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Young, Archibald, 1873-1939.
Glasgow Odontological Society.
University of Glasgow. Library

Publication/Creation

[Glasgow] : [publisher not identified], [1906]

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"SOME SURGICAL CONDITIONS OF THE MOUTH,"

WITH ACCOUNT OF A CASE OF "DENTAL CYST," AND REMARKS ON ITS NATURE.

BY ARCH. YOUNG, M.B., C.M., B.Sc.

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"SOME SURGICAL CONDITIONS OF THE MOUTH,"

With Account of a Case of "Dental Cyst," and Remarks on Its Nature.*

By Arch. Young, M.B., C.M., B.Sc.,
Surgeon to Out-Patients, Glasgow Western Infirmary; &c.

It is my duty at the outset to thank you most cordially for the honour you have done me in inviting me to read a paper before your Society.

In doing so, I should state that my consent was as cordially given as the invitation was on your part. When your secretary approached me in the matter I felt that, after your kindness to me, and after the generous way in which you received my effort last year in proposing the health and continued prosperity of your Society, there was only one course open to me, viz., to demonstrate the reality of the plea I then took occasion to make for a more hearty co-operation between dental science and the allied sciences of medicine and surgery.

Co-operation, full and frank and free, should, in my opinion, be earnestly sought for in every department, and between all the sub-departments of science. It is in no sphere more likely to conduce to efficiency and real advancement than in the relations existing between general surgery and dental surgery.

The advantages of mutual help may be already sufficiently obvious to you. Will you, however, pardon me if I illustrate or elaborate the point somewhat, and in so doing find a theme on which to address you to-night.

The subject of my paper, as stated on the billet calling the meeting, is a sufficiently wide one, and may seem to have little bearing upon the theme just suggested, and yet it is not altogether unfitting. I propose to deal with the subject from two points of view, or, rather, to suggest to you two directions in which mutual help is likely to be of advantage.

* Read before the Glasgow Odontological Society on January 16th, 1906.

It may be well to state two propositions on which to base what I have to lay before you. Shortly, they are as follows :—

I. The *early recognition* of certain surgical conditions of the mouth and adjacent parts is of great importance in treatment.

II. In certain surgical conditions of the mouth a rational diagnosis and full appreciation of the aetiological explanation call for special knowledge of the developmental abnormalities of the teeth such as the scientific dentist is most likely to possess.

I. Firstly, then, as regards the importance of early diagnosis, and the help which the general surgeon may derive from his fellow in the dental profession.

I might cite not a few instances to bear out the statement that in the early stages of certain grave surgical diseases about the mouth, diagnosis may be peculiarly difficult and unsatisfactory. Three will suffice ; of the three, two may be taken together.

About six months ago I was consulted by a man of about 35 years of age who came to me on account of a condition affecting his lower lip. For several months there had been a seemingly trifling sore, which at most seemed little more than a slight abrasion, which at times was all but healed, but which never completely cleared up. At greatest extent it was never more than about 0·25 cm. in diameter. There was no overgrowth, and no palpable induration, nor was there any glandular enlargement. Clinically there was nothing to suggest malignancy, nor was the man's age suggestive of (though it admittedly did not bar) such a diagnosis. The part was, however, excised, and the ulcer proved to be epitheliomatous, as you will see under the microscope here. (Section shown.)

This result came to me, I may say quite frankly, as a surprise. Armed with it, however, I made, within the past month, a diagnosis of epithelioma in a case almost precisely similar, with the same trifling ulcer, looking like a mere abrasion, the same absence of induration and over-growth, and the same absence of glandular enlargement. True, the patient was older than the former one, but except for this the cases were almost identical. The section under the next microscope will show you what I take to be most unmistakable proof of the epitheliomatous character of the ulcer in the second case, but you will note that the histological characters in this, as in the former case, are those of the very earliest stage of epitheliomatous change.

In some of the sections, indeed, there is little to be noticed beyond a very slight deepening, at the margins of the ulcer, of the epithelial processes. It is only at one part that there are visible any distinctly isolated epithelial groups or actual cell nests.

The recognition of epithelioma in this very early stage is obviously of paramount importance from the point of view of effective treatment, and these two cases are therefore of great interest.

The third case was that of an elderly man who suffered from an irritative condition of the gum such as not infrequently seems to be caused by a not altogether satisfactorily fitting denture. In his case the erosion of the surface was not constant, but came and went for a time, and though the *rôle* of the tooth plate in its causation

was given most weight, it was observed that abstinence from smoking for a short period seemed to contribute towards its healing. Complete healing, however, never actually occurred, and its epitheliomatous nature was suspected. Histological examination proved the justice of the diagnosis.

While the importance of early diagnosis in the case of epithelioma is obvious, it is also well, even in simpler conditions, that early recognition of the nature of the lesion should be attained.

I have thought it well, therefore, to show you a series of lantern slides, and some water-colour drawings and photographs illustrating some of the more common surgical affections of the mouth, lips, and adjacent parts.

It must necessarily happen that the illustrations are of more or less typical cases, where the lesions are sufficiently well-marked to allow of reproduction by photograph, lantern slide or drawing.

The less typical, or undecided lesions, as well as the earlier stages of most, do not present appearances admitting of satisfactory photographic or other reproduction.

If I show you a number of lesions which are already familiar enough to you, I shall crave your indulgence, and suggest merely that they are necessary to the completeness of the demonstration. I shall pass the slides rapidly before you, and shall, with your permission, assume that it is unnecessary for me to enter, except in the most limited way, into the intimate histology of the conditions which they illustrate.

I am quite certain that all present have a good working knowledge of the present views regarding the pathology and intimate histology of the conditions shown.

I am not without hope that the views I am able to show you, and which have the merit in the large majority of cases, of being from original photographs of my own, will serve to revive your knowledge of the surgical conditions illustrated, and perhaps to suggest to you, in the event of similar lesions coming under your notice at anytime, an accurate and sound diagnosis.

[The following conditions were then illustrated by a series of lantern slides :—

1.—*Rodent Ulcer* : Ala of Nose and adjacent part of cheek and upper lip. (Two slides.)

2.—*Cancrum Oris* : Cheek and lower lip. (Two slides.)

3.—*Lupus of Lips* : A somewhat unusual form. (Two slides.)

4.—*Epitheliomatous Ulcer of Tongue : Right Side.* (Three slides.)

5.—*Tuberculous Ulcer of Tongue—Tip.* (Two slides.)

6.—*Tuberculous Ulcer of Tongue—Tip.* (From water-colour of another case.) (One slide.)

7.—*Gumma of Tongue—Dorsum.* (From water colour.) (One slide.)

8.—*Sarcoma (periosteal) " epulis " —Jaw* : (One slide.)

9.—*Sarcoma of Jaw—Lower Jaw.* (Two slides.)

10.—*Sarcoma of Jaw—Jaw and Tumour After Excision.* (Three slides.)

11.—*Sarcoma of Antrum and Upper Jaw—Right.* (Two slides.)

12.—*Sarcoma of Antrum* : Extreme case. (One slide.)

13.—*Fibroma of Upper Jaw—Left.* (One slide.)
14.—*Osteoma of Lower Jaw—Right.* (One slide.)]

II. The second proposition to which I desire to direct your attention may be taken as an almost self-evident fact. The dentist, the scientific worker in dental developmental pathology, ought surely to be the most likely man to contribute valuable assistance in elucidating those surgical conditions associated with defective, delayed or aberrant development and maturation of the teeth.

I shall confine my remarks to a single department of the field this theme suggests, viz., that concerned with the class of malformations connected with excessive, defective, or irregular development of some portion of the primitive tooth-germ. These malformations may, in order to a satisfactory understanding of their relations, be classified under the general term "Odontome," though admittedly it is not strictly just to regard certain of the conditions so classified as true odontomes.

It may be useful, by way of introducing the subject, if I begin by showing you on the screen a copy of a plate in "*The International Text Book of Surgery.*" This is a photograph of a greatly enlarged and expanded lower jaw in skeleton, taken from a specimen in the Warren Museum.

It is spoken of as illustrating a cystic tumour of the jaw and the statement made is that it is "*probably dentigerous.*" I confess that this statement comes to me as somewhat of a surprise. It may be that we are accustomed, in this country, to a too strict application of the term. So far as I can see the specimen presents no unmistakable evidence of its "dentigerous" nature. It seems to suggest much more resemblance to the appearance of an osteoma, or an ossifying sarcoma in skeleton. May I show you again the photograph of an osteoma of the right lower jaw, and for further comparison show you a photographic representation of a skeletonic preparation from that rare affection known as *Leontiasis ossium.*

In this condition which may be termed a "local or partial gigantism" the bones of the skull and face are affected. There is marked, localised hyperostosis, which in the plate I show you seems to be fairly uniform, the affected bones being lobate or tuberous in outline. It may be said that the outgrowths are not always uniform and may affect only one side of the skull or a single bone.

The plate from the so-called "dentigerous cyst," which I once again show you, might quite well stand, so far as superficial appearances go, for a localised form of Leontiasis.

The overgrown bony tissue in this condition though generally spongy, is, at times, considerably blown out and expanded so as to present in skeleton an appearance not very different from that shown here.

Without further elaboration of the point I may now lay before you what I have to say regarding those tumours directly or indirectly connected with the teeth, many of which are cystic, most of which have the potentiality of presenting cystic characters, and all of which from the point of view of the developmental standpoint furnish interesting material of study.

The more immediate reason for my choosing this subject for

special reference is to be found in the difficulty I have recently had in arriving at a satisfactory diagnosis regarding a case which I believe comes under the category of odontomes, and the particulars of which I propose to lay before you before I finish this paper.

It is well to have a good working classification of the class of tumours we are considering, and though I hesitate to advance it as correct, I am content to adopt the classification given by Bland Sutton in his treatise on "Tumours: Innocent and Malignant."

It is as follows:—

1. *Epithelial odontome* ..... *from the enamel organ.*
2. *Follicular odontome*
3. *Fibrous odontome*
4. *Cementome*
5. *Compound Follicular odontome*

} *from the tooth follicle.*

6. *Radicular odontome* ..... *from the papilla.*
7. *Composite odontome* ..... *from the whole tooth-germ.*
8. *Dental Cysts*..... which are put in a class by themselves because of their as yet somewhat indeterminate developmental relations; they are variously regarded as residual suppurative sacs, or as paradental epithelial "rests."

Sutton's definition of an "odontome" is "a tumour composed of dental tissues in varying proportions and different degrees of development, arising from teeth-germs, or teeth still in the process of growth." As the list shown indicates "the species of this genus are determined according to the part of the tooth-germ concerned in their formation." It may be premised that the eighth class ("Dental cysts") is by no means the only one characterised by cystic development. Indeed, with the exception of the sixth class ("Radicular odontomes") all may be marked by very definite cystic formation, though this is most characteristically present in the first, second, and fifth classes ("Epithelial," "Follicular" and "Compound Follicular Odontomes.")

I may, with your permission, shortly outline the outstanding features of the various species described by Sutton, and for the description and illustrations I am able to give you, I have to fall back almost entirely upon what Sutton furnishes in his book.

1. *Epithelial Odontomes.*

The histological structure of these tumours is such as the title suggests. There are tubules or columns of epithelium, the cells arranged often in definite layers, and either cubical or columnar in shape. Spaces of varying size may be seen here and there and even definite cysts containing a brownish mucoid or glairy fluid. The supporting stroma is at first fibrous, has a varying

quantity of osseous matter deposited in it, and may even become extensively ossified. Eve's use of the term "multilocular cystic epithelial tumour" was suggested by the naked-eye appearance of multilocular cysts which at times compose its main bulk.

Certain of the tumours so described, Sutton would rather classify as endotheliomata. Whether this be just or not, it seems tolerably certain that a number of them do arise from persistent or aberrant relics of the primitive enamel-germ, in which proliferation and cystic degeneration lead to the histological appearances just described. Such tumours seem to occur most frequently in the lower jaw, and are generally distinctly encapsulated.

I have had occasion to make sections from one such tumour, but am unable to show you them with the lantern. Sutton's illustration is, however, quite sufficient to show the appearances usually presented.

2. *Follicular Odontomes.*

These tumours are pretty generally believed to be due to abnormal changes in connection with the processes of maturation of the tooth-sac or follicle. The small quantity of fluid probably normally present between the tooth and the wall of the follicle is greatly increased, and as a result—or at any rate as an accompaniment—the tooth only partly erupts, or fails entirely.

If the cyst be laid open the non-erupted tooth, or a part of it, is found lying loose ; or it may be found fixed to some part of the interior in normal position or completely inverted ; at times it is altogether absent. The wall of the cyst—representing the expanded tooth-follicle—varies in thickness, but is seldom of greater thickness than 1 cm. (Sutton). It may be so thin that, even if calcareous or osseous, it crackles on pressure.

Such cysts are what are generally termed "*Dentigerous Cysts.*" They seem to be associated chiefly with the permanent teeth, most often the anterior molars, though they may occur in connection with the bicuspids or canines.

My own personal experience of the condition is limited to one undoubted example—a case I saw several years ago. A second case of what was thought might, perhaps, turn out to be a "dentigerous cyst," was that one to which I have promised to make reference later on. I may state here, however, that my opinion is decidedly against the justice of such a diagnosis, and I may mention one feature of it, viz., that it was suppurating to a slight extent, and had indeed suppurated somewhat freely at intervals for at least six months. According to Sutton, "follicular odontomes rarely suppurate, so that if Sutton's statement is substantially correct, the occurrence of suppuration in my case tends to negative a diagnosis of its being a follicular odontome.

I am again forced to rely on Sutton's plate to illustrate the characters of tumours of this class.

3. *Fibrous Odontomes.*

In these the tooth-sac, instead of being as in the preceding class distended with fluid, generally somewhat closely embraces the tooth. Exceptionally it may contain a little fluid. It is usually thickened, the fibrillated condensed vascular tissue of which it is

in the early period composed becoming greatly indurated and laminated. Strata of calcific material may occur here and there throughout the laminæ. Such a tumour will, of course, materially interfere with eruption of the tooth, and such a fibrous mass enclosing a non-erupted tooth may readily be mistaken for an ordinary fibroma, or even for a sarcoma.

The cause of the thickening of the capsule and the failure in eruption of the tooth has been sought for in rickets, and perhaps with a show of reason. The size of the tumour represented in the slide I show you, was about 5 cm. across, and this may be said to be a fair type of such a tumour. It also is from Sutton's article.

4. *Cementomes.*

If you imagine the condition described in the last class carried a little further, and the greatly thickened capsule become more or less completely ossified, you have a rational explanation of the term applied to members of this species.

The mass surrounding the tooth is really the equivalent of cementum, and it forms the main bulk of the tumour—hence the name.

Some very large tumours of this nature have been described by Tomes, Sutton, and others. Sutton gives an account of one weighing 25 ounces—a sketch of which I show you. By careful decalcification, and preparation of microscopic sections from the decalcified tissue, the laminated disposition of the tissue was clearly shown to resemble very closely the arrangement seen in fibrous odontomes. Such masses may contain a number of teeth, the obvious suggestion being that contiguous odontomes have coalesced, or that from the very outset there has been a composite character in the tumour.

5. *Compound Follicular Odontomes.*

These tumours are said to occur in man as well as in other mammals, though not, apparently, with any frequency. In brief, it may be said that they are regarded as being produced by irregular ossification of the capsule, the ossification process occurring in such a way as to lead to the production of a tumour containing isolated fragments or masses of any of the constituent elements of a normal tooth, actual denticles with cement, dentine, and enamel all entering into their composition, or even separate masses of dentinal matter, cement, or enamel.

The slide I show you now (from Sutton), displays a good example of such a tumour. You observe the very large number of separate denticles which it contained. There were, in fact, fully 300 separate teeth and fragments of cement contained.

It is taken from a specimen which is preserved in the museum of the Royal College of Surgeons.

The cases of this sort contained in literature are comparatively few, but chiefly because I incline to attach special importance to this group of cases (in relation to the aetiology of the condition found in my own patient), I shall refer shortly to three cases which Sutton cites in his work.

The first of these was described by Tellander, of Stockholm.

The patient was a woman, aged 27 years, who had a tumour of the right upper jaw, occupying a position where the first molar, the bicuspids and the canine should have presented; none of these had, however, erupted. The tumour was found to contain 9 single teeth perfect in themselves, and a number of masses composed of adherent single teeth.

The second case was recorded by Tomes (after Mathias), and was that of a Hindoo, aged 20 years. The tumour contained a number of ill-formed teeth and 15 masses of supernumerary teeth and bone. The incisors were absent, the tumour occupying their site. The canines were normally placed.

The third tumour (recorded by Windle and Humphreys in the Journal of Anat. and Physiology, Vol. XXI., p. 667), was in a 10 year-old boy. The right lateral incisor and canine, both of milk and permanent set, had failed to erupt, the tumour occupying the space. It contained forty small irregular teeth.

From the point of view of my case, then, please note that it seems to be accepted that in this class of odontomes, tooth matter may occur in all kinds of incomplete condition, from perfectly formed denticles representing in their composition all the elements of tooth structure, to the most rudimentary and irregular isolated particles of elemental substance, dentine, cement, or enamel.

6. *Radicular Odontomes.*

These tumours are composed of dentine and cement. They cannot contain any enamel, as they arise during the process of formation of the root, *i.e.*, after the completion of the crown. I need not trouble you further concerning the members of this group but shall content myself by showing you three of Sutton's illustrative plates.

7. *Composite Odontomes.*

These tumours may be regarded as arising from an aberrant growth of the whole of the primitive tooth-elements. They comprise a number of tumours occurring in the jaws, in which enamel dentine and cement are indiscriminately massed together. Their composite character is determined not merely by the presence of all the elements of the tooth germ in their substance, but also by the fact that their origin is probably to be found in a coalescence of several, at one period quite separate, tooth-germs.

Contrary to what I pointed out to you in speaking of cementomes, the individual teeth cannot here be distinguished, but the component parts are indissolubly and inextricably confused.

I again content myself with showing you Sutton's illustration of a tumour of this class, and before speaking of the next group would show you three other slides illustrating various types of odontome.

8. *Dental Cysts.*

These, though included by Sutton in his chapter on "odontomes," are variously explained. The term is certainly applied (loosely perhaps) to a variety of conditions met with from time to time by both dental and general surgeons. Most typically, the term may be said to be applicable to those small fibrous sacs varying in size from a split pea to a small egg, which are found

at times adhering to the apices of the roots of dead teeth of the permanent set. They contain fluid which may be clear, turbid, or frankly suppurative, and have been found to contain crystals of cholestearine. They have been regarded by many as residual suppurative cysts. It must be said, however, that the term has been also applied to certain larger cysts—at times of enormous size—which may cause very notable deformity, may invade the antrum, and even simulate an abscess of that cavity. Turner has satisfied himself that some such cysts have a definite epithelial lining. It is not improbable that some large tumours of this variety have been described, from their clinical characters, as essentially jaw or antral tumours.

Their origin in "paradental rests" from primitive enamel germ may be regarded as quite feasible, and whatever their origin it is at any rate certain that they do at times suppurate.

I show you now two illustrations of such cystic conditions.

That concludes what I have to say on the strict classification of odontomes. The method adopted has been (as I premised) Sutton's, which affords a workable basis to start with. Also, I have illustrated the different forms by the use of his plates.

Let me now describe very shortly to you the case which was chiefly responsible for my bringing this subject before you to-night.

The patient, a boy of 11 years, was brought to see me by Mr. Rees Price and your treasurer, Mr. Broughton Head, in August of last year (1905), at the outdoor department of the Royal Hospital for Sick Children, Glasgow. To Mr. Price and Mr. Head I desire very gratefully to acknowledge my indebtedness for the privilege of seeing the case, and for their interest and suggestions regarding it.

The boy had come to the hospital complaining of a swelling of the upper jaw, which caused a very obvious bulging of the upper lip.

Noticed first about six months before, it had increased in size, until, at the time when he came to us, it formed a swelling of a fairly regular, oval shape which raised and pushed forward the upper lip and right ala of the nose to a considerable extent.

On several occasions suppuration had occurred in connection with it. Except at these times there was no pain. So far as we were able to ascertain, the origin of the swelling was not regarded by the boy's parents as in any direct way connected with abnormality of the teeth of the milk set. The milk teeth had evidently normally erupted, and given place to the permanent set in due course.

There had been no excessive caries, and, so far as we could gather, no suppurative condition of the jaw or gum prior to the appearance—and, indeed, the attainment of considerable size—of the swelling.

Suppuration was on no occasion very acute. Shortly before the patient came to the hospital, one of the mild suppurative attacks had occurred, and there was visible, on folding up the lip, the aperture of a sinus situated about a centimetre above and in front of the fang of the right lateral upper incisor.

The four incisors were normally erupted, so also the left canine, and both right and left bicuspids. The right upper canine, however, had practically failed to erupt, its tip being just visible through a narrow split in the gum. We were informed that it had been in that condition for a good many months without appreciably advancing at all. In the lower jaw the teeth seemed normal.

The swelling was firm and resistant to the touch. Pressure caused no pain, nor was it possible by pressure to express any discharge from the sinus.

The diagnosis seemed to lie between a simple follicular or fibrous odontome on the one hand, and a dental cyst, such as Sutton places in a separate class, including such indefinite forms as residual suppurative conditions and "paradental rests."

The almost complete failure in eruption of the canine, and the outline of the swelling, as well as its size, made a diagnosis of simple follicular odontome—or "dentigerous cyst"—seem well justified.

Against it, might be put the occurrence of suppuration which, as I pointed out, Sutton regards as a rarity in such tumours. Still this could not be said to constitute an effectual bar.

The condition might equally have been explained as a fibrous odontome in which, contrary to what is usual, a collection of fluid had persisted, or in which the fibrous capsule had been very greatly over-developed.

In either case eruption of the tooth might readily have been permitted to begin, the exact stage at which it should be arrested depending on the degree and localisation of the cystic or ensheathing formation.

The statement, if reliable, that the swelling was antecedent to any suppuration, and that there was no trouble with the milk teeth made the relegation of the condition to the class of "dental cysts" such as Sutton places in his eighth class somewhat difficult.

At the time, I confess, my own feeling was that we would find it to be either a simple follicular odontome or a fibrous odontome—and more probably the latter.

A few days later, in the presence of Mr. Price and Mr. Head, I operated on the patient. Chloroform was administered by Dr. J. King Patrick.

An incision was made right down to the bone at a distance of about 1 cm. above the incisor fangs, traversing therefore the sinus aperture. With periosteal elevator the gum-periosteal flap was freely raised, displaying a bony expansion which reached from the middle line in front backwards and to the right for fully 5 cm. In an upward direction it seemed to bulge towards the floor of the right anterior naris.

A fine probe could be passed into its interior through an aperture continuous with the sinus in the soft tissues, but the passage of the probe gave exit to no pus.

With gouge and rongeur forceps the bone was opened up until there was displayed a cavity measuring about 5 cm. long, 3 cm. vertically, and about 3 cm. deep.

The bony wall anteriorly was fully 0.5 cm. thick and was composed of dense and concentrically laminated bone. Posteriorly it

was also composed of dense bone. The cavity contained little or no pus, the space being occupied by material of firm consistence and considerable vascularity, somewhat resembling granulation tissue.

The relation of this tissue to the bony wall was a very intimate one.

After careful removal of the soft tissue contents, and free removal of the anterior bony wall, the whole interior was closely examined for any evidence of tooth material such as might throw light on the nature of the condition, but without avail.

The roots of the incisor teeth did not enter the cavity, nor did there appear to be any sort of connection between the latter and the right upper non-erupted canine. It seemed, indeed, as if the canine process could be followed in a direction leading obliquely backward, behind the right posterior limit of the cavity—whether the failure in eruption was due to back pressure of the enlarging cavity it was impossible to say.

The upper wall was distinctly vaulted and must have encroached appreciably on the nasal floor.

After free removal of the anterior bony wall and granulation-tissue-like contents, the cavity was packed with gauze.

It may be said here that the after progress of the case presented little of special interest.

The packing was removed after the first few days and was not re-introduced.

About a month ago I found it necessary to open up the aperture in the anterior wall a little, on account of slight retention of pus.

I am able to show the patient to you to-night and you will see that the cavity is now all but closed and there is practically no deformity. You may notice that the right upper canine does not yet show much sign of erupting. It is, however, a little more visible than when the patient first came to us.

The question of interest, then, is that of the exact pathology, and I have already suggested the possible causes as they presented themselves to Mr. Price, Mr. Head and myself prior to operation.

Following the first operation, I cut sections of the tissue removed from the interior of the cyst.

When in the paraffin block the prepared tissue looked as if it should cut very readily, just as, on removal, though firm, it looked like granulation tissue, which, as a rule, can be cut very easily after the ordinary processes of fixation, hardening and embedding in paraffin.

I was, therefore, not a little surprised to find, on proceeding to cut sections of the tissue, that I completely spoiled two razors in the process. Something existed in the tissue which was of such hardness as to spoil the razor edge.

On examination of the sections after suitable staining, there was not at first obvious any adequate cause for this. The sections were found to be made up, as was expected, of tissue showing the characters of ordinary granulation tissue. On careful examination, however, there were seen, here and there throughout this, small highly refractive bodies which took on the eosin stain and which

were distributed singly, in pairs, or in small clusters of three or four. In size they varied from about that of the nucleus of a small mononuclear leucocyte to about twice the diameter of a red corpuscle. Some of them presented a central more highly refractive part.

These bodies I did not then recognise as like anything I was familiar with, nor have I yet arrived at a satisfactory explanation of their nature. I wondered whether they could be produced by any deposit of dentinal matter and I made inquiries amongst some of my dental friends on the subject, but could get no further on towards a solution.

I am satisfied that, whatever their nature, they were the gritty particles which destroyed the razor edge.

With a view to elucidate the matter, if at all possible, Mr. Head very kindly sent on some of the sections to his friend, Mr. Hopewell Smith, of London, who not only gave us his opinion, but very kindly sent us some photomicrographs which he had prepared, showing these bodies *in situ* in the tissue.

I show you now a lantern slide I have made from one of these, and you can see, I think very well, these bodies in the midst of what you will recognise as ordinary granulation tissue. (Figure.)

I may quote Mr. Hopewell Smith's opinion as to their probable nature. He says :—

" I have come to the conclusion definitely that the bodies in the sections are identical with the so-called ' Russell's fuchsin bodies '— otherwise hyaline bodies which occur in a great variety of pathological processes, such, for instance, as chronic appendicitis. They are believed to be due to a kind of coagulation brought about by changes taking place in the granules in oxyphile and basophile cells in organic material which is breaking down. I am convinced that there are no calcification appearances in the sections. I have never before seen these bodies in the walls of dental cysts, but apparently there is no reason why they should not be at times found there."

While appreciating very much Mr. Hopewell Smith's assistance and interest, I confess that I cannot accept the explanation he suggests.

That there was some gritty material of considerable hardness in the tissue I know, and except for these bodies I have found nothing in the sections to explain it.

I therefore feel myself bound to seek for an explanation in their being of inorganic calcific (dentinal or other) nature.*

If I am right in so explaining them, what bearing then may

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*Mr. Hopewell-Smith gives the following reasons for thinking the re ractile bodies seen in the sections to be hyaline and not calcareous :—

(1) Their uniformity in size and shape is marked ;

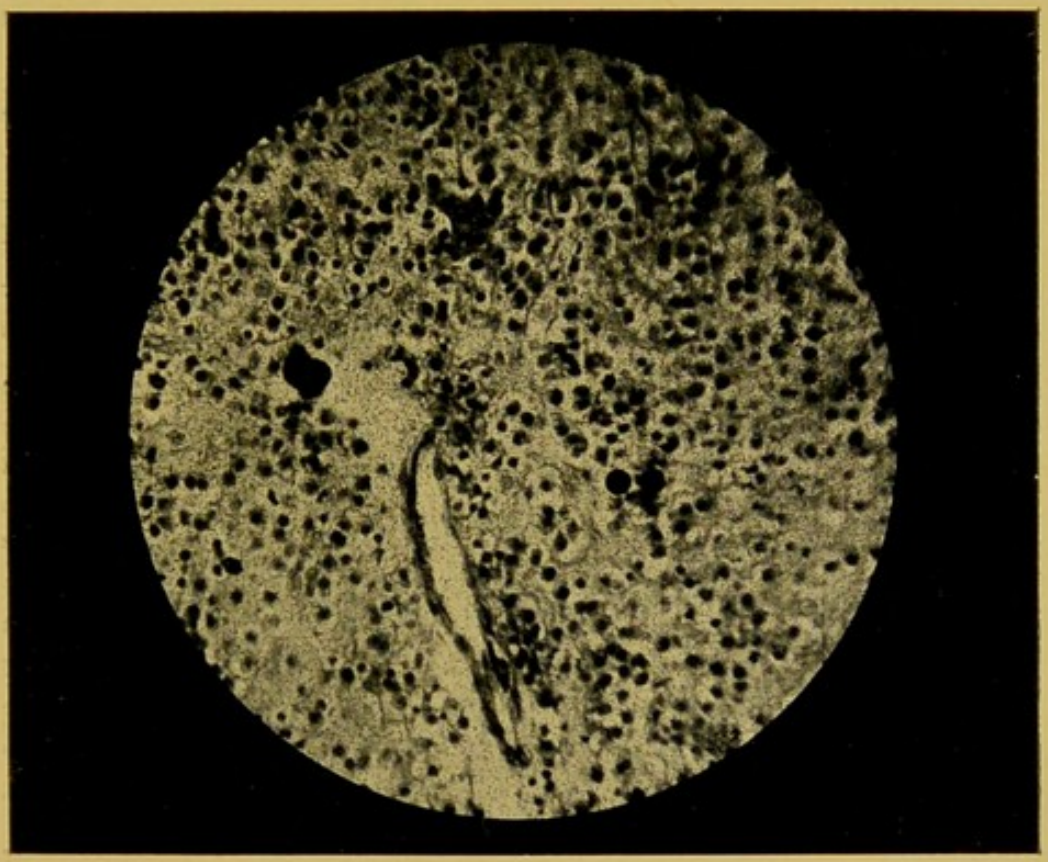
(2) Their arrangement singly, in pairs, or tetrads is constant ;

(3) They are absolutely structureless ; so far as a dentinal or other tubular system is concerned ;

(4) There are no formative cells ;

(5) They possess high-staining properties which developing, *i.e.*, formed but uncalcified, dentine does, but calco-spherites do not ;

(6) They are very few in number.



To Illustrate Dr. Young's Paper.

this have on the exact nature of the cystic condition I have described ?

May I suggest that the explanation will most reasonably be found in the supposition or presumption that the condition was of the character of a compound follicular odontome, in which, you will remember, not only may you have more or less perfectly formed denticles fixed to the inner lining, but even isolated aggregations composed purely of dentinal matter, or purely of cement, or purely of enamel ? May these bodies not represent an extreme form of that isolated inorganic tooth material ?

I put this forward as, in my view, an explanation not altogether unworthy of credence ; and in the spirit of the second proposition which I advanced to you as a basis for my paper, I look forward, not without hope, for an expression of opinion from the members of your society.

I thank you very much for your patient and attentive hearing, and again express my appreciation for the honour you have done me in asking me to address you.

Dr. WALLACE, the president, was the only speaker, and warmly thanked Dr. Young for his paper, which was much enjoyed. He referred to Bland Sutton's classification, and held that while it was fairly workable, it would have to undergo many alterations as our knowledge of dental pathology advanced. He agreed with the doctor on the importance of the early diagnosis of tumours and ulcers in the mouth, and of the assistance the general surgeon and the dental surgeon could be the one to the other. None of the members could render any suggestion as to the case submitted by Dr. Young. The wound was healed with the exception of a small opening situated above the lateral incisor in the incisive fossa, and swelling was entirely gone. None of the members had met with a case approaching the same characters.

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