

into the wax. Next the support of the lip is to have consideration. This pertains of course to the gum portion of the teeth. To afford here the requisite information to the artist, it is only necessary to model the wax until the external parts are seen to have proper expression. This modelling is done by building upon the flange of the plate a rim of wax of such form and shape as are proved to be right by the impression produced on the contour of the lip. Accompanied by its shade tooth, the articulation is now ready to be again transferred.

An articulation of the full lower denture is to be secured in a manner precisely similar to that practised with the superior.

The Articulation of a Complete Denture.—A complete denture implies a set of teeth full above and below. Having the plates made ready, the surgeon first places them, each in its proper place, and causes the patient to close the mouth that thereby some general idea of the relation of the parts be obtained. Measuring now the size of the lips that notion be afforded of the required length of the new teeth, rims of wax are built upon the two plates precisely as before explained. This accomplished, each plate is to be placed in position and the relations studied; the lip is to be properly contoured, the wax is to represent the proper height of the new teeth, and the arches are to have such relations with each other that the tongue is accommodated with the room required for untrammelled movement: likewise is it to be observed that the line at which the rim of wax rests upon each plate is calculated to throw the centre of gravity of the new teeth on a bearing which antagonizes any tendency in the plate to tilt. This last, however, the mechanical dentist should himself know all about; it is not a necessity that the surgeon particularly heed it, it is of chief consequence, however, that such balance be secured. Finally, the plates, with their rims, having been accommodated, each to its special requirements, the two are put at the same time in place in the mouth. This done, the patient is directed to close naturally the jaw, and as now the rims of wax meet, and adhere to each other, the natural bite, or articulation, is secured. The operator next, with a knife or other convenient instrument, marks from plate to plate upon the united rims of wax a line which represents the exact centre of the mouth, and besides this central mark two others, one on either side. The plates may now, in their united condition, be removed from the mouth, and are ready for another transfer. If, however, it happen, as indeed is not unlikely, that in removing the plates they have separated, it makes but little difference, as by the lines which have been cut they are at any moment to be replaced in the original position.

Peculiarities in articular relations occasionally occur, the management of which requires experience to make easy. As an example, reference may be made to a condition in which teeth remaining in both the upper and lower arches hold such relation that in bringing the jaws together they pass each other, allowing those of either arch to strike the gum of its an-

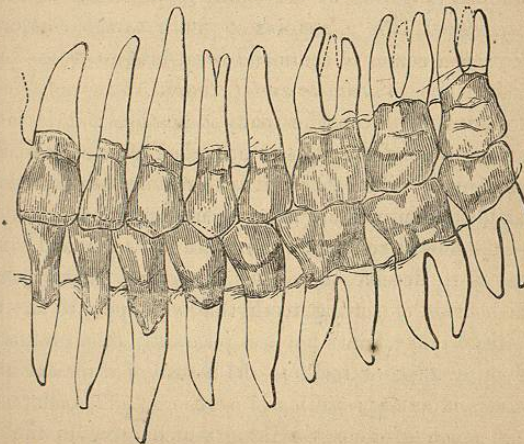
tagonist. Proper articular relation here resides in so arranging the artificial teeth that bite is restored to the original plane. In other words, in the arrangement of the wax the closure of the jaw is to show the impression upon it on that plane which would be natural, should the irregularly placed teeth strike instead of passing each other.

In an attempt to procure almost any but the most simple of articulations, the operator finds himself annoyed by false bites, the patient closing his mouth in every way but the right one; particularly does experience show this to be a result where special pains are taken to instruct a sitter as to the manner of closure. A proper bite, it is to be recognized, is the natural one. After arranging the wax, tell the patient to close the mouth. Having thus obtained an articulation, take the piece out, and after a few minutes replace it, procuring now a second bite. Should the two correspond, inference is in favor of correctness. Should, however, different impressions be made upon the wax at the different bites, one or the other must necessarily be wrong; the test is to be repeated until satisfaction is secured. The manner suggested a few paragraphs back, of having the patient lean the head far back while biting, seems to be the best corrective of false bite yet tried.

Articulating a Full Denture in the Mouth.—When an articulation, or bite, as just described, is faultless, the relations of an artificial denture should be equally perfect. It very frequently happens, however, that, from fault either in the surgeon or the artist, the desired and absolutely necessary perfectness of articulation does not exist, certain teeth being seen to strike unduly, thus denying a common occlusion; or it may be that the cusps are found wrongly placed as regard is had to their articulating neighbors.

To appreciate the character of a proper articulation, the student will refer to Fig. 321.

FIG. 321.—ARTICULATION.



Integrity and mechanical adaptability in articulation are essentials to usefulness and comfort. Artificial teeth which do not strike properly can never

be servicable or easy to the wearer. When, therefore, a finished denture is found to be so far out of the way in this direction as not to permit of a satisfactory correction, the very best thing to do is to have the piece made over. Such a necessity must come more or less frequently to the inexperienced; each mistake, however, has in it the compensation of a lesson more instructive than a dozen successes.

Artificial dentures slightly faulty in articulation constitute the rule rather than the exception. Relief here is found in recognizing the false touching points and by the use of the corundum stick, or preferably the wheel, cutting such points away.

Closing his own natural teeth, one recognizes solidity and regularity of occlusion. This is the secret of articulation. No tooth is to touch before its fellow; bite is to be common: an upper relates with two lower teeth.

Addenda.—Working to an articulation which has been furnished him (Fig. 323), the mechanical dentist attaches the teeth to his plate in general correspondence with such articulation. That it may be proven he returns it to the surgeon, prepared as designed by him, to be placed in the mouth. The teeth, however, in place of being solidly attached to a plate, are merely moulded into wax. Taking this denture, one who would convert the manufacture into an art proceeding places the set in the mouth, and, with aid of taste, he twists, turns, and alters special form and general contour until relation with physiognomical requirements is complete. The stones figured in connection with the insertion of pivot teeth are requisite in the work.

Arranged and ground to suit, the case is handed back to the mechanic, who, without in any way changing what has been done, proceeds to finish the operation; which being accomplished, it is again returned to the surgeon to be fitted into the mouth as just described.

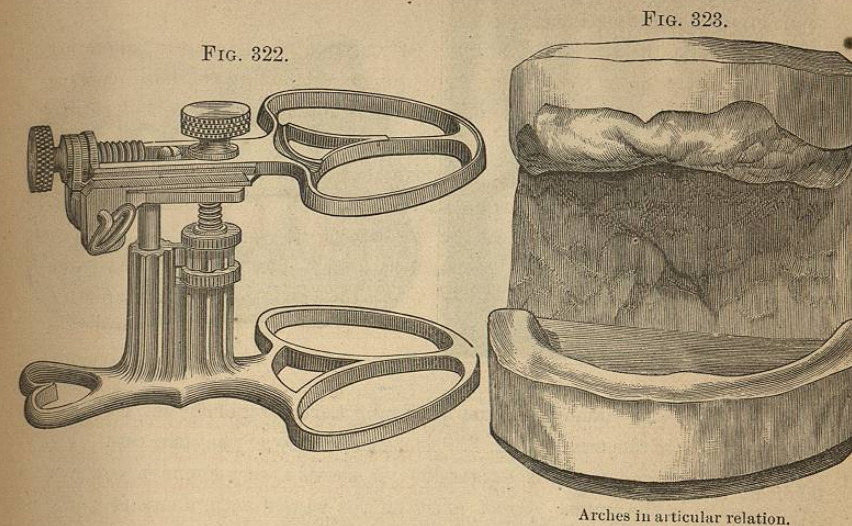
Prosthetic dentistry, viewed as art work, is possessed of great interest. Æsthetically considered, it is a restorer of youth to age, comfort to discomfort. As work it soon comes to command great interest at the hands of him who engages in it. (See *Vulcanite and Celluloid*.)

An artificial denture is to consider many indications: it is to fit a mouth so as to be worn with comfort; it is to articulate after such manner as shall serve all the purposes of mastication; it is to restore lost expression.

Makers of artificial dentures are many, dental artists are few. It is possible, with appliances now at command, to replace lost teeth and symmetry with such perfectness as to deceive the closest observer. Every case is a special study; there is no rule of setting teeth that will apply to any two mouths. An artist may spend many hours not less pleasantly than profitably in physiognomically adapting a set of teeth to the mouth of a patient under charge. Adaptation consists in an appreciation of relations. This adaptation is to be practised at that stage of denture-making which precedes the fastening of teeth to a plate. The secret lies in arrangement.

Illustrations in Arrangement.—In the laboratory of the mechanical

dentist is an instrument known as an articulator; Fig. 322 represents one form; a great variety existing. That he may be certain of having a reliable model of the articular relation of the jaws to work by, the artist uses this apparatus, fixing the plates in their apposed positions by attaching them, each



Arches in articular relation.

in its place, to the wings. These wings, before removal of the intervening wax which holds the plates in relation, are secured by means which allow of no change in position, so that on taking away of the wax the worker has assurance that relations are absolutely maintained, and that as the teeth are attached to his plates, so will they surely show in the mouth. Articulators have, as a rule, a joint which permits of a motion corresponding with that of the lower jaw, adding much to the convenience and facility of the dentist as he works at and studies his case.

The plates being attached, as explained, to the articulator, and the bite-wax removed, it is evident that a model as here exhibited, Fig. 323, would exist, and that the space between the two plates is that which requires to be correctly filled by the artificial teeth.

Fig. 324 illustrates a set of teeth as furnished for setting by the manufacturer.* As here shown they reach the hands of the mechanical dentist, whose business it is to set or prepare them for the mouth. Fig. 325 shows this same set of teeth prepared for the mouth. As exhibited in the diagram, this denture appears handsome and finished. If so set for a patient about twenty-five or thirty years of age, possessed of great regularity of features and freshness of complexion, the arrangement might prove perfect.

We pass to a step in æsthetics. Fig. 326 shows this same set of teeth

* This form of teeth is prepared and adapted for the celluloid base. Plate teeth, designed for ordinary soldering, are without roots.

triflingly altered in outlook by a cutting of the articulating faces expressive of abrasion. Fig. 327 shows these abraded teeth irregularly related in the

FIG. 324.

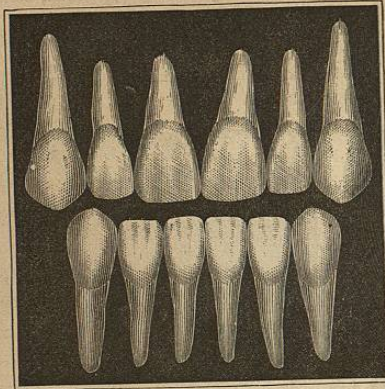
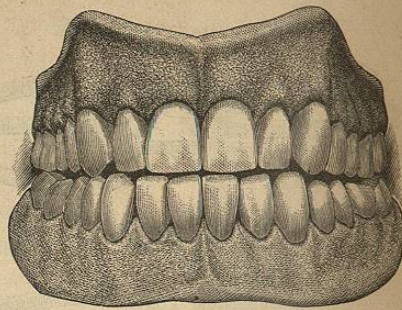


FIG. 325.



setting. Fig. 328 retains the same particular teeth irregularly set, a bicuspid being left out of the arch. Fig. 329 is a palatal view of the same case. Fig. 330, still the same teeth, is expressive; it shows a very common condition of recession in the gums. Great effect in the way of naturalness is gained in imitating this recession. Fig. 331 is a side view of the same denture.

FIG. 326.

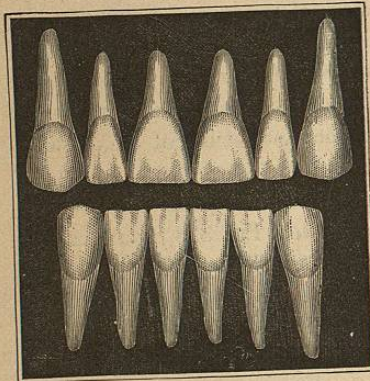
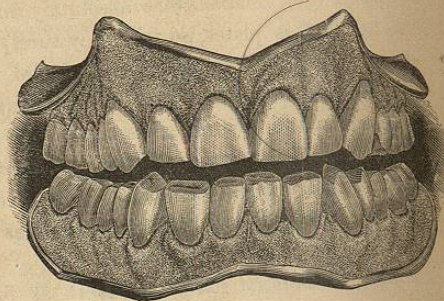


FIG. 327.

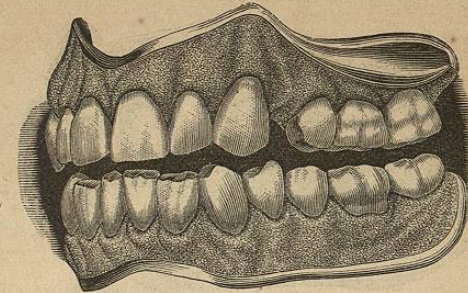


These illustrations, copied from studies by Warrington Evans, M.D., have the meaning of changes made to meet varying indications associated with features, age, etc. Seeing what results are to be obtained out of a single set of teeth, an operator will be led to infer that, with so great a variety before him as is to be found in a dental depot, he may effect anything within his inclination.

Plumpers.—What are known as plumpers consist simply in what has been

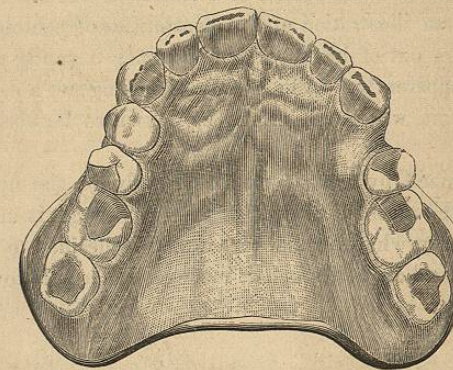
alluded to as contours, made by additions to the base of a denture; the object is expression. Plumpers are commonly associated with the cheek

FIG. 328.



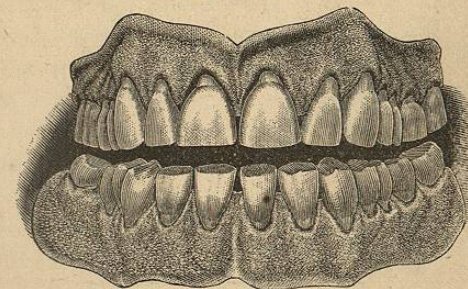
portion of the base. To make them nothing more is necessary than to

FIG. 329.



thicken this base by added material. Contouring is first to be accomplished

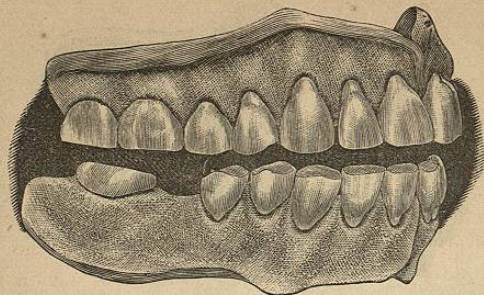
FIG. 330.



during the process of articulation, the operator adding layer after layer of wax until a desired restoration of form is achieved. It is in the experience

of the author to have secured such results in this direction that a toothless woman of seventy has found herself able, through a judicious use of

FIG. 331.



rouge, to compete with a sister forty years younger. An instance is familiar in which a mechanical dentist of celebrity in the art furnishes in his own person such an illustration of the capabilities of contouring that with teeth and plumpers out of his mouth he becomes instantly metamorphosed from a man full, apparently, of life and vigor, looking not a day over fifty, to one old and decrepit, whose age might be anywhere between ninety and a hundred.

A contour obtained by wax, it remains simply for the operator to pass the piece over to the mechanical dentist, who reproduces it in metal, in vulcanite, celluloid, or in whatever material it may be decided to use.

A full study of oral æsthetics is best made, and indeed is to be made only, in a study of faces.

CHAPTER XXX.

THE MATERIALS VULCANITE AND CELLULOID.

MANIPULATIONS with the materials vulcanite and celluloid are so exceedingly interesting, and, at the same time, so easy of being understood and accomplished, that the present chapter is introduced for the instruction of such as wish to enter upon the practice, either with a view to profit, convenience, or entertainment.

By vulcanizing is meant the conversion of a plastic material into a base of such solidity that it can be used for the attachment and support of artificial teeth, for obturators, and for a variety of similar purposes within the requirement of oral surgery. Vulcanite is a composition bought prepared at the depots; its components are india-rubber, sulphur, and sulphuret of mercury. It comes in form of sheets.

Dental Plates as an Example.—The author describes here the manner of making a denture, the example applying to the working of the material for any other purpose. First an impression of a mouth is taken, and an articulation secured precisely as described in the previous chapter; except that the test plate, on which the bite is received, is preferably made of wax for a reason shortly to be understood, and that also a layer of tin foil be made to underlie this wax as direct relation with the model is concerned. Teeth used are specially prepared for the purpose. Fig. 332 shows the peculiarity.

Let it be accepted that the worker has a set of teeth arranged as required, which teeth have their fixation by reason of temporary attachment to a base plate of wax, which wax, in its turn, rests upon a layer of tin foil: teeth and base rest in turn upon the plaster model. The wax of the base is required to be trimmed and formed that it shall represent accurately a base of vulcanite which is to take its place. The thickness of the wax is to vary according to position, and to requirements in general, from the twelfth to the twentieth of an inch.

It is to be added that the joints between the gums are demanded to be as close as accuracy can make them.

To replace the wax base with one of vulcanite the operation is as follows:

FIG. 332.—TEETH USED WITH VULCANITE; FRONT AND SIDE VIEWS.

