a patient for his use. Patients with acute gout, in every rank of life, are commonly possessed of more than the average intellect, and can therefore afford particular aid in this and kindred investigations. It is certain that, in hospital-practice, we cannot pursue this inquiry, for cases either do not present themselves early enough, or are not deemed fit objects for a bed. Meantime, we remain in ignorance of the particular type of gouty pyrexia, an ignorance that could be removed within one month if fitting use were made of opportunities.

Another objection has been made to our definition of the disease. To avoid endless errors, which are only too easy to fall into, the subcommittee agreed to limit the gout-inquiry to cases in which a great toe was alone, or at all events primarily, involved. This is classical podagra. It will hardly be believed that one member of the Association made objection to this, because he had happened to see more cases of acute gout in the knee than in the great toe.

Other inquiries are about to be issued. The subject of puerperal pyrexia is a pressing one, and we want better knowledge of this important matter. A card has been prepared on cholera; and if, as is not unlikely, this pest invades us next autumn, it will be well to have our inquiries systematised, and available in good time.

Complaint is sometimes made that more time would be required for response to these inquiries than can be fairly demanded from busy men. We well know how ways can be found for willing minds, and I might here adduce as a monument of industry, erected, almost imperceptibly, at odd moments in a busy life, that valuable work of Dr. Neale's, the *Medical Digest*, to which I am ready to acknowledge my frequent indebtedness.

The art of collective investigation can be best cultivated by acquiring a habit of recording, even in mere jottings, the points and prominent features of cases. A note of one line in length at the time is worth a page written from memory a few days afterwards. The value of committal to paper, too, is very great as an incentive to accurate, and corrective of superficial, observation. And all this demands an interest in our work, and calls upon us to show how much we really love our art. To judge by some men's conduct, it would seem that they did not love their daily work for its own sake, and I will illustrate what I mean by some personal experience.

To take a class of diseases about which we want information, and which we too often fail to reach in hospital practice;—I allude to abdominal tumours. Perhaps there is no more difficult subject of diagnosis than this. Years of experience (and, as my great predecessor at St. Bartholomew's, Latham, remarked once, "great experience is not all experience") are required to render one's opinion valuable in this direction. What do we find but too frequently? That, as soon as we have paid careful attention to a case of this kind, and shared our difficulties with our colleagues, the patient becomes alarmed at the concern his malady creates, and forthwith quits the hospital. In too many instances we never hear more of the case. It will certainly fall into the hands of some practitioner; but the occasion is rare when it excites sufficient interest, or becomes the subject of a necropsy; and still more rare, if this should be made, that the hospital-physician ever hears the result. And thus great *lacunæ* in our knowledge come to exist, for want of timely interest and enterprise. It would be but kind, and it would certainly be wise, for the practitioner to communicate the fact of his having such a case to those who preceded him in charge of it; and in many instances the hospital would provide for an inspection, and thus secure a fragment of knowledge for common benefit. All this entails some trouble; but I hold it to be a duty, and no work is worth doing that gives no trouble. Indeed, nothing in the way of our duty can possibly be a trouble, properly so called.

Gentlemen, I have expanded the remarks I purposed to make, and have taken up an undue amount of your time. I desired to give you a text for your discussion, and have avoided touching any topic which my predecessors have exhausted. Let me conclude by commending the efforts of the Committee to your best consideration and support. If you possess the first *Record* of its work, you will not fail to procure the second, just about to be issued; and, if you do not find your own share of contribution in either of these volumes, I am confident you will not allow the third one to appear without some token of your sympathy with this good work. My last words shall be those of one of the greatest and most painstaking physicians of our time, and they are very pertinent to the subject of collective investigation: "In the medical profession, all truly valuable and practical knowledge is only to be gained by appropriate sacrifice of time and labour; and, as a general rule, the one may very fairly be measured by the other." Thus wrote Thomas Addison. For those who are faint-hearted, or lack confidence in

their powers of observation, I would commend a daily reading of this inspiring epigram, which has before now served good purpose: "Maximum mediocris ingenii adjumentum diligentia."

RODENT ULCER, AND ITS RELATIONS TO EPITHELIOMA.

By G. H. HUME, M.D.,

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THERE seems to be now almost an agreement among pathologists on the subject of rodent ulcer and its relation to epithelioma. But the question is not yet entirely settled, and the investigation of which this paper is a record was undertaken with the desire to aid in definitely determining the pathology of the former disease.

It is not necessary to enter at any length upon the history of this question. But it is convenient to have in mind the leading facts, and it is found that these group themselves into two periods. In the first period, in which rodent ulcer was first clinically distinguished by Jacob, no special cell-growth was detected as characterising the disease, and it was therefore classed among the non-cancerous ulcerations. The second period dates from the description by Thiersch in his *Atlas* of the existence of a special cell-growth. Since the publication of Thiersch's *Atlas*, there has been practically little added to the description he gives of the masses in which this cell-growth occurs. Later observers may have differed as to more minute details, but the existence of peculiar glandiform cell-masses has been accepted as the distinctive pathological feature of rodent ulcer, just as Jacob's description has remained the clinical picture of the disease. The point on which opinions have mainly differed has been as to the genesis of these cell-masses. Thiersch considered them to be of epithelial origin, and he therefore distinguished the cases in which they occur as flat epithelial cancer. He does not seem to have directly traced the cell-masses to any one of the skin-structures, but, from their general form and character, he was of opinion that they originated in the hair-follicles. This view, both as to the epithelial character of the masses and as to their origin, has been generally adopted, and among recent writers has been especially advocated by Drs. Tilbury and Colcott Fox (*Pathological Society's Transactions*, vol. xxx), who traced the growth to the external root-sheath of the follicles. This sheath being an extension of the Malpighian layer of the epidermis, from which the growth in epithelioma is known to spring, this view necessarily reduces the difference between the two diseases to a minimum. In the one disease, the new growth takes the form of prolongation from the rete Malpighii; in the other, the portion of the Malpighian layer attacked is that belonging to the follicles. But in opposition to this view, Dr. Thin has maintained the belief that rodent ulcer is in reality a cancerous adenoma of the sweat-glands (*Pathological Society's Transactions*, vol. xxx). He traces the origin of the cell-growth to the secreting epithelium of these glands, and not to any epidermic structure, and thus assigns to the disease a pathological connection altogether distinct from the epithelial cancers. Between these two views, there can be no doubt that the balance of evidence is decidedly in favour of the former; but on neither side has the endeavour to trace the actual development of the new growth from its origin been altogether satisfactory.

During the past five years, I have had opportunity of examining specimens from eight cases of rodent ulcer. Five of these cases were under my own care; the remaining three were under the care of my colleagues in the Newcastle Infirmary, and I was enabled in these instances also to see the patients previously to treatment. To the earlier of these eight cases, I do not here make more than a passing reference. Their examination familiarised me with the ordinary histology of rodent ulcer, but the portions of skin obtained were too completely involved in the disease to admit of other than a conjectural opinion as to its origin. I therefore determined, as opportunity occurred, to obtain portions of skin as far removed as possible from the edge of the ulcer. It seemed a reasonable assumption that the mode in which the disease is propagated into the surrounding healthy skin (apart from the direct growth of the glandiform masses) is a repetition of the process by which it at first started; and that therefore a methodical examination from the healthy skin towards the ulcer would yield important evidence as to the structure in which the morbid action begins. So far as could be judged from the few published cases, the development of the disease did not seem to be more easily read in the nodular or pre-ulcerating period, than after ulceration had occurred; and the

opportunity of examining any case in this earlier stage did not present itself to me.

Three cases—the correspondence of which in all particulars with typical rodent ulcer was exact—have afforded me material for continuing the examination in the way proposed. In these cases, the margins of the ulcer were removed by incision well into the apparently healthy skin, and the material so obtained was, after hardening, cut into sections, all of which were preserved. These were stained in logwood, or double-stained in eosin and logwood, or in picro-carmin and logwood, and were so mounted as to admit of being examined in consecutive order. The history of the cases is, briefly, as follows.

CASE I.—H. G., a woman, aged 54, was first seen November, 1882. She had suffered from an ulcer affecting the left side of the face for twelve years. It had begun at the side of the nose near the angle of the eye, had gradually extended to the cheek and brow, and had now attacked the eye. The ulcer presented the usual characters of a rodent ulcer. There was no glandular affection, and the patient was in excellent general health. The eye and contents of the orbit, and the margins and floor of the ulcer, were removed by the knife, and the surface cauterised with the thermo-cautery. Sound healing took place, and the patient remained free from the disease till September this year, when a small ulcer formed in the depression of the skin, which now covers in the empty socket.

CASE II.—J. E., a pitman, aged 59, had been under treatment in 1878 for an ulcer of the side of the nose of six years' duration. The ulcer was then treated with chloride of zinc paste with promising effect, but the patient ceased attendance before healing was completed. He was not again seen till June of this year. The ulcer had then extended towards the cheek, the inner canthus, and the brow.

CASE III.—J. L., aged 60, was admitted into the infirmary in May, under Dr. Armstrong, who kindly allowed me to see the case, and gave me a portion of the excised margin of the ulcer. The disease had existed for four and a half years, and its progress had been somewhat rapid. It had begun close to the lower eyelid, and had destroyed the lid and a portion of the brow and cheek. But there was no infection of glands, nor was the health affected.

It would lead to unnecessary repetition to give a separate report of the examination in each of these cases. The facts observed were the same in all three; and it was found that certain changes could be clearly traced in passing from the healthy skin to the neighbourhood of the ulcer. I shall therefore proceed to describe these changes from their first appearance to their outcome in the production of the glandiform masses.

The first appearance of disease (Fig. 1, A) is noticed in a broadening from increased cell-formation of certain hair-follicles. The portion of the follicle affected seems usually to be the neck, or that part between the opening of the sebaceous gland into the follicle and the epidermis. The canal of these broadened follicles usually widens (Fig. 1, B.), producing an elliptical cavity in the section. In some follicles the broadening is not general, but takes the form of distinct outgrowth from the edge (Fig. 1, C.), and in such the connection of the outgrowth with the external sheath of the follicle can be plainly traced.

At the same time, there are evidences in the corium of irritative action, in increased vascularity, in the presence of groups of leucocytes, and, later, in general oedematous infiltration. Then, partly owing to the cell-production going on in connection with the follicle, and partly in consequence of the swelling of the corium, the diseased follicle, with its sebaceous gland, tends to take a deeper position as regards the epidermis; and, at one point or other, it breaks off. The beginning of this breaking off is, in some specimens, indicated by a constriction, and by the apparent growing towards each other of the cells of the Malpighian sheath. There is then seen to stretch across the follicle, at this part, a loop of rod-shaped cells; and, the constriction increasing, the follicle is broken into two portions. It is the deeper portion which seems invariably to become changed into the patch of rodent tissue. That the upper fragment frequently, if not usually, disappears, is suggested by the almost unbroken contour which the atrophied epidermis often exhibits. The further change of the deeper portion of the follicle into a patch of rodent tissue consists in the multiplication of cells which are unmistakably derived from those of the Malpighian sheath. They are more or less elongated in form, and often quite rod-shaped. In Fig. 2 are shown two follicles which have become detached from the epidermis, and which are undergoing transformation. A portion of one of them is shown more highly magnified in Fig. 3. Here the root of the follicle is breaking up in a brush-like manner,

due to the elongated form of the cells; while quite the upper part of it remains as yet unchanged. Where the transformation of a follicle is in this way seen in progress, the two parts—the changed and the still unchanged—offer a striking contrast in their behaviour towards staining agents. The old follicle-cells are seen to be feebly stained, while the proliferating part is deeply coloured in exactly the same manner as the rodent patches; and a positive demonstration is thus afforded of the development of rodent tissue from follicle-transformation.

The changes which attack the sebaceous glands appear quickly to follow the first evidence of disease in the follicle. The proper sheath of the gland, which is continuous with the Malpighian sheath of the follicle, becomes the seat of proliferation. A broadened layer of cells shows itself often first on the shoulder of the gland, and spreads gradually downwards, so as to surround the gland and enter between its subdivisions. As this layer becomes more marked, the proper secreting cells show signs of retrograde change. They become pale, granular; their margins are less sharply defined, and their nuclei less distinct. In Fig. 4 is shown a sebaceous gland, in which this process is tolerably far advanced. The proliferating band, which is composed of small rounded, or more or less elongated cells, is seen to surround the gland, and to pass in loops between its incomplete subdivisions. And in this arrangement is undoubtedly to be found the explanation of the loop-like, or apparently tubular, formation of some of the patches of rodent tissue. This explanation is at once suggested by the appearance of the gland in process of transformation; and the transition from such a gland to the typical rodent patch in Fig. 5 is unmistakable. Further, the identity of this latter patch with a transformed sebaceous gland is still more clearly demonstrated by the occurrence in the tubular spaces of atrophying cells, which, from their size and appearance, are evidently those of sebaceous gland-epithelium. (Fig. 6).

The patches originating in this two-fold manner preserve for a time their distinctive outline. A cell-mass, which owed its origin to the transformation of a follicle, may be recognised by its elongated form, regular outline, and the absence of honeycomb-spaces. On the other hand, a patch originating in a sebaceous gland is rounded in shape, and distinguished by the tubular spaces. No doubt, however, the rapid growth of these cell-masses, shooting out in the directions of least resistance, soon causes them to lose their original forms; and in the areas of advanced disease, the masses are characterised by the greatest diversity of outline. As regards the cells composing these masses, I have nothing to add to the account given by previous observers. The cells were for the most part small, rounded, and contained a proportionately large nucleus; those in the periphery of the masses were frequently rod-shaped.

One point to which careful attention was directed, is the occurrence of *globes epidermiques*; but in none of the large number of sections examined was there found one true epithelial nest. There were found, more markedly in some of my cases, than in others, cell-masses of two distinct kinds, which bore a superficial resemblance to epithelial nests, and which might, on casual scrutiny, be mistaken for them. The first of these consisted of detached portions of sebaceous glands, or rather of rodent masses still enclosing gland-cells. The structure represented in Fig. 6, detached from the rest of the mass, and examined under a low power, gives much the appearance of an epithelial nest. But more careful examination, under a higher power, at once reveals its true character; and such masses have been described as pseudo-nests, by Dr. Sangster (BRITISH MEDICAL JOURNAL, 1882) and others. The second kind of pseudo-nests, described also by Dr. Thin and by Dr. Sangster, were situated both in the epidermis and in the cell-masses, and consisted of groups of flat cells which, more closely than the first variety, resembled true *globes epidermiques*. This was especially the case when such masses happened to be divided in transverse section. But when divided in vertical or oblique section, they were plainly seen to be hair-fragments, or the results of imperfect hair-formation.

In none of my specimens did the rete appear to take part in the formation of the special cell-growth. As a rule the epidermis was atrophied, and, as the ulcer was approached, was found to be divested of connection with the follicles or interpapillary prolongations; so that it appeared as a narrow band with straight bounding lines. In some portions, however, considerable thickening of the epidermis did exist, but this seemed to occur only when there were marked signs of inflammation and infiltration of the skin. It was one of the secondary results of the disease, and not one of the factors in its production.

Another point which I carefully examined in these three cases

To illustrate the paper of Dr G.H. HUME on Rodent Ulcer.

× 15

× 20

× 130

× 50

× 45

× 250

× 45

was the condition of the sweat-glands, and their relation to the disease. This was the more necessary, on account of the view as to the origin of the cell-growth from these glands which has been advanced by Dr. Thin. But I have nowhere been able to discover any relation between the rodent masses and the sweat-glands. The latter certainly undergo changes, but these are changes of disintegration, not of morbid growth; and they are to be detected, not in portions of the skin becoming affected, but in those portions in which secondary inflammatory changes have been set up. The sweat-coils seem indeed to be the last of the skin-structures to be affected, and a quite normal gland may frequently be seen side by side with a glandiform mass, or with a diseased hair-follicle or sebaceous gland. But so soon as the skin becomes inflamed and infiltrated, the sweat-glands suffer. In consequence of obstruction the coiled tube becomes dilated, and its lumen choked with epithelial debris. (Fig. 7.) In some specimens the gland-epithelium appears unaltered, or the cells may be at first diminished in size from pressure. But, as the ulcerating edge is approached, and the skin is found more infiltrated, the gland-epithelium becomes swollen. The cells are larger, and their outline becomes less distinct, so that the nuclei seem embedded in a granular mass. (Fig. 8.) As this cloudy swelling of the gland-epithelium takes place, the behaviour of the cells towards staining agents is markedly changed. In striking contrast to what happens in the case of developing rodent tissue, these swollen gland-cells stain very imperfectly, or scarcely at all, indicating, in this manner, that they are involved in a process of disintegration, not of proliferation. The stages of their disintegration may, in fact, be readily followed, keeping pace with the general infiltration of the skin, till the glands become finally broken up.

These facts, with regard to three cases of rodent ulcer, are altogether in agreement with the results of my previous study of the disease. They seem to me, therefore, to justify certain definite conclusions. In the first place, they are entirely opposed to the view of Dr. Thin that rodent ulcer is a cancerous adenoma of the sweat-glands. The number of cases which I have examined in an exhaustive manner, would certainly not warrant the position that rodent ulcer never begins in these glands. But even in Dr. Thin's investigations the connection between the rodent masses and the sweat-glands was not traced; and it seems probable that, where morbid changes have been found in them, these have been of the secondary character which was undoubted in the cases I have described.

The only conclusion which seems to be borne out by all the facts, both pathological and clinical, is that rodent ulcer is a form of epithelial cancer which begins in the external root-sheath of the follicles and in the sebaceous glands. It is of the same essential nature, therefore, as epithelioma; but it differs pathologically in the mode of development of its cell-growth, just as it differs clinically in the absence of gland-infection and in its slight general malignancy.

Some explanation of these clinical differences may be found in the character of the cell-growth in the two diseases. In epithelioma, there is a marked tendency to an unrestrained cell-infiltration of surrounding structures, so that infection of the lymphatic system readily occurs. The cell-growth of rodent ulcer, on the other hand, is in the form of isolated masses which, originating in the follicles and sebaceous glands, are, at least for some time, restrained by the firm fibrous sheaths of these structures. The tendency of these masses is, therefore, to cause, by their pressure on the tissues, a persistent ulceration in which they, as well as the tissues, perish. But because this local destruction takes place rapidly, and because of the absence of cell-wandering, lymphatic infection is not prone to occur.

The suggestion was made some years ago by Mr. Jonathan Hutchinson, that the difference between the two forms of epithelial cancer must be determined in some way by the difference of locality in which they occur. The foregoing account of the genesis of the cell-growth in rodent ulcer, seems to supply the rationale of this suggestion. Commencing in the continuity of a skin-surface, rodent ulcer is peculiarly apt to attack that part of the face—the side of the nose—in which the sebaceous glands are strongly developed, and I have endeavoured to point out the manner in which the structure, when the disease begins, determines its onward course. As bearing upon this supposed influence of locality, it would be an important point to decide whether an ulcer which began as undoubted rodent ulcer in the upper half of the face may not become changed to the epitheliomatous type, when in its ravages it reaches the region of the mouth. One or two cases which I have seen in a very advanced period of their course, in which the invasion of

the region of the mouth appeared to be speedily followed by glandular infection, seemed to lend countenance to this view.

EXPLANATION OF PLATE.

FIG. 1.—*a*. Broadened follicle with widened cavity (*b*). *c*. Outgrowth from one side of follicle. *d*. Groups of leucocytes.

FIG. 2.—*aa*. Two follicles undergoing transformation.

FIG. 3.—*a*. Lower portion of follicle breaking up in a brush-like manner. *b*. Upper portion still unchanged. *c*. Sebaceous gland with cell-proliferation around margin.

FIG. 4.—*a*. Sebaceous gland surrounded by broad band of cells. *b*. Sweat-coil, dilated.

FIG. 5.—A patch of rodent tissue resulting from the transformation of a sebaceous gland.

FIG. 6.—A small portion of Fig. 5, more highly magnified. *a*. Band of cells enclosing (*b*) atrophying gland-cells.

FIG. 7.—*a*. Dilated sweat-coils containing epithelial debris.

FIG. 8.—*a*. Sweat-gland, showing retrograde changes.

REMOVAL OF TESTIS IN PERINÆO ATTACHED TO PERITONEUM.

BY SURGEON J. W. H. FLANAGAN, A.M.D.

WITH reference to a case of testis in *perinæo* published in the BRITISH MEDICAL JOURNAL of July 21st, by Mr. J. A. Williams, I forward the notes of a case of this kind in which I lately removed the misplaced testicle. The case may be of interest, on account of the complication met with and the successful results of the operation.

S. S., aged 21, a private in the 2nd Battalion, Lancashire Fusiliers, stationed at Mhow, had been in hospital some time, suffering from the effects of an inflamed misplaced testicle. He had been in the service for about a year and a half, and during that time had been constantly coming into hospital from this cause. He stated that, whenever he marched or had to make any exertion, the testicle became swollen and painful, and he could walk with difficulty. He had suffered in this way before he enlisted. The left testicle, which could be felt to be very small, was situated in the left side of the

perinæum, beside the scrotum. This appeared to be normal, except for the absence of the testicle. The inguinal canal was full to the touch; but no impulse could be felt at any time on coughing, and there did not appear to be a hernia present. I got charge of the case about the beginning of June last; and as the man, in this condition, was perfectly useless as a soldier, and unfit for any employment which required exertion, and as he himself was most anxious to have the disability removed, I determined to take away the testicle. The only risk I contemplated was the great probability of the funicular process of the peritoneum covering the testicle being continuous with the abdominal peritoneum.

On June 20th, having placed the man under the influence of ether, I proceeded, with the assistance of Surgeons-Major Taylor and Macnamara, A.M.D., to perform the operation. Having made an incision over the testicle, I dissected the superficial structure until I reached the peritoneal sac, which, as we had foreseen, was continuous with the peritoneum. This was opened on a director, when a quite unlooked-for complication presented itself. The testicle,