A Discussion of Inharmony of the Mid-Central Incisor Lines of the Maxillary and Mandibular Dentures

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Harmony in the median line* of the maxillary and the median line of the mandibular dental arch, when the dentures are in occlusion, is characteristic of normal occlusion of the teeth. Therefore, when disharmony exists in this denture area, it is an indication that there is malrelationship of either individual teeth or of the dental arches as units.

Considerable error may result if this symptom is studied from the models only, for it is often impossible to tell from these whether it is the median line of the maxillary arch that is inharmonious with head anatomy or the midline of the mandibular dental arch that is displaced. This question can only be answered by an examination of the patient. With the lips closed, the midvertical line of the face is noted and indicated with a pencil mark after which the lips are parted and the operator then ascertains which dental arch median line, if either, is harmonious to this marked median line of the face.

Variation in the location of the median line of the maxillary arch is always due to tooth-shifting over the body of the maxilla, usually being coincidental with a break in the continuity of the arch form from the loss of a tooth either from premature extraction or congenital absence. This leads to the subsequent migration of adjacent teeth into the space, accompanied by the teeth proximal to them. The arch form is thus warped, as it were, with an accompanying displacement of the median line. Fig. 1. Sometimes, however, the tooth-shifting may be due to environmental pressure, either muscular, postural or from a foreign body.

*By the median line of the dental arch, the writer refers to the proximal space between the central incisor teeth.

On the other hand, variation in the relation of the median line of the lower arch to the median line of the face may be due to one of two factors or to a combination of the two. *First,* it may come from a tooth-shifting *en masse* over the body of the bone, from the same causes and of the same nature as found in the maxillary arch, Fig. 2; *second,* it may result from a movement laterally of the mandible in an effort to establish serviceable occlusion with a narrow upper arch, or perhaps from a habit. Fig. 3.

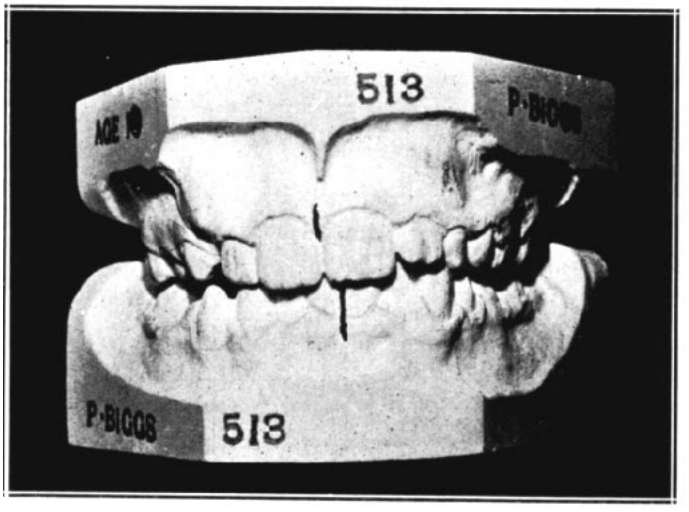

Figure 1
Displacement of the maxillary median line from a break in the continuity of the tooth arch.

When the inharmony is the result of lateral displacement of the mandible there must be a mesial shifting of one of the condyles from its mandibular fossa onto the articular eminence in order to permit the side-swing of the lower jaw. This produces an interesting and sometimes confusing effect upon the inclined plane relationship of the premolar and molar teeth, especially manifested on the side on which the condyle is forward. This condition must be carefully analysed if the correct classification and treatment of the malocclusion is to be made. Let us note just what takes place in a case of this kind.

On the side *toward* which the lower arch median line has shifted, the mandibular molars, premolars and sometimes the canines will usually be found in buccal occlusion with the upper teeth, but their mesiodistal relationship to the opposing teeth and to the skull anatomy will be no different from what

it would have been had this side-swing of the mandible not occurred. Fig. 4. This is because the condyle on this side simply rotates in its mandibular fossa and does not move forward when the lateral movement of the mandible toward this side is effected. On the side *from* which the median line has deviated, however, the buccolingual relationship remains undisturbed, but the mesiodistal pairing finds the lower molars, premolars and canines considerably *mesial* to their normal location in relation to head anatomy because

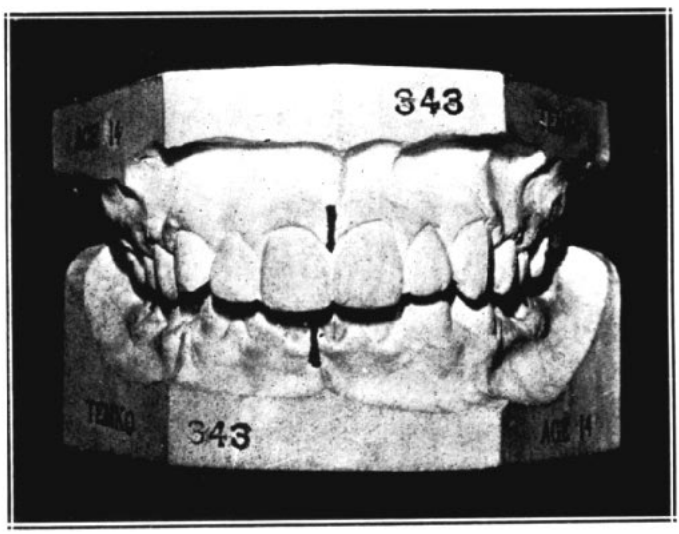

Figure 2

Displacement of the mandibular median line from premature loss of the right second deciduous molar.

the condyle on this side has slid forward onto the articular eminence in order to permit the lateral jaw movement. Fig. 5. Hence, to make the correct classification, all the teeth on this side of the mandibular arch must be mentally readjusted to their proper relationship with the anatomy of the skull or, in other words, placed that amount distally to their present positions that is equivalent to the length of the forward slide of the condyle onto the eminence. This approximates the width of a premolar. When this is done, the inclined plane relationship that results will furnish a correct basis from which to judge and to decide upon the classification of the case.

In Fig. 6 is shown a case that exhibits inharmony in the relation of the median lines of the two dental arches. By examining the patient it is found that the maxillary arch median line harmonizes with the central vertical line

of the face while the mandibular arch median line is displaced to the right. If this displacement were due to a tooth-shifting process we would note a break in the proximal contact of some of the teeth and probably a perversion in the axial inclination of several of the incisors. This lower arch, however, is so nearly perfect in its outline form that we would, at once, suspect a lateral displacement of the entire mandible. A convincing symptom of such a condition is a disharmony of the facial outline produced by this faulty jaw

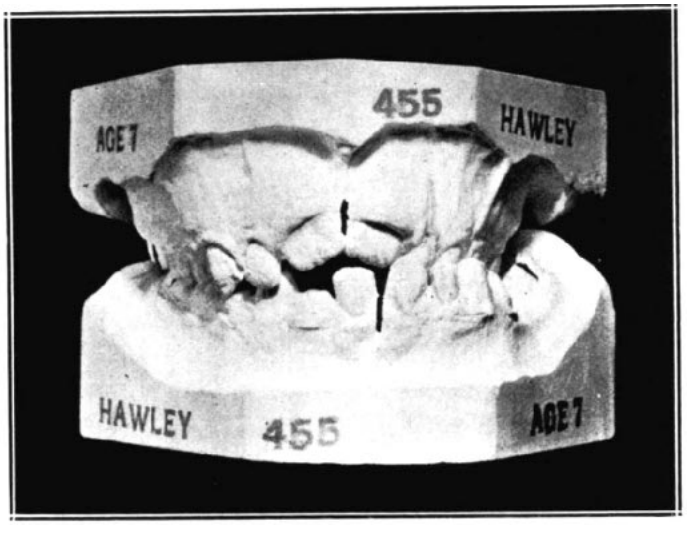

Figure 3
Displacement of the mandibular median line from a lateral movement of the mandible.

position. The photographs of the patient show characteristic marring of the facial contour. Fig. 7. Consequently we deduct that this inharmony in the median lines of the maxillary and mandibular arches is due to the swinging of the mandible to the side, either from habit or because there is thus given a better functional contact of its dental units with those of the maxillary arch.

This conclusion having been reached, it now becomes necessary to analyse the inclined plane relationship so that proper classification and treatment can be made. On the right side, Fig. 8, which is the side *toward* which the median line of the mandibular denture has shifted, we find the maxillary teeth in lingual occlusion and the inclined plane relationship

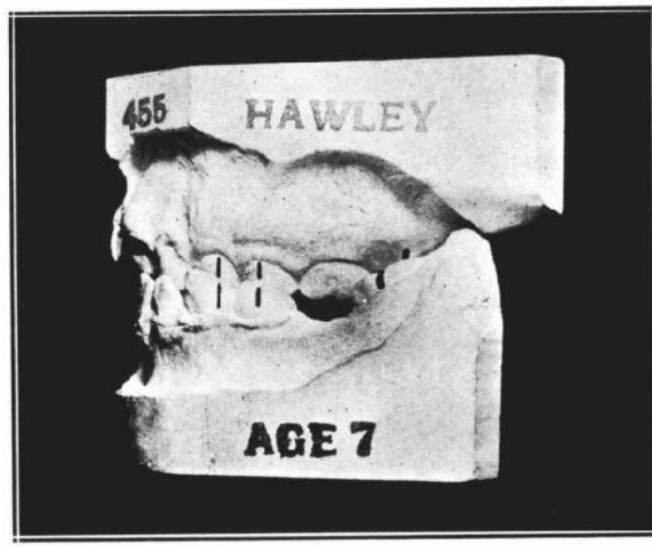

Figure 4

Showing normal mesiodistal relationship on the side toward which the mandible moves. The mandibular first permanent molar has tipped forward because of the break in the continuity of the tooth arch. When this error is mentally corrected, all the teeth on this side will be in normal relationship to the maxillary teeth.

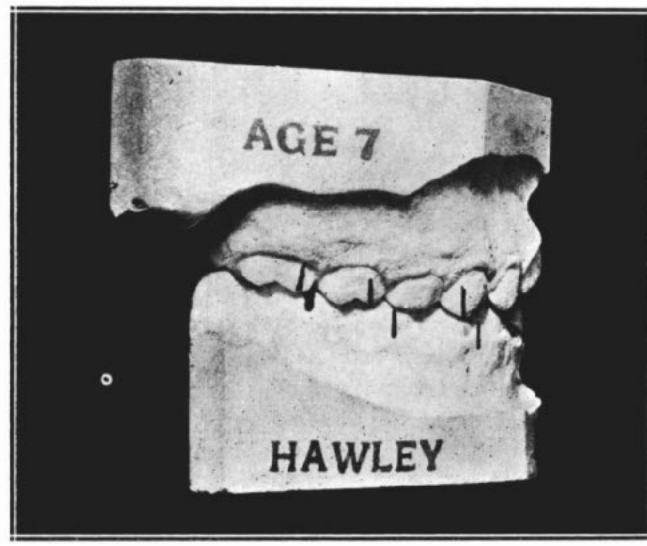

Figure 5

Illustrating the forward displacement of the mandibular teeth on the side *from* which the median line has deviated in the case shown in Figure 3.

correct. This is just what we would expect in such a jaw displacement. On the left side, Fig. 9, however, where the condyle has slipped forward onto the articular eminence and where the mandibular deciduous and permanent molar teeth should, as a result, be mesially related to the maxillary buccal teeth, we find, instead, a correct occlusion of these various units, not only buccolingually but also mesiodistally. Therefore, we have every reason to suspect that the *maxillary* molar and canine teeth on this side are also mesial

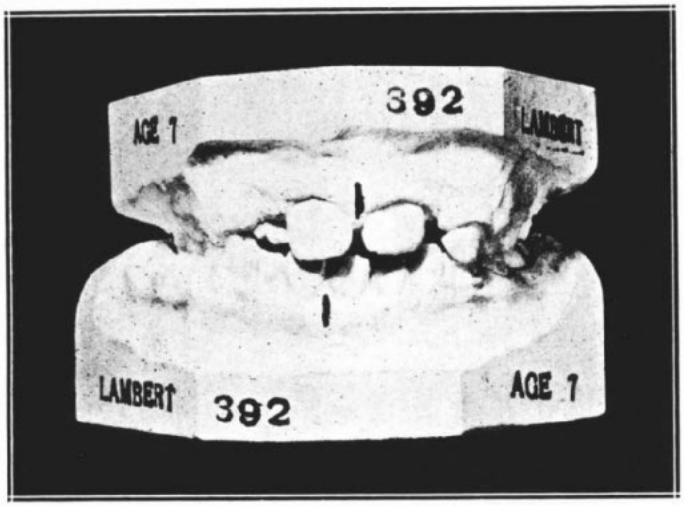

Figure 6

Another case in which disharmony in the median lines of the two dentures is due to a lateral displacement of the mandible.

to their normal position in the anatomy of the head. That this is true is verified by the marked closing of the space allotted to the maxillary permanent left incisor. Fig. 6. Hence we have a Class I malocclusion complicated by a mesial shifting of the maxillary left canine, deciduous molars and permanent molar. Treatment of this case must include the distal movement of the maxillary buccal teeth on the left side until they are normally situated in their basal bone. An effort to gain this space for the lateral incisor by carrying the maxillary buccal teeth laterally, only, would be a most serious error and could never effect a stable result.

In Fig. 10 is seen another case of disharmony of the median lines of the two dentures. Examination of the patient disclosed that the maxillary

median line was correctly located in relation to the face and the mandibular median line was displaced to the right. There was lack of harmony in the facial contour indicating a side-swing of the mandible and the lingual occlusion of the maxillary teeth on the right side confirmed this condition. If there was no other marked tooth displacement in either denture, we would expect to find the mesiodistal cusp relationship of the maxillary and mandi-

Figure 7

Photograph of a patient with the mandible displaced laterally. Note the characteristic inharmony of the facial lines. (This is not the photograph of the patient whose models appear in Figs. 6, 8 and 9.)

bular buccal teeth correct on the right side and the mandibular molar and canine teeth mesial to the maxillary buccal teeth on the left side.

Fig. 11 shows the right side of this denture and it can be seen that the cusp relationship is not normal but that the mandibular teeth are either distal to the maxillary or the maxillary teeth have slipped mesially to their

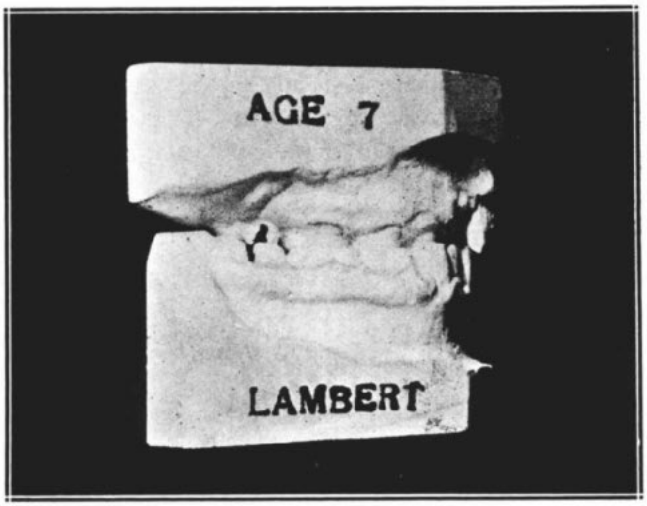

Figure 8

The normal mesiodistal relationship of the buccal teeth on the side toward which the mandible swings.

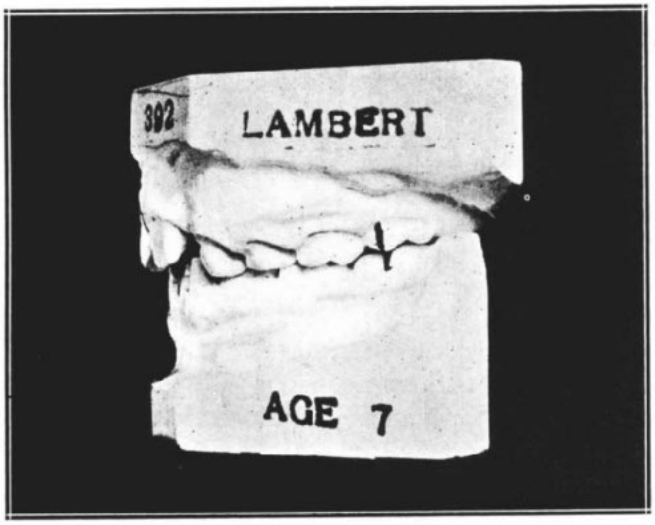

Figure 9

Normal mesiodistal relationship of the buccal teeth on the side *from* which the mandible moves. This indicates a coincidental forward shifting of the maxillary teeth.

correct position in skull anatomy. Hence the profile photographs of this side must be studied to see whether there is any indication of failure in the forward growth of the mandible. We find that the photographs of this case show a well developed mandible. Next we look for perverted axial positions of the maxillary teeth on this side showing a forward shifting of the tooth crowns. There is no sign of this until we reach the right lateral. This

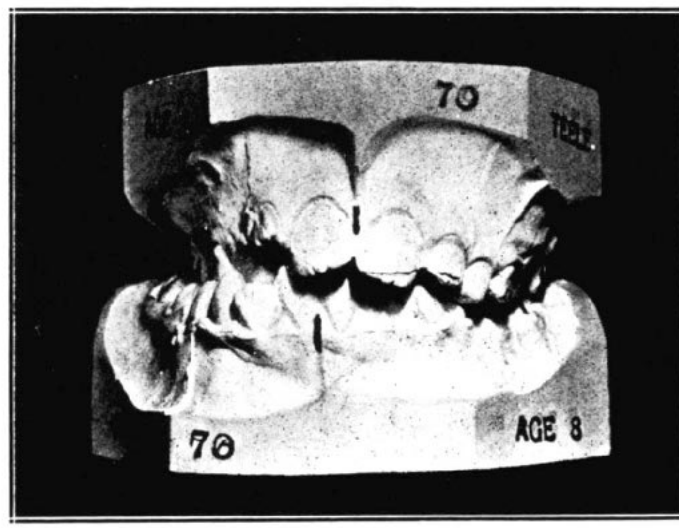

Figure 10

Inharmony of the median lines of the two dentures due to lateral displacement of the mandible.

tooth has a most decided mesial and labial perversion of its normal axial adjustment. Therefore, the evidence at hand on the right side points very strongly towards a Class I malocclusion with forward shifting of the maxillary teeth.

Now let us study the left side of this case. Fig. 12. Instead of finding the mandibular buccal teeth mesial to the maxillary buccal teeth on this side, we see that the cusp relationship is correct. Therefore, when this condyle is replaced in its mandibular fossa, the mandibular molars will be in distal relationship to the maxillary molars. Is this, then, a subdivision, Class II case or is it a Class I case with the maxillary buccal teeth on the left side, as well as the right, mesial to normal position in skull anatomy?

Examination of the *left* profile which, it must be borne in mind, is affected by the mesially placed condyle, should show an indication of an overgrown mandible if this bone is fully developed, or should exhibit ex-

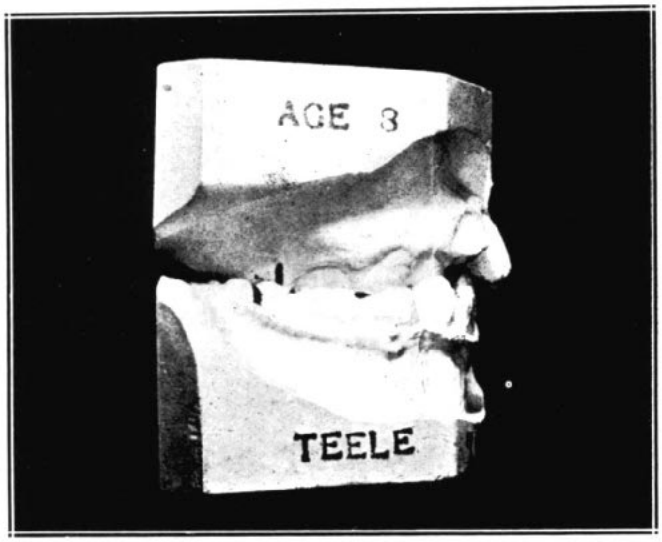

Figure 11

Forward shifting of the maxillary buccal teeth on the right side in the case shown in Figure 10.

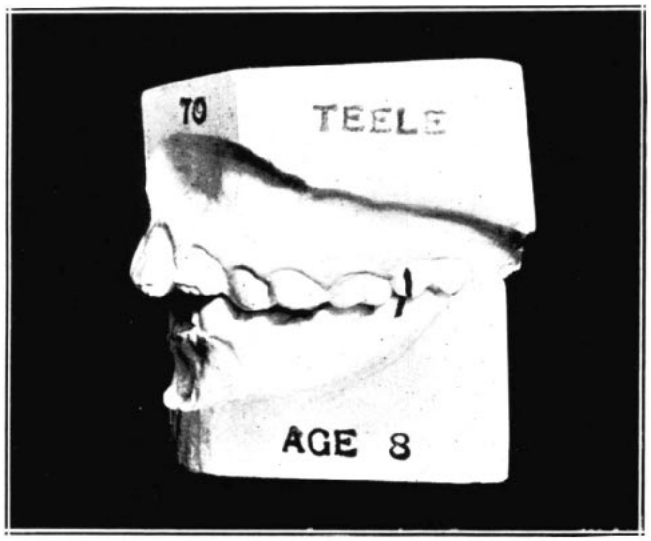

Figure 12

Correct mesiodistal location of the maxillary teeth on the left side in the case shown in Figure 10. This indicates either a forward shifting of the maxillary teeth or an original distal position of the mandibular teeth.

cellent balance of lines, if the body of the mandible is undergrown. This study did show a very harmonious relationship of the chin to the upper portion of the face. Furthermore, there was little or no mesial axial perversion of the teeth on this side of the maxillary denture. Consequently it was concluded that there was a Class II malocclusion on the left side and the case was classified as a Class II, Division 1, subdivision malocclusion. The treatment, however, included the distal movement of both buccal segments of the maxillary denture.

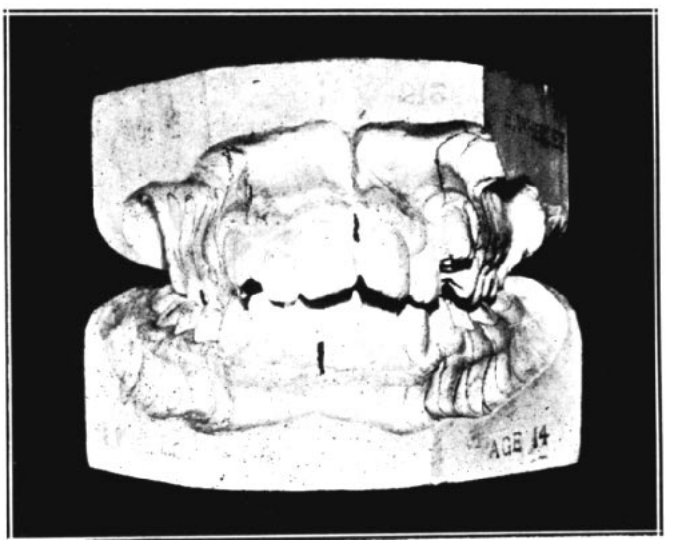

Figure 13
A complicated case of malocclusion with lateral displacement of the mandible.

Fig. 13 illustrates a more complicated malocclusion with disharmony of median lines of the two dentures. Examination of the patient shows that the maxillary denture median line is correctly related to the central vertical plane of the head. The facial lines are marred by a prominence of the chin on the right side indicating a lateral displacement of the entire mandible.

Examination of the right side of the models, Fig. 14, tells us that the maxillary teeth are mesial to normal as indicated by the mesial axial perversion of the maxillary canine and a well balanced profile in the facial photographs. On the left side, Fig. 15, we find a similar mesial axial perversion of the maxillary canines, showing very definitely a forward shifting of the maxillary molars, premolars and canines of this side. The profile photograph of this side exhibits an overprominent chin. Consequently our analysis leads to a deduction of Class I malocclusion complicated by the forward displacement of both buccal segments of the maxillary denture and a lateral displacement of the mandible with its superimposed denture.

The Treatment of Disharmonies of the Median Lines of the Two Dentures

The correction of median line displacement is not difficult provided an intelligent analysis of the disharmony has been made.

If the disharmony is due to a shifting of the teeth into an incorrect relationship with their bony base and coincidentally with the anatomy of

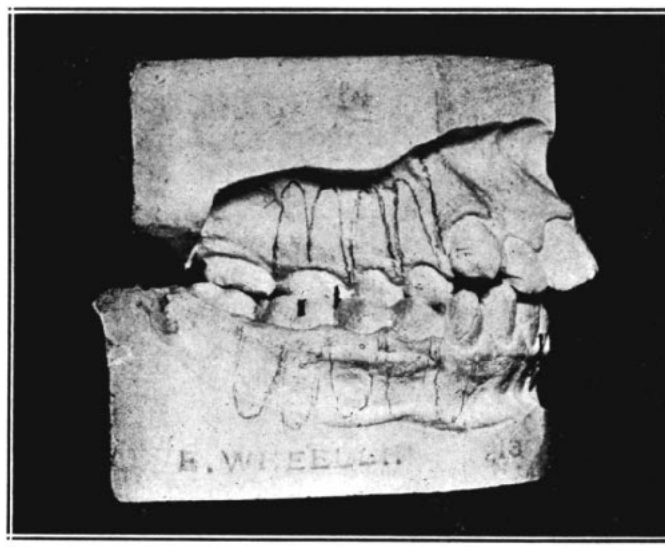

Figure 14

Forward shifting of the maxillary buccal teeth on the right side in the case illustrated in Figure 13.

the skull, as in Figs. 1 and 2, then these must be moved mesially or distally over their basal bones, until the harmony is restored.

When the fault lies in a displacement of the mandible, the teeth themselves still being in their correct position in this bone, or properly related to their bony base, we may say, then the treatment must be directed toward establishing a normal position of the condyles of the lower jaw in their respective fossae.

It has been the experience of the writer that the condyles will seek the mandibular fossae if the inclined planes of the teeth are so adjusted to one another as to render normal condylar location the most satisfactory for efficiency of function. Yet a few exceptions have been found to this rule.

These were cases in which the lateral thrust of the jaw was primarily evolved as a habit malposition and had been established for a relatively long time and cases that were of more advanced years in which a new pseudo-joint, located upon the articular eminence, had in all probability been established. In these two types of cases, the prognosis is more or less unfavorable toward ever establishing a normal condition in the tempero-mandibular articulations and so permanently overcoming the side bite.

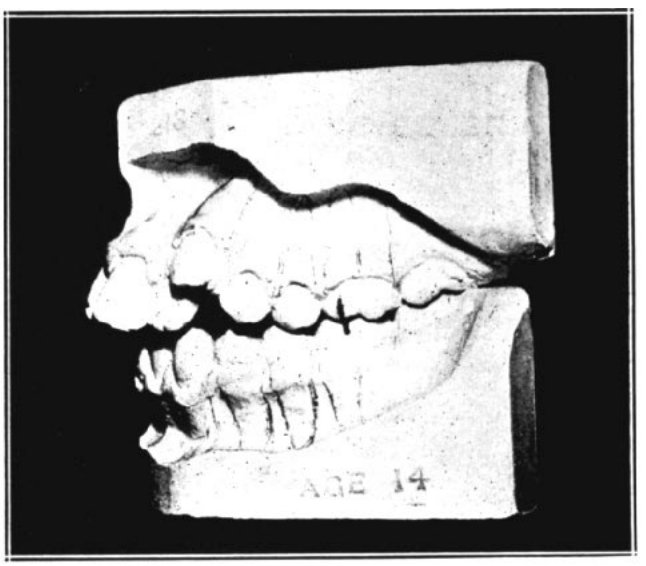

Figure 15

Forward shifting of the maxillary buccal teeth on the left side in the case illustrated in Figure 13.

In malocclusions where the lateral displacement of the mandible is not due to a habit, it usually is secondary to narrowing of the maxillary denture. When the maxillary dental arch is so lacking in width that the normal buccal position of the maxillary molars upon the mandibular molars is no longer possible, the individual finds it more efficient and comfortable to throw the mandible to one side and so establish an interlocking of buccal and lingual inclined planes rather than to maintain a cusp to cusp adjustment. Consequently widening of the maxillary arch across the molar, premolar and canine region is the first step to perform in treatment. Such a buccal movement should be *bilateral* and usually of equal degree on both sides of the denture. If the operator elects to widen only on the side of the maxillary

denture that is in lingual occlusion, he will find that the mandible keeps moving laterally as fast as the buccal movement of the maxillary teeth is taking place and the inharmony of the median line increases rather than corrects itself. By bilateral expansion the mandible is guided into the normal resting position and the displaced condyle gradually falls back into its mandibular fossa.

If, however, the maxillary teeth are forward on the side of condylar displacement, as in Fig. 9, bilateral expansion will often fail to correct the median line disharmony for the cusps on the side where the condyle is on the articular eminence are strongly held by their normal relationship and the condyle is not permitted to slip distally again. When, however, the maxillary teeth on this side are also moved distally into their correct position in skull anatomy and on their basal bone, then the mandibular teeth seek to maintain their normal cusp relationship and the condyle automatically returns to its correct location, thus establishing the harmony that is desired.

So, to sum up the proper treatment of disharmony of the median lines of the two dentures, due to lateral displacement of the mandible, we would say that it consists of effecting a bilateral expansion movement of the buccal teeth of the maxillary denture and accompanying this with such mesial or distal tooth movements as will establish the correct position, in relation to the skull, of every one of the dental units.

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