiting continued uncontrolled through the 16th, and she took no food. On the 17th she was greatly exhausted: epileptic fits came on, and she had many of them in the course of the day. In the afternoon her wrists had become pulseless, but she was conscious, and spoke rationally and well. She had neither cold, nor cough, nor heat of head, nor pain, but pallor and exhaustion. Towards evening she became unconscious, and lay breathing noisily, and puffing at expiration. She did not rally, and she died on the morning of the 18th April, 1865, having survived the operation three years, and entered the 75th year of her age.

The body was well nourished, and the muscles red and well developed. The hair was thick and long, and not entirely gray. There were a few freckle-like stains on the insides of the knees; the upper part of the right shin was a little raised, and the surface of the tibia at that part very slightly rougher than

natural. There were no scars in the inguinal regions, nor any glandular nodules. The mammæ were firm, the areolæ perfectly pale; the os and cervix uteri small, and so contracted as almost to be imperforate. The ovaries were shrunken. In the cavity of the uterus was a small recent blood clot, and the lining membrane was injected and somewhat villous.

The aperture in the face was perfectly natural, as it had been since it first cicatrised.

The dura mater was thick and firmly adherent to the bones of the skull. There was much opacity of the arachnoid covering the hemispheres of the cerebrum. The brain appeared shrunken, the sulci were large, and there was much subarachnoid fluid. At the inner part of the right orbital plate and close to the ethmoidal notch, the bone was deficient, and the cavity of the cranium was only separated from that in the face below it by a thick membrane, in which the membranes of the brain, the dura mater, and the scar were inseparably blended. The anterior part of the right central lobe was adherent to this partition. It was firm and yellowish, but otherwise of natural appearance.

After maceration of the skull, the bony surfaces from which the necrosed fragment had been detached during life, were found compact and scored with cicatricial lines. The aperture in the roof of the orbit was bounded by a smooth thin edge of new bone, and was smaller than the piece which had been removed from it. Quite apart from the situation of the osseous

scar and nearly an inch from its edge, there was a ragged aperture in the lateral and posterior part of the frontal bone, more than half an inch in diameter. The diploe of the bone in that situation was deficient to a wider extent than either the inner or outer table; and, except in being less sharply riddled, the appearance of the macerated bone resembled that which is presented after the soaking out of a medullary tumour from the skull. There had been no swelling or tenderness in this region during life, and no appearance of disease when the skull was examined after death.

The arteries at the base of the brain were extensively atheromatous. In the substance of the left optic thalamus was a small cyst, containing serous fluid, but no remnants of clot. On examination with the microscope, the cerebral substance around it was found granular, and loaded with compound granular corpuscles: no blood crystals were visible. The rest of the brain appeared normal.

The pleuræ were normal. The lungs were dark, and the whole right lung and upper part of the left were œdematous. The base of the left lung appeared partially collapsed: it was flaccid, and did not crepitate; its section was smooth, and here and there were small portions which sank in water: the bronchial tubes in it were somewhat dilated. The upper part of the lung was emphysematous. The bronchial tubes were filled with frothy fluid.

The pericardium was normal. There was a white

patch of considerable size on the surface of the right ventricle. The endocardium of the left ventricle covering the septum was opaque and thick, and from this slender, white, fibrous bands passed into the substance of the septum nearly through its whole thickness. They resembled cicatricial tissue, but the muscular substance between them and in the rest of the heart was firm, and natural on microscopic examination. There were patches of atheroma on the mitral valves, and both atheromatous and calcareous plates along the whole aorta.

The intestines were matted together by old fibrous adhesions, and were also adherent to the abdominal wall. They were otherwise healthy. The liver was small, and firm in texture: its hepatic venous system was somewhat congested. The gall bladder held a small quantity of viscid colourless mucus, its duct being obstructed by a small biliary calculus. The common duct was dilated, the hepatic normal. The spleen was small and healthy. The stomach was nearly empty; the mucous membrane near its pyloric end injected. In the sigmoid flexure of the colon a soft polypus, half as thick, and nearly as long as the little finger, hung from the mucous membrane. Except near its root, it was nearly black: its surface was mucous, and its free extremity was its largest part.

The kidneys were small; their cortical substance was rather wasted: the capsules were slightly adherent, and their surfaces somewhat granular.

If this case stood alone, it would be admissible to

refer the whole of the fits which occurred in the last few years of life to the renal disease, except perhaps the first of all, which was apoplectic. But when the cases which follow are also taken into consideration, it can hardly be doubted that the fits observed after the operation were consequences of the application of the chloride of zinc to the skull, and its penetration to the dura mater. Neither those which preceded her admission into the Hospital, nor any which occurred after the healing of the wound, and the complete restoration of the patient to health, can be attributed to that cause.

I may further briefly remark, that this severe operation was well endured, notwithstanding the possible existence of renal disease at the time when it was performed, and suggest the enquiry whether the chloride of zinc prevented the pyæmia, which might otherwise have been expected, by coating the surface with a dry inodorous slough. Certainly the caustic alone proved the means of relieving her of her extensive disease, though the incisions made way for the effective application of it, and the patient lived her natural term unshortened by the cancerous disease. Considering the separate nodule of the disease in the eyelid, and that afterwards supposed to exist in the skull, the title of Cancer may perhaps be allowed, notwithstanding the obscure indications of syphilis which undoubtedly existed in the cicatrices in the heart, the tibial node, and the atheromatous arteries.

CASE II.—*Very deep and extensive Rodent Cancer of the Face, removed by two operations. Recovery. Subsequent death from Bilious Cholera.*

ON my showing the case of Mrs. H. to my friend, Mr. James, of Uxbridge, he expressed a wish to send to my care a man who was suffering from the same disease of the face, and was living as an incurable patient in the Infirmary of the Uxbridge Union. The disease in him being of 13 years' duration, was much further advanced than it had been in the woman, but as it might not be quite hopeless of treatment, I agreed at least to see the patient, and he was accordingly sent to the Middlesex Hospital, May 30, 1864.

He had been a country postman. At the time of his admission, he was 54 years of age, and he appeared to have sound general health. His parents also had been healthy, and both of them had lived beyond 70 years of age. He was, however, thin, cheerless, and enfeebled, partly by the long continuance of the disease, and partly by being insufficiently nourished.

Some notion of the formidable character of the disease may be obtained from an inspection of the photographic drawings, Nos. 2 and 3; but these representations fall short of the reality, as they exhibit only the rugged orifice in the face, the vast cavern amongst the bones behind it not being lighted up and visible. It extended from the brow to the lower

lip, and was formed by the destruction of the greater part of the cheek, eyelids, nose, and upper lip on the right side, and of much of the osseous framework of the face. The entire front of the right superior maxillary bone, and the alveolar ridge of the left one as far back as the second molar tooth, were gone. Nearly all the hard palate was wanting, and only its hinder edge remained, forming a narrow but sufficient support for the velum. The front of the nasal septum was deficient, and what remained of the cartilaginous extremity of the nose had fallen in. The left turbinated bones were partly destroyed, the right ones entirely so; and the loss of the floor and inner wall of the right orbit, with the right half of the ethmoid bone, exposed the soft tissues of the orbit behind the eyeball. The extent of the disease in the direction of the cribriform plate was uncertain. The right eye was uncovered by the lids and the cornea of it was opaque, and the sight dim.

The character of the disease was precisely that of the previous case. Its edge was sinuous and raised, and was formed by a firm and solid deposit in the structures next to the ulcer. A similar deposit thickened the ulcerated septa of the air-cells and thin bones of the nares at their exposed anterior edges. The ulcerated surface was of a pale pink colour, uneven, and firm, like the cutaneous margin, and it bled readily when the dressings were removed from it. In no part did the solid deposit reach a depth of a quarter of an inch; little of it exceeded

an eighth of an inch; for, as it grew on into new and healthy textures, it was followed at nearly an equal rate by an advance of the ulceration. With the extension of the ulcer healthy and morbid structures alike disappeared, but their substance was not represented in its scanty and often scabbed discharge. The bones were not bare and exposed in the ulcer, and did not crumble away in visible fragments; they appeared to be converted and removed, like the soft parts, as the morbid deposit advanced upon them. The thin bones of the nostrils and orbit were more extensively destroyed than the nasal and malar bones; for the disease spreading easily along the mucous membrane invaded them from both sides at once. Mere thickness of bone did not appear to delay its destruction, for a very large part of the alveolar ridge was completely gone. But thickness combined with compactness of osseous structure evidently retarded the disease, as the nasal and the malar bones remained prominent and entire long after the loss of the skin which had covered them, and when the cutaneous edge of the ulcer, in which the activity of the disease appeared greatest, had already advanced an inch or more beyond them. Nevertheless, these bones also were enveloped in the morbid growth, and were gradually, though more slowly, undergoing absorption.

Though resembling Epithelial Cancer with the most exact precision in all the particulars which have been referred to, there were yet characters in which this disease differed from the usual progress of

epithelioma. Throughout its long duration it had not infected the glands. The gland over the masseter and those beneath the jaw, as well as the clusters in the neck, were carefully examined, but no trace of enlargement or hardness could be discerned in them. Moreover, widely as the disease had spread, it was still single, no separate nodules existing apart from the central disease, as they are sometimes found near a scirrhous Cancer of the breast.

The functions of the mouth were materially interfered with by this extensive destruction of it. The man's speech was very indistinct, though not wholly unintelligible. The pad and bandage with which he filled the great hollow served him for a palate, and he made a rude imitation of articulate sounds by raising his tongue against them. When the bandages were removed, he turned back the tip of his tongue to the soft palate, and thus vaguely modulated the vocal sounds. But all his articulation was effected with much effort, and the tone of his voice was shrill, and never sonorous. Deglutition was much more easily accomplished; he placed the morsels of food between the tongue and soft palate, and readily swallowed them. The entire absence of the power of masticating he supplied by mincing his meat before introducing it.

At the first sight of the poor fellow's face it seemed hardly possible that any operation could afford him relief. The extirpation of the whole disease involved a mutilation, beyond that already existing, which

not even the encouraging success in the case of the woman appeared to justify. At that time also his general feebleness precluded any operation. And, further, the limits of the disease behind the eyebrow being uncertain, I could not be sure that the brain would be beyond the reach of injury in that part of the operation which would have to be carried into the frontal sinus and amongst the higher air-cells of the ethmoid bone. Accordingly, I postponed the question of the operation, and endeavoured, by quinine and good diet, to improve his health, carefully watching, also, for symptoms which might indicate the extent of the disease towards the brain.

In the course of the following three weeks his state improved. He gained some strength, and he presented no cerebral symptoms; moreover, there was no reason to conclude that the solid growth everywhere skirting the ulcer extended further behind the brow than it did in any other part of the face, and it became probable that the brain and its membranes were still free from it. But as, during the same period, a slight advance of the external part of the disease occurred, and the same increase was probably going forward in the parts which were concealed from view, it became evident that the operation, if done at all, must be done speedily. Having the concurrence of my colleagues, Mr. Shaw, Mr. De Morgan, and Mr. Nunn, I determined to proceed with it at once.

There appeared to be no object in deviating from

the general principle of the operation, which had been satisfactory in the previous case, but it needed to be modified in two particulars. One of these was the employment of a smaller quantity of the chloride of zinc. The ulcer having laid open the cavities of the mouth and nostrils, it was necessary to apply the caustic cautiously. Instead of laying a large quantity of the paste in the cavity at once, all the lower parts of the disease could only be lightly touched with the solid zinc, which would probably require to be reapplied daily after the main operation. All the more, therefore, it was necessary to remove the morbid parts as completely as possible with the knife and cutting pliers. The other modification related to the extent of the operation.

In his surgical Lectures, Mr. Skey was in the habit of repeating an account, which had been given by Mr. Abernethy, of a man whose face had been crushed off by a wheel. The man was not otherwise injured, and the brain and cranium were unhurt. But, in the place of a face, was a huge lacerated wound, presenting a sight so ghastly that the nurses fainted, and no one could look on it unmoved. Though not insensible, and though the injury involved a part not vital, the poor creature lay and died within a very few hours of the accident.

This death was due to shock; and I was forcibly reminded of it in contemplating the formidable extent of the disease in my patient's face, and of the operation which would be necessary to remove it.

The incision in the skin alone could not be less than eleven inches in length, and, in addition to this, every separate spot of disease amongst the bones of the face would need to be separately removed. It appeared advisable, therefore, to perform but half the operation at one time, and to allow an interval for his entire recovery from the first portion before proceeding with the second. The slow progress of the disease seemed likely to permit this interval to be a long one. The part of the disease which approached the brain would need to be removed in the first operation.

June 22.—After the administration of chloroform, I made an incision in the healthy skin bordering the diseased across the forehead, down the left side of the nose, and through the upper lip about midway between its middle and the left corner of the mouth. By breaking, with bone nippers, the ascending process of the left superior maxillary bone, and the nasal bones at or near their connection with the frontal, I was able to remove the whole of the upper and left margin of the ulcer. The body of the left superior maxillary bone was thus exposed, and was found to be covered with cancerous granulations. This diseased part was continuous across the ulcerated front of the bony palate with that on the right side of the face, but the nasal mucous membrane and the turbinated bones were not extensively diseased. Partly by dissection with the knife, and partly with bone nippers, I removed the morbid growth from all

these exposed parts, in one place opening the antrum. On examining the ulcer towards the cribriform plate, I found that the disease had not perforated the cranium, and that the air-cells of that region had been almost cleared of the disease in detaching the nasal and adjoining bones. I then removed the right eyeball and the diseased portions of the eyelids. The soft orbital tissues behind the eyeball were exposed in the ulcer by the destruction of the inner wall of the orbit, and were cancerous. These, therefore, I removed with the globe. There remained all the disease in the right side of the face, but this I determined not to remove at the first operation. The man's strength, indeed, had not flagged, and the hæmorrhage had been moderate, requiring the actual cautery only in the neighbourhood of the palate. He had not, however, been kept fairly under the influence of the chloroform through the latter part of the operation, and I feared the shock which might ensue if the operation were prolonged. I accordingly touched various parts of the surface which had been incised with chloride of zinc, wherever there was any doubt of the entire thickness of the disease having been removed, laid a paste of the chloride spread on cotton-wool on the orbital and adjoining structures behind the eyebrow, and then filled the cavity with wet lint. Some care was required to prevent the dissolved zinc from trickling over the palate. Before he left the table, half a grain of the acetate of morphia was injected under the skin of his arm.

23. No hæmorrhage or sickness took place, and he soon went to sleep. He swallowed brandy and beef-tea easily, and had a very good night, sleeping fairly, and suffering very little pain. In the morning he described himself as feeling comfortable by a highly jocular expression. The left cheek was somewhat red, and the eyelids a little œdematous; his palate was tender, but he swallowed plenty of liquid. He complained, however, of the change in his palate as inconvenient, the quarter of an inch or less of its anterior diseased edge which I had removed being a serious loss to him in deglutition. He said that nothing trickled back from the nostrils to the pharynx, and that the fœtor of the dressings did not annoy him, as he had no sense of smell. I removed the dressings, touched the palate again, and other parts of the wound, with the chloride of zinc, and renewed the application of wet lint.

24. He continued comfortable. There had been intermittent stinging pain from the caustic until midnight, when he slept. It was again applied in a few places.

26. Wished to get up, and was allowed to do so. Was up an hour.

27. Little further attention was required beyond removing the sloughs as they became loose; and as much of his comfort depended on minute arrangements of the bandages, he was allowed to resume the dressing of the wound for himself. He was up daily, took his food readily, and recovered strength.

Throughout the month of July and the first half of August, his health greatly improved; he became vigorous and hearty in manner, and seemed little like the feeble and dejected person he had been on his arrival at the Hospital in May. The wound on the left side of his face had all soundly healed, and no disease had reappeared in any part of it. On the right side, the thin undermined skin of the cheek sloughed and came away, and the solid margin of the ulcer spread a little in all directions. The greatest change, however, was in the upper eyelid, which, with the orbital tissues behind it, became œdematous. He complained repeatedly of discomfort in this eyelid and in the malar region, and on the 18th I made two punctures in the lid.

August 19.—He was seized this morning with convulsive twitching of the face, and muscles of the body generally, and was insensible for five minutes. There was at the same time a little hæmorrhage from the right upper lid, which had been punctured yesterday. There was no foaming at the mouth. A cold lotion was laid on the forehead, his diet and stimulants were reduced, and his bowels were opened with a saline draught. He lay in bed for a day or two, and then rose again daily as before.

September 5.—He has had no further sign of an affection of the brain, neither head-ache, nor giddiness, nor return of the fit, nor loss of sleep or of appetite. His vigorous and hearty manner has returned, and he goes up and down stairs briskly. The eyelid con-

tinues œdematous, and gives him discomfort. The orbital tissues behind it are much more bulky, and seem as if infiltrated with newly-grown cancerous substance. Their actual condition cannot be seen, but if their increase be due to a cancerous growth, the advance of the disease in the orbit must have been more rapid than in any other part, or at any previous period. This swelling, however, and the fit on the day after the eyelid was punctured, point to the possibility of a hernia cerebri having taken place through the orbital plate, and of its having been punctured with the eyelid. The vigour and natural manner of the man, nevertheless, render this explanation of the fit and of the tumefaction of the orbital tissues very improbable. Whether the growth has really perforated the bony roof of the orbit cannot be discovered before the second operation; but there is no swelling or tenderness of the forehead, and the opening of the frontal sinus which was produced by the first operation is distinctly seen at the top of the great cavity, and is healthy. No disease has recurred in it since the slough came away from that part.

I made an incision through the skin of the œdematous upper lid, and turned it up from the cartilage to the frontal ridge. I then dissected along the roof of the orbit to healthy tissues, and removed those which were diseased. Finding no perforation of the bone in that part, I proceeded with the operation. I divided the skin behind the malar bone at the limit

of the disease, and removed the diseased part of that bone. This opened the temporal fossa, and exposed a part of the temporal muscle. Still following the limit of the disease, I carried the incision down the cheek, and then upward through the lower lip a quarter of an inch from the corner of the mouth. At the lowest part of this incision, the disease was prolonged round the facial artery further than in the skin and mucous membrane. I therefore cut it out more freely, dividing, as I did so, the facial and coronary arteries. After removing the remaining morbid parts on the right of the nostril, I touched the bleeding points with the actual cautery, and laid the chloride of zinc paste on the greater part of the exposed surfaces. Half a grain of morphia was injected under the skin of his arm, and he slept on without awaking from the chloroform. The chloroform was given more conveniently and efficiently at the second than at the first operation. He was brought under its influence in the ordinary way, but during the operation the vapour was injected from an india rubber bottle into the cavity in his face as often as he drew breath. He lost about 10 ounces of blood during the operation, and in the evening some hæmorrhage recurred, and was arrested by ligature.

6. He had no pain in the night, and he slept. Towards morning he was sick, and after that had moderate uneasiness and little swelling. He was quiet, and had no head symptoms.

7. He is pale, and has pain about the forehead

and malar region. The left eyelids are a little œdematous. The wound is covered with black, dry slough. Pulse slow and feeble.

8. Still paler. More headache and swelling. Food and brandy increased.

9. Headache gone. Less pale, and less feeble.

10. The sloughs separating. He had no pain, and wanted to get up, which was not allowed.

11. Last night he had an epileptiform fit, which lasted about five minutes, and after the interval of an hour a second fit of about the same duration. To-day he is apparently as usual, except perhaps in being less disposed to get up. He is perfectly natural in manner and speech. He has been sitting up in bed, writing a letter; he has no headache or heat of head, but he speaks of a constant beating in his right ear, and his conjunctivæ are very pale. Pulse 78, soft and small. He is less pale than he was three days ago. Takes chicken, beef tea, eggs, and stimulants. Some ether, ammonia, and bark were ordered for him.

12. Easy and better. The beating in the right ear is less. Some of the slough was removed to-day. Ordered a chop.

14. Pil. Quinæ cum Ferro ter die.

16. He had a very slight convulsive fit last night, lasting not more than half a minute. He appeared to be but half awake, and the attack amounted to little more than tremulous twitchings of the limbs. The sloughs were removed, except in the orbit, where

a square inch of the orbital plate was seen to be necrosed.

20. For several days past he has dressed the wound himself, read the newspaper, cut up his meals, and resumed his natural prompt and independent manner. He is allowed to get up to-day.

28. He had another brief epileptiform fit. The muscles of the body generally were slightly convulsed. He had no foaming at the mouth.

October 6.—He walks out daily and recovers strength, though he is still pale. Cicatrisation advances rapidly over the sore from many parts, and fragments of dead bone are occasionally removed, but that at the roof of the orbit is not touched. The man manages to smoke a pipe.

31. Fragments of bone were removed from the superior maxilla and orbital plate of the sphenoid; and none now remain except that at the roof of the orbit. It is overlapped all round by granulations, but is seen dry and white amongst them. The man's recovery of health, and vigour, and colour, is very marked.

November 14.—A loose fragment of the orbital plate of the frontal bone was easily removed to-day: it was nearly an inch long, $\frac{3}{8}$ths of an inch broad, very thin, and entirely rough on its upper surface. Little of the wound remains to be healed; a spot of the size of a shilling at the back of the antrum, and the part from which the dead bone has just been removed. The skin of the cheek is forcibly drawn inwards, and

lessens the gap in the face so much as greatly to diminish the apparent enormity of the operation. The man has become quite fat, hearty, and strong. Observing that he was taking a large quantity of food; a steak, two pints of strong beef tea, three eggs, a pint of bottled stout, four ounces of wine and three of brandy daily, I altered it to ordinary mutton diet with suet pudding, one egg, one pint of beef tea, and the stimulants. For the last fortnight Mr. Bell and Mr. Turner, Assistant Dentists to the Hospital, have been engaged in making a mask to fill the gap, and to supply him with a new palate and upper teeth. The improvement in his articulation when the latter part is in place is very marked and immediate. There is a diminution in the mobility of the lower jaw, which moves up and down through about half only of its natural extent. It arises from the vertical shortness of the cicatrix in front of the right ramus of the jaw, and is likely somewhat to increase as the scar contracts. Though mastication would thus be impeded, the Dentists are satisfied that they can overcome any difficulty which may arise from this cause.

On the 16th, the day following that on which the fragment of bone was removed, and the change was made in his diet, he had severe diarrhœa. He felt ill, and remained in bed; and when asked as to his feeling pain, he beat his epigastrium. His tongue was rather dry. That night he vomited, bringing up even his brandy.

About 6 in the morning of the 17th, he had a fit

which lasted two minutes, and affected only his face.

He remained drowsy and feeble, and was again pale. His diarrhœa ceased, but he took little nourishment, and at length refused beef tea and brandy. He passed no urine all the day. Towards evening he became excessively feeble, restless, sighing, and tossing from side to side, and his breathing was frequent, deep, and accompanied with sibilus. His abdomen was full and tense; his pulse rapid, and scarcely perceptible at the wrists. He did not wander, but he appeared too much occupied with internal distress to give an account of himself. He indicated, however, that he had headache, and he repeatedly removed the dressings from his face, and breathed with the cavity exposed to the air. His head was cold and pale; the granulations at the highest part of the wound were œdematous and almost transparent. There was no urine in his bladder. Stimulants were administered, as far as possible, by the mouth, as well as in an enema, but his exhaustion increased, his pulse became imperceptible, he lay back quiet, except for slight twitching of the muscles of the forearm. The moment of his death was uncertain.

The body was not completely examined. Among the chief circumstances which were noted in it after death were fullness and distension of the abdomen by a large quantity of fat and of intestinal contents, some vascularity of the bronchial tubes, and an over-

loading of all the tissues, and especially the muscles, with a greasy kind of fat. The heart was remarkably pale and fatty.

Except pallor, the brain presented no unnatural appearance. There was not an unusual quantity of water in the cavities, and there was no adhesion, thickening, or special vascularity of the right anterior lobe of the cerebrum. The dura mater covering the right orbital plate of the frontal bone was entire, and not different from that of the opposite side in thickness, colour, or vascularity. Both were indeed somewhat red on the arachnoidal surface, but they were equally so, and the deepest hue, which was near the anterior clinoid processes, was symmetrical. The redness was not that of recent inflammation, and, without being especially looked for, would not have attracted notice. It appeared to be seated in a thin film of whitish old lymph of loose texture. The orbital plate of the bone immediately beneath the dura mater was entire.

The photographic figures, 4 and 5, taken by my colleague Mr. Heisch, exhibit the appearance of the face after death. Nothing is more remarkable in them than the diminution of the size of the aperture since the second operation. With the healing of the wound a new process commenced, viz. cicatricial contraction. Nothing of the kind took place during the progress of the disease, and the little of it which followed the first operation, rather enlarged than lessened the cavity, for it was limited to drawing

upwards the left extremity of the upper lip. In a vertical direction it was not possible that there should be much alteration, the boundaries of the aperture being the brow and the lower lip. The gap between these two parts measured three inches. But, during the cicatrisation on the right side, the skin was drawn forward and inward more than an inch and a half, and the measurement across the aperture in the face was thus reduced to two inches.

No trace of the original disease remained. Except in two small spots, the wound was healed. The frontal sinus remained as it was before the second operation, and those air-cells which are partly formed by the orbital plate of the frontal bone were also open in the highest part of the cavity, being exposed by the removal of the last thin fragment of bone from beneath them. They were all healthy, and the plate of bone between them and the cranial cavity was entire.

The operations for the removal of this disease thus entirely succeeded. All the morbid structures were removed, and cicatrisation was nearly completed. When thus there was every prospect that he would survive for some years, demonstrating to what an extent operations in these parts might be carried with advantage, his life was cut short by a cause independent of the operations. He appears to have died from a rapid exhaustion of the power of a fatty heart. Somewhat suddenly enfeebled by vomiting and diarrhœa, compressed by distension of the abdo-

men, and possibly further interrupted in its function by the early congestion of a catarrhal bronchitis, the heart seems to have failed beyond the power of stimulants to recover it. The slight epileptiform fit which occurred in the last illness had nothing fatal in it, being much slighter than had occurred in him before, whilst it was also such as might arise from, but not produce, the exhaustion of his last hours. The disturbance of the digestive system, which initiated the fatal symptoms, appears to have commenced with the last alteration of his diet, and to indicate the extreme care which is necessary in the selection of articles of food for a person deprived, as he was, of the proper organs of mastication.

Case III.—*Extensive Rodent Cancer of the Face. Operation. Recovery.*

George W., 59, was sent to me from Congleton, by Dr. Beales, August 31, 1865. In the middle of the face was a vast ulcer, laying into one cavity the nostrils, right orbit, and mouth. Its highest part was narrow, and reached a little above the level of the eyebrows: its lowest part was formed by a deficiency of all but the outer half-inch of the upper lip on each side. In the interval it extended from within a quarter of an inch of the left tendo oculi, across to the middle of the right lower lid. The entire nasal part of the face was gone, with the inner part of the right orbit; and the globe of the right

eye, covered only by some thin cellular tissue and conjunctiva, was exposed. It was, however, movable and healthy. See Figure 6.

The character of the disease was that of a solid deposit in the natural tissues, advancing in one direction, viz. towards the healthy structures, and followed so closely by ulceration, or degeneration of the mixed deposit and tissue (if, indeed, any tissue remained), that the edge nowhere reached the thickness of a quarter of an inch. The cutaneous margin was thus thick, and the anterior edges of the bones in the nasal cavity. The tissues exposed in the orbit were thinly covered with the morbid growth, and not contracted. Their surface secreted and discharged pus in small quantity, which being in the current of the breath, formed scabs. Both parts of the divided upper lip ended in a contracted scar, but they were thick and firm, seeming to be filled out by some of the morbid deposit. The teeth were nearly all gone from the upper jaw, though only the front of the alveolus was destroyed by the disease.

The man looked robust. He was short and thick-set, and what remained of his face was well-nourished and ruddy. Nevertheless he said he had much difficulty in accommodating his stomach, and could not digest any but light food. Whenever he had gone into a hospital, he was soon made ill by the air and confinement, and was speedily obliged to leave it.

He had had the disease twenty-six years. It had begun on the right side of the nose, as a small red

pimple, in a pit left after an attack of small pox, which occurred in his infancy. It spread in all directions, and it had never entirely healed, although he had undergone treatment when it was smaller, and had had it nearly well for more than a year afterwards. Three years ago, during the Exhibition in 1862, the ulceration was not larger than a half-crown piece, but it had lately extended with comparative rapidity, and about Christmas 1864, had split open the lip. His exercise, general health, and work were not interfered with, and he had supported himself, was married, and had a large family of children since the disease had begun.

The most comfortable application to the ulcer proved to be a mixture of glycerine and starch.

September 4.—I removed all the solid deposit by galvanic cautery. The trench sunk by the hot platinum was even, dry, and black. I could not remove the diseased parts of the nostril with it, or those near the globe of the eye. These I partly cut away with scissors, and then over the whole surface applied chloride of zinc paste. He was not under the influence of chloroform during the latter part of the operation.

The operation was followed by pain, and by much swelling of the adjoining parts of the face and forehead. He took little support, and had a good deal of pain and little sleep; and on the 7th, for some short time he seemed to be somewhat uncontrolled in mind, wishing to go home instantly to Cheshire, by train, without having his wound dressed, and refusing all

interference. I felt it necessary to prevent his doing this, and ordered a male nurse to watch him. He slept that night, and awoke rational and refreshed, and took food. The sloughs then began to separate, and he rose and went about the garden. On the 11th some large pieces of slough were detached, and healthy granulations appeared underneath them; and on the 14th he was allowed to return to Cheshire, being quite well again in himself, and able to attend to the dressing of the large wound. The only part in which it appeared doubtful if the whole disease had been removed, was at the inner and back part of the right orbit near the globe of the eye.

November 23, 1865.—By the direction of Dr. Beales of Congleton, W. showed himself at the Hospital to-day. He said that his journey down had tried his strength, and that for about a month afterwards he had kept his bed. He did not yet feel mentally recovered, and was sometimes giddy if he exerted himself. He had, however, no headache, or other head symptom, and he struck his head forcibly with his hand to demonstrate his sense of its soundness. He had latterly resumed light work, and was capable of doing it, but greater efforts, and the journey of yesterday (160 miles), were too much for him. He felt more than usually tired, and he was troubled with cold caught yesterday, in the exposed right eye. Nevertheless he was stout and well nourished, and he looked healthy.

The aperture in the face had remarkably contracted,

and there being very little scar the cheek was drawn forward to the edge of the bones. The same process had, however, a little widened the gap between the parts of the upper lip which, in adhering to the bones, had retracted. The alveolar part of the upper jaw was thus exposed widely, and covered with red cicatrix. At the left side the canine tooth hurt his lower lip. Cicatrisation was complete in all but the former site of the nasal spine of the frontal, and about the front of the right maxilla, where some dead bone still adhered. Even the parts behind the right eye seemed sound; but the eye itself had a scab adhering to the inner and lower part of the cornea, and surrounding grey opacity. Above this the cornea was clear, the pupil was distinct and contracted, and the anterior chamber contained natural fluid. The upper lid, which was nearly entire, was firmly fixed to the inner part of the superciliary ridge, near to the right edge of the ulcer, but without thickening by disease. The outer remnant of the lower lid was turned downward, and involved in the margin of the scar below. Between it and the globe there was a great livid soft chemosis; the conjunctiva being inflamed with yesterday's catarrh, and much swollen. I pulled off the scab from the cornea, but that membrane, though ulcerated, was not yet perforated. The sight of the eye was much impaired, and as it could not get better, I proposed to him that he should have it removed. He assented, but wished it done without chloroform. Before operating I sent him to Mr.

Turner, that he might consider if any further preparation were necessary to fit the face for a mask.

24. He took chloroform, and I excised his right globe. I also removed the lower lid and its mucous membrane, and attached the upper lid to the adjoining part of the cheek. This lessened the deformity. He did well, and left the Hospital five days after the operation. Before he returned to Cheshire, Mr. Turner made him an admirable mask. See Figure 7, and the contrast in the same man's appearance as shown in Figure 6.

July 7, 1866.—He has a small concave ulcer at the inner corner of his remaining (left) eye. It is pale, and without granulations, and its hard margin involves the inner extremity of each lid. The front of the inferior turbinated bone is covered with scab, and appears likely to be ulcerated. The front of the right superior maxillary bone, where exposed, is pale, and covered with slightly elevated separate granulations, which bleed when roughly touched.

All these I removed, either by caustic, or by knife and chloride of zinc combined.

I saw him at the Chester Meeting of the British Medical Association, August 1866, with the parts nearly healed. His health and vigour were good; but in May 1867, I was informed by Mr. Solly that W. had died in the previous month. The report was that 'some vessel on the brain was affected, and gave way.'

CASE IV.—*Rodent Cancer of the Forehead, perforating the Cranium.*

AN emaciated cheerful woman, of 73, sent me by Mr. Henry Lee, was admitted into one of the Cancer wards early in 1864. She had one ulcer covering the whole forehead, nose, parts of the eyelids, with the conjunctivæ near the inner canthi, and the cheeks. All these parts retained their form, and looked as if they had been flayed; for the ulcer was very shallow and had but a thin edge, and the nose and lids did not fall in. One eye, however, which was involved in the disease, was shrunken and sightless. She sank, after a few days of exhaustion, early in April.

At the P.M. examination the frontal bone was found perforated and necrosed; white solid substance was lodged in parts of it, and the dura mater and bone near the crista galli were separated by a mass as large as the surface of a florin, and nearly one quarter of an inch in thickness. The aspect of this morbid mass was distinctly cancerous; it was soft, juicy, and white, and under the microscope it showed numerous nests of large nucleated cells, resembling pavement epithelium; many of them forming large mother cells, with others in their interior, and looking like the section of an onion; many fragments of cells and nuclei; very distinct round dark granular cells, and oil.

The appearance after death, when the superficial granulations were dried, was that of what is commonly called a Rodent ulcer, without solid deposit; but the deeper part showed it to have been epithelial.

There was not a trace of disease in any gland. Those on the masseters were not in the least enlarged, and those in the neck were also perfectly healthy. Nor was Cancer found in any internal organ. There was an adherent clot-cyst with puce-coloured and puriform contents in the right external iliac vein, and œdema of the right leg and foot. The thyroid gland contained spherical tumours, resembling the rest of the gland substance. One of them was encircled by so distinct a yellow wall that, on section, the tumour looked like an ovarian Graafian spot after escape of the cell.

CASE V.—*Rodent Cancer, perforating the Cranium, and deeply excavating the Brain.*

A WOMAN, advanced in years, died in the Middlesex Hospital with a vast cancerous ulcer of the forehead, left temple, and adjoining parts of the upper eyelid and nose. Its cutaneous edge was everywhere thick and abruptly raised: its surface was formed of uneven masses of solid morbid deposit, here and there covered with plates of dead bone, and nowhere with healthy granulations. The scalp having been destroyed, the morbid substance lay close upon the frontal and nasal bones, except in the left of the forehead. At that part the bone was gone, and an aperture existed, measuring two inches vertically by $1\frac{5}{8}$ths horizontally. Within this aperture, and thus inside the level of the frontal bone, a cavity of the size of half a hen's egg lay exposed. The walls

of this cavity were pretty regularly concave, and they appeared to be formed of brain substance, infiltrated with the same solid material as elsewhere composed the base and margins of the ulcer, the actual surface of the cavity being similarly soft and uneven. There remained no trace of the frontal sinuses, which were filled with the morbid deposit.

On making a vertical section through the cavity and the adjoining parts of the skull and brain, it was found that the anterior lobe of the brain was destroyed nearly to the front of the ventricle. The base of the cavity was formed of firm material, from one to four lines thick, to the posterior part of which the brain substance, partly granular and partly in long stretched fibres, adhered. The morbid substance did not appear to be widely infiltrated through either the brain or the bone, but it reached between them along the dura mater to the extent of a quarter of an inch. There was no disease or even adhesion of the coats of the brain, except in the immediate neighbourhood of the base of the ulcer.

This case was reported by Mr. Shaw to the Pathological Society in 1849, under the title of a 'Cancerous Ulceration of the Integuments of the Forehead,' and from his account it appears that the patient had been long subject to epileptic fits, and at one time had been affected with insanity. When she was admitted, the ulceration had reached the bone, and by degrees a circular portion larger than a crown piece was eaten away. Under the ob-

servation of the attendants, the process of destruction went gradually deeper, until it reached an inch into the substance of the brain on the left of the falx cerebri. She lived for two months after the disease commenced in the brain, and she died from gangrene of the right lung. It is remarkable that till the day before her death, except one or two epileptic attacks, similar to those which had previously occurred, she had no symptoms of cerebral affection. Her mental faculties remained unclouded and apparently unimpaired until the time of her actually dying.

Dissection showed the brain to be sound, except in the neighbourhood of the cavity. Figure 8 represents a section of the excavated cerebral lobe. Under atmospheric pressure, too great for the brain of an aged person to resist, the solid growth has assumed a concave form.

CASE VI.—*Rodent Cancer, exceeding thirteen years in duration, and extending over the right side of the Head and parts of the Face and Neck. Permanent destruction of parts of the disease by cautery. Improvement by general treatment.*

M. W., A BRICKLAYER, was in the Hospital under my care in 1862, having a shallow ulcer on the right temple, spreading in all directions; its edge was solid and raised. It was treated with the chloride of zinc used as a caustic; and on the separation of the slough it was cicatrising, and seemed likely to

heal over completely. An attack of erysipelas then came on the head, and so reduced him that before it was well over he was urgent to leave the Hospital. He did not appear again for eighteen months, when he was readmitted, January 5, 1864. He was then sixty-five years of age, much reduced in strength, somewhat emaciated, and suffering pain, chiefly about the pinna of the right ear. He had a decided arcus senilis, and thin grey hair.

At the time of his readmission he had two cicatrising ulcers of about the size of a shilling on the right temple. The cicatrix around them reached as far as the cheek. A third ulcer above and in front of the pinna had a thin, abrupt, firm, solid, cancerous edge. This sore was ulcerating. In its extension backward it had destroyed about half the attachment of the pinna of the ear, which consequently hung only by its lower and posterior part. The right occipito-frontalis was completely paralysed, and the right eyebrow on a lower level than the left.

His health was always good until twelve years ago; the disease then began as a small pimple on the right temple. He scratched it, and an open sore formed, which never afterwards healed. Six years ago he was struck by a plank on the sore, which thenceforth more rapidly extended.

April.—Some sloughing took place.

May.—Erysipelas of right temple and forehead above the right eyebrow. Two enlarged and tender glands in the neck.

Sloughing of lower half of pinna, which is black. The ear was amputated.

During the year 1864, all traces of the scars disappeared, and the disease took their place, and extended in all directions until it reached from the mastoid to the malar, and corresponded in shape with that of the temporal fascia. The sore, however, was the less extensive, its curved upper edge being an inch and a half below the attachment of the fascia to the parietal bone. The process of ulceration was limited to the superficial tissues; the temporal fascia was not involved in it, but lay permanently exposed, with the exception that it was thinly covered with a few granulations. The edge of the sore near the meatus and mastoid gave the patient much suffering, which was only increased by the application of steam.

January 5, 1865.—A gland two inches below the right mastoid process is somewhat enlarged and firm. There is also slight enlargement, without firmness, of a gland in the right subclavian triangle. The pain of the sore is less, but is still severe. Cicatrisation has recommenced at several parts of the edge, at the meatus, and at one point in the centre of the ulcer. The granulations of the sore are not morbid, but are dragged out into strings with intervening hollows by the useless contraction of the cicatrisation. The structure of the temporal fascia, still undestroyed, can be discovered in these hollows. For some time past the marginal solid deposit has been advancing to the external angular process and into

the orbit. The eyelids are dragged outwards, shortened, and straightened. They are also separated from one another, and the lower is slightly everted. The eye is consequently permanently open, and the conjunctiva inflamed. At the back of the ulcer the scalp is a little dusky, tumid, and undermined, but cicatrisation is going on at that part also.

February 1865.—The pain which this man suffers is very severe; it is almost constant, but is frequently increased to an almost unbearable degree. He usually refers it to the whole surface of the sore, but sometimes to the meatus and region of the mastoid process, and of late much of it has depended on the advance of the disease toward the orbit and pressure on the eyeball. The entire surface of the sore is apparently formed of the temporal fascia, which is covered with some granulations, and has never been perforated. The superficial nerves are destroyed, and their extremities are in the solid deposit forming the lower edge of the sore. If the pain be not a rheumatic affection of the temporal fascia, it is most probably produced in the diseased ends of the nerves, and referred by him to their former distribution.

Strychnia, gr. $\frac{1}{60}$, and gr. iij. of bismuth, restored some of his long-lost appetite.

March 6, 1865.—For the last five days W. has had erysipelas, which started from the wound and spread over the face. He is much reduced by it, but no suppuration has taken place, and to-day there remains but little redness on the nose and on the

occiput, which is still tender. Every trace of the solid disease has been removed by it, except a small part of the edge above, below in front of the meatus, and at or a little behind the meatus. He cannot bear medicine well, being rendered wild by morphia; I gave him only vin. ferri. The gland over the splenius, which had rather lessened, has trebled its size.

23. W. has greatly improved since the subsidence of the erysipelas, and the administration of cod-liver oil. His appetite has been quite keen, such as he has not had for years. The ulcer is healing nearly all round, there being cicatrisation even underneath the thickened posterior part over the mastoid process. Disease is still manifest in some unnatural granulations at the meatus and in necrosis, ulceration, and pain at the external angular process, and in the orbit. The gland over the splenius continues enlarged, but slightly so, and less firm. It is so set in and attached to the other tissues as not to be movable.

May 1, 1865.—For the last week, W. has been suffering severely again; at the same time, the marginal solid deposition has increased, and ulceration advanced. This deposition did not occur at the margin of the ulcer, which is now the new cicatrix, but at the part where it was, so to speak, interrupted by the erysipelas, viz. along the line of the old skin, now separated from the ulcer by the new cicatrix. Neither, as it spread, did the deposition destroy the scar, but advanced in the skin only. And when the ulceration which succeeds the deposit, began again, it also

started from the edge of the skin, and soon formed a trench, cutting off the new scar from the yet more recent solid deposit in the skin around it.

June.—During the last two months W. has begun to complain of pain again, and the ulceration has extended. The pain is not equal to that which he suffered before the last attack of erysipelas, but still it is severe. The ulceration is peculiar; it is little altered, and very slow at the upper curved edge, but advances chiefly at the lower part of the sore, which is thick, precipitous, and tender: as it spreads, more and more of the masseter becomes exposed. The parotid duct still lies on the muscle, but it is shrunken, and has a small thin scar at one part of it. It seems also to be perforated, as the moisture on the sore is more abundant than usual, particularly when he is at meals. The quantity of saliva secreted by the gland is probably less than is natural, as much of the superficial portion of it has been destroyed by ulceration. In one or two parts of the surface of the sore there are now pitted spots at which the ulceration seems at last to have perforated the temporal fascia. The condyle of the jaw is also prominent in the wound, though not necrosed, and the state of the muscle and the articulation is not such as to prevent his eating steak for his dinner. The most important increase of the ulcer is in the meatus, which is more than half filled with granulations, and in which the pus has a slight pulsation. The whole right occipital region is dusky, and a little tender. The gland

over the splenius remains enlarged, firm almost to hardness, and adherent to all the tissues except the skin. It gives the impression of its being the seat of a firm deposit similar to that forming the edge of the ulcer; that it is, in fact, cancerous.

With the object chiefly of arresting the progress of the ulceration towards the ear and eye, I gave this man chloroform, and applied the galvanic cautery. The battery was prepared by my colleague, Mr. Heisch, who, with three cells, readily heated a bent platinum wire. By the prolonged touch of this wire, a trench was sunk around nearly the whole ulcer. It was found advisable not to use the wire in an incandescent state, as the high temperature brought on bleeding, which delayed the operation. If the wire were kept in contact with the skin, its temperature remained dull, and when it was drawn slowly along, a black dry trench was immediately formed, which could be carried, without force or pressure, in any direction, and to any depth. The granulations forming the base of the ulcer, all the diseased structure which could be reached near the meatus, and that about the eyelids, were charred with the wire. The granulations bled inconveniently, as it was not possible to expend the heat upon them quickly enough to close the vessels with coagulated blood. When the whole surface had been treated, it was covered with cotton-wool, with the view of closing the wound with dry materials. Morphia was injected under the skin before the patient awoke from the chloroform sleep.

He did not sleep, and in an hour there was a little hæmorrhage, but by the evening he was sufficiently at ease to eat and relish his steak.

6. He passed an uneasy night, from pain about the head and from the morphia, which always makes him restless; and to-day he complains of stiffness and heat of the head. The cheek is red near the wound, but the scalp is cool; he is but little feverish.

7. The importance of avoiding hæmorrhage while using the cautery is manifest to-day, as the dressings are soaked with softened blood-clot, and almost all the surface of the ulcer is moist and discharging. The edges are everywhere formed of black eschar. He makes no complaint of pain, and he slept well last night. He is, however, much annoyed by the fœtor of the dressings.

10. Doing well. His appetite fails, apparently from the fœtor of the sore during the present hot weather. Some delirium last night seems to have been due to the use of stramonium ointment for the sore, as he feels uncomfortable to-day all over, and has some dilatation of the pupil.

26. The slough has separated, and the whole sore is covered with bright, prominent, healthy, granulations. At the posterior part there does not appear to have been a sufficient destruction of morbid substance, the margin being tumid, of a dusky venous colour, and undermined. The parts in the meatus look healthy, and the bony portion of it is not necrosed. His health is much improved, and his

appetite and healthy appearance have returned. He sleeps well at times, but he complains of pain about the eyebrow and at the back of the sore. The gland over the splenius has diminished to nearly a natural size, and is soft.

August.—There is a distinct diminution of the size of the sore, and its edge is level, soft, and cicatrising, except over the front of the right masseter. There are scattered cicatrising points in six places within the area of the sore. The edge towards the nape is tumid and turgid, but not hard.

Dec. 1865.—The sore has shrunk to four and a half inches horizontally by three inches vertically: its upper edge is thin, flat, and disposed to cicatrise: but no permanent scar advances from it, being no sooner formed than it disappears again. All the lower margin of the ulcer is thick. The base of the sore is covered with few granulations, but is scored in lines radiating in the directions of the fibres of the temporal muscle. These concentrate towards the zygoma, which is prominent and granulating, and are lost under it. The dragging of the lids outwards rather increases, and gives him discomfort. In this part of the sore is the most cicatrix. Over the masseter it is characteristic of the disease, hard, and precipitous. It is firm over the parotid, but bevilled and ready to cicatrise. Towards the occiput and nape its thickness, vascularity, and firmness have lessened, and the skin itself is soft; the margin is here, however, undermined for three-eighths of

an inch, and probably cicatrised on its under surface. There is much complaint of pain and tenderness of the adjoining scalp, where the groove under the skin ends. I can find no bare bone, and there is little tenderness on probing at that part. The gland on the splenius is still not natural.

18. With the galvanic cautery I again destroyed as much as possible of all these diseased parts.

May 1866.—The disease has extended within the last few weeks among the deeper textures of the neck, and has exposed the sterno-mastoid muscle, on both its surfaces. Its entire base appears also to have sunk to a slightly lower level, as if the process of destruction were deepening in all directions. The most distinct increase of the marginal disease is towards the eyelids, which have rather rapidly ulcerated: the upper part of the edge meanwhile has undergone little change, and still presents an appearance of health in every respect but its failure to cicatrise. With this rather rapid advance of the disease there has concurred a considerable failure of strength, and an amount of pain which the poor fellow speaks of in the strongest language.

May 1867.—During the last twelve months the disease has not extended upwards, the curved margin over the temporal muscle remaining at the same level and of the same form. Occasionally, cicatrisation has advanced from it, and receded again. In other directions some advance of the growth has taken place. The eyelids at one time became gradually

shortened and distorted by the encroaching growth, and so great pain resulted from the consequent exposure of the eye that I removed it for him, together with that part of the disease which had reached the eyelids and orbit. The relief from this operation was great, and he recovered his general health, which had been much impaired by sleeplessness and pain. In the direction downward and backward a slow but continuous increase of the disease occurred, and the parotid space, and upper parts of the sterno-mastoid and of the splenius muscle were denuded. Some hæmorrhage took place on one occasion from the deepest part of the parotid. It seems to have amounted to several ounces, but after two or three months it had not recurred. The base of the ulcer has withal sunk yet deeper, and most of the substance of the temporal muscle, as well as of the bony zygoma, has disappeared. The aspect of the sore is consequently more healthy, there being less solid substance in any part of it, less rugged inequality, and much less discharge. But these changes are due to infiltration of the solid growth into the even cranium, which is now exposed, and not to any real improvement in the disease. The pain has been sometimes very severe; it is chiefly confined to that part of the sore which is encroaching on the nape of the neck. It sometimes interferes with sleep for a long time, which indeed appears to be taken chiefly either in a half-sitting posture or when he is resting on his elbows and knees. The position of the sore makes

all ordinary recumbent positions unbearable. The improvement which has, on the whole, occurred in the past twelvemonth has appeared to be due, partly indeed to removing sources of irritation, as the eye and eyelids, but chiefly to the prolonged administration of the iodide of potassium, which he took for some months, and which always appeared to give him appetite, vigour, and a feeling of health and comfort, as well as to improve the aspect of the sore.

Figure 9 represents the appearance and extent of the sore at the beginning of July 1867. The mastoid process has in part disappeared since May. Within a fortnight of the time when the drawing was made, a large increase of the sore was produced by sloughing of the soft textures about the transverse process of the atlas.

CASE VII.—*Rodent Cancer of the left side of the Head and Cheek; destruction of the pinna of the Ear. Death by hæmorrhage.*

THOMAS C., 55, a labourer, a slender, tall, otherwise healthy man, and once a soldier, was sent to me by Mr. Holthouse, July 7, 1865.

He has a shallow ulcer occupying the back of the left cheek and the side of the head. Its upper edge extends from an inch behind the outer commissure of the eyelids horizontally, a little beyond the mastoid process. In front upon the cheek it is two and a half inches in vertical extent, and sinuous. Its lower edge crosses the masseter an inch above the base of

the jaw, and curves upward over the nape of the neck to the scalp behind the mastoid process. Within this area considerable destruction has taken place. The lower two-thirds of the pinna of the ear are gone, and the remaining third, cicatrised but hard, hangs by a small pedicle from the upper edge of the ulcer. So deep a hollow exists below the stump of the ear, that it is doubtful if there are any remains of the parotid gland. The portio dura is destroyed, and the cheek is paralysed: he is also unable to close the left eyelids.

The greater part of the ulcer is formed of hard or firm deposit, which is most distinct at the cutaneous margin, and exceeds the thickness of one-eighth of an inch only towards the nape, where the skin is tumid and varicose. On the cheek it is very thin. The base of the ulcer is nowhere composed of healthy granulations, even on the cheek, where it is softest and thinnest. In some parts the base is cicatrised, but the firm, precipitous, diseased edge is perceptible still around the cicatrix. None of the glands are diseased.

'For forty years,' he said, 'I never had finger-ache nor tooth-ache.' He was a soldier 21 years, and had a slight local venereal affection, but no sore throat or eruption. When going to the Crimea in Feb. 1854, he noticed a small pimple on his left cheek in front of the ear. He soaked it in ink; he picked it and it bled; but he found no inconvenience from it for twenty-two months, during which he was in the Crimea, although at last he had 'dropsy' from ex-

posure in the trenches. After his return home the ulcer spread. Various applications were made to it, but it still increased.

He remained under observation in the Hospital until September, sometimes suffering pain in the scalp and shoulder of the left side. This he attributed partly to the previous exposure in the trenches of Sebastopol. Towards the end of August his nights were sometimes disturbed by much pain. At the same time the progress of the ulcer was very slow.

September 4.—By means of a slender piece of platinum wire, looped and heated by four galvanic cells, I made a trench in the skin adjoining the hard edge all round the sore, and then touched it in various places to destroy the base. In some parts blood was sprung, and the wire hissed without burning. This was especially the case when the granulations were touched. Where the heat acted best, it left a black dry slough. Not being satisfied of the complete destruction of the diseased parts on the base of the sore and at the tumid nape, I laid chloride of zinc paste over them, and, after giving a subcutaneous injection of acetate of morphia, sent him to bed. In the evening he continued easy.

5. He slept badly on account of pain, and he was nauseated and thirsty, but not feverish. The left side of the face and the eyelids were swollen, and he was unable to open his jaw. The zinc, blood, and tissues were united into almost a rocky mass, fixing the cranium and jaw together.

6. He required a morphia injection, and slept well after it. There is considerable inflammatory swelling around the whole slough. Bowels open. Feels better this morning, and is without pain; about 2 P.M. he perspired profusely.

7. The swelling extends to the right cheek, and his head aches a good deal. Altogether there was much pain, and it was clear that the inflammation following the slow action of the cautery far exceeded that which is usual after the same disease is removed by the knife and chloride of zinc.

9. The swelling of the face and eyelids has considerably diminished. The slough begins to separate.

October.—The soft parts separated completely, but some of the bone became necrosed. The malar bone, the zygoma, and the mastoid portion of the temporal bone were exposed. The temporo-maxillary articulation was opened. In the remainder of the wound cicatrisation went on satisfactorily, and the sore gradually diminished, until, on the 19th, it measured 4 inches by 2 inches.

October 22.—The outer surface of the neck of the lower jaw exfoliated.

November 20.—The malar bone has been loose for about a month, and it is held only by the zygoma. The granulations overlap its edge all round, and cicatrisation has advanced as far as possible over them. I cut through the zygoma and removed the malar fragment.

30. Granulations level, and cicatrisation proceeding

at the malar part. Below it is one small hole in the scar, with a very abrupt precipitous edge and hard margin. It does not fill up, and I have been watching to see if it would spread in the same manner as the first disease.

December 18.—The hole near the malar scar enlarges, and has a hard margin downward. The temporal necrosis loosened as I twisted it, on the 14th. I did not pull, but left it. He had some headache afterwards.

January 4, 1866.—I removed the posterior sequestrum. It comprised the posterior part of the zygoma, the inner root and eminentia articularis, a thin plate of the mastoid portion, reduced to half its area by the granulations, a thick mass of cell structure, and one very small bit of internal table not larger than half the area of a split pea. The diseased spot in front of the malar scar enlarges and deepens; in consequence of which I applied chloride of zinc paste to it on the 8th and 9th. After this, cicatrisation advanced over the greater part of the wound, and the whole parotid region became a dense depressed scar.

February 12, 1866.—Ulcers have re-opened in the scar. They are of small size and without elevation of the margin; their appearance is that of sores opened by the force of contraction of the scar. Two fragments of bone still adhere on the squamous. He suffers from rheumatism a good deal, especially in the left shoulder.

April.—The ulcerations have spread. That over

the malar has also re-opened. At the lower part of the larger one there has been a little sloughing within the very hard thick tissue between the jaw and the mastoid process.

May 1.—The skin last spoken of is now perfectly soft.

July 9.—The three openings have remained in nearly the same state for many weeks. They appear perfectly indolent, being pale without granulations, excavated and concave, sharp edged, and without surrounding vascularity. Sometimes the margin towards the tissues of the neck becomes hard and thick, and again, without perceptible reason, it softens. It has been necessary to discharge him to-day; I have desired him, however, to return.

Mr. Holthouse informed me that the man was admitted into the Westminster Hospital and died of hæmorrhage from the wound in the parotid region, in the latter part of 1866.

Case VIII.—*Rodent Cancer of twenty years' duration in the left Eyelids, Orbit and Temple.*

James B., æt. 81, was sent to me by Mr. W. G. Lee, of St. John's, Fulham. He is a tall, fairly muscular, clear-skinned, hale old man; retains sight for reading his Bible without glasses, and till five years ago he had good sight with the left eye. He has also had excellent health throughout life, with the exception of an abscess under the left shoulder blade, probably

after pricking his finger. He was born in Surrey; was the eighth of ten children, and born in the same year as the seventh. After working as an agriculturist, he came to London 'in the same year as Lord Nelson' (1804), and was a butcher over fifty years.

More than twenty years ago he found blood on the edge of the upper lid, and a small crack, which thickened, ulcerated, and spread, never ceasing, never better, until it reached its present size. Five years ago he lost the eye, but without particular pain.

There is now a cavity on the left side of his face, having thick sinuous cutaneous edges, and occupying the place of nearly all of both eyelids, the adjoining part of the temple, and the outer part of the orbit. At the inner side is the stump of the eye. It is doubtful if any part of the base adhere to the external angular process; elsewhere there is no tissue affected but the lids, the globe, and the orbital cellular structure, all of which could be easily removed. No glandular disease on the masseter or in the neck.

He suffers pain in the scalp on that side of the head, and is sometimes very low; but he decidedly objected to have the disease removed by any operation.

Case IX.—*Rodent of the Cheek.*

Mr. Flower, of Codford, St. Peter's, sent me a patient of about 63, November 1865, with an excava-

tion in the front of the left cheek, side of the ala nasi, and upper lip. It had begun some years previously in a pimple on the cheek, which scabbed, and she frequently rubbed off the scab in washing. The progress of the ulceration was at first very slow, but since May last it has advanced more quickly. The whole gap in the integument, though not circular, occupies a larger area than a half-crown piece. The edge of the ulcer is a firm, rather red, raised rim, less than an eighth of an inch in thickness, irregular in outline, and continuous externally with perfectly healthy integument. The adjoining features are not in the least displaced. Half the lip is destroyed, yet the line of the mouth is not altered.

The case is a promising one for extirpation; but she declines any operation.

CASE X.—*Rodent Cancer of the left Orbit, Forehead, and Cheek, exposing the Dura Mater. Operation. Temporary improvement.*

Published by favour of Mr. De Morgan.

ANN F., aged 67, an emaciated and feeble woman, was in the Middlesex Hospital under the care of Mr. De Morgan for a very extensive ulcer of the forehead, left cheek, and left eyelids. The ulcer was everywhere set upon a solid base of new growth, which permeated the textures beneath the ulcer. The natural parts were to a considerable extent destroyed

by it: the whole thickness of the scalp and frontal bone was gone, and the dura mater of that part, thickened with the morbid granulation, pulsated on the face of the great cavity. The eye was painful and sightless, and it appeared to contain pus.

After extirpating the globe, Mr. De Morgan removed the greater part of the diseased substance by incision and cautery, and then laid the chloride of zinc paste over the entire surface. The paste was laid upon the exposed dura mater in small quantity, and without previous incision of that part.

The patient had the usual epileptiform fits after the operation, but they were transient and not severe. They were indeed neither so prolonged nor so frequent as those which sometimes occurred when the caustic was not applied to the dura mater, but only to exposed bone. On the separation of the sloughs, the wound in great part healed, and the patient was restored to much comfort and recovered some of her strength. She lived altogether in the Hospital from June 1864 to April 1866, and died at length without renewed cerebral symptoms, on a return and increase of general feebleness.

At the time of death, the gap in the face extended from a little below the hairy scalp nearly to the tip of the nose. The left cheek was gone, with the inner part of the left eyelids, the contents of the left orbit, and the nasal bones. The interior of the nose and the left frontal sinus were exposed; and the aperture in the frontal bone, still closed by dura mater

and covered with a thick layer of granulations, measured an inch and a half in diameter. The edge of the ulcer was generally cicatrised, and nowhere thickened; on the left eyelids and left side of the nose it was sharp and appeared to have been extending. There was no enlargement of the glands in the neck or face. The brain was normal, but adherent to the dura mater within the aperture in the frontal bone. No cancerous elements were detected with the microscope. The kidneys were contracted and granular; their cortices much wasted, and the capsules adherent.

CASE XI.—*Fatal Rodent Cancer of the Face at an early age.*

Published by favour of Mr. De Morgan.

A MAN, aged 48, died in the Middlesex Hospital, under the care of Mr. De Morgan, in July 1863.

He was extremely emaciated. An ulcer, having a somewhat thickened edge, on the left of the face, occupied the place of the left eye, the whole of the nose, the left cheek, the left half of the upper lip and part of the left superior maxilla. The whole frontal bone and the right upper jaw were bare, and both the right eyelids were gone, but the eye itself was not injured. There was no enlargement of any of the glands of the head or neck.

There were depressed cicatrices in the apex of the right lung, small patches of atheroma on the aortic

valves, and a large smooth liver, though soft and decidedly granular, on section.

No Cancer could be found in any part of the body, and the thickened margin of the ulcer contained no Cancer cells.

CASE XII.—*Tumour of the Tongue; query Rodent?*

MR. FRANCIS W. DAVIS reported a case to the Pathological Society in December 1859, in which a hard ulcerated tumour, of sixteen years' standing, involved the tip and right half of the tongue to the extent of about two inches. The rest of the tongue was small and atrophied, and the pharynx and œsophagus were also small. The patient was a man aged 79. He had suffered shortly before death from constant gnawing pain in the tongue and the right side of his face.

The Reporters on the specimen, Dr. Bristowe and Mr. Jonathan Hutchinson, observing the margins of the ulcer indurated, but of no great thickness, and finding the elements displayed under the microscope to be almost exclusively those common in chronic inflammation of the part, and only indistinctly composed of nested cells, were of opinion that the disease was allied rather to that known as 'Rodent Ulcer' than to the more decidedly malignant class.

Case XIII.—*Syphilitic Ulcer of Scalp. Epileptiform Fits. Death.*

Added for contrast with foregoing cases.

May 29, 1862.—I admitted into the Middlesex Hospital a short, stout, full-faced, bloated-looking, feeble man of 45. His head was bald, and at the back of the crown in the mesial line was a nearly circular ulcer, with deep precipitous edges, a scabbed base nearly on the bone, and as large as a five-shilling piece. The skin around was slightly red and tumid, but the whole looked inactive, and except in form and depth characteristic of nothing. There were a few scars on his body and legs, but no very definite syphilitic marks, and none on the penis.

He had long had a pimple on his bald head, and often scratched it. The sore, which might have been primary, had come in six weeks to its present state. I ordered him iodide of potassium and bark.

May 31.—Last night he seemed to the nurse teazed with his throat. Early this morning he had a fit. I saw him in the fourth and fifth fits in the afternoon. With just a respiratory catch in his breathing, hardly enough to call a scream, he became unconscious, stretched and involuntarily twitched his limbs, compressed his chest, and became red in the face. In a few seconds he strained with efforts to vomit; the muscles relaxed, and he was at once conscious again, and spoke quietly. During the fit his eyelids were open, his eyes fixed, and pupils dilated, but there

was no grinding of teeth, foaming, or further distortion of face than that of the fixed unearthly stare. The whole was over in thirty or forty seconds. Pulse 140, scarcely perceptible.

The fits continued through the afternoon, and he died at seven quietly and suddenly, having been the moment before quite conscious.

On examination, the scalp was found thick and closely adherent. The cranium was moderately thick, rather dense, having little diploe, and slightly bossy externally. Internally the greater part of the vault was marked by many thin deposits of new bone, on which distinct grooves were filled with vessels full of blood. Parts of the substance of the base of the skull were deeply congested, an abrupt line separating the vascular from other pale parts. In the right frontal sinus there was free pus, and the lining membrane was vascular. Neither appearance was found in the left cell. The dead piece beneath the wound reached one third through the skull; the inner layer was living, dense, bossy, and lined by a small patch of very vascular soft membrane, which came off with the calvaria. It was not so large as a threepenny piece, and it corresponded with one only of two dead portions which could be distinguished on the outer table. The dura mater was everywhere thick: in some places it was covered externally with old leathery sheets of yellow lymph. Many vessels were seen in the membrane, much larger and more numerous than natural, but having the aspect of old,

almost varicose, dilatations of the vessels rather than of recent inflammation. Immediately beneath the base of the ulcer, the dura mater was thick, yellow, and vascular. It was adherent to the bone, and had no trace of suppuration about it. The longitudinal sinus and the arachnoidal surface beneath the thickened dura mater were quite healthy. At the front of the parietal region were some ossified Pacchionian bodies, small, rather sharp, and presenting near the longitudinal sinus toward the brain. The cerebrum was vascular on the surface, not varicose, and opposite the ulcer was quite healthy. Gray substance somewhat pale, decidedly thin. White rather congested in large holes, but not tinged with blood. Perfectly clear serum in the ventricles.

There were many dotted small glandular elevations over the œsophagus. The mucous membrane inside the higher process of the thyroid cartilage was raised on one side in low, flat, slightly pale elevations. The microscope showed that these were natural, not condylomatous. Intense deep venous congestion of trachea and bronchi : moderate of lungs. Liver large, firm, deeply congested, shrunken in parts between the lobules, so as to seem there rather hob-nailed. An obsolete cyst, nearly as large as a pea, containing cheesy stuff.

Kidneys large, scarred in pits, capsule adherent in parts.

Heart fairly firm, pale, not distinctly fatty.

Much fat everywhere.

There had long been disease of this skull and dura mater, which is partly intelligible from the later details of the post mortem examination; but the little patch of vascularity beneath the ulcer, and necrosis, seemed to indicate acute inflammation just begun.

CASE XIV.—*Construction of a new Nose by transplantation in four portions. Necrosis of the Frontal bone. Death from Cerebral Abscess.*

Added for contrast with foregoing cases.

JOHN J., aged 37, a married courier, lost by syphilis the entire cartilage and septum of his nose, and the extremities of his nasal bones. The skin and mucous membrane at the sides having joined in a linear cicatrix, there remained a somewhat triangular opening, bounded by the scar, and having for its only raised part the remaining projection of the nasal bones. The lower transverse base of the triangle rather receded, and the scar descended over the upper lip. This portion had not even a remnant of the nasal spine which might have formed some support for a new nose, and with the entire absence of the septum there seemed no hope of maintaining any prominence of a flap of skin taken from the forehead. I accordingly declined to operate.

The man returned after some weeks and urgently desired that, though only a flat web of skin were laid across the opening, even that improvement should be made in his visage; as his appearance, notwithstanding his artificial nose, prevented his gaining a live-

lihood. I accordingly devised a plan for making a septum out of an inverted bit of the upper lip, stripping the cicatrised margins of the aperture down, and attaching their extremities to the septum in a curve, so as to form nasal apertures, and then bringing down a flap of skin from the forehead, and attaching it to the margins of the aperture laterally, and to the newly made alæ below. In doing this operation, I raised the whole thickness of the scalp, after the manner of Langenbeck, with the view of obtaining from the transplanted periosteum the support of a layer of new bone in the nose. The exposed frontal bone was washed with a solution of chloride of zinc, 20 grains to the ounce of water. The four transplanted portions united together throughout, and the result of the operation was a nose of very satisfactory shape and prominence, with a well-formed nasal orifice on either side of the septum.

On the sixth day the patient was reported to have erysipelas of the right side of his face, but this was doubtful, and he soon recovered from it.

After three weeks of health and comfort, he had headache about the exposed bone, which was necrosed. The pain extended to the vertex. His tongue was dry and brown, and he lost sleep.

On the twenty-sixth day he spoke of slight shivering. His headache was less, his tongue less furred, his bowels open, his pulse 80.

Between the twenty-seventh and twenty-ninth days he had four epileptic fits. They were slight,

and quickly over. He then recovered his natural and comfortable feeling, and for more than a fortnight he had neither headache nor fit. The convulsive symptoms appeared to indicate nothing further than is usual in the separation of a layer of bone to which chloride of zinc has been applied, namely a superficial and transient local irritation.

On the forty-fifth day after the operation, headache recurred, with excessive soreness of the granulations overlapping the circumference of the dead bone, and of one or two which protruded through it. These symptoms alternately moderated and returned. After a more than commonly restless night he was found, on the morning of the fifty-first day, to be unconscious without any fit, and in the course of a few hours he died.

At the post-mortem examination, besides syphilitic deposits in the liver, a large fibro-calcareous concretion on the aortic valves, and a granular state of the kidneys, it was found that an abscess existed in the substance of the right hemisphere of the cerebrum beneath the exposed frontal bone; that there was much cerebral meningitis, and some pus in both lateral ventricles. The dura mater was not perforated, but the inner table of the frontal bone beneath the exterior layer of necrosis was cribrous. In the lungs were a few abscesses of small size and pyæmic appearance; but there were besides a few deposits of miliary tubercle.

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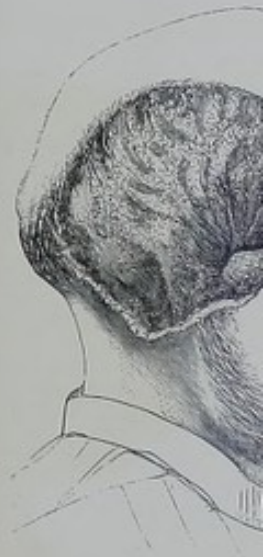
Fig. 3. Case II.

Fig. 7. Case III.

Fig. 9. C



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