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THE CORRECTION OF FACIAL DEFORMITY AND OCCLUSION IN ADULTS AND THE AGED.

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(Read before the New York State Dental Society at its annual meeting, Albany, May 4, 1911.)

THIS paper is primarily a plea for that great army of adult and aged patients who are more or less seriously deformed, and whom we as a profession are absolutely neglecting and thereby condemning to continued and increasing deformity. These patients are not incurable, and it is our duty as well as our privilege to correct their physical defects.

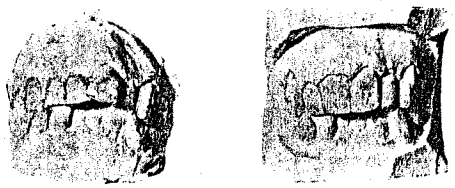
The cases used to illustrate this lecture are typical ones selected from an ordinary general dental practice, not one in twenty having been referred to the writer by dental or medical colleagues. These cases had been neglected by the profession previously, and should have had a suitable correction made years ago. These are no longer cases for orthodontia, though this treatment is sometimes combined with prosthodontia, as will be indicated. Many of them could have been easily corrected at one time by orthodontia. Like all standing armies, this one has a large recruiting brigade; though unconscious of the fact, they are certainly doomed to enlistment and to suffering from deformities unless retrieved and rescued by the dental profession, and if our duty is great toward those who are already in the senior army, it is infinitely greater toward those who are just about to enter it—for relief can come to them from no other source.

It is the speaker's purpose to indicate in each case how a correction could easily have been made earlier in life, for probably few weeks go by in an ordinary practice in which some case does not present that demands some special attention to a condition which, though apparently insignificant and rarely recognized by the patient, will, if it is not corrected, cause a more or less serious deformity. We must not be simply tooth carpenters, but must regard the mouth and the face as a unit, as we regard the tooth as a unit.

Two general principles should prevail: First, disfigurement with gold is not only unnecessary but is abominable; and, second, the establishment of unsanitary conditions is so bad and so unpardonable

as to be often a more serious deformity and menace than the one to be corrected, for health must not be sacrificed for appearance. Removable bridges are often very superior to fixed bridges, and partial gold crowns—viz, inlays with a post—usually preferable to all-gold crowns for bridge attachments. Gold-base porcelain crowns are usually much superior to gold

FIG. 1.



crowns, which must never be inserted on bicuspids or anterior teeth.

CLASSIFICATION OF DEFORMITIES IN ADULTS.

For convenience I have divided facial and oral deformities in adults into ten classes, and have selected a few typical cases from each to illustrate and emphasize the different phases of each class.

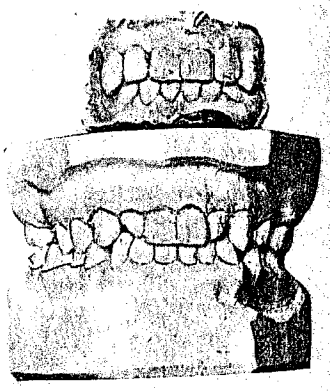
SIMPLE DEFORMITIES IN ANTERIOR TEETH.

Class I. This includes all simple deformities of the anterior teeth. In youth this class should be restored by orthodontic methods. In middle or past middle life that method, though applicable, is usually not the best, according to conditions.

Fig. 1 is typical. The patient, a lady of about forty-five years, a professional teacher, could not bring her lips down over her upper central incisors. She was so conscious of her facial deformity that she took up kindergarten work to avoid more critical associates. The method of restoration consisted in removing the natural crowns, leaving the roots in their faulty position and placing on them gold-base porcelain crowns in normal position. The gold is not visible. The entire operation was completed without discomfort in two sittings, pressure anesthesia being used to remove the pulps. The change in her appearance was so great that her aged mother wept for joy when she saw that her deformed daughter had been so improved. Both entire arches would have had to be widened to accomplish this by orthodontia, which would have required many months of discomfort and would have greatly interfered with her exacting duties, with which the method adopted did not interfere in the least. This case should have been corrected by orthodontia when the patient was a girl.

Fig. 2, taken from a patient of about forty, illustrates a deformity due to de-

FIG. 2.

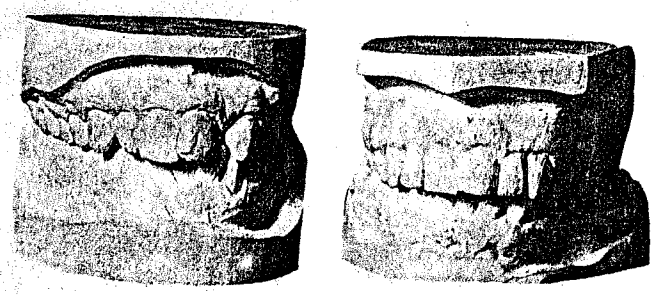


formed teeth, the laterals being peg-shaped. This deformity could not have been corrected by orthodontia, but should have been treated by prosthodontia years ago. The crowns were removed after devitalizing the pulps with pressure anesthesia, and gold-base porcelain crowns of proper shape were placed on the roots, as shown in the upper model.

Fig. 3, taken from a patient of about forty-three, shows a deformity due to peg-shaped upper laterals, one of which is inlocked in the lower incisors. The patient, a university professor, with both his features and voice thus blemished, was very conscious of his deformity. He had been cared for by dental experts in

New York and St. Louis, but remained deformed.[1] The correction consisted in location. The crown for the left lateral, the root of which was inside the arch,

FIG. 3.



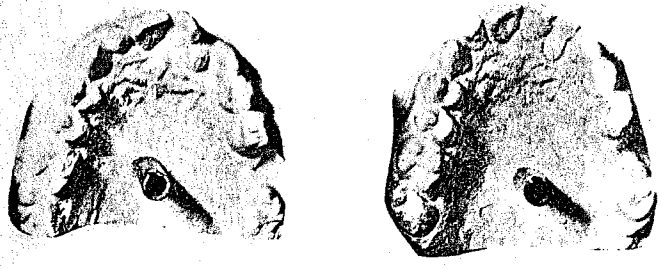


FIG. 4.

FIG. 5.



facing the deformed peg-shaped lat- ls with normal crowns in their normal was offset with an iridio-platinum bar in the gold base. The model illustrating the

lingual surfaces shows the relation of the root to the crown. Figs. 4 and 5 show the improvement in the patient's appearance.

Very often in adults or even in patients of advanced age, orthodontia can be used to correct considerable deformities.

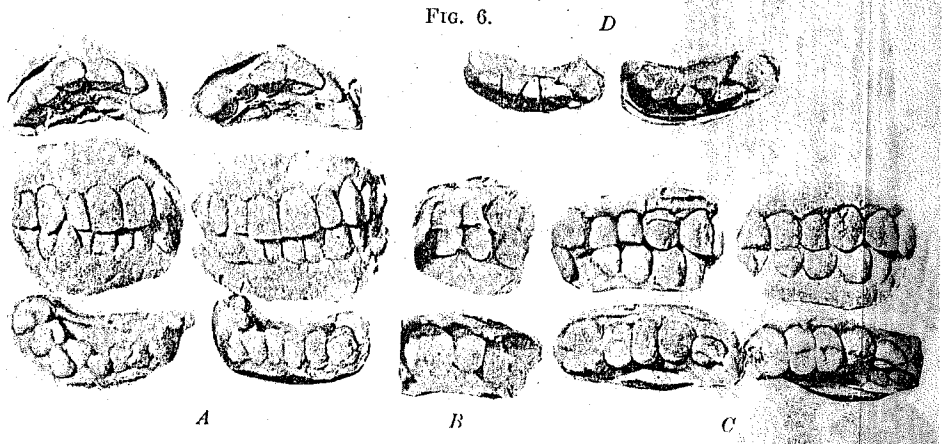
Fig. 6, *A*, illustrates the simple correction of what would ultimately be a serious deformity of the right canine region in a patient of about thirty-eight years. The lower canine is locking over the upper lateral incisor. The deformity was corrected in about six weeks with traction ligatures.

Fig. 6, *C*, shows an upper canine of a man of about fifty years that was inlocked inside the lower arch. The buccal cusp was ground off, the tooth moved into normal position with traction ligatures, and the buccal cusp restored to hold it in its corrected relation. This cusp was included in a gold inlay placed in a disto-occlusal cavity.

Fig. 6, *B*, taken from a patient of fifty-two years, shows how in people past middle life a greatly improved appearance can be secured by lining up the teeth without widening the arch. In this case the contact points of the overlapping laterals were polished off, thus narrowing the teeth sufficiently to permit them to be lined up between the canines. The angle of the final contact points is left beveled so as to act as an automatic retainer. Even at the age of fifty-two, this case was corrected in twenty days by narrowing the teeth, which it would have taken many months and much pain to accomplish had both arches been expanded to make room for the laterals.

There are so many variations of class I that it could occupy the entire paper. Each case is a law unto itself, and practically all of them can be corrected.

FIG. 6.



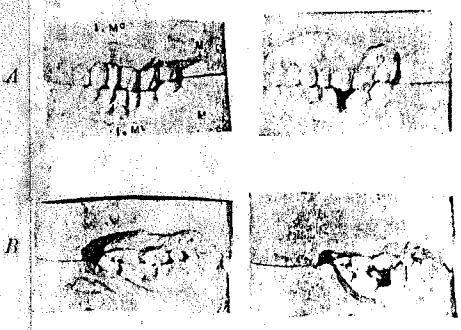
DEFORMITIES CAUSED BY FOOD-TRAPS.

Class II. This class includes those cases in which, as in Fig. 7, owing to a food-trap caused by the tilting of the lower second molar after the loss of the first molar, pain and distress have been caused when food was forced into it. This patient accordingly masticated entirely on the other side, causing faulty nutrition owing to lack of use and a general condition of gingivitis and pyorrhœa. By correcting the occluding surface of the second molar with an inlay carrying a small tooth to fill the space, and with a step support on an inlay in the disto-occlusal surface of the second bicuspid, the normal conditions for masticating were restored, and thereby the gingivitis involving that entire side above and below was corrected. *A* shows the buccal surface and *B* the lingual.

Such cases can be prevented by the preservation of the first permanent mo-

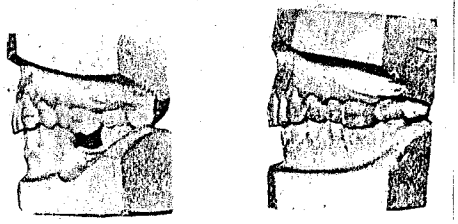
lars, and it is pathetic that the dental profession is every day dooming literally

FIG. 7.



thousands of people to this class of deformity by extracting first molars that could readily be saved. Why are we so indifferent that others do it, even if we do not? It is certainly malpractice, and should be punished; the first molars are the keys or guides to the developing arches, and the most important members in each arch. The laity cannot be expected to know this.

FIG. 8.

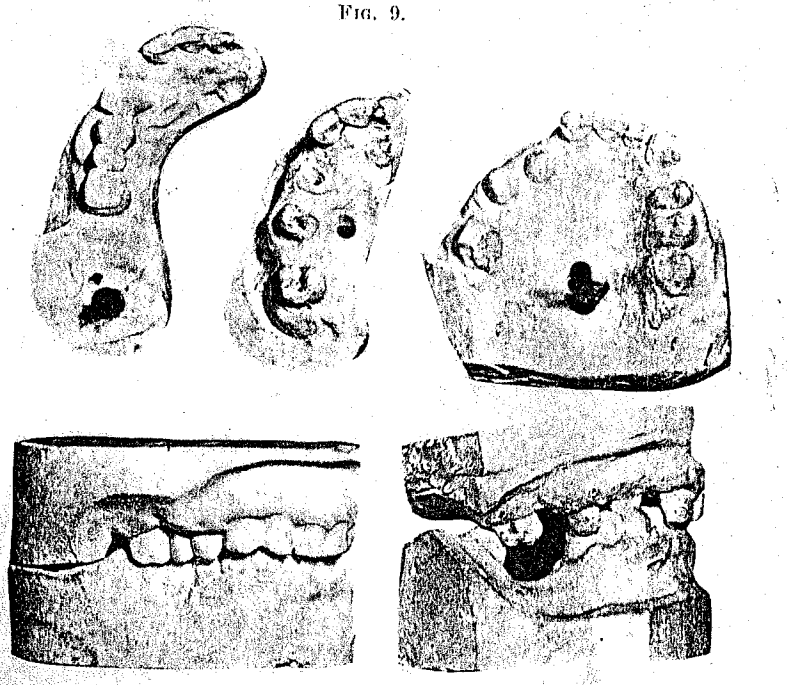


There are many variations of class II, but we cannot take time to illustrate them, as they are too familiar to every observing dentist.

LOCKED BITE.

Class III. The simplest form of locked bite is found in cases in which, owing to the extraction of one tooth, its antagonist elongates into the space, as shown in Fig. 8. This deformity is corrected by shortening the elongated tooth,

FIG. 9.



and preferably also by closing the space with a bridge carried by inlays in the adjoining teeth. The simple grinding of the elongated tooth in order to shorten it is often sufficient.

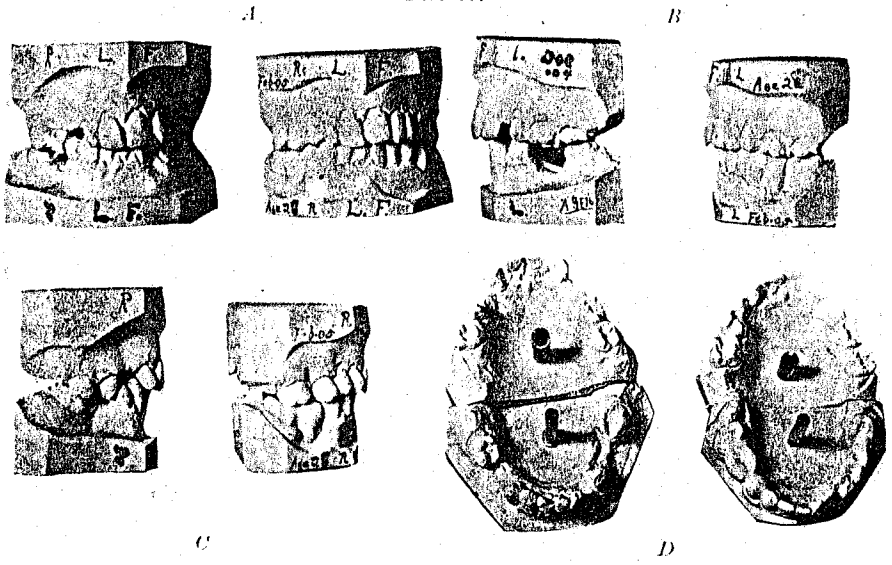
Fig. 9, taken from a patient of about fifty, is a much more complicated case of locking. The upper canine is inlocked in the lower arch, and the molars have been extracted so as to entirely destroy

SHORTENED BITE WITH REDUCED MASTICATING AND SUPPORTING SURFACE DUE PRIMARILY TO FAILURE OF COMPLETE DENTITION.

Class IV. In this class, usually about half of the bicuspids are absent, never having been formed by nature. The canines almost invariably move backward toward or near the first molar, with separation of the incisors. The teeth of one arch usually telescope those of the other, and thus lock the bite and shorten the face.

Fig. 10 shows the case of a young man of twenty-five years, very poorly nourished and undersized. The bicuspids are nearly all missing, the upper right canine is situated against the first molar. The bite was lengthened three-sixteenths of an inch, and a complete normal masticating surface provided by bridges attached with iridio-platinum pins partly to the vital, partly to devitalized teeth, and with inlays placed in cavities that could be used. The upper canines were made into bicuspids by putting an extra cusp on their lingual surface. No gold is visible, and the occlusion looks normal. The improved masticating equipment produced

FIG. 10.



their occlusion. In this case almost no occluding surfaces were in the mouth, owing to the extraction in one jaw, which destroyed the usefulness of the teeth of the other. The upper right canine is malposed entirely, being inside the arch, and the lingual cusp of the second bicuspid, which was about the only one in true occlusion, is split off. A splendid restoration was made by using the foundations prepared as shown in the upper models, and placing the restored teeth upon bridges in their proper positions, although the foundations are out of line, particularly the intruding canine, which, as shown, was cut off and restored. The bite was opened three-sixteenths of an inch, producing marked general improvement in the facial expression and splendid occlusion.

the remarkable result that, according to the patient's statement, he gained twenty-five pounds in three months. This work was completed on February 27, 1905, and is being examined once or twice a year, and up to this time is apparently in as perfect a condition as it was when first completed. In this case the left lateral incisor was moved slightly, otherwise the teeth were left in their fixed positions. This case should have been restored at least ten years earlier in life. The X rays will help in diagnosing such a case positively, even at six years of age, and any time later.

Fig. 11.

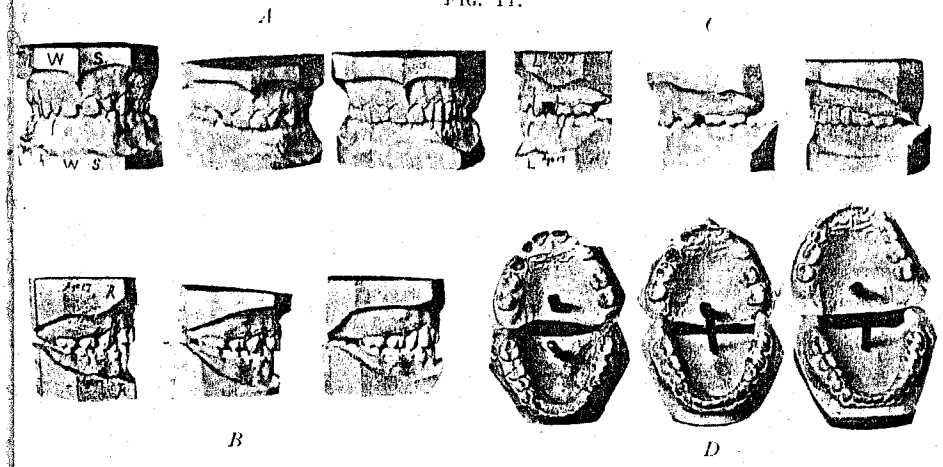


Fig. 11 illustrates a more complicated case of the same class. The upper bicuspids have not erupted, and the canines and incisors have moved back. The bite was normally short, producing even in this young man of seventeen a compressed appearance of the lips. The canines were made into bicuspids by putting a lingual cusp of gold on them as part of the system for lengthening the bite, and artificial canines were inserted into the spaces obtained by placing the four incisors in proper relation, which was done by an orthodontist. Gold tips were placed on the occlusal surfaces of the molars to lengthen them, and bicuspids were carried on these and the canines. Small threaded iridio-platinum pins were inserted into holes in the lingual surfaces of the canines mesially and distally to the pulp, and these are strong and not sensitive. The whole restoration is esthetic, there being no sign of an artificial appliance upon external observation. This case was completed on May 2, 1905, and continues affording excellent service and comfort, as well as a very great improvement in the general appearance, facial expression, and ability to masticate.

There are very many cases in this class which, however, are not so extensive or complicated as the two mentioned. They should be recognized and corrected early. If the operator has no X-ray apparatus in his own office, he should refer such cases for X-ray examination.

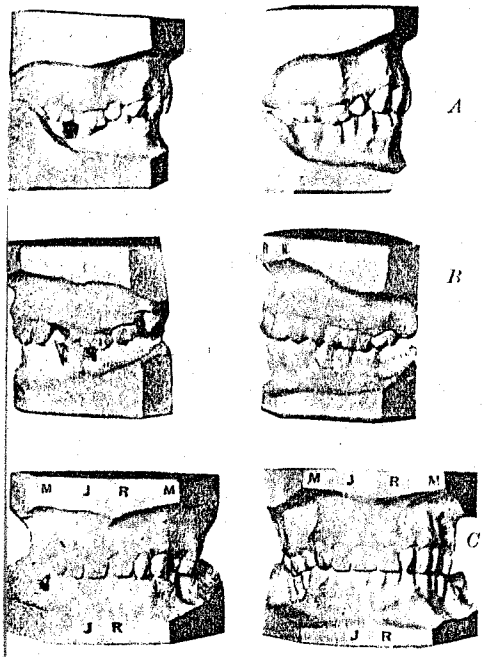
SHORTENED BITE AND REDUCED MASTICATING AND SUPPORTING SURFACE DUE TO EXTRACTION.

Class V. This class is the largest, both as to variety and as to the number of people included in it. The chief characteristics are—(*a*) The number of teeth absent, usually molars, leaving too few to support and maintain the features; (*b*) excessive wear of the remaining teeth; (*c*) shortened facial features producing wrinkles and premature appearance of old age; (*d*) digestive disturbances usually; (*e*) often mental de-

pression or sensitiveness regarding the conscious deformity, and (*f*) distortion of the anterior teeth with excessive wear.

Fig. 12 shows a typical case of a lady of about fifty-five, who recognized with great sorrow the marks of premature age, consisting in a shortening of the face as well as in the wrecked appearance of most all of the incisal angles, for the

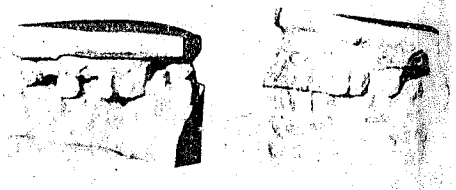
Fig. 12.



upper incisors were abraded from the under side, so that restorations of gold soon became dislodged. The bite was lengthened with bridges, tips, and porcelain crowns, and the incisors restored with compound porcelain pieces that included the mesial, lingual, and distal surfaces. The improved masticating surfaces produced a great improvement in her nutrition, and this, together with the greatly improved esthetic appearance and corrected facial expression, caused her friends to insist that she looked fully fifteen years younger, which her ambitions easily verified. The change was very marked, and her appearance and health were very greatly improved.

Fig. 13 illustrates excessive abrasion of the few teeth remaining in the patient's jaws. In this case, as is shown, the upper molar has cut down part of the lower molar and bicuspid almost to the gum line. The bite was lengthened about one-quarter of an inch with inlays and bridges, and the restoration of the facial expression, as well as the masticating

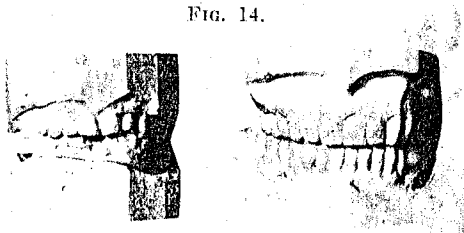
Fig. 13.



efficiency, was very gratifying. This case was completed in May 1906, and the patient has frequently expressed her great comfort and appreciation.

Fig. 14 illustrates that variation of this class in which, owing to early extraction of the lower molars, the lower incisors have been abraded down almost to the gum line. The facial expression is extremely distorted, and the efficiency of the masticating apparatus very poor indeed. The method of restoration in this case consisted in placing crowns on

Fig. 14.



the abraded anterior lower teeth and restoring the posterior teeth by means of a removable saddle on either side with attachments to the back of the crowns and a round bar passing around under the tip of the tongue connecting the two sides. This is really only a modified plate. Often, at least two of the crowns next to the attachment on each side are united for the sake of rigidity. This

restoration was made in November 1903, and when last seen was giving good service, and greatly improved the appearance and efficiency.

FIG. 15.

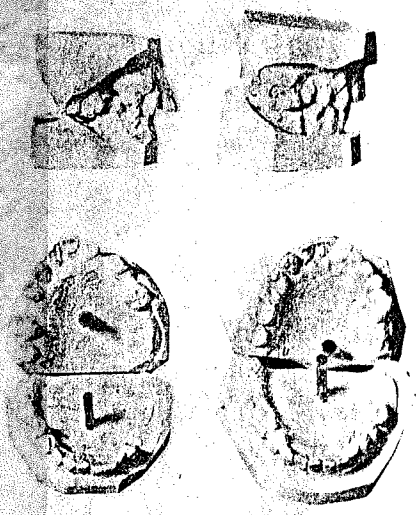
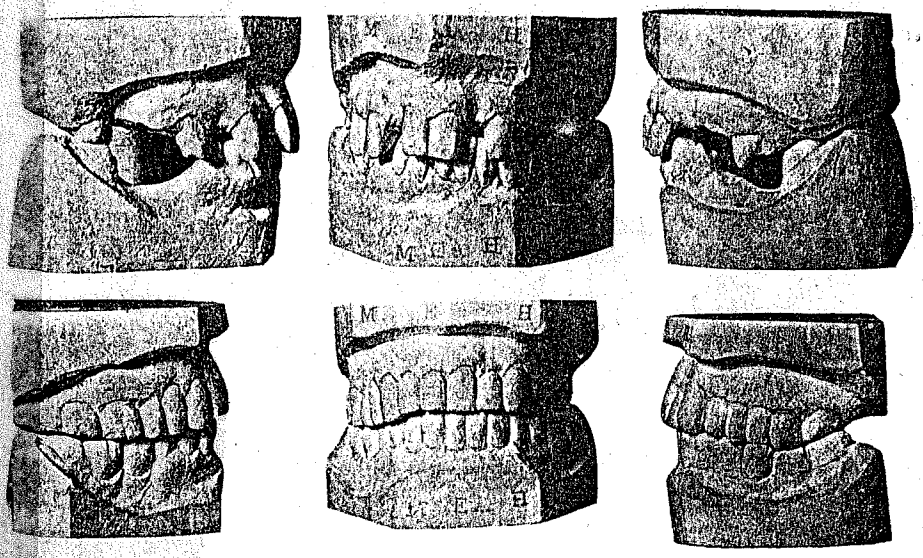


Fig. 15 is typical of a variety of this class of cases in which an extensive protrusion of the upper incisors is being produced by the lower ones, owing to the abnormally close or shortened bite. The second model shows these same teeth three months later, after they have, by the stress of the lip only, been brought to nearly normal position again. There are many such cases developing in our practices that should be subjected to preventive treatment, thus precluding the necessity of later corrective treatment.

Fig. 16 illustrates the result of early extraction and restoration by plate. In this case a well-made gold plate had been inserted. The rigid natural teeth of one jaw missed the rigid natural teeth of the other, placing the weight on the plate, with the result that the gum tissue had receded from around all the upper teeth and the face had shortened very considerably. Restoration by bridges placed the support on the rigid teeth, and is maintaining the facial relations and giving an excellent masticating surface, which the patient had not had for many years.

Fig. 17 illustrates extreme neglect, chiefly on the part of the parents, who thought their son's teeth were "too soft" to be worth saving. The patient, nineteen years of age, presented nearly all teeth decayed to the gum line, but the

FIG. 16.



roots were sound. The teeth were crowned, and the facial expression restored, as shown in Fig. 18. This was almost a charity case, as many such extreme cases will be. This case was restored by my assistant, Dr. Palolay.

Fig. 17.



Fig. 18



Fig. 19.

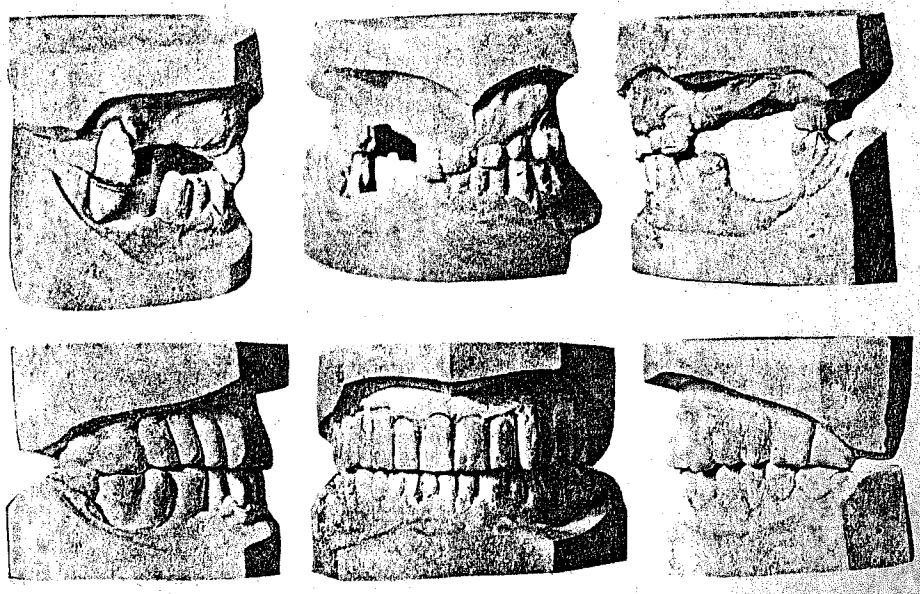


Fig. 19 illustrates almost as extreme a case of neglect found in the mouth of

a man of about sixty, this neglect being due to fear of supposedly necessary pain. The teeth were restored with gold-base porcelain crowns and bridges, with splendid results.

FIG. 20.

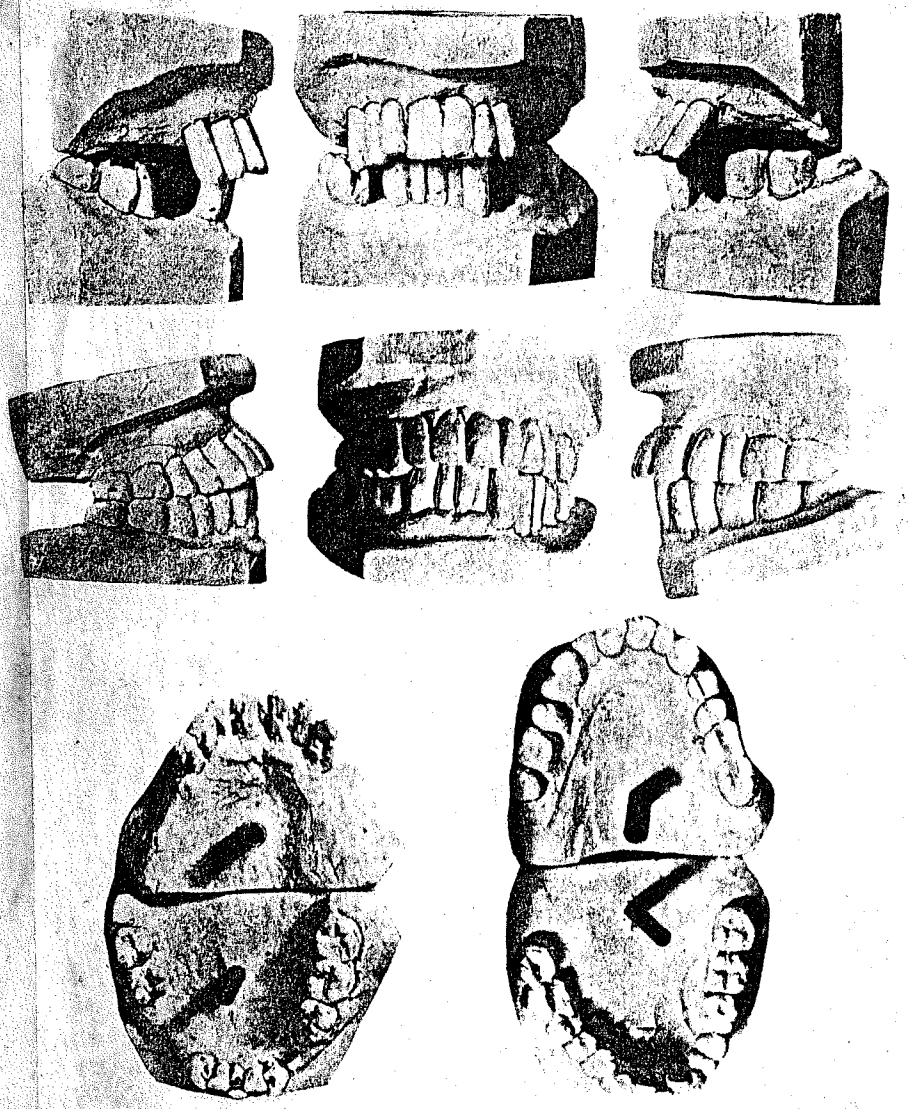


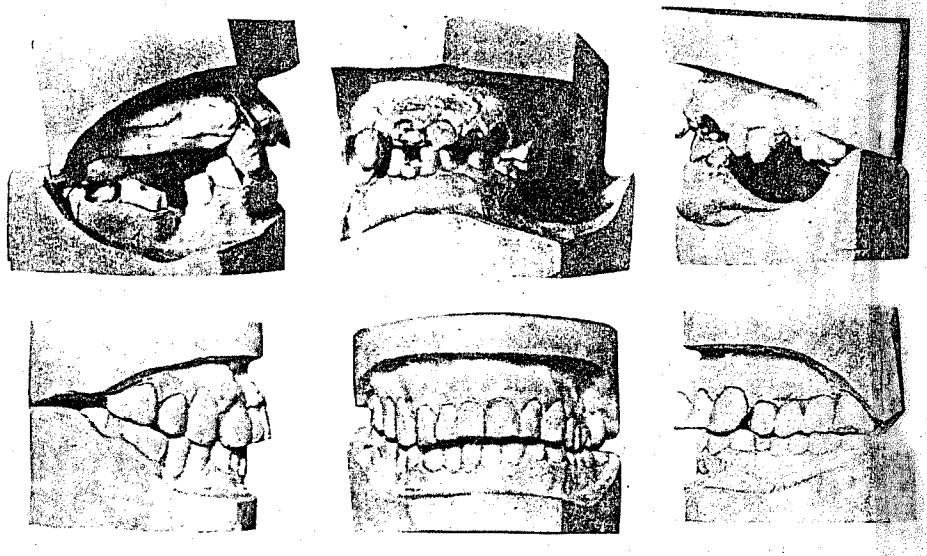
Fig. 20 is a typical, though extreme, example of those cases of pyorrhea and loosening which are quite perfectly restored and the pyorrheal condition in which is perfectly cured by making the teeth rigid, thus rendering normal exercise and massage by mastication possible. This patient had tried faithfully, but in vain, to use an upper plate with suction chamber to restore the missing bicuspids and molars. A fixed splint was made for the upper incisors and canines, which alone were left in the upper arch.

These rigid splints, which cover only part of the lingual surfaces, are usually attached to such teeth with iridio-platinum posts in the pulp chambers. In this case the splint was attached by staple dovetails, which better allowed the alignment of all surfaces to be protected, and gave a very rigid attachment. The right lateral, which was protruded by the unnatural occlusion, was cut off at the gum line, a post placed in its root, and a new crown inserted in its proper relation as a part of the splint. On the distal part of either end of the splint were placed the receiving parts of Morgan detachable sockets. Saddles were then made for the bridges on either side and connected by an iridio-platinum strap or bar, which fits closely to the fixed splint when in place. The entering parts of the detachable sockets were attached to this removable piece. Bridges attached by inlays were placed in the spaces in the lower arch, and the bite was lengthened. The result has been exceedingly satisfactory. The appliance has been in use for four years, and the patient says that he is able to eat more comfortably than he has been since his sixteenth year. The pyorrhœa has entirely disappeared, and he enjoys better health than he has for years.

Fig. 21 shows a possibly even more extreme case, and is intended to illustrate another form of restoration with removable saddles. In this case single saddles were employed.

When there are no teeth present posteriorly to the space to be filled, we cannot, of course, use any bridges unless by inserting an artificial root, which in the writer's experience is not serviceable for more than ten years, and seldom for five. In the case under consideration there were no molars or bicuspids on the right side of the upper arch, and none on the left side of the lower arch, though good teeth were present on the opposite side of each arch. The upper front roots were crowned with gold-base porcelain cusps, except the left central incisor and right canine, which were lengthened on their lingual surfaces with gold inlays and posts, and all were united to secure rigidity. To the distal surface of this piece, which was the distal of the canine, was attached the receiving part of a removable attachment, the Morgan type being preferred. A saddle was made for the entire side, carrying the bicuspids and

Fig. 21.



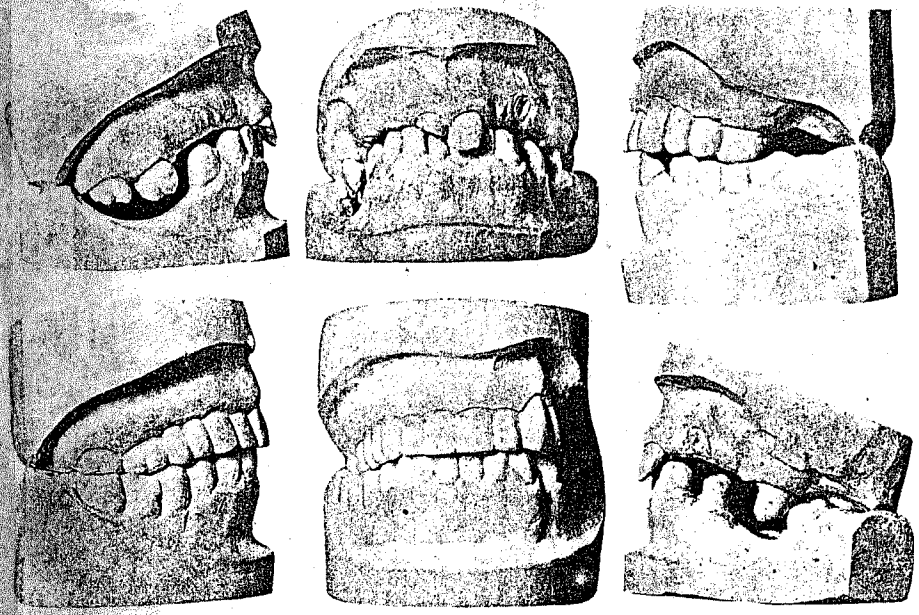
molars, and the removable part of a removable attachment was attached to this saddle to enter its counterpart. The splint was constructed with an arm about half an inch long, extending along the lingual surface of the fixed splint of the anterior teeth, with a small iridio-platinum pin entering the splint behind and between the lateral incisor and canine. This single attachment holds the piece, and the stress comes to bear on the ridge. The lower left side was supplied with a gold saddle attached in the same manner to the lower left first bicuspid, and with a small round bar extending around the arch below the tip of the tongue and attached into an inlay bridge on the right side. These saddles are very satisfactory, and have been doing their work without trouble for several years. The patient says that she eats as though all her teeth were natural.

I strongly recommend this treatment for cases in which so many teeth have been extracted. These appliances are very much to be preferred to plates. In this case the bite was lengthened considerably, and the facial appearance very greatly improved. The missing angle of the left central was restored with a porcelain inlay set into the gold inlay.

Fig. 22 represents the variety of this class in which a single bridge is advisable to restore the entire upper denture. This method is only indicated when the foundations are very rigid, and the bite is long to permit of a very narrow contact with the ridge. This patient declared that he would never wear a plate under any circumstances, and from the models it will be seen that he had no masticating surface, except the two central incisors. The bite was lengthened a full quarter of an inch, and a removable saddle for the lower right side attached to a bridge on the left similar to the one described in the preceding case.

Though this patient was himself an architect of national reputation, and he faithfully left his dental needs to the dental profession, his pitiable condition of disfigured features and worthless masticating apparatus is a pathetic reflection on both.

Fig. 22.



CROSSED BITE.

Class VI. There are few disfigurements that more seriously affect the features than the crossing of the bite, caused usually by one tooth or more—most frequently by the upper canine—becoming inlocked in the lower arch, later carrying with it the process and bicuspids, and finally throwing the mandible from the median line.

Fig. 23 illustrates a case in which practically the only contact existed where the line of the arches crossed on the incisors. The upper right canine was cut off, and a crown placed on it in proper relation to the lower arch, thus placing the mandible in the median line. Crowns were placed on the bicuspid roots, and the lower broken incisor and the arches were given a normal relation as shown. The greatest improvement was produced in the expression of the mouth, which formerly reminded one forcibly of the cross-beaked birds.

Fig. 23.

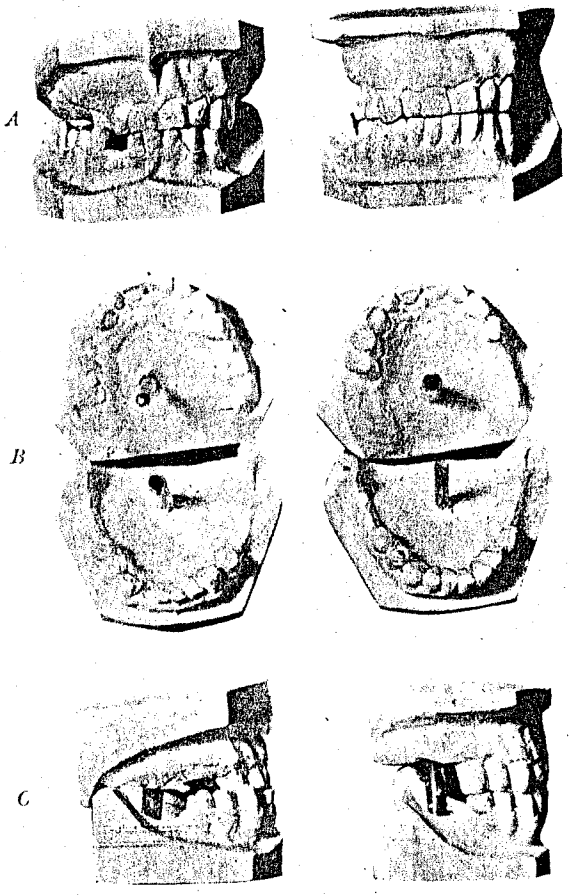
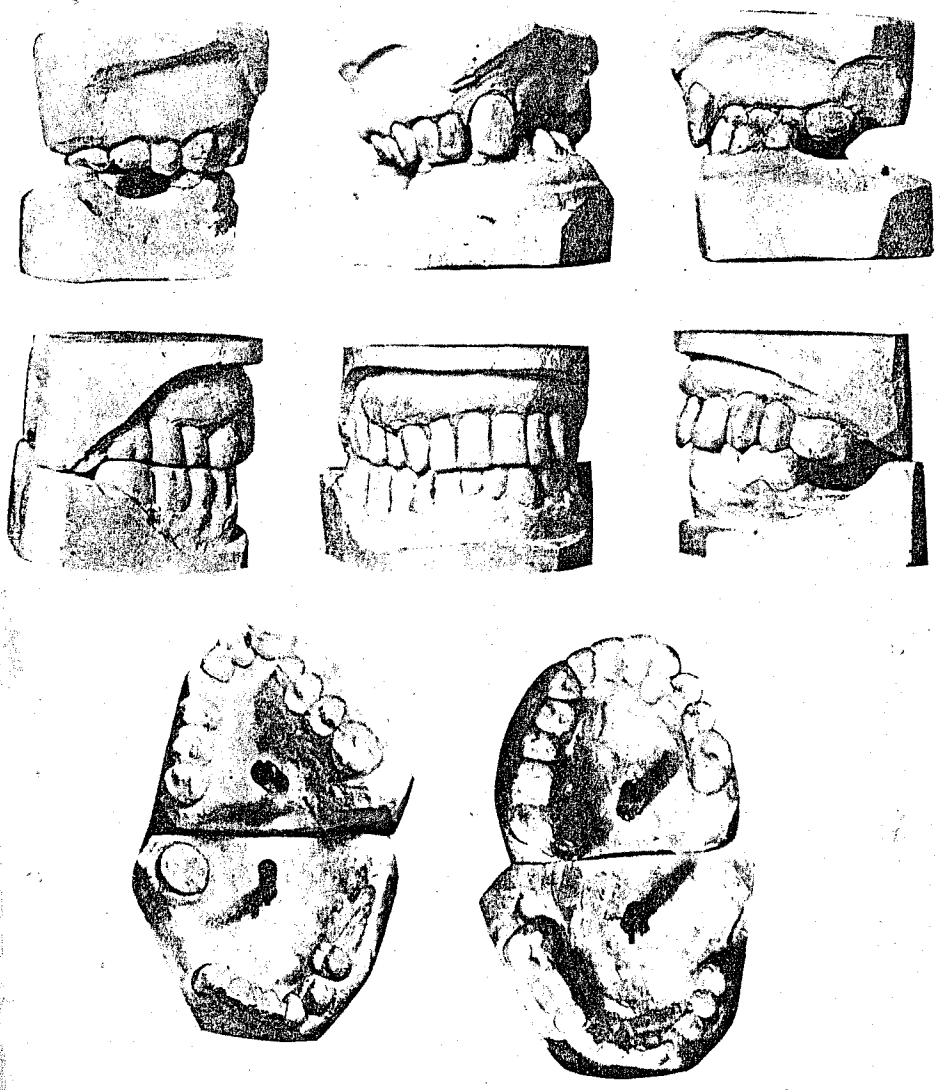


Fig. 24 shows a much more serious case. The patient was a lady of about fifty-eight and though she was greatly disfigured, supposed this to be her thorn in the flesh, and tried to be reconciled. The entire left side of the upper arch had curved into the vault as shown, ow-

ing to the canines and bicuspids inlocking. The left central was extremely prominent, and she could not cover it with her lips. A bridge was placed extending from the right central, supported on the root of the canine with an offset and with an inlay and post in the molar, carrying the teeth fully out to their proper relation to the lower arch, as is seen in the models. A bridge was placed on the lower left side. This case was first treated fifteen years ago. At that time I had not courage enough to place the teeth fully out to their proper relation, and a few years ago took off the bridge and placed it fully out, having gained more courage by experience. I have no hesitation in saying that few of our operations will so greatly bless adult or elderly patients as the correction of mal-

FIG. 24.



placed teeth by leaving the roots where they are and placing new crowns on them in their proper positions. Such an appliance is entirely successful if wisely constructed. These cases should, of course, be corrected when the locking is commencing.

OPEN BITE.

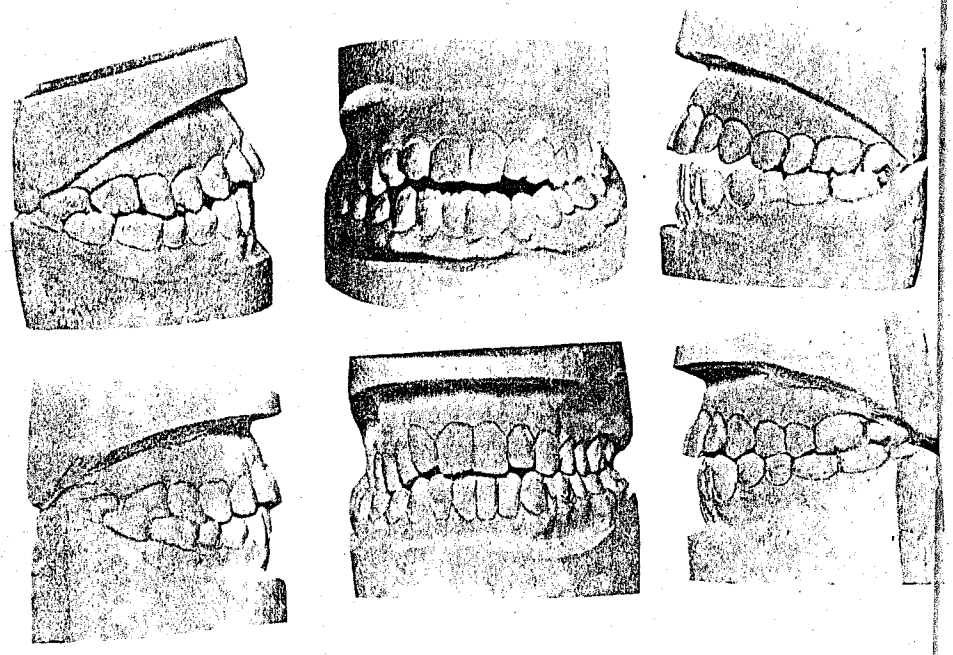
Class VII. In this class the anterior teeth cannot be closed, because the posterior teeth are too long. In younger persons orthodontic treatment is the rational procedure.

Fig. 25 shows the case of a patient of about forty-eight, in which the patient herself did not know that the condition existed, nor did her family know what made her look different from other people. A few hours of grinding fillings and elongated teeth, and the removing of a gold crown and replacing it with an inlay produced a nearly normal occlusion. The patient stated later that she had never known before what it was to be able to eat. All the work in her mouth had been done by skilled, high-priced dentists, yet all had passed her along as incurable. They simply did not observe the mouth as a whole, and were looking for errors in the individual teeth.

OVERBITE OF LOWER TEETH WITH PROGNATHISM.

Class VIII. Unfortunately, we cannot go on the street for an hour in a busy city without seeing some stages of this class of deformity, and no other deformity seems so universally considered as incurable in the adult or aged.

FIG. 25.



In his short practice, the essayist has seen several of these cases develop from the early stages, when they would have been easily corrected, into very extreme cases, but he was in many cases powerless to even warn these people, because they were the patients of his fellow dentists.

Fig. 26 shows a typical case that has been recently treated. The patient was a stenographer of twenty-nine years. Nine years ago she had been my patient, but had not been situated conveniently to see me since that time. She remem-

bered that I had told her to watch her bite carefully, as it was then an end-to-end bite and was in danger of going over by the luxation of the mandible if the molar should break down. When she presented, she was mentally depressed by her horrible disfigurement, for she had developed the English bulldog expression. The two lower central incisors were crowned, placing them in their normal relation behind the upper teeth. Inclined planes were attached to the lower

FIG. 26.

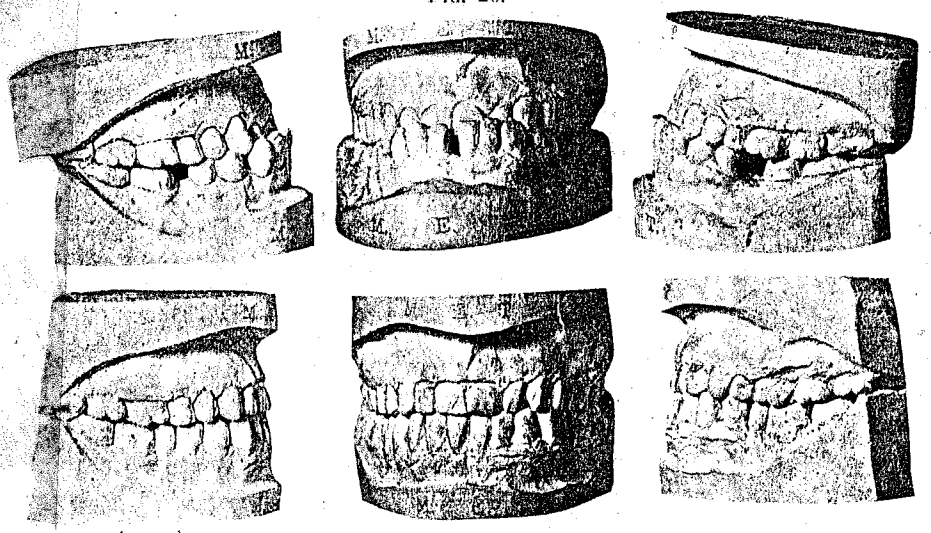


FIG. 27.



lateral incisors, to start them behind the upper incisors and help the jaw slide back. In a few weeks it was in the position indicated in the second row of models. The molars and canines were lengthened, and the missing teeth supplied by bridges. The improvement in appearance and masticating efficiency were very

Fig. 28.



Fig. 29.



Fig. 30.



Fig. 31.



marked, and the patient was mentally transformed.

Figs. 27, 28, 29, 30, and 31 show a similar case of excessive overbite and prognathism. The patient was about forty-eight years of age, and her case was treated differently. The bite was lengthened primarily, and new gold-base porcelain crowns were placed on the six anterior upper teeth in such a relation as to just start the lower arch inside of it. In a couple of weeks it had slid backward, with the remarkable result shown. The lower right side was restored with a removable saddle, with a bar passing around under the tongue to an inlay in the distal surface of the second molar.

FIG. 32.



Figs. 28 and 29 show the improvement in the appearance of the teeth, and Figs. 30 and 31 that in the patient's profile. The patient stated that formerly her jaw always felt tired and lame, and now she is entirely comfortable and eats with more perfect ease and comfort than since she was a child. Her present appearance is distinctly more youthful.

In Fig. 27 the increased size of the upper arch from the palatal view is to be noted.

Fig. 32 shows two cases just in the act of going over. The upper case, *A*, is caused by the relation of the upper molars to the lowers, having inclined planes pushing the jaw forward all the time, as shown in the center model giving the lingual view. This was corrected in an hour, and the extreme condition shown in the two preceding cases prevented by grinding away the upper molars causing the defect. The patient immediately said that he felt great relief, and the mandible has receded. The anterior teeth were also ground to correct the relation of their occluding mesial edges. The models *B* in Fig. 32 show a similar condition, which is being caused by an upper third molar and the faulty relationship of the angles of the canines. This was corrected and the impending calamity prevented by grinding away the upper third molar and spreading the upper arch to unlock the canines.

Fig. 33 is typical of the going over of the bite owing to the breaking down of the incisal ends of the upper incisors and the breaking down of the molars, allowing the bite to shorten, because the mandible comes forward almost as rapidly as it elevates, owing to the position and shape of the articulation. The restorations were made with porcelain crowns and bridges, nothing but porcelain and natural teeth being visible. The crowns were inclined outward to about their normal position, and the general improvement was exceedingly great, as can be judged. This patient is seen frequently, and since the above steps were taken in April 1905, has had practically no further treatment, except examination and cleaning, to which he himself attends very well. This patient was only twenty-eight years of age, and had allowed his teeth to deteriorate to this extreme condition through sheer fear of dentists. It was possible to make this very extensive restoration without causing any serious

FIG. 33.

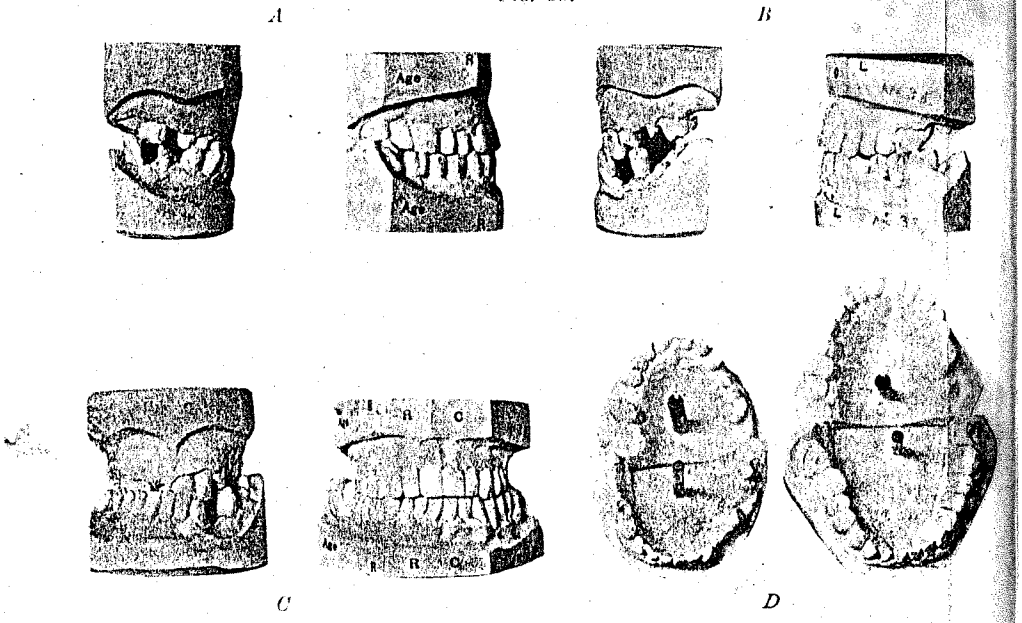
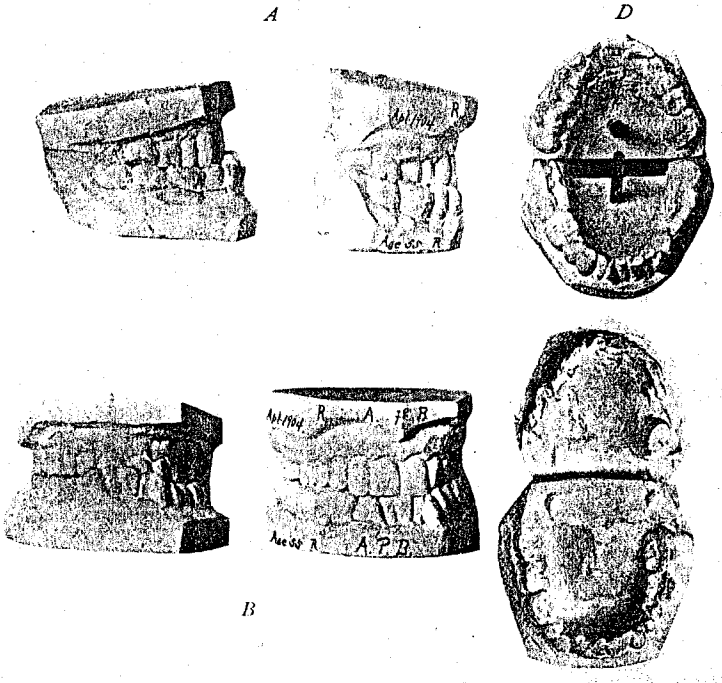


FIG. 34.



discomfort. The difference in the width of the arch before and after treatment, amounting to one-third of an inch, is particularly noteworthy, though no roots

FIG. 35.



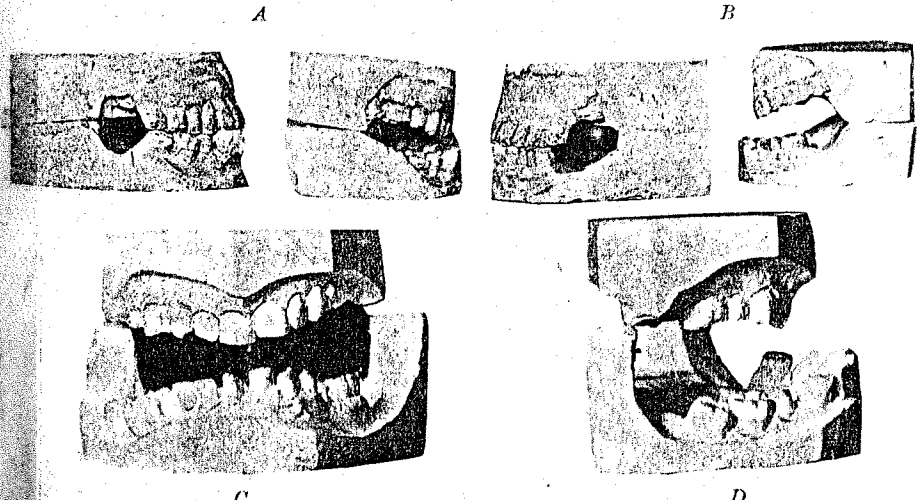
A B C

were moved at all in their sockets, the crowns simply being placed in their new position.

Fig. 34 illustrates the same class, but a more extreme case, with a serious com-

patient had such pain for months that he could not masticate, and for three months had not been able to sleep more than two hours out of twenty-four, and seriously feared he would do himself bodily harm in his distress. Temporary extensions were made to raise the bite, and that night the patient slept much longer than he had for months, and the neural-

FIG. 36.



A B C D

plication resulting. The patient, then fifty-five years of age, a busy business man, was presented by a physician for an X-ray picture of the maxillary articulation to find a suspected cancer, for the

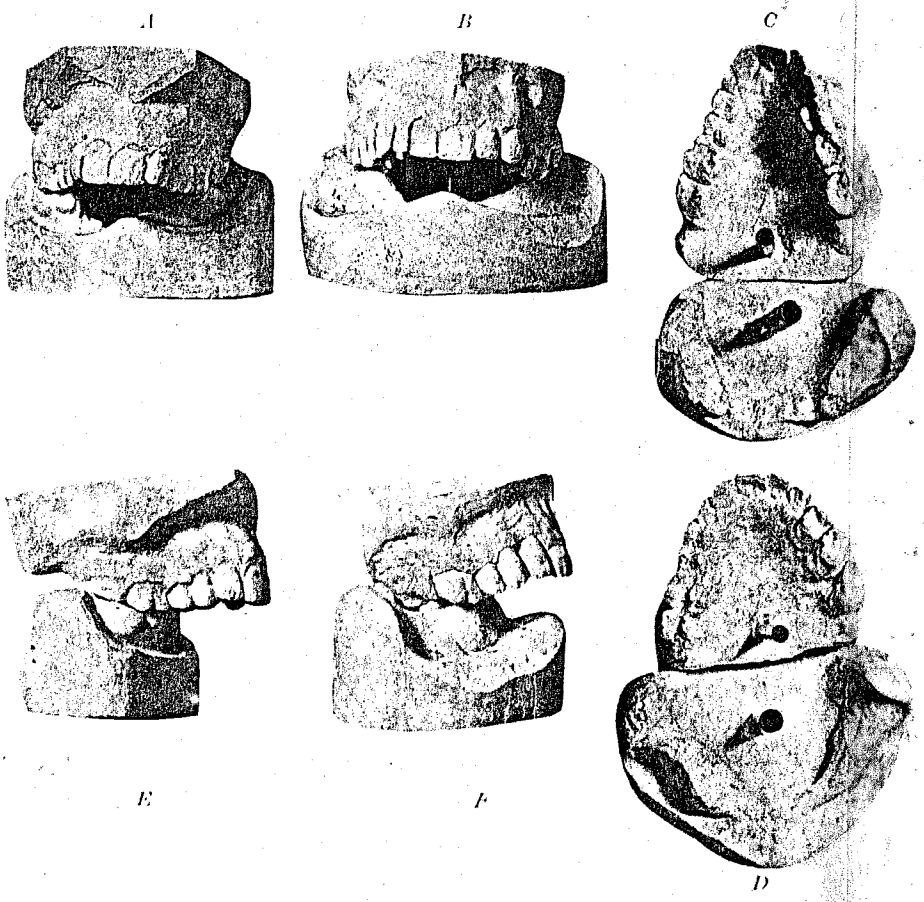
gic paroxysms became much less frequent. The permanent restoration was made, as shown, with tips and crowns, correcting the relations in the articulation, and the distressing irritation rap-

idly and entirely disappeared, and now for over seven years the patient has had no recurrence.

ACROMEGALY OR GIANTISM.

Class IX. These cases are fortunately quite rare, but are very severe. Figs. 35 and 36 show a typical case. The first face, model *A*, shows the patient at thirty-two years of age, before the disease had commenced, when he happened to have a plaster cast made of his face, and *B* shows the change that had taken place when he came to the essayist twelve years later. The lower arch had developed so that it was about one-quarter of an inch outside of the upper all the way around, rendering occlusion absolutely impossible. There were almost no cavities, and the teeth were almost all in place in both arches. A splint was made to fit over the upper natural teeth, all of which were extended outward and downward, and which carried a set of large artificial teeth in occlusion with the malposed lowers. This plate also carried his upper lip out to place and greatly improved his appearance, as shown in Fig. 35, *C*, as well as rendering mastication possible. The condition of continuing enlargement involved other parts of the body; for example, his bare feet were fourteen inches long and his first and second fingers four inches in circumference, and the others in proportion. His wrists and ankles were almost of normal size, while his tongue almost completely filled the en-

FIG. 37.



larged oral cavity. The writer made frequent measurements of the developments; the head enlargements were found to be the most out of normal proportion. Every few years the dental splint had to be made over to extend out to meet the requirements of the new relation, until the entire lower arch was fully three-quarters of an inch outside the upper one, as shown in Fig. 36, *D*.

RESTORING THE MANDIBLE.

Class X. Frequently, owing to necrosis, part of the mandible is lost, with more or less deformity, depending upon how extensive the loss has been.

Fig. 37, taken from a lady of twenty-nine years, shows an extreme case. An infection entered the chin from an external pimple or mole, and spread to the alveolus, with very rapid necrosis. Frequent operations were made to arrest this necrosis, which was only accomplished after the entire mandible was lost from the third molar on one side to the second molar on the other, including all the teeth of the lower arch.

So virulent was the systematic infection that the patient very nearly died from septicemia. For ten days her tongue had to be tied to her breast to keep her from strangling, as its normal support was gone. When she presented about nine months later, her upper arch had collapsed, as shown, and the shreds of periosteum left in the lower had deposited a new bone, uniting the vertical sections at their stubs, which had fallen, leaving almost no throat space. This new bone, about an inch long, formed a diminutive chin in the region of the second molars but going straight across under the base of the tongue. The disfigurement was excessive, and the patient's spirit was crushed. She never went out except after dark, and then heavily veiled. The upper arch was expanded with a very simple device made of hard rubber on the sides and soft or velum rubber in the center, and with springs embedded in the mass of the rubber. The soft rubber acted like a hinge for the hard, and with this appliance the process as well as the teeth was pressed out into proper position. The lower arch presented a serious problem, for there was practically no arch left. A prosthetic chin was made with teeth on it to hold the face in shape and to expand the forming new bone to form a new arch. A jackscrew was placed between the wings of the denture in such a way as to widen the mandible and cause it to develop forward. This latter was also accomplished by pressure from this artificial chin on the tissue from within, in such a position as to simulate the periosteum at the symphysis. The teeth are carried on a column at the anterior part of the expander so that, as the wings or lateral parts separate, the relation of the teeth on this piece to the upper teeth is not changed. In a few months the jaw has been expanded and forced to develop forward until the patient now comes and goes on the street-car without wearing a veil, and is rarely noticed by passers-by. As will be seen from the models, the artificial chin extends well out toward its normal position. This case is not completed, but will be reported in greater detail with illustrations at a later time. The relative sizes of the lower dentures with chin (see Fig. 38) should be noted. The model at the left shows the jackscrew for widening the mandible.

Time has not permitted the essayist to present here the details of construction. Every case requires its own solution, but practically no case is incurable.

FIG. 38.

