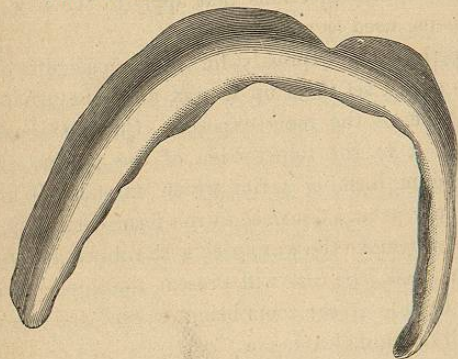


between the necks of the teeth, is occupied. After the wax has hardened, which may be hastened by placing in cold water, carve it into the desired form of gum. The wax may be made very smooth by throwing upon it the flame of a spirit-lamp with the aid of a blow-pipe, taking care not to destroy the outline of the carved gum. Cover the wax with heavy tin foil, burnishing it lightly, but smoothly, to the wax.

Invest the piece again in the following manner: Place the plate in one section of the flask with the teeth upward, and raised at the front at a greater or less angle, as may be necessary, so that when the investment is completed the upper part of the flask may be removed without dragging. Imbed in plaster to the rim, and pour batter over the palatine surface, covering the crowns, and taking care to fill the interstices between the necks of the teeth, but leaving their outer surfaces exposed. After the investment sets, pour more plaster around the inner edge of the flask ring, forming a ridge, leaving a groove or space between it and the plate. (See Fig. 334.) Complete the investment, and remove the wax from the groove and interstices between the roots of the teeth by pouring boiling water over it. Having selected a celluloid blank of proper size, saw off the outer rim; in other words, make a semi-circular rim; warm this rim of celluloid in boiling water, and with the hand

FIG. 340.—CELLULOID BLANK RIM.



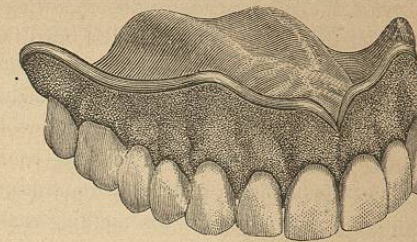
and a cloth press it closely about the teeth, and hold it to its place until stiff; it will then remain there until the two parts of the flask are entered upon the guide-pins. Join the two parts of the flask together and place the investment in the oven of the machine, having previously heated up the chamber. When the temperature of 280° is reached the flask may be closed. As soon as this is accomplished the case is ready to be removed from the oven and placed in a clamp to cool.

When entirely cold remove the plate. The tin foil will adhere to it, but can readily be removed by inserting the point of a knife under the edge and pulling it off. A surface produced by the above method presents a smooth, polished gum, but if the tin foil used be "stippled" a striking resemblance to

the natural part is produced. The adjoining edges of the celluloid and rubber will be found perfectly united, each preserving a sharp outline.

A second manner of making continuous gum out of celluloid relates to its use on metal bases. First an impression of a mouth is taken, and a plate of silver, gold, or platinum is prepared.* This plate is tried, and, if found to fit, teeth like those shown in Fig. 324 are arranged on wax after a manner that secures both articulation and physiological adaptability. The piece, as it thus stands, is handed back to the dentist, who sets the case up in plaster, backs the teeth with metal, and solders the parts indifferently together. Taking the denture as now prepared, it is again tried in the mouth, a gum structure having been built out of wax about and around the teeth. This stage introduces the celluloid pack, which is accomplished and the piece finished precisely as described in preceding paragraphs. Fig. 341 shows a metal plate with stippled celluloid gum attachment.

FIG. 341.—METAL PLATE WITH CELLULOID GUM.



* Refer to description as to taking impressions and making metal plates on page 415.

CELLULOID

CHAPTER XXXI.

OBTURATORS.

BREAKS in the continuity of the palate surface of the mouth, congenital or acquired, are treated by operation, or otherwise through the use of obturators and vela. The present chapter considers the mechanical means.

The instrument, or plate, called an obturator, gets its name from the Latin verb *obtuero*, and signifies a something that shall close or stop up an entrance or break.

Obturators correcting breaks of the soft portion of the palate, being mobile in construction, are not improperly designated vela,—artificial vela.

Obturators are used in the treatment of palatine defects where operative surgical means do not apply.

As obturators are instruments designed to meet the most varying indications, so necessarily are they apparatus of great variety in construction. The simplest of them is nothing more than a plate of metal or rubber covering a break in the hard palate; it differs but little from the support of an ordinary denture. An obturator having the meaning of a velum is an attempted duplicate of missing part in the movable, or soft, palate; it is designed not only to fill a break, but to assist in functional performance.

A simple obturator holds the same relative position to one at the other extreme that is held by the Physick-Desault leg-box to the most complex of apparatus used in the treatment of fractures of the extremities. The simple is expressive of a principle; varieties express modification on the principle. A practitioner understanding the basal idea is at no loss to appreciate the genius of the instrument in its application to all kinds of cases.

A patient presents himself, let us suppose, suffering under a deficiency in the hard palate. We examine the condition, and find the walls of the break so heavily and solidly indurated as at once to perceive that any attempt to pare and bring them together would be futile. Palato-plasty naturally suggests itself, but observation of the surrounding parts convinces that the risks are too great for a good promised. Such is a case that not infrequently offers itself to the surgeon's judgment. Dieffenbach, whose name is so honorably associated with oral operations, evidently found himself much embarrassed with just such conditions,—cases here to be presented as the easiest of remedy by use of an obturator. To correct such defect the German surgeon suggested a stud of india-rubber. Two pieces of rubber the thickness of pasteboard are cut, being somewhat larger than the opening to be closed,

and between these is placed a small round piece; the whole is then securely fastened together by means of waxed thread: one of these pieces is intended to rest on the posterior, the other on the anterior surface of the opening; the small middle piece is for the intermediate space.

A moment's reflection will exhibit the inconveniences as well as the more striking faults of such an appliance. The rubber, unless vulcanized (and, to be so applied, it cannot be vulcanized), soon becomes offensive. It acts as a continual source of irritation, particularly as the posterior base of the cleft is concerned. The centre piece, which, to hold the parts with any degree of steadiness, must fit the opening with reasonable accuracy, soon, because of the presence of moisture and heat, expands, thus enlarging the canal. The apparatus is as well very inconvenient to remove for the purpose of cleansing, which cleansing it demands daily.

A case amply illustrative of the inefficiency of this mode of combatting palatine defects, and, indeed, of the absolute harm resulting from it, is recorded by Dr. J. H. McQuillen. The patient, who had an opening in the palate, the result of syphilis, was treated by Dr. Daniel Neall, who employed, in the first instance, india-rubber as a substance from which to construct an obturator. This was cut somewhat in a button shape, being large above and below, and contracted in the centre, thus constituting an apparatus which was retained in position by resting on the parts of the nares surrounding the orifice. After this had been worn a week or two, the patient returned, when it was found quite loose and the orifice somewhat enlarged, the rubber having acted as a source of irritation and induced absorption. Another apparatus was formed from the same material, and, after being worn a week, the orifice was found larger than at the previous meeting. The rubber was also found considerably affected by the fluids of the mouth. Satisfied that it would not answer the purpose intended, this material was abandoned, and a simple obturator of silver constructed, this covering both orifice and roof of the mouth. It was found to fulfil every indication.

There is another, a somewhat domestic treatment for these defects, which may be alluded to in passing. This consists in stuffing the break with cotton or wool. The material, unfortunately, not infrequently escapes into the throat, or, passing into the nares, it has sometimes produced ozæna by lodging in a meatus, quite extensive necrosis of the turbinated bones having been provoked in this way. The practice is not without marked danger.

A case of a different class, yet belonging to the same category so far as treatment is concerned, invites, in connection with the consideration of simple obturators, a moment's attention. This is the existence of a cleft or break associated with subacute or chronic disease,—cases not fit, of course, for operation.

Some time since, Mr. —, a French teacher of this city, had necrosis of the palatine arch, the result of venereal disease; the sequestrum that came away was quite large, producing a break in the continuity of the hard palate