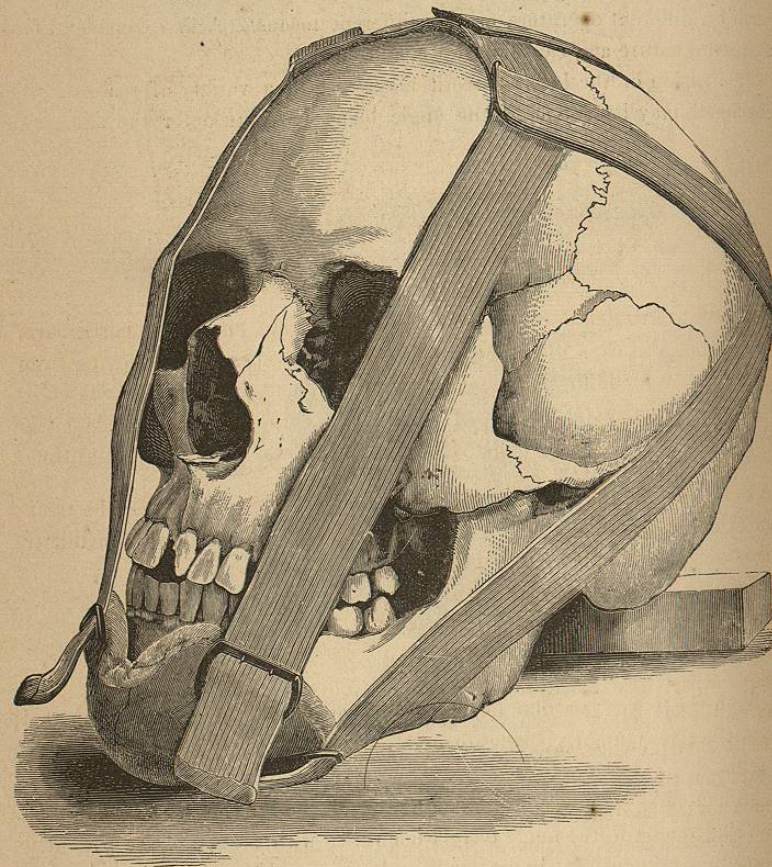


In a young patient having a protruded under jaw, the size of the upper and the position of the teeth being normal, advantage is to be taken of the natural tendency of the parts to retire; a sling,—the occipito-mental,—the straps being of elastic material, is to be used, as represented in Fig. 246. A sling of this kind, properly made and applied, will be found to exert such constant pressure on the angle, forcing, as it does, the body backward, that not infrequently a very few months will suffice to correct such a malarticulation, and this without discomfort or the possibility of ill consequences.

FIG. 246.—OCCIPITO-MENTAL SLING.



Where fault resides in the superior arch, the jaw itself being small, or the teeth being possessed of inlooking cutting faces, the appliance represented in Fig. 241 may be used, or the envelope, with the flat spurs, may be employed, as directed for use upon the lower denture (Catalan's inclined plane).

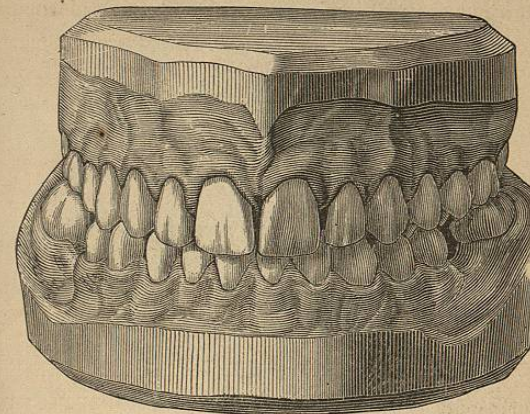
A mode of treating a case of malarticulation such as is exhibited in Fig. 244 is as follows: Pull back lower jaw by means of occipito-mental sling

(Fig. 246). Wedge upper arch as shown in Fig. 249. To retain advantage gained by wedges, apply plate as shown in Fig. 248.

Fig. 247 shows a result obtained, after this manner of operating, in twenty days by Dr. N. W. Kingsley.

A very simple, and not infrequently effectual, mode of correcting the de-

FIG. 247.

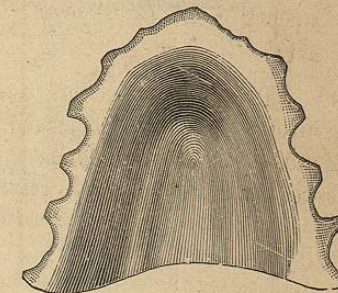


formity of protruding lower teeth in young patients, applicable particularly where the organs close directly against the upper, consists in removing from the inferior arch the first bicuspidatus of either side, and advising the cultivation by the patient of a habit of pushing the chin backward; or the latter purpose will be answered by using the occipito-mental sling during mealtime.

Among the various appliances which ingenuity has suggested for the treatment of dental irregularities is a plate devised by Dr. Redman, of Cincinnati. This is a rubber cap fitting accurately the palatine arch and carried across the anterior face of the teeth, having thus, as is seen, a most secure relation. Where it is desired to move a particular tooth, the plate is cut away in the direction which it is desired the tooth shall take, pressure being brought to bear from the opposite point by wedges of wood forced through holes in the plate.

In correcting irregularities of the teeth it is always necessary to bear in mind an antagonism which may exist to the moving force as relation is had to articulation. A tooth bound in place by one overlying it is to be moved only through relief from the existing pressure. To insure such relief it is found necessary, in almost all cases, so to cap neighboring teeth as to compel a space between the two arches,—such space to be preserved until the tooth is changed to its new position, when the removal of the cap and the restoration

FIG. 248.



of the articular bite will, in many instances, prove the best means that can be adopted for securing permanency to the change.

FIG. 249.

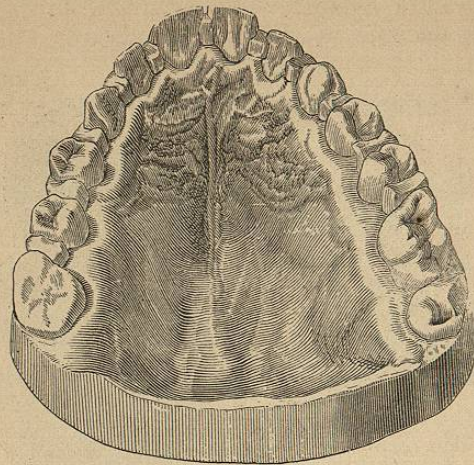
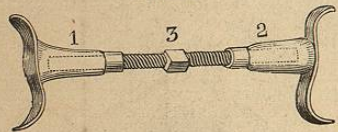


Fig. 250 represents a principle found most useful in a great variety of cases of dental irregularities. An example of its application may be given as follows:

CASE.—*Two central incisors turned upon their axes and overwrapping; arch narrow and crowded.*—To turn teeth so situated, a first necessity is room. To secure this room the arch must be widened. Examination of the instrument exhibits double collars for resting against teeth on opposite sides of the arch: these collars are attached to screw-cut tubes 1, 2, which tubes are associated by a common screw, 3. Desiring to widen the arch and thus afford facility for manipulating the crowded incisors, the collars are placed against the inner faces of the teeth designed to be moved, when, by means of a wrench, the screw is turned, the arms being extended day by day as circumstances permit. The desired space thus secured, a plate is fitted to insure retention of the teeth in the new position, when the twisted teeth may be turned into proper position, by means shown in Fig. 241.

FIG. 250.



Illustrating the use of this means in another instance, reference may be made to lateral incisors, or other teeth fallen within the arch and overlaid by their fellows. Here application of the enlarging force is directed after the same manner. When the proper room has been secured, the misplaced tooth or teeth may with all facility be drawn into place by the labial plate and elastic ring as before described,—a manipulation which would be impossible without the previous expansion.

Fig. 251, after a cut by Dr. N. W. Kingsley, exhibits a case of protruding jaw treated as follows: First, a vulcanite plate with jack-screws, across the mouth against the bicuspids, as shown in Fig. 252, the plate

FIG. 251.

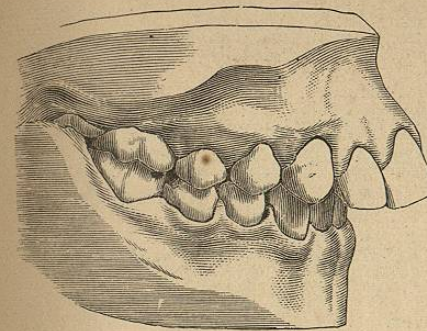
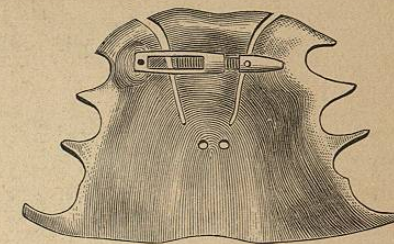


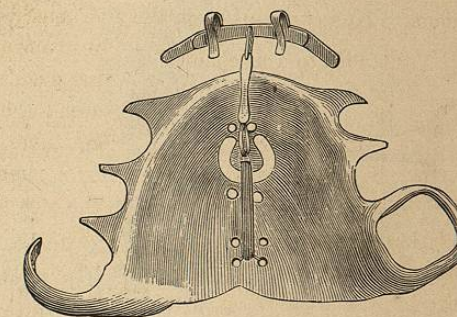
FIG. 252.



being split to allow of expansion under pressure. Second, a bar with elastic band acting upon the front anterior face of the arch, Fig. 253. The rectification was made in just five weeks.

A system of regulating, claiming attention through the efforts of J. N. Farrar, M.D., is known as the positive. Not entirely new, this system yet claims a study that shall fully appreciate it from the fact that it embraces its subject from a philosophical stand-point. The student who familiarizes himself with the positive system, even though he may not be disposed to accept all its practice, will find that he is master of the situation.

FIG. 253.

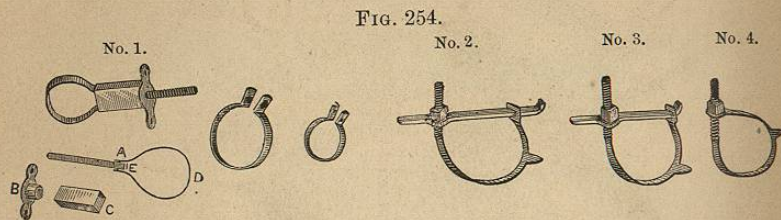


In regulating teeth the positive system accepts the dividing line between the production of physiological and pathological changes in the tissues of the jaw to lie within a movement of the teeth acted upon, allowing a variation which shall cover all cases, not exceeding one-two-hundred-and-fortieth or one-one-hundred-and-sixtieth of an inch each twelve hours; the application of the force to be intermittent, not a continuous motion.

For motive-power, movement of the screw is accepted as expressive of the positive, the drum and belt as typical of the probable. For measurement, the action of a screw is recognized as unerringly calculable, the slippings of a belt over a drum as incalculable. Regulating apparatus con-

structed purely on the screw principle are capable of intermittent motion. Elastics and springs are necessarily of continuous action.

Instruments used in the positive system by Dr. Farrar are simple when appreciated. They consist really of two pieces,—*i.e.*, a band to encircle the tooth or teeth to be moved, and a screw to act on this band. Teeth being various in shape and position, the band requires, of course, to have other than a single meaning. Fig. 254 shows the band in its varieties.



No. 1 is the box wrench, with lever. The separate parts A, B, and C, of which it is composed, are shown for a better understanding of it.

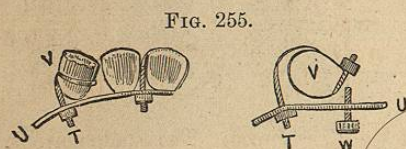
Nos. 2 and 3 are the bar and loop wrenches, the bar prolonged, at both ends being the only difference in them.

No. 4 is the rotating loop, used to turn teeth in their sockets.

The lugs, or ears, shown on all these bands and loops, are to be bent into fissures of the crowns of teeth to prevent them from slipping too far on the necks, and so irritating the gums, or causing misdirection of the screw-power.

A first matter in this system considers the application of a band to be acted upon, and which in turn is to act upon the tooth it encircles. Fig. 255 will supply the idea to a mechanical mind.

The cut represents rotation. The nut T, when tightened, draws the bolt through the bar U, and being attached to the band-clamp V on the opposite side of the tooth causes it to rotate,

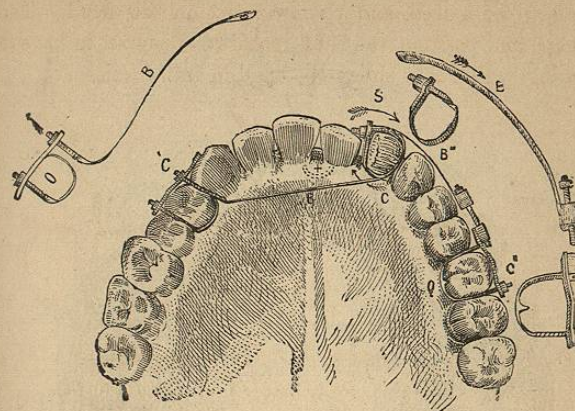


and at the same time fall backward if desired. Should, however, this latter movement be undesirable, it may be prevented by a little screw, W, passing through a threaded hole in the bar U, which, impinging against some point (or not), as shown, holds the tooth in position. Should it be necessary, this screw may be made an assistant rotator; but a proper shaping of the bar by bending or filing will generally be sufficient for this purpose.

Fig. 256 shows the application of positive movement to a cuspid tooth out of the arch anteriorly, and somewhat overriding the lateral. The requirements are, 1, to drag the misplaced organ backward; 2, to pull it into the line of arch. C, left side of cut, and C, right side, exhibit bands or clamps placed about teeth as supports from which traction is to be exerted; these same bands are also shown separated from the teeth. In front, encircling

the eye-tooth, is a similar band. Q shows bolts and nuts. The design explains itself.

FIG. 256.



Figs. 257 to 263, after Dr. Farrar, exhibit ideal cases of application. In the diagrams, the arrows indicate the direction of the movement of the teeth operated upon.

FIG. 257.

Fig. 257 illustrates a form of apparatus which acts upon the teeth collectively, also by means of a band (m) extending along the outer surfaces, and which is made to force against the teeth to be moved by tightening of bolts which pass through smooth-bored nuts (i, i) soldered to the ends of the band (m), and which enter threaded nuts soldered to anchor-bands (h, c) secured around the back teeth as shown. The band m is to be prevented impinging on the front gum by passing through the eye of a clamp-band, o, secured to a front tooth, or, better still, by having a T (Fig. 258) soldered to the inside, so that the top of the T shall rest on the lingual surfaces of the central incisors.

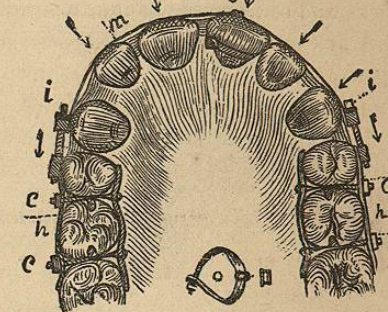


FIG. 258.



Fig. 259 illustrates a case of the lower jaw having the incisors in the posterior position, and which are being forced forward and into position by a compound variety of jack-screw devices. This appliance does its work by pushing against a bar situated immediately behind the teeth to be moved.

The jack-screws are secured posteriorly to anchor-clamp bands (c, c) around

two of the back teeth by a hook or rivet-hinge joint (*e*), and anteriorly into little pits made in the bar (*f*) by counter-sinks or cups soldered to it.

FIG. 259.

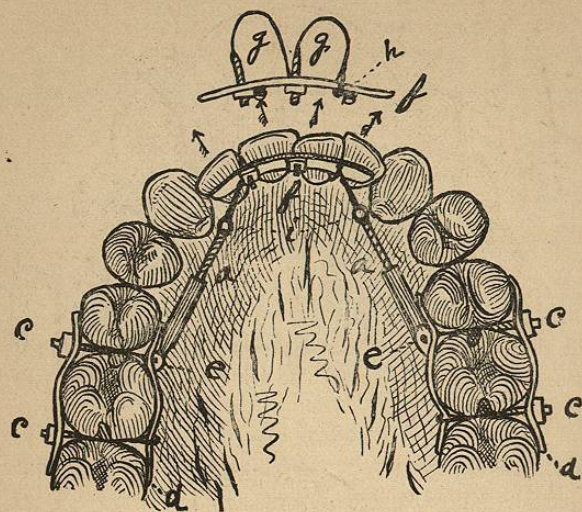


Fig. 260 represents a device made up of the same form of bar (*a*) behind the teeth, to be moved as illustrated in Fig. 261, but which is made to force

FIG. 260.

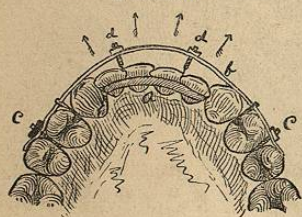
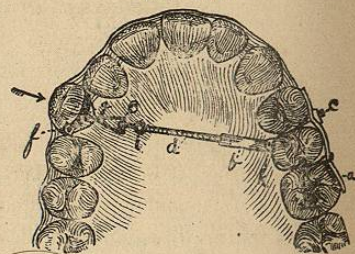


FIG. 261.



the incisor teeth forward by attachment to little bolts (*d, d*) which pass through a bridge-bar (*b*), which is tightened by nuts on the front sides.

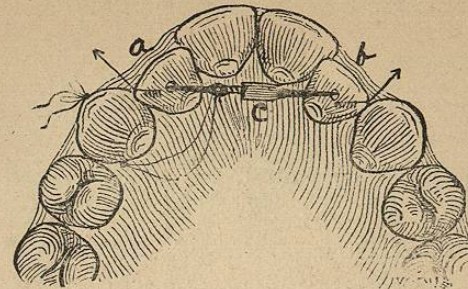
Fig. 261 illustrates a device in the form of a drag- or swivel-jack (*d*) in the act of drawing upon to move a cuspid (*f*) tooth by forces based at the opposite side of the mouth (*c, c*). The cut so clearly shows its construction that it needs no further explanation.

Fig. 262 represents the application of a spindle jack-screw (*c*) in position to force outwardly the two upper lateral incisors (*a, b*), which have erupted in the posterior position.

Fig. 263 illustrates the application of a compound jack-screw (*f*) made of the spindle and fish-tail varieties combined. The spindle-points should

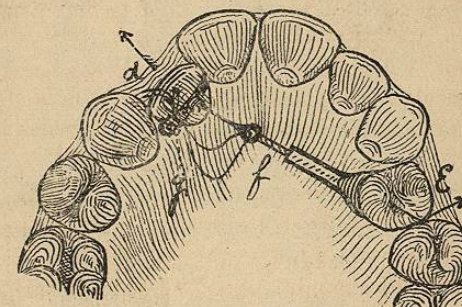
rest in pits, made in the teeth by a drill, or in cups or pits made in or upon a clamp-band secured around the tooth.

FIG. 262.



To avoid the swallowing of small pieces of regulating apparatus which may get loose, they are to be secured to some convenient teeth by threads, as shown in Figs. 262 and 263.

FIG. 263.



In conclusion, it is to be added that the health of a multitude of mouths has been ruined and patients rendered uncomfortable for life by ill-advised attempts in the direction here described. *To do nothing unless the way to an end is clearly, fully, and practically perceived, is a rule of practice from which the experienced practitioner never departs.* (See for surgical expression of this subject, chapters on *Anomalies of Dentition and their Relations*, on *Alveolar Abscess*, and on the *Odontomata*.)

CHAPTER XXVII.

THE EXTRACTION OF TEETH.

Indications for Extraction.—1. Teeth, or roots of teeth, which have lost their vitality, and which have become so much loosened as to be agents of offence and injury to surrounding parts.

2. Posterior teeth which, from absence of antagonizing teeth, are rising from their alveoli, and, through the displacement, have become a source of pain or inconvenience.

3. Teeth having fungoid excrescences growing from the pulp-cavity, not responding happily to curatives.

4. Teeth having associated with them incurable abscesses, threatening complications.

5. Teeth, particularly the premolars, so crowded and wedged into the arch as to contribute to undue lateral pressure.

6. Posterior teeth inferred to contain nodules of osteo-dentine, being themselves painful, or involved with sympathetic neuralgia.

7. Teeth recognized as associated with antral disease.

8. Teeth which are worn down to the pulp-cavities, or so close upon the gums as to render mastication painful, and where periodontal irritability renders the application of artificial crowns objectionable.

9. Teeth so badly affected by caries—being painful or offensive—as to afford no prospect of usefulness.

10. All roots of teeth about which the gums are congested and debased.

11. All roots which are sources of unrelievable pain or discomfort.

12. All roots in which badly putrescent decay is progressing.

The removal of a tooth is an easy or difficult matter according as the principle involved in the operation is clearly or obscurely appreciated. In the adult mouth there are thirty-two teeth, and these, as the study of their extraction is concerned, are comprehended under six classes.

The first of these classes embraces the eight central and lateral incisors, teeth with cone-like roots, and accommodated in alveoli representing hollow cones.

The second class embraces the cuspidati, represented by the partly flattened cone.

The third class embraces the bicuspidati, represented by the flattened cone.

The fourth class embraces the superior first and second molars, teeth having three roots,—two external cone roots, situated antero-posteriorly, with the interspaces looking toward the cheek, and the third, generally a flattened root, looking toward the palatine arch.

FIG. 264.—PERMANENT TEETH OF UPPER JAW.

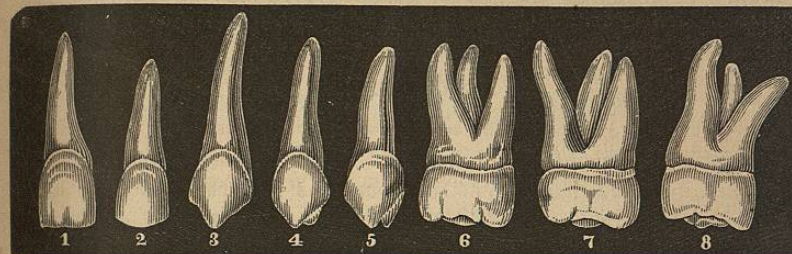
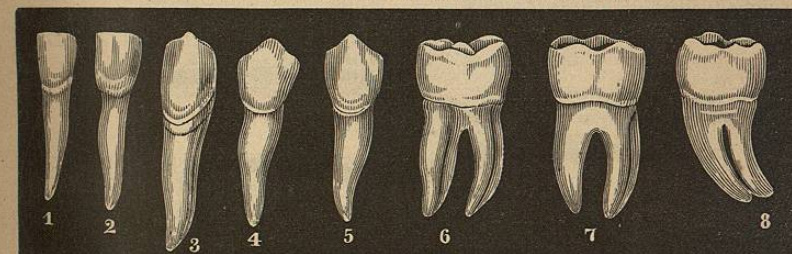


FIG. 265.—PERMANENT TEETH OF LOWER JAW.



Figs. 264, 265, DIAGRAM OF TEETH.—1, 2, incisors; 3, 4, 5, bicuspidati, or small molars; 6, 7, 8, large molars, or grinders.

The fifth class embraces the inferior first and second molars, teeth having two roots, one looking anteriorly, the other posteriorly; the interspace looking outward and inward.

The sixth class embraces the four wisdom-teeth. These are single-rooted as a rule, with a curve looking backward.

To extract a tooth of the first class, the application of the force is required in a twofold direction, rotary, and downward or upward, as the case may be.

To extract a tooth of the second class, the force is required in a threefold direction, downward or upward, lateral, and rotary.

To extract a tooth of the third class, upward or downward, and lateral, or inward and outward, as one loosens a nail.

To extract a tooth of the fourth class, the same application of the force; one-half of such a tooth is, however, to be extracted at a time,—that is, we first break the attachment of either the inner or outer roots, and feeling these yield, the force is instantly brought to bear upon the other. In extracting teeth of this class after such manner, much care is necessary in guarding against