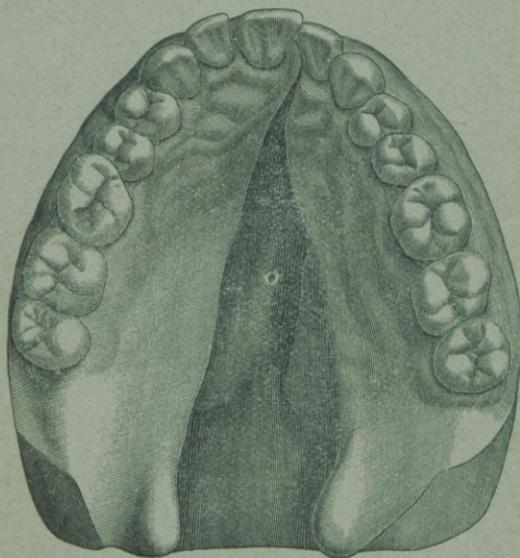


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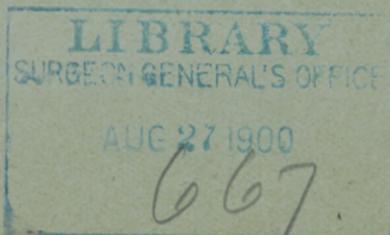
CLEFT PALATE.

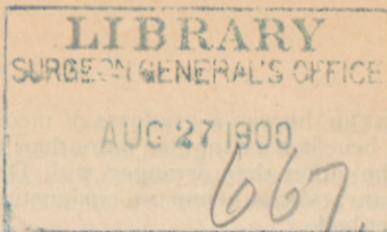
Read before the Connecticut Valley Dental Association, June, 1894.



By NORMAN W. KINGSLEY, M.D.S., D.D.S.,
115 Madison Avenue, New York.

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CLEFT PALATE.

BY

NORMAN W. KINGSLEY, M.D.S., D.D.S., NEW YORK.

(Read before the Connecticut Valley Dental Association.)

A PAPER is not worth the mental effort of preparation, nor is an author justified in taking up the time of an intelligent audience with it, unless it contains something new, or at least new to the audience addressed. If I am to follow strictly the line which I have thus prescribed, I shall have the merit at least of not wearying my hearers.

When I first became interested in this class of deformities, the literature upon the subject was extremely limited; the first edition of "Harris's Principles and Practice" was the only work I had access to. I was wishing for an opportunity when I was suddenly confronted with one of the worst cases which I have ever seen. It was a double cleft of the palate, alveolus and hare-lip. An operation had been performed upon the lip during infancy, and in so doing the surgeon had removed the pendent intermaxillary bone, thus sacrificing all possibility of the eruption of any incisor teeth. With the meager knowledge obtained from "Harris" I made for this patient an obturator of vulcanite, filling the gap in the alveolus with a carved porcelain block.

In that same edition of "Harris" I read of a "Mr. Stearn, surgeon, of London," of whom it was said that he had made a very clever contrivance which had proved beneficial, but the description was so incomprehensible to me that I was none the wiser. My patient, described above, was a young lady from the southwest, about twenty-one years of age. After the completion of my obturator, which was to all intents and purposes identical with many that I have seen in later times, and for which a claim of originality has been made, I learned by the merest accident that there was a gentleman living in New York who had made for himself an artificial palate of rubber.

I hunted up this gentleman, and to my surprise found that he was *the* Mr. Stearn, surgeon, of London, mentioned by "Harris." I told the father of my patient that I believed that a palate such as

Dr. Stearn (for he was a graduate of medicine) had made for himself would benefit his daughter more than the obturator which I had made. The father then arranged with *Dr. Stearn* to make for his daughter an artificial velum in conjunction with my prosthesis, as before described.

This was my introduction to artificial vela, and was in the winter of 1859 and 1860.

Dr. Stearn's velum was constructed by his taking small impressions of the various parts of the cleft, in white wax, upon the end of a stick, and then combining those forms and making a copy by carving in wood. He was thus able to produce, and did produce, a mold made of wood, in which he subsequently vulcanized his artificial velum.

From that moment I conceived the idea of making for the same patient an artificial velum which I believed could be produced with less labor and would be more exact in its adaptation. I began as a dentist would naturally begin. I took an impression with plaster, and was quite sure that I had a cast of all the parts in their normal relations and in their entirety before I took my next step. I made a model of my velum with sheet gutta-percha, and my mold in which to vulcanize was made of type-metal.

This, my first artificial velum, was modeled upon the lines of *Dr. Stearn's*. It was not a *copy* of *Stearn's*, but was an imitation. His required a delicate gold spring to make it effective; subsequently I discarded the gold spring, and varied the form so that it was unnecessary. Nevertheless, I did not venture very far away from so high an authority as I then conceived *Dr. Stearn* to be. The outcome of this case was that the patient, after trying both instruments, wore mine in preference to *Dr. Stearn's*, because she said it was more comfortable. A description of *Dr. Stearn's* velum has gone into our literature; nevertheless, I desire to call attention to the feature which he seemed to pride himself most upon. In a communication which he made about that time to a dental journal called *The Vulcanite*, after describing the triple laminae which made his instrument collapsible, he says, "I wish to be understood as saying, in exact terms, that I consider the slit and opening through the center, and its closure by a sort of valve on the anterior surface, as an essential feature of all artificial vela; and also that I do not acknowledge the remotest obligation to any other person for this one idea, which did not present itself to my mind until I had occupied myself with my first case (in 1841 and 1842) for more than a year. . . . Eighteen years have since elapsed, and I have not yet conceived any other possible way of constructing an instrument at once simple, delicate, and durable, but in this *triple* form; and, though I trust and believe that others will hereafter improve upon my methods, I am confident that this one feature will be preserved in all successful 'obturators.'"

Figs. 1 and 2 represent respectively the oral and nasal aspects of *Dr. Stearn's* artificial velum, as published by himself in 1860 in *The Vulcanite*.

For the first four years of my experience in making artificial vela, I confess that I was handicapped by the foregoing authoritative statement. I did not dare to depart radically from that peculiar character. In the autumn of 1863 I was present at a meeting of the Odontographic Society of Philadelphia, and exhibited examples of the artificial vela

which I was then making. To those who were familiar with the Stearn instrument the similarity was plain to be seen.

In December, 1864, I was in London, and the criticism of London dentists upon the complex character of the instrument aroused me to the necessity for a more simple contrivance ; and I then produced my

FIG. 1.

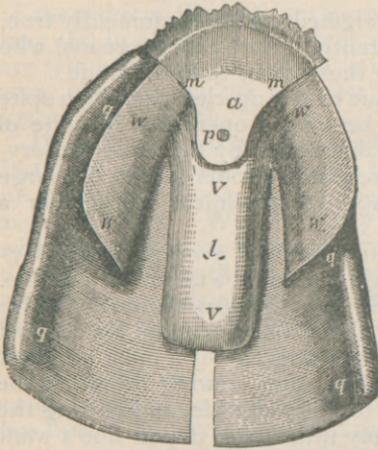
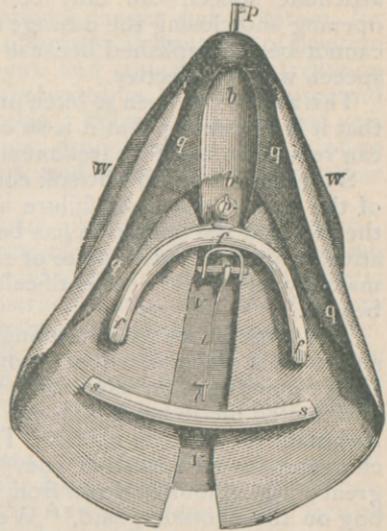


FIG. 2.

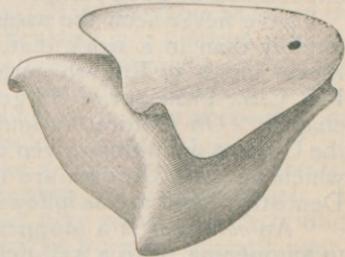


first really original appliance. It had not then, nor has it had since, any of the characteristics of Stearn's instrument, of which he was so proud. Fig. 3 shows my artificial velum as contrived in London, 1864.

Mine was an original conception, and was no more like the Stearn instrument than is the modern repeating rifle like the old flint-lock shot-gun,—the only points in common being that both are made of the same material. I have been informed that Dr. Stearn before his death abandoned his complex instrument, and was wearing one made upon the same plan as my own ; thus was the compliment returned.

I must apologize for so much of personal history. I would not have intruded it, nor would I have regarded it of sufficient interest to take up the time of an association, were it not that, in the discussions upon this subject before the New Jersey State Dental Association in the summer of 1893, Dr. Truman, of Philadelphia, is reported as saying, "I think it would be well to have the matter settled some time, as a matter of history. . . . It is of course unprofitable to discuss a matter of this kind when we have no data at hand, but I think the matter ought to be settled."

FIG. 3.



It is somewhat mortifying to me that neither so learned a man as Dr. Truman nor any one else in that audience was aware that a faithful and correct history of all that I have above stated is to be found in my work on "Oral Deformities," published more than a dozen years ago.

It is unnecessary to repeat that the only object of any interference is to give to the sufferer the power of articulate speech; and perfect articulate speech can only be produced normally by voluntarily opening and closing the passage from the larynx to the nose. If this cannot be accomplished because of the inability of the palate to act, speech will be defective.

This axiom has been so often promulgated, and is so eminently true, that it is surprising that it is so constantly ignored by surgeons, who can recognize no other treatment for these cases than the knife.

Surgeons are found who still continue to sew up cleft palates in spite of the almost universal failure as a beneficent operation, in spite of the fact that the operation has been abandoned by the most conservative surgeons, and in spite of the repeated proofs that in the large majority of cases a scientifically applied apparatus will confer a benefit.

The surgeon sews on, seemingly unmindful of everything but loyalty to his profession, whose dignity will not admit a failure as possible. I am reminded of an interview with Sir Wm. Fergusson in 1865. He had invited me to bring to him a lad about nine years old for whom I had made an artificial palate. The case was one of a most hopeless character for an operation; nevertheless, after viewing my work the great surgeon looked down from his toplofty altitude, and patting the boy on the shoulder, said, "Well, my little man, if you don't want to wear that, come to me and I'll sew you up."

I suppose there have been cases of surgical operations which have enabled the beneficiary to speak perfectly. I repeat that I *suppose* so, but in all of my nearly forty years of experience I have never met one. They are claimed in the books and when the patient is out of sight, but I am skeptical about there being such a percentage as to justify surgical interference in any but rare cases, while it must be an extraordinary case to which an apparatus could not be applied with expectation of good results.

I have never seen the assumption of superiority manifested more forcibly than in a work that, so far as I know, embodies the most recent views of English surgeons. The author is William Rose, F.R.C.S., Professor of Surgery in King's College, London. In the chapter "On Obturators and Artificial Vela," he says, "Such are the Utopian definitions given by American dentists." The definitions which he calls Utopian are taken from the "American System of Dentistry," and are as follows:

"An *obturator* is a stopper, plug, or cover, stationary and fitting to an opening, with a well-defined border or outline, and closing the passage.

"An *artificial velum* is an elastic, movable valve, under the control of surrounding or adjacent muscles, closing or opening the posterior nares at will, and applicable to cases of congenital cleft, occasionally when the soft palate has been destroyed by ulceration, but never merely to perforations of the hard or soft palate."

These are what he calls "Utopian definitions,"—that is, imaginary, fanciful, chimerical. I doubt if it is possible to define the terms "obturator" and "artificial vela" in more concise and specific language. The definition becomes a complete description of the instrument. In his chapter upon that subject he makes the following argument for surgery and against the use of such appliances: "The mental effect on patients operated on is much more satisfactory than that following the application of artificial assistance; whilst the presence of a foreign body in the mouth is a source of continual danger and irritation, for there is always the possibility of the obturator slipping out of position and becoming impacted in the pharynx and œsophagus. Irritation of the sides of the cleft not uncommonly results from their use, and may end in ulceration and even necrosis. When obturators and vela are removed from the mouth, a spongy, granulating surface is often seen, bleeding on the slightest touch, and giving rise to a peculiar foetor of the breath."

This arraignment is more than Utopian; it is whimsical and fantastic. But I will not deny that it may be true of the appliances with which he is familiar; it would be a libel if said of that branch of prosthetic art in America. With properly constructed apparatus the criticism which he makes can only apply to persons of slovenly habits. Objections couched in the same language can be used with equal force against thousands of sets of artificial teeth worn by careless people; but no one has the temerity to say that artificial teeth ought not to be worn, or that they are not a great blessing.

He further says, "These appliances cannot be fitted to a patient much before the age of fifteen, and the habit of defective articulation has been fully formed by that time." And this is said in the face of the fact that I had made and introduced an artificial velum for a child of nine years, in London, nearly thirty years ago, and have been doing it repeatedly for children under ten years of age ever since.

But English surgeons are not the only ones who are claiming a greater superiority for surgical treatment than the facts at present seem to warrant. Just now two dentists have stepped into the arena and ask attention. Perhaps if they were surgeons by profession, rather than dentists, they might be lost among all the others of their class; but being dentists, ambitious to shine in a broader field, their efforts obtain a hearing—among dentists. It is a laudable ambition to be something more than a dentist, particularly in a kindred calling.

I very much doubt the wisdom of the average dentist's attempting anything professional except dentistry, but skill in dentistry is certainly an excellent foundation upon which to build a surgeon. In Philadelphia we have one brilliant example, at least.

Dr. John S. Marshall, of Chicago, read a paper upon "Congenital Fissures," etc., recently before the Tennessee Dental Association. I have read this essay with some care, and take pleasure in recording that it is one of the most conservative articles from the operating surgeon's standpoint that I am familiar with. He makes no pretence of claiming that surgery is the best treatment for more than a limited number of cases, and of those cases he says, "The main object is to restore function, and this can only be accomplished by restoring the velum and uvula to their proper width and length, so as to insure a perfect occlusion of the naso-pharyngeal opening."

That sentence is worthy of being framed in gold and conspicuously hung in every surgery. He furthermore says, "In clefts of the velum palati where the fissure is very wide and the deficiency in tissue is considerable, it is better to depend upon the artificial velum rather than to attempt a cure by surgical means, for unless the velum can be restored to its normal length, the operation would be a failure, for restoration of function is the main object in view."

It is with pleasure that I read of the importance that Dr. Marshall gives to the *length* of the surgical velum. I have never seen that idea more forcibly presented, and yet I have been trying to have it recognized for a professional lifetime; and while it may have been admitted theoretically by surgeons, it has been ignored in practice.

I wish I could indorse Dr. Marshall's colleague in Chicago, Dr. Brophy, as warmly. Dr. Brophy has evidently been ambitious to do something startling, and he has succeeded. He ought to feel gratified, as he has attained an eminence denied to most,—*viz*, performing an operation and having it called by his name; *that is fame*. He has that satisfaction whether the operation proves a blessing or a curse. It will take several years before we can render a verdict. At the present outlook, as one of the jurors, I am not sanguine of its ultimate benefit. Dr. Brophy does not wait for the age of consent, nor for the age of co-operation, but operates in the earliest weeks of infancy, and does not hesitate apparently to undertake most unpromising cases. The reason I say unpromising is because his own description of his methods can only apply to cases which in the light of restoring function cannot be other than hopeless.

He operates at an age when the bones are so soft that they can be cut with a knife, and he trims the edges of the fissure, bones and all, "thoroughly and with a bold hand." The fissure is brought together by wire sutures passing through a lead button and through the body of the maxilla above the palatal bone, then tightened by twisting until the parts are in contact.

"If the resistance is such that the edges do not readily approximate, the malar process is divided on either side by the aid of a heavy scalpel." The principle involved here, of bringing the divided portions of the maxilla into contact under pressure, is not original with Dr. Brophy. It was on record more than forty years ago, and has been performed occasionally by surgeons since; but there do not appear to have been such results as to justify any general adoption. It is perhaps the temerity with which he divides the maxillary bones that attracts attention, and his method of passing the wires through those bones that makes it unique. As open nasal passages are essential to the purity of the voice and speech, we should like to know what becomes of these passages when the two halves of the superior maxilla are jammed together?

Dr. Brophy says, "When the child comes to an age that he may articulate, his articulation is correct, and he lives and moves and has his existence without being embarrassed through life with the deformity which characterizes cleft palate." I hope that his sanguine expectations of perfect articulate speech in those cases will be realized; but if they are, it will violate all my observations. It may be that through the medium of his cases we shall make new discoveries in the mystery of articulate speech. It has been commonly held that clearness and

distinctness of enunciation are largely dependent, other things being equal, upon a broad and well-formed jaw, and that a narrowed, ill-formed jaw and irregular dental arch are hindrances to vocal culture. But it may be that we shall now learn that these theories are erroneous.

I have seen too many cases of defective speech after excellent operations on the soft palate, when the jaws and teeth were well formed, and I have also seen too many cases of indistinct utterance arising from ill-shapen jaws and irregular teeth where the palate was normal, to believe that Dr. Brophy's sanguine expectations, as quoted above, can be realized in cases where hard and soft palate and jaw-bones are operated upon as described by him. When asked what the effect would be upon the germs of the undeveloped teeth, he was wise to answer that he "did not know." But opinions will differ when he says, "It makes very little difference even though the germs of several teeth are destroyed." Again he says, "If, however, the upper superior [*sic*?] arch should be abnormally contracted, and when teeth erupt fail properly to antagonize with their fellows of the lower jaw, the means well known to the modern dentist may be employed, by which the arch can be expanded and the slight abnormality removed."

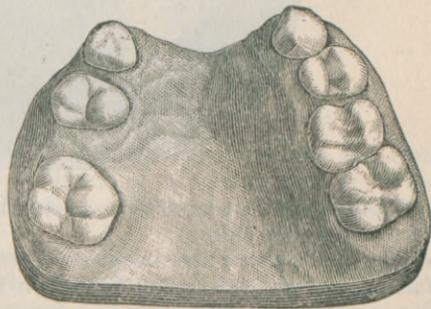
The possible condition thus admitted by Dr. Brophy is too serious a matter to pass lightly.

I have had too many years' experience in cases of cleft palate and cases of dental irregularities not to view such possibilities with some alarm. I know it is idle to speculate, but I cannot avoid the conviction that he is laying the foundation for serious trouble in the future.

In the discussion of Dr. Marshall's paper before alluded to, Dr. J. J. R. Patrick said, "We may have cleft palate without hare-lip, but never hare-lip without cleft palate."*

A hare-lip without a cleft palate is not such an uncommon occurrence but that it has been observed by many and has been recorded several times. In this connection I may add that Mr. Rose, the English surgeon from whom I have made extracts, says, "In all cases of *double alveolar cleft* the palate is also involved." This is also an error, as I have but recently had under my care a child of nine years of age who was born with a double hare-lip and *double alveolar cleft*, but without any defect of either hard or soft palate. The speech of this child is clear and distinct. Fig. 4 shows the plaster cast of such a case.

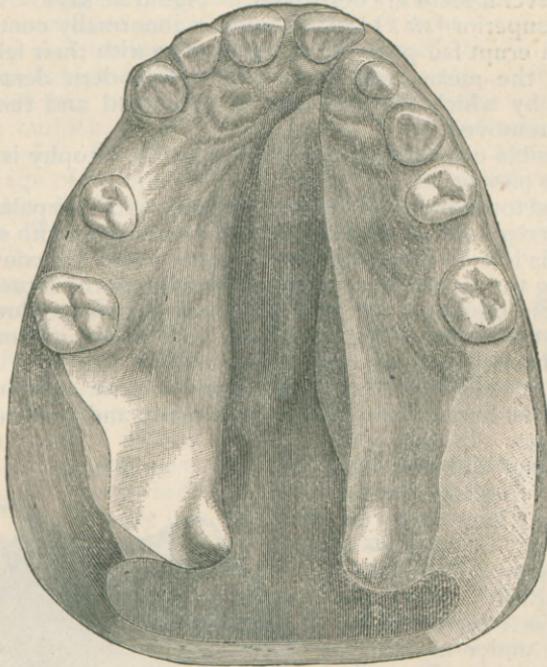
FIG. 4.



*Since this article was put in type, I read in the September Cosmos Dr. Patrick's disclaimer as follows: "In the report of the discussion which followed the reading of Dr. Marshall's excellent paper, I am made to say the reverse of what I did say in regard to the question of cleft palate and hare-lip."—N. W. K.

There is an impression, which I think is quite general, that the alveolar fissure in cleft-palate cases always continues along the line of one or both intermaxillary sutures; that is, that single cleft associated with single hare-lip separates the maxillary bones from the intermaxillary bone upon one side only, while in double cleft and double hare-lip the intermaxillary is separated on both sides, and has no union whatever with the maxillary. It is also quite commonly believed that the intermaxillary suture alluded to is the one that divides the alveolus *between the lateral incisor and the cuspid tooth*. I admit that in a majority of cases which have come under my observation the fissure in both single and double cases has been next to the cuspid, but that it is always so is an error.

FIG. 5.



I have here a number of models which indicate a variety of departures from that rule.

Fig. 5 shows an alveolar fissure between the *central incisor and the lateral incisor*, the lateral being on the maxillary side of the cleft. No incisor teeth are missing.

Fig. 6 shows an alveolar fissure with one central incisor missing, the lateral incisor being fully developed from the maxillary side of the cleft and adjoining the cuspid.

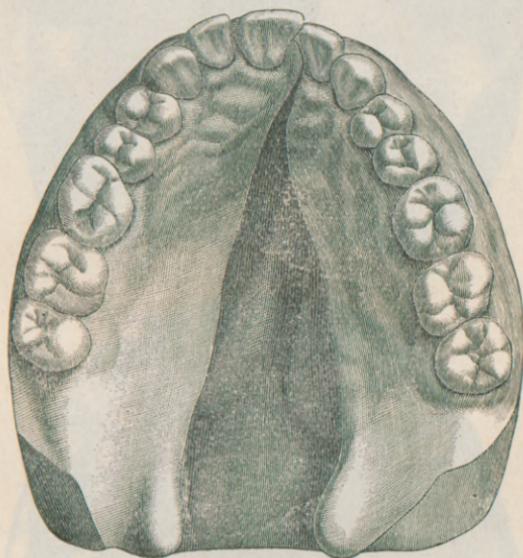
Figs. 7 and 8 show a striking similarity. Here also the lateral incisor is developed from the maxillary side of the cleft, but the two centrals and one lateral have gone off with the absent section of the intermaxillary. These two are undoubted double clefts.

In Figs. 9 and 10 the fissure follows both the median line and one intermaxillary suture next to the cuspid tooth. The remarkable fact here shown is that one-half the intermaxillary bone has gone with its accompaniment of one central and one lateral incisor, their mates retaining their normal positions. One of these fissures is an undoubted double cleft, and the other a single cleft. The missing portion of the intermaxillary is from the right side in one case, and from the left side in the other.

In Fig. 11 the alveolus is cleft apparently on the median line, but in reality between the central and lateral; upon both right and left sides that portion of the intermaxillary carrying the central incisors is missing, and the laterals in close contact are producing the appearance of an alveolar cleft upon the median line. This also is a double cleft.

I have also three casts, Figs. 12, 13, and 14, of a single alveolar fis-

FIG. 6.



sure, showing the central and cuspid in close proximity and the cleft between them, but there is no evidence of a lateral incisor. This would indicate the possibility that that section of the intermaxillary bone had never been developed.

All the foregoing examples serve to confirm the theory that "fissure of the alveolus always follows the line of an intermaxillary suture." There are five intermaxillary sutures,—one on the median line, one between each cuspid and lateral, and two additional between the centrals and laterals. In early life there are four distinct portions of the intermaxillary bone, each portion carrying the germ of an incisor tooth; these parts all subsequently join the maxillæ by continuity of tissue, except upon the median line, where the two halves unite by suture. (See Fig. 15.) With this diagram in mind, it is not difficult to account for the missing teeth in the cast illustrations.

In Fig. 6 that section of the intermaxillary marked 3 in the diagram is undeveloped, and consequently that central incisor is missing.

FIG. 7.

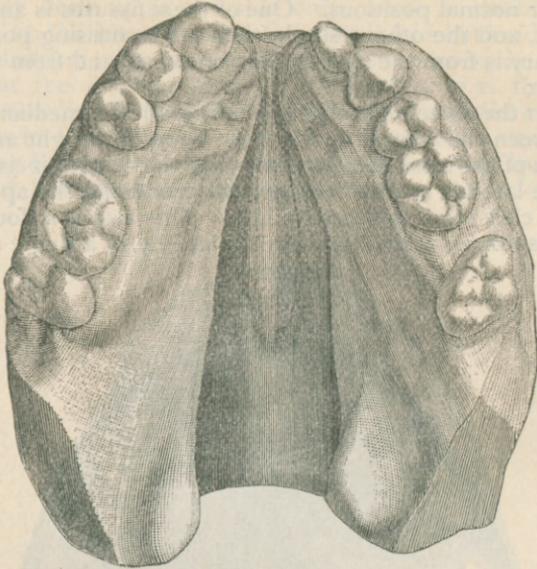
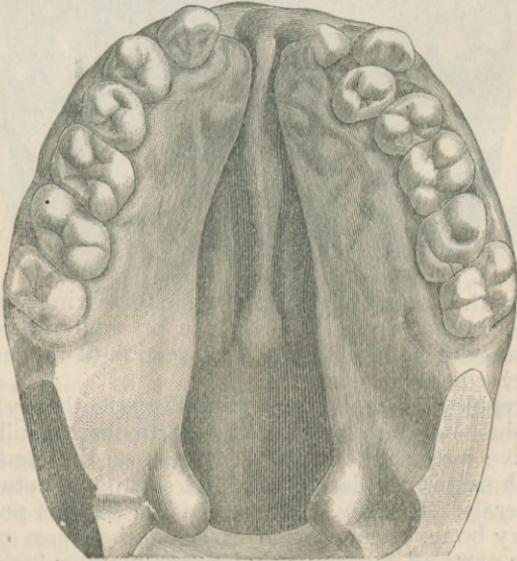


FIG. 8.



In Figs. 7 and 8 those sections of the intermaxillary are gone which are indicated by Nos. 1, 2, and 3.

In Fig. 9 the undeveloped section is equivalent to Nos. 1 and 2 on

the diagram, while in Fig. 10 the missing parts are represented by Nos. 3 and 4.

FIG. 9.



FIG. 10.



In Fig. 11 the undeveloped sections are Nos. 2 and 3, hence the absence of the centrals.

In Figs. 12, 13, and 14 the missing section is 1 or 4 on the diagram. As in these three cases there is no evidence of a lateral incisor, it is as

FIG. 11.

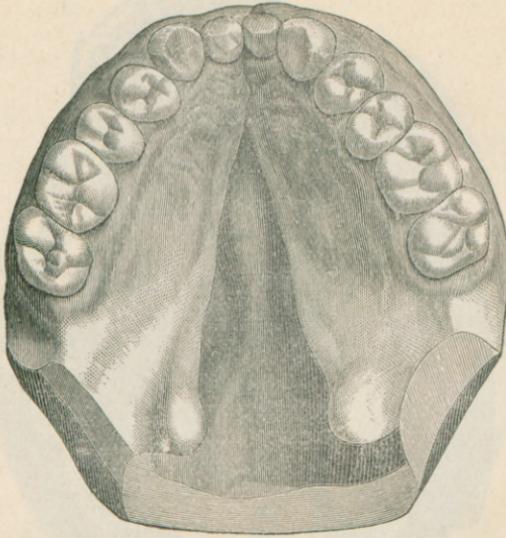
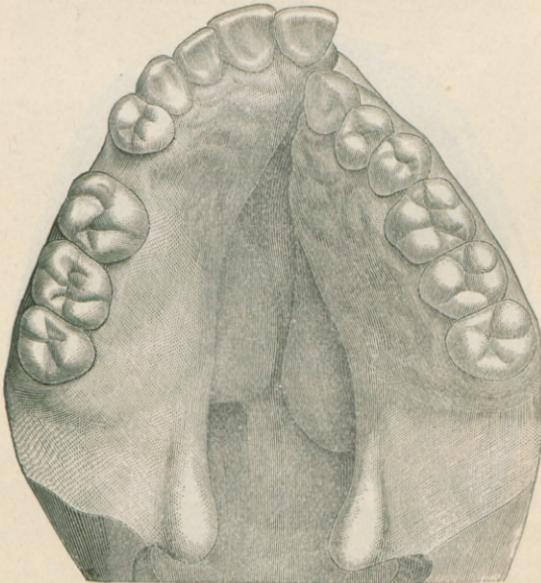


FIG. 12.



reasonable to regard that section of the intermaxillary as undeveloped as to consider the lateral suppressed.

Thus does the statement become a fact that cleft alveolus always

follows the line of an intermaxillary suture, but cleft alveolus does not always follow cleft palate. Beginning say with a cleft of the uvula, it will be found varying in extent, only stopping short of an actual

FIG. 13.

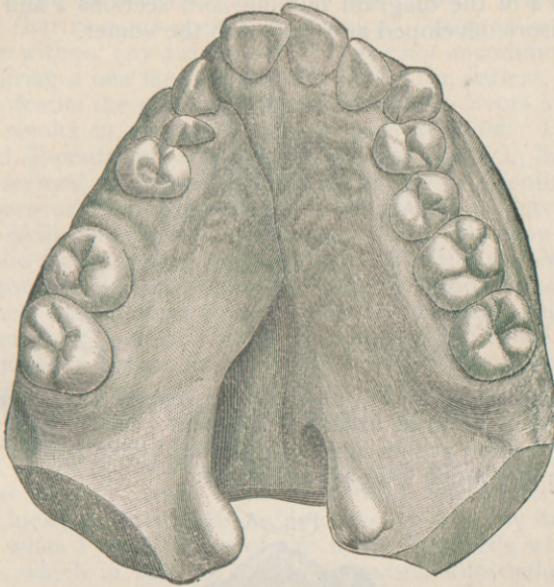
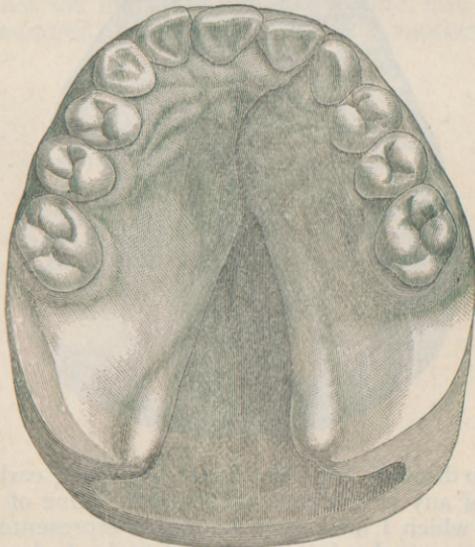


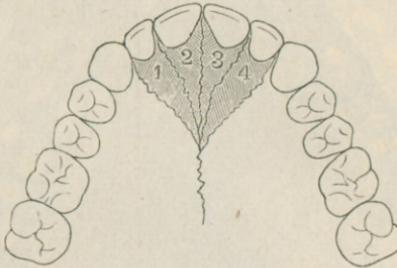
FIG. 14.



division of the alveolus. I have here a model of a case (Fig. 16), with the fissure upon the exact median line reaching to the very base of the alveolus, and carrying, to my mind, evidence of a tendency to a

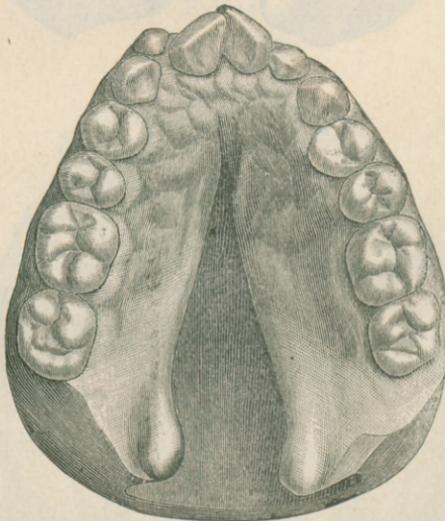
double cleft of the alveolus ; this evidence I see, with other aspects, in two dwarfed lateral incisors which are the counterparts of many lateral incisors which develop from the side of a cleft. I believe that if the alveolus had been cleft in this case we should have found sections 1 and 4 of the diagram missing, and sections 2 and 3 with the central incisors developed and joined to the vomer.

FIG. 15.



I have also an array of models here representing cases which I have treated in children from six to eleven years of age. I regard every case treated at that age as promising better results than those undertaken at a much later period of life.

FIG. 16.



I have yet to discover any objection to beginning early, even before the eruption of any of the permanent teeth. One of the most successful results which I have ever known is represented by a model here where not even the first permanent molar had arrived, and all the deciduous teeth save one were decayed and broken down to the gums. My attachments were made by putting gold crowns upon the remains of a temporary molar upon each side of the mouth.

I am not going to claim or maintain that one kind of an instrument is better than all others in every case of cleft palate. I am not going to assert that even the crudest and most cumbersome of the many devices which have been sent out by inexperienced persons with a flourish of trumpets may not have done some good. I will go further and admit that in some specific case, partly owing to a fairly good enunciation without any instrument, or to the not uncommon faculty of easily acquiring a new language on the part of the patient, and on the part of the dentist the good luck which sometimes favors a first effort, favorable results in articulation have been reached. I have seen clumsy and ill-contrived appliances—appliances which, in their construction, seemed to defy all theories of proper or scientific methods—which persons have accommodated themselves to, have managed with much skill, and derived benefit therefrom. So have we all seen some of the worst fitting, inartistic artificial dentures—work which was a disgrace to the profession of dentistry—worn by patients who derived such benefit from them in mastication that they could not conceive anything better. None of us, however, would admit that such a denture is a type or a model to copy in the introduction of artificial teeth.

The idiosyncrasies of cleft-palate people are quite as numerous as those of an edentulous people.

When I recall the success which, as I now remember it, attended my first two or three cases, I am led to think that I must have been extremely lucky in having favorable cases fall into my hands at that time; but when I recall some of the many hundreds which I have seen since, which in spite of all my increased knowledge and skill have only brought me disappointment and mortification, I am only too grateful that the first were not of that kind, else I should have been too discouraged to have ever undertaken another.

