

containing some pus, and for a short distance surrounding this the bone appeared quite cancellated, but the rest of the tumor was quite dense in structure. The pulp of the canine and of first bicuspid had still some vitality, but that of the second bicuspid was dead. The pulp-chambers were decreased in size by a deposit of osteo-dentine upon their walls. Slight hypertrophy existed of the cementum around the fangs. A large nerve entered the growth on its buccal side.

The microscopical examination of this tumor, as made by Dr. J. W. S. Arnold, and as shown by his drawing (Fig. 568), exhibits cancellated tissue almost entirely; the outer edge being a thin layer of more compact bony tissue. In the spongy part is a small amount of soft marrow, containing the usual constituents of fetal marrow,—*i.e.*, medulla-cells, and myeloplaxes with oil-globules.

Exostosis, or, more correctly speaking, hypertrophy, of the tuberosity of the maxillary bone, the condition shown in Fig. 567, is a quite frequent affection, being associated, as the author infers, with the continuous excitability engendered in this part by that elongatory process which terminates only in adult life. The propriety of operating upon these cases is to be determined by the individual conditions. The majority of such tumors are safely to be let alone, as they exhibit little or no disposition to change from year to year. Associated with these hypertrophies the author has met with neuralgia of such severity that only through section of the affected part could relief from suffering be procured.

CHAPTER LXIII.

THE TUMORS OF THE MOUTH.

SELF-EXPLAINING CYSTIC TUMORS.

THE self-explaining cystic tumors of the jaws are, all of them, dental: of this the author is now entirely satisfied. In a former edition of this work* these cysts were described as being of two kinds, simple and compound: the first, the simple, were alluded to as mere expansions of the outer plate of the bones,—wind-bags, the old writers called them. The second class, the compound, were described as cysts containing peculiar contents, which contents induced the cysts and constituted the lesion to be studied; such contents being teeth in a state of full or partial or anomalous development, the tumor being the odontocoele, or, as it might as well be termed, the dentigerous cyst.

The Simple Cyst.—All writers on surgery have remarked the existence, in the mouth, of this form of tumor,—a simple expansion of the bone, with varying fluid of gaseous contents. Different authors differently describe and name them. The term *spina ventosa* is, perhaps, about the most unmeaning that has been applied. As the author *knows* them, their history may be written as follows: there is first remarked on the side of the jaw, either superior or inferior (no preference seems to exist), a slight flattened enlargement; this increases slowly, until the swelling reaches the size of half a hickory-nut; they are seldom seen larger. No pain attends the growth, and, outside of the mental disquietude induced, no functional or other disturbance associates. The slowness of growth is such that it may require from one to three years to reach the size alluded to. This tardiness, absence of pain, and of constitutional disturbance form marked diagnostic signs. Another sign, one on which most writers lay particular stress, is the giving forth, on pressure, of a parchment-like crackling; with this last the author seems to have had a peculiar experience, for, while he has treated quite his share of such cases, it has not been his experience to find such crackling sound in any one of them, and while of course it would ill become any individual to assert that such a crackling is never to be heard, yet it is to be impressed that the sign is not by any means a constant indication, consequently is not to be given a heed demanded for it. In most of these tumors, septi, more or less in num-

* Diseases and Surgery of the Mouth, Jaws, and Associate Parts.

ber, have been found supporting the vault; with the presence of such pillars, it is evident that yielding would be out of the question, so that the practitioner is not to be deceived by the firm character of the growth. The gum covering such cysts is always perfectly normal,—no congestion, nothing indicating implication; a matter important to observe, as, should the diagnosis be in any wise obscured, the practitioner has at least the satisfaction of feeling a tolerable assurance as to the benign character of the disease as well as of its non-acute character.

Of the number of cysts of this class treated by the author, every one has been situated in the outer or vestibular walls of the bones. Why they should have been so located, or indeed whether it is always the case that they are so found, he does not know. An individual experience alone is offered.

A diagnosis made out, correction is simple. A common treatment, and one generally practised, because of its little trouble, is to make a crucial incision through the body of the tumor, and, breaking up such septa as may exist, stuff the cavity with lint saturated with the tincture of iodine: this, if there be no foreign body in the cavity, as, for instance, the root of a dead tooth, will invariably cause the base to throw out granulations, and thus obliterate the cyst.

Another mode not infrequently resorted to, is to dissect from the tumor, in flap-form, the overlying gum, and with a chisel or the bur of an engine cut away the vault of the cyst. The parts are next carefully syringed and the flap laid back. This latter operation requires much more time, more skill, and gives more pain than the other. The first is not nearly so objectionable to the patient, and is likely to be equally effectual.

Concerning hemorrhage, little anxiety is to be felt; it may be necessary to syringe the cavity with a little alum-water, or some other astringent, but even this is not commonly necessary.

CASE.—Mrs. C., aged about twenty-one, applied to the author for treatment of a tumor occupying the canine fossa of the left superior maxillary bone. The growth had been eighteen months in progress; was about the size of half a walnut, perfectly solid to the touch, painless, and entirely healthy-looking; the disquietude of the patient was purely mental, her mother having died from scirrhus cancer.

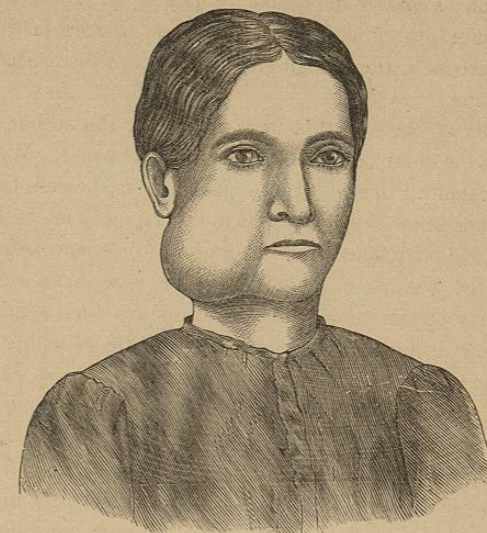
Diagnosis.—Simple cyst.

Treatment.—Crucial incisions were made; several delicate septa of bone, which the cuts revealed, were broken up; the cyst was injected for the first three days with weak stimulating liquors. No inflammation developing, tufts of cotton were saturated with tincture of iodine, and the cysts stuffed with them. In one week the site of the cavity was occupied by healthy granulations; in three weeks the patient was entirely cured, and left the city for her home in an adjoining State.

CASE.—About nine months back, a German woman applied with a cystic tumor, similar to the above; it was certainly as unyielding as solid bone.

This tumor was treated by making a crucial incision through the soft parts alone; the flaps were then dissected off, and the cyst, being exposed, was cut away with a chisel-shaped instrument. The flaps fell naturally into the

FIG. 569.



cavity, and were left, even without a stitch, to take care of themselves. The cure was complete in about a week.

Figs. 569 and 570 show the external and the uncovered appearance of a

FIG. 570.



cystoma successfully removed by the author at one of the clinics of the Philadelphia Hospital of Oral Surgery. This tumor had been some two years in progress of development. It presented certainly a threatening appearance and

was variously diagnosed by different surgeons. The origin was in a diseased wisdom-tooth. In the extirpation it was found to involve all the body of the bone extending from the cuspid tooth to the sigmoid notch. Internally were several septi. The feature of the cyst was that of osteo-enchondroma. The patient recovered without a bad sign and remains well.

The above, with the exception of the last case, constituted the description and the illustrations offered of the simple cysts in the edition alluded to; but in the mind of the writer there existed a degree of confusion, because in some of these cysts nothing was found, and a tumor strictly local, as these always prove to be, should not be without local explanation. This explanation has been found in a more careful study of the cases. In every instance over which proper inquiries have been extended, origin has been demonstrated to exist in dental disease. Close observation, in most of the cases, discovers some part, it may be a mere particle, of an unabsorbed tooth-root.

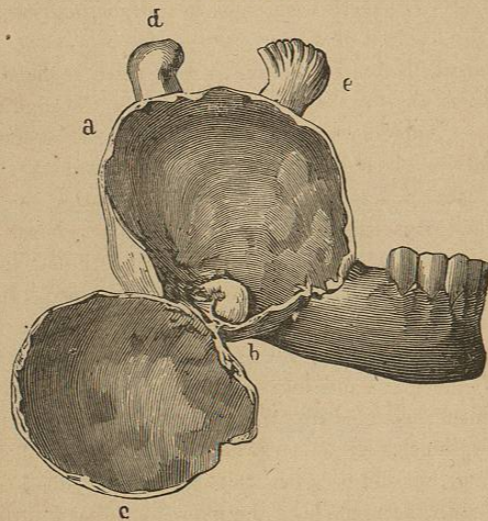
Odontocoele is the most common of the oral cystomata.

An odontocoele proper is exhibited in Fig. 571.

In the diagram a large tumor is recognized to have existed in the body of the lower jaw, cystic in character, as seen by the section *c*, the exciting lesion of which, *b*, a tooth-crown, is seen lying in the cavity.

The diagnosis of an odontocoele is seldom a matter of difficulty. The illustration last presented is the subject in its simplest expression; from this the

Fig. 571.



lesion varies to the complex dentigerous tumor, an example of which is presented on succeeding pages.

An odontocoele may present itself in any part of the ossa maxillæ, and,

what is of much consequence to be remembered, may have, as the lesion of departure, a supernumerary tooth.

The absence of a tooth or teeth from the arch through non-development, conjoined with the presence of a non-vascular tumor, affords inference of the existence of odontocoele.

In the case of supernumerary teeth, or of doubt as to absence of teeth through non-development, the use of the exploring-needle, striking the glossy, slippery enamel, will always explain the ordinary condition.

EXAMPLE.—A young lady, aged sixteen, presented herself, having a tumor, intramaxillary, evidently, occupying the anterior left side of the hard palate. Her exact condition was as follows. She had never had a tooth of the permanent set extracted, yet she lacked, to make up the complement common to her age, the canine of the affected side. The tumor was, of course, an odontocoele, or at least so great was the probability of such being its character, considering the absence of the tooth from the dental arch, that any surgeon would feel justified in founding a proposed operation on such conviction. An exploring-needle verified the conclusion.*

A few years back the following interesting case of odontocoele came under observation of the author: The patient, desiring a set of artificial teeth, had, about a year previous, all the teeth of the upper jaw extracted, and, as is customary (not desiring to wear a temporary denture), had been dismissed for a period of some four months to await alveolar absorption. At the end of that time the impression of his mouth had been taken, the parts being in healthy condition. The teeth were made, placed in position, and worn with entire comfort for a period of a year.

About eight weeks before presenting himself, these artificial teeth had been found getting loose, as if from some projection at the right border of the myrtiform fossa. Applying to his dentist, surprise was expressed at the occurrence, and advice given that developments be awaited. At this period the gums were more or less congested, and were putting on quite an angry appearance; a few days later a fistula formed. His adviser, confident that no portion of the roots of any of the teeth had been left in the jaw, now dismissed the case, advising him to seek surgical assistance. In this condition he came under observation of the author.

The case now presented the following features: much engorgement of all that portion of the gum and lip covering the incisive and canine fossæ, which engorgement extended in a triangular direction to the inner canthus of the right eye; much soreness on pressure over all the affected parts, the fistula discharging thin and occasionally bloody pus.

Examination with the probe gave the impression that it struck against the root of a tooth, which would certainly have influenced the making up of

* Refer, for proper appreciation of the subject, to chapter on Anomalies of Second Dentition.

the diagnosis if experience had not suggested that no tooth could, under ordinary circumstances, have a fang extending such a length.

Deducing from the conditions present the imperative necessity for an exploration, and the patient willingly acceding to the conclusion, the following course was pursued. The parts being exposed, a pointed and somewhat delicate-bladed bistoury was passed from the superior fleshy boundary of the canine fossa to the inner canthus. The cut passed not only through the soft parts, but, in the return, sunk readily into the bone. A first flap was now dissected posteriorly from the dead mass: a second was bounded mesially by the nasal bone, ala, and left prominence of the myrtiform fossa. The blood being sponged away, there was discovered, lying in the very centre of the carious bone, a cuspid tooth of ordinary size and development, the apex being in immediate relation with the floor of the orbit.

That this tumor had existed for a long time is, of course, not to be doubted, but it attracted the attention of the patient only on setting up acute inflammatory action. This inflammation soon destroyed the integrity of the vault of the cyst: hence the softened carious state in which it was found. The interest associated with the lesion lies in the absence of all the teeth by extraction, and the consequent loss of data for a diagnosis. A tumor precisely similar is described by Dupuytren.

A case of odontocoele, deserving to be put forward as illustrative, occurred in the practice of Dr. David Roberts, treatment being conducted by the writer in consultation with that gentleman.

Mr. T., a person of wealth and leisure, wearing a partial set of artificial teeth, noticed that the four natural incisors of the superior jaw were loosening. This trouble increased until the living teeth were about to drop out. Anticipative of that accident the organs were extracted. Following the removal exuberant granulations filled, and depended from, the cavities. Examination with a probe revealed the bone to be in a condition of caries. Development showed the expression of fungus hæmatodes. Diagnosis being in abeyance the concern felt was very great.

The meaning of the case turned out to lie in an encysted canine tooth of uncommon size, occupying a position in the floor of the nasal fossa midway between the anterior and posterior openings. The writer, in an experience of thirty years, has met with no case more confusing. A diagnosis was secured only by cutting away the carious bone on the supposition of an existing local lesion; this supposition arising out of absence of dyscrasic expression.

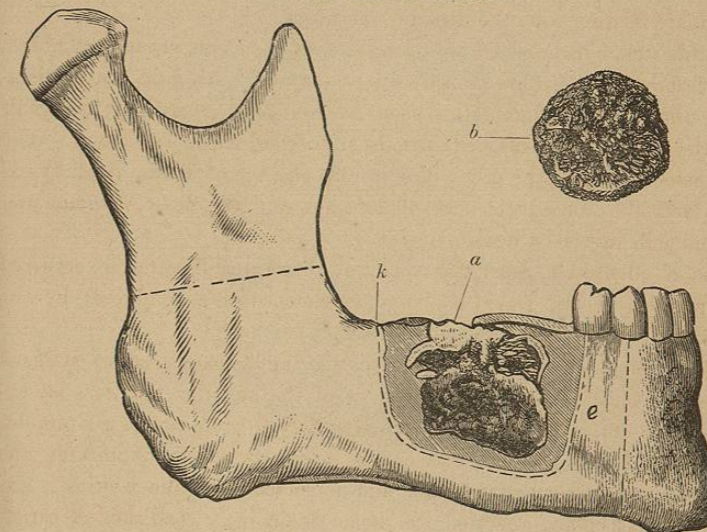
Osteo-dental tumors dependent on the development of supernumerary teeth are not uncommon; they are generally easily recognized from their position and size, being seldom larger than an ordinary pea, and mostly situated in some part of the palatine processes of the superior maxillæ. Any obscurity, however, is readily dispersed by thrusting a bistoury into them, or, as suggested, the exploring-needle. The dental surgeon, particularly, would remark from the sense of touch whether or not the contents are tooth-substance.

Osteo-dental tumors not infrequently have as their cause undeveloped teeth. Only a few days ago the author saw a couple of bicuspid crowns, evidently long dead, which had been removed from one of these oral compound cysts.

Such osteo-dental tumors, then, as just illustrated, may be viewed as the most simple of these compound cysts. Another class, the complex osteo-dental, may now claim attention.

Taking advantage of illustrative cuts kindly furnished by writers and publishers, two cases are shown which cover the ground of a required study perfectly; both being anomalous, indeed almost unique. Fig. 572 shows an

FIG. 572.—AN ODONTOMA.



odontoma, or tooth-tumor, in position. The outer, enveloping, plate is removed with view to the exposure. This growth, looking in its bed, *k*, *e*, so indistinguishable, and not less so when isolated, *b*, is yet easily demonstrated by microscopic section to be an expression of odontocoele.

On the top of the tumor, as is seen, is a portion of the enamel of the crown of a tooth, *a*, very much like a half-decayed deciduous molar. The part below this, in external appearance, was rough on the surface, and seemed dense in structure, with the exception of a concave surface on the bottom of the tumor, which was quite porous. Sticking out from this surface were a number of spines, between which were minute openings into the centre of the tumor for the passage of these vessels.

Alongside of this were two other concave surfaces, not so deep, but dense and somewhat smooth, produced by the cusps of a molar tooth found below the tumor at this point. These cusps were probably a part of the first per-

manent molar, and the tumor was composed of the elements of the last deciduous molar. No other teeth were found.

On making a section of the tumor, there were seen columns or spiculæ running from the circumference to the centre, forming quite a net-work, in which the pulp was held, so that, instead of there being one pulp-chamber, there were many.

Fig. 573, drawn from a section of this tumor, made by Drs. Goodwillie and

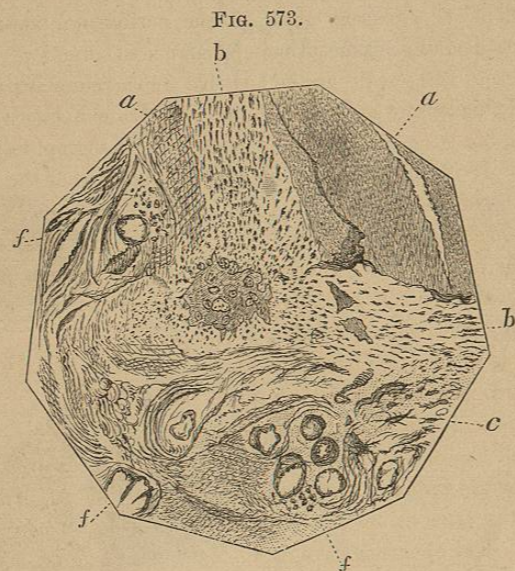


Fig. 573.
 a, a, represents the enamel at the top of the tumor penetrating into fissures, or depressions, in the mass below.
 b, b. Here is represented the dentine; passing from the centre in two directions,—in one instance passing between two layers of enamel, and in the other between enamel and cement.
 c. The cement is here seen, recognized by the presence of lacunæ.
 f, f, f, represent the fenestræ, once occupied by the dental pulp. Around some of these may be seen distorted dental tubuli.

Arnold, represents the dental tissues in their deranged and distorted condition. The internal structure is seen to be very much fenestrated.

A curious case, diagrammed for the *Dental Cosmos* by Dr. C. N. Peirce, the tumor having been ablated by Dr. A. B. Eastman, of Wellsboro', Pennsylvania, will command interest. In the preceding



FIG. 574. In the preceding chapter reference is made to a condition evidently of similar signification, but another periodontal proliferation, or hypertrophy, so extensive as that here shown is not familiar to the author as being on record. Histologically the growth is described as not being very widely differentiated. Its upper part, or that portion which surrounded and almost buried the crown of the tooth and which presented a somewhat granular appearance,

is delineated as being composed largely of a proliferation of impacted epithelial cells so dense that quite an effort was required to separate them sufficiently for an accurate examination.

The lower part of the tumor, or that division which was entirely within the walls of the alveolar process, was still more dense, forming a structure hard and leathery in appearance; like the upper part it was composed of epithelial cells, with a tendency to a linear arrangement containing various amorphous patches of the salts of lime, showing quite an effort at calcification,—a condition occasionally presenting itself in the periodontal membrane without causing much deviation from normal appearance of function.

The feature of interest lies in the fact that the envelope is part of the tooth. Periodontal thickenings are not at all rare, the writer has seen cases counting by hundreds, but accepting that here shown as photographically correct it is exceptional. It is only, however, in a special sense that the condition is to be allied with the odontomata.

An odontoma, the most heterologous example found illustrated in surgical literature, was presented, together with a prize essay thereon, by M. Forget to the French Academy. Fig. 575 shows the tumor as it lay in the section of jaw removed. The commencement of the disease was by pain, at first intermittent, afterwards continuous and acute.

When the patient was seven years of age, two small healthy molars were extracted, under the impression that they were preventing the evolution of the second teeth. The operation gave great relief, and the pain ceased. Shortly afterward a small, round, hard tumor appeared on the external face of the jaw, near the alveoli of the teeth that had been removed. The growth caused no suffering to the patient, and made no sensible progress for a period of eight years. After this the left side of the jaw became tumefied, and the bone, in the language of the patient, broadened and rounded. He also observed, at this time, that the large molars, which were regularly developed on the right side, were wanting in the diseased part.

This morbid enlargement was accompanied by frequent fluxions of the gums, cheek, and whole left side of the face. The recurrence of this perversion was attended with great pain, and caused an increased tumefaction in the

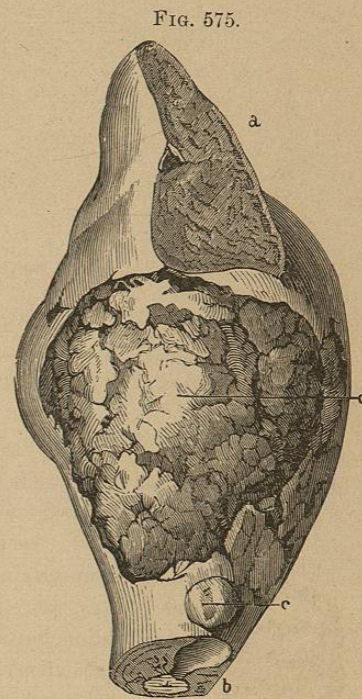


FIG. 575.

soft parts to such an extent that the difference between the sides of the face became absolute deformity.

Later a violent inflammation occurred in the base of the jaw and the cervico-maxillary region. Antiphlogistic treatment was employed, two applications of leeches were made, and the inflammatory symptoms decreased, and, fifteen days afterward, purulent matter formed. The thick part of the cheek opened spontaneously, allowing the issue of a large quantity of fetid pus. The opening of the abscess became fistulous, the surrounding tissues then detached, and the bone under them was naked for a very considerable extent.

The case is thus described in the memoir. The disease appears externally in a considerable tumefaction of the left cheek, which is more than three times its natural size, and the tumor has caused a very marked eccentric development of the corresponding maxillary bone.

When the patient opens his mouth, which he does without effort, the whole left side of the bone is seen to resemble a large turkey-egg,—the base of the jaw being confounded, without appreciable line of demarkation, with the internal and external faces, which describe a very considerable curve.

The tumor is uniform, without depressions or any irregular swellings upon the surface. It does not yield to pressure, and no part of it gives that sound of crepitation which is characteristic of attenuation of the osseous tissues. The external swelling hides the superior and lateral parts of the neck; the enlargement of the bone has forced the tongue from its true direction, and the floor of the mouth has been driven from the left to the right.

The alveolar ridge, singularly enlarged, contains none of the grinding teeth, except the first bicuspid, which stands regularly in its socket. The tissue of the gums is dark-red, and unusually thick and hard. In a circumscribed spot, about the size of a twenty-centime piece, the tissue is broken, and exhibits an unequal, wrinkled, grayish surface which gives a dry sound when struck with a metal, as if the crown of a tooth were hidden in the cavity.

In order to complete the symptomatic description, it is added that there are many ossifluent fistulous openings at the base of the tumor, and much hypertrophy and hardening of the submaxillary lymphatic ganglia.

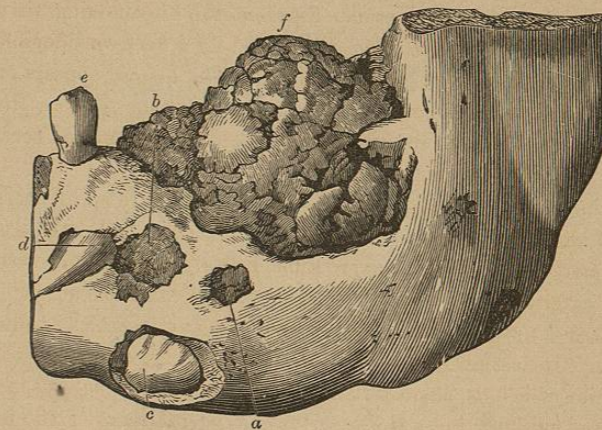
The functional disorders arising from the pathological condition, at first very slight, are noticed at this stage as increasing every day: embarrassment of vocal utterance, mastication painful and incomplete, deglutition effected with difficulty, and respiration much impeded every time inflammation is renewed in the tumor; lastly, the patient suffering from two serious inconveniences,—one, the very marked deformity of the face; the other, the incessant flow of fetid pus, proceeding from the complicated fistulæ of the osteo-dental caries.*

* ANATOMICAL EXAMINATION OF TUMOR.—With the surrounding soft parts, the tumor is described as being an exact ovoid. The tissues, adhering to its external face, were found marked with many fistular passages, ending at inflamed and ulcerous points of osseous structure. This tissue was thin, soft, and depressible, and perforated by two orifices leading into the interior of the cyst, from which exuded a purulent, viscid, reddish liquid. A stylet

M. Forget, in presenting his case to the French Academy, remarked that it was a duality of anatomical and pathological lesion, so rare that, after the

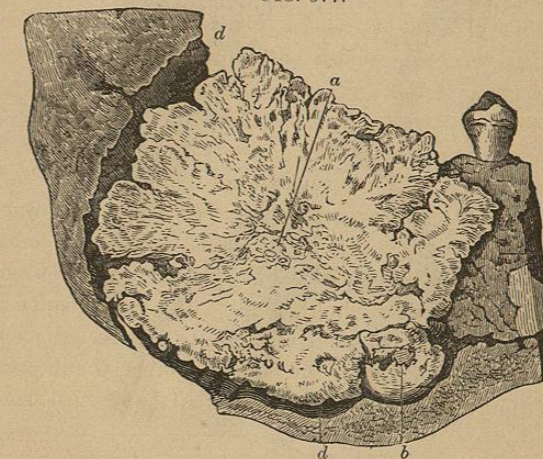
introduction into one of these passages was stopped by a hard body, which, under percussion, sounded like a compact tissue deprived of its periosteum. This object was reached by dissecting off the gums, which, condensed into a thick bed, formed a sort of operculum for the upper part, completing the cyst in which the morbid product was situated. The

FIG. 576.



dissection exhibited that the jaw from the ramus to the premolar had been changed into a cavity containing a compact, saxiform, ovoid mass, the size of a large egg, grayish, unequal surface, studded with small tubercles, surrounded by a bed of enamel, and completely buried in the thick part of the bone. (See Fig. 575.)

FIG. 577.



Next, the tumor was divided along its axis into two unequal parts, each confined to the corresponding half of the osseous cyst that was comprised in the division. This revealed the composition of the tumor: it was formed of a smooth, glossy, compact, homogeneous, ivory-like tissue, of a whitish-brown color. In the centre of it a kind of regular disposi-