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Mesial Drift*

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The term *mesial drift* is not new in either the thought or literature of dentistry. It means that the buccal teeth of the denture move in a forward direction. It is present, in a normal occlusion, as a natural physiological force, becoming effective as soon as the first permanent molars erupt and come into occlusion. Its functions are to stimulate forward growth of the denture and take up the wear of the proximal contact points of the teeth. Quite often, because of a disharmony of the forces of occlusion, mesial drift of the teeth becomes abnormal in its effect upon the denture. This paper will deal with the analysis, classification and treatment planning of abnormal mesial drift.

The first classifications of malocclusion were based solely on perverted tooth relationship. In 1899 the Angle classification was introduced with the intention of relating the teeth and denture to the head as a whole. Because tooth land marks, the first permanent molars, were used as indicators of three classes, the full import of this classification was not generally grasped. That Angle intended his classification to relate the arches to each other and to the cranium is proven in his paper, "The Upper First Molar as a Basis of Diagnosis in Orthodontia," published in 1906.† At this time he pointed out that these teeth, for various reasons, may assume perverted positions within their own arches, and that the shifting of the six-year molars must be analyzed before they can be used as a basis for classification. This is one of the first writings dealing with the problem of mesial drift.

Relationship Between Teeth and Adjacent Structures

With the comparatively recent introduction of anthropometric and cephalometric methods in the study of facial growth we are witnessing changes

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† *Dental Items of Interest*, Vol. 28, p. 426 (June), 1906.

in our concept of tooth relationships. The change is in the nature of an analysis of the relationships between the teeth and the anatomical units of the face. We now recognize four relationships.

1. The teeth to each other.
2. The teeth to their alveolar processes.
3. The teeth to their maxilla and mandible.
4. The teeth to the cranium.

The author does not wish to be understood as offering a classification to supplant or modify the intended import of existing classifications. He does suggest a method of analysis by which these may be more accurately determined, and offers a classification of mesial drift.

Dental Arch Length

All malocclusions, whether they be Class I, II or III, may be classified, at least for the sake of analysis, according to their dental arch length. This term is defined as the length of an arch from the distal surface of the last tooth present on one side, around the arch to a similar point on the opposite side. When normal, this length will accommodate, in correct contact relationship, all normal teeth which should lie between these points. On the basis of length, all dental arches may be divided into three groups.

1. Those with adequate length.
2. Those with an increased length, as indicated by a spacing of the teeth.
3. Those with deficient length, as indicated by rotations, blocked out, or impacted teeth.

Factors Which Disturb Dental Arch Length, Causing Abnormal Mesial Drift

There are at least four factors which lead to the collapse of dental arch length.

1. Constitutional factors affecting the growth of the maxilla and mandible.
2. An anterior component of force.
3. A restraining or distal force emanating from the labial and buccal musculature.
4. A lack of resistance to these two latter opposite forces induced by the disturbance of the proximal contact points of the teeth.

It is disharmony, or lack of balance of these various factors which produce abnormal mesial drift. Taken literally, the words *mesial drift* imply a forward movement. It is my impression that when the term is used it is

intended to mean an abnormal condition, *i.e.*, that certain, or all, of the buccal teeth have moved to a position forward to that which they should normally occupy in respect to the cranium. I believe that mesial drift of the teeth is far more complicated than this thought implies, and that its meaning can be broken down by analysis, thus affording us valuable information in planning a course of treatment. Four cases have been selected to illustrate how this may be done.

Analysis

Method—Grünberg Symmetroskop

Usually malocclusions exhibit asymmetry of denture growth, and a survey with the Grünberg Symmetroskop is quite valuable. This is a simple,

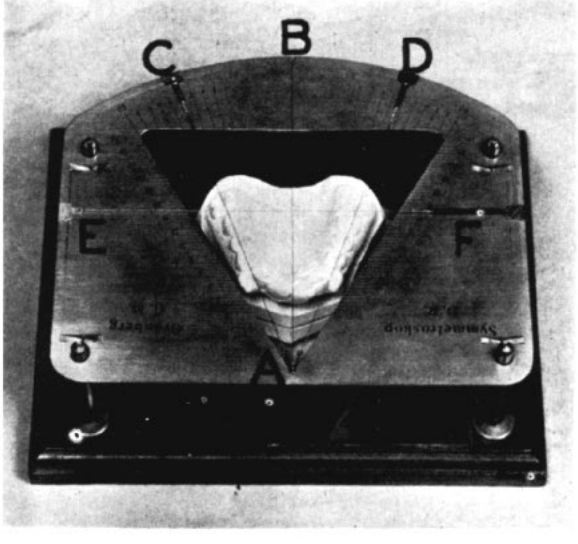


Fig. 1
Grünberg Symmetroskop.

inexpensive instrument which will verify and indicate degrees of asymmetry that come to light during the analysis of malocclusions. It consists (Fig. 1) of a metal plate with a suitable opening through which the model, which is mounted on a mirror, may be viewed. Four fine wires cross the opening. One in a vertical fixed position, AB, under which the median line of the model is oriented. Two other vertical wires, AC and AD, are fixed at the apex A. The opposite ends, C and D, being movable over similar graduated scales at C and D. These will record the buccolingual position of the posterior

teeth. The fourth wire, EF, is horizontal and movable at both ends over similar graduated scales at E and F, and will record the relative anterior posterior position of right and left teeth.

In the use of this instrument the median raphe of the palate is selected as a starting point because it is readily defined, is not in the line of the teeth and therefore less influenced by tooth position than any other landmark. Also being in the mid-sagittal plane it is less apt to be disturbed by asymmetrical facial growth. Its acceptance as a mid-plane, of course, must be tempered with judgment as it is quite possible for the entire face to be twisted on the cranium. However in the largest percentage of cases, the palatal raphe will coincide with the mid-line of the denture as determined by a study of the face.

To make a survey the upper model is placed in the instrument, and by sighting on the mid-line wire, AB, and its reflection in the mirror, the model is adjusted so that the palatal raphe coincides with this line. Now selecting a point in the buccal segment, usually the mesio-buccal cusp of a first molar, adjust the horizontal wire, EF, over this point and at right angles to the mid-line. The three points where wires AB and EF cross the dental arch are marked on the model. By manipulation of wires EF, AC, and AD the relative symmetry of all teeth in the arch may be accurately determined. To study the lower arch the models are occluded and the three marks that were made on the upper are projected to the lower, thus giving points by which the lower model may be placed in the instrument in the same position as the upper was studied. I mentioned the clinical check of the mid-line by direct observation of the patient's face. There is a similar check that may be made for symmetry. Stand directly behind and above the patient and place some long straight instrument, such as a pillar file, on the tip of the lower cuspids. By sighting on this indicator a very good reading may be had of the relative anterior posterior position of these teeth.

Case I

Photographs of a 13-year-old girl with a physical and dental development which appears to be advanced for her chronological age are shown in Fig. 2. A study of her features indicates an adequate growth of both maxilla and mandible. Facial musculature was considered to be within a normal range and no detrimental habits were found. She was using her denture vigorously in mastication, but the movements were vertical rather than lateral. In Fig. 3 the models show a collapse of both dentures to such an extent that the upper and lower left cuspids are blocked out. This has caused a marked asymmetry of development, throwing both median lines to the left side, the upper 2½ mm. and the lower ½ mm.

The etiological factor in this case probably was the premature loss of deciduous tooth material on the left side. However, this could not be verified by questioning the parents, and no dental record was available. The influence of the inclined planes on the left side has been strong enough to hold the first molars in nearly a normal mesio-distal relationship. The break in the arches on this side has caused a disharmony of the forces of occlusion, permitting the anterior component of force to produce a mesial drift of both upper and lower buccal teeth. On the right side the molars are in Class II relationship due to two factors; the upper anteriors have traveled farther

Fig. 2
Case I.

to the left than the lowers because they are more readily influenced by musculature, and second, there has been a shortening of the upper arch from the first bicuspid to the median line due to slipping of contacts. The lower arch, on the other hand, has maintained its integrity on this side. These two things would indicate that the lower molar has not lagged so much, but rather that the upper has had an accelerated forward movement. This, plus the fact that the mandible and maxilla bear a very satisfactory relationship to each other and to the cranium, should place this malocclusion in Class I rather than Class II subdivision, as an unanalyzed tooth position might indicate.

The symmetroskop reading is shown in Fig. 3. Both upper and lower left buccal segments are definitely mesial to those on the right side. The upper left cuspid is not as much affected as one might expect because it has

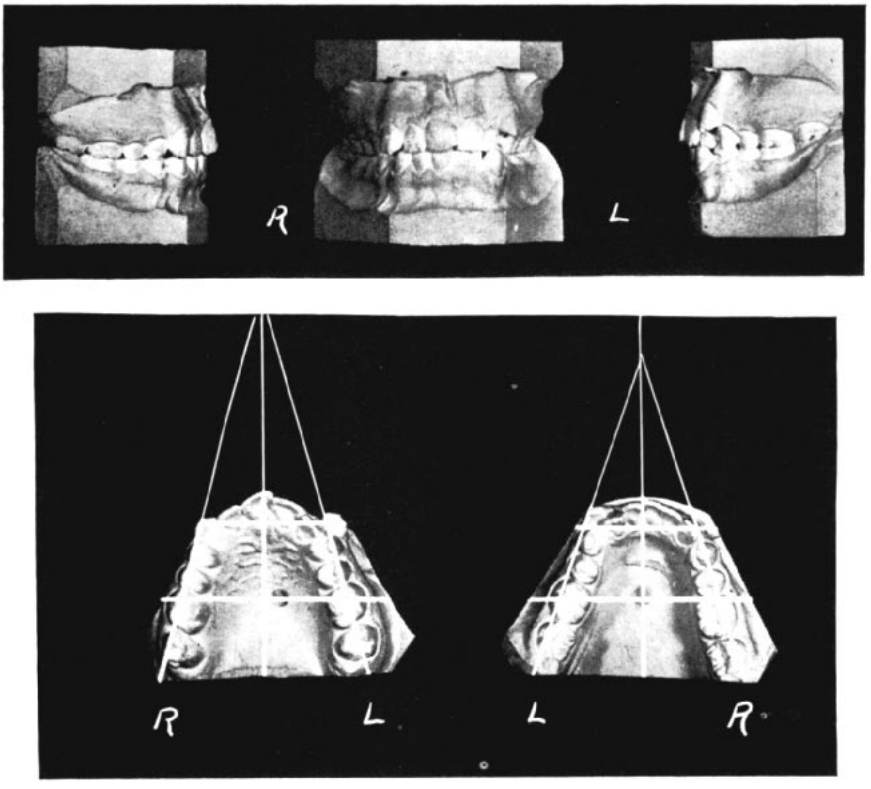


Fig. 3
Model and Symmetroskop reading of Case I.

broken contact with the bicuspid and has been forced bucally where it receives an exaggerated muscular force which has held it distal. Buccolingually, the asymmetry of the arches is not marked, the left upper and lower bicuspids being slightly lingual. The upper and lower left central and lateral have collapsed lingually, due to excessive muscular force acting on the prominent cuspids.

Because of the good facial growth of this patient and the obvious mesial position of the left buccal segments, they can be said to have drifted mesially to a normal cranial relationship as well as mesially in their alveolar processes and to their mandibular and maxillary bases.

Classification

This patient presents an example of one classification of mesial drift; that is, a case where the teeth have gone beyond their normal dentocranial

positions. This type is sometimes called a unilateral, bimaxillary protrusion. The major problem in treatment is to prevent a protrusive or toothy denture.

Case II

The second case (Fig. 4), likewise a Class I, is that of a girl 13 years of age. Her physical development and health do not appear to be up to par. She is 5 feet 1 inch in height and weighs 91 pounds, of which 10 pounds were gained in the last six months preceding the examination. Analysis of her face indicates a lack of maxillary height and mandibular length; in other words, the face is lacking in growth and development. Facial musculature is active and tense. No detrimental muscular habits were found except hyperactivity, probably due to a high nervous tension.

Fig. 4
Case II.

The models shown in Fig. 5 indicate a marked collapse of dental arch length with an overjet and overbite of the upper incisors. The upper and lower mid-lines are correct with the face. The lower incisors bear quite a satisfactory relationship to their alveolar process and the mandible, except for the probable lack of alveolar height. The molar relationship on the left is normal, while on the right it is approaching Class III. One would immediately suspect that the lower right molar was ahead of the one on the left, and there is evidence to support this, as the right cuspid is completely blocked out, while the left cuspid has a third of its space left. The symmetroskop (Fig. 5), however, showed that the asymmetry is in the upper arch and not in the lower. Further analysis would indicate that because the right cuspid did

erupt and come under the influence of musculature, it caused the right bicuspids and incisors to move lingually, closing the cuspid space. The lower arch is quite symmetrical except for this greater lingual crush. The left cuspid space is almost closed and the tooth is impacted.

In the upper arch the left buccal segment is slightly mesial to the right,

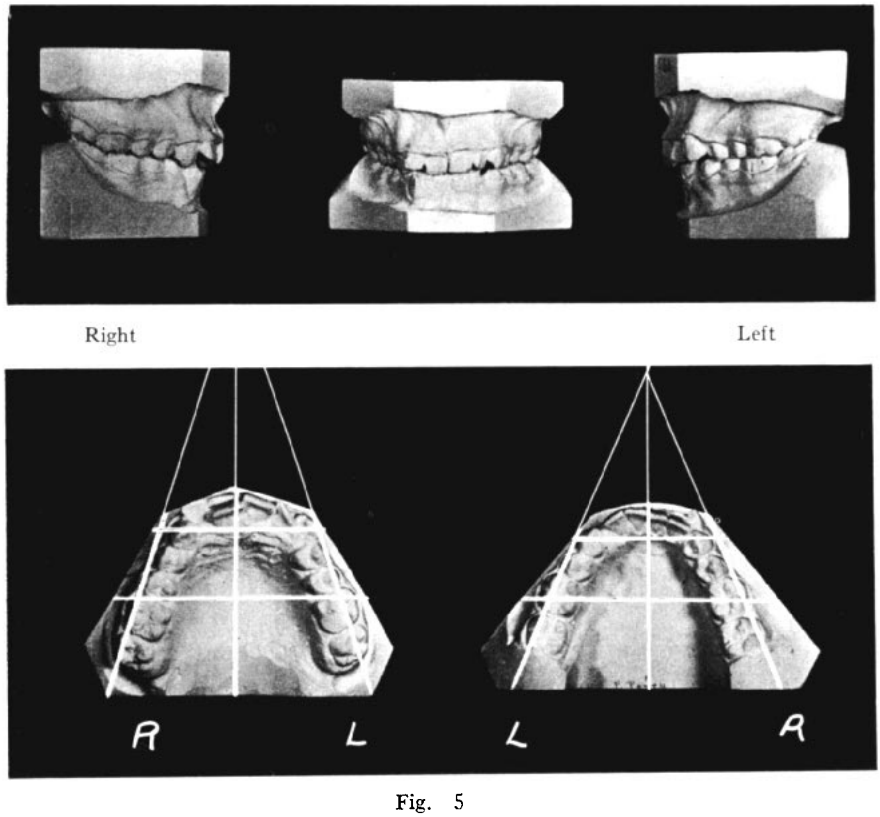


Fig. 5
Models and Symmetroskop of Case II.

with quite a lingual collapse of the right cuspid and first bicuspid. The arch length is considerably shortened by rotations and partial blocking out of the incisors. There is a severe collapse of dental arch length in this case, and an obvious mesial drift of all four buccal segments. The deficiency of facial growth is so evident in this patient that it is a border-line case, and I would not argue with one who wanted to call it a Class II face.

Classification

For the above reasons all four segments have been classified as mesial

drifts in relation to the alveolar process and to the mandibular and maxillary bases, but not to cranium.

In treatment there is little danger of getting this denture mesial to cranium, but there is grave danger in getting it too far forward in relation to its supporting bases. If this should happen it would defeat the ultimate object of the treatment, that is, a stimulation of facial growth. The preservation of the labial tissues of the lower incisors is also a serious problem of this type of case.

Case III

The third case, a Class II, Division I, is that of a girl of 13 years. (Fig. 6.) The usual characteristics associated with this classification are presented. She is a mouth breather because of an established habit and the mechanical relationship of the incisors. With respect to musculature the lower lip is nearly normal and without a mentalis habit, the upper lip is hypo-

Fig. 6
Case III.

functional and a little short. She appears listless. The mandible is relatively normal in form and of anterior posterior development. It is the type of case that looks simple and the prognosis would be considered favorable. An examination of the models shown in Fig. 7, however, changes this opinion. The case is typically Class II, Division I, with the usual narrow tapering upper arch of adequate length. The lower arch has good width, an exaggerated curve of Spee, markedly decreased dental arch length and exaggerated axial inclination of both lower cuspids. Obviously, there has been a lack of forward growth of the lower incisor region in addition to the general lack of

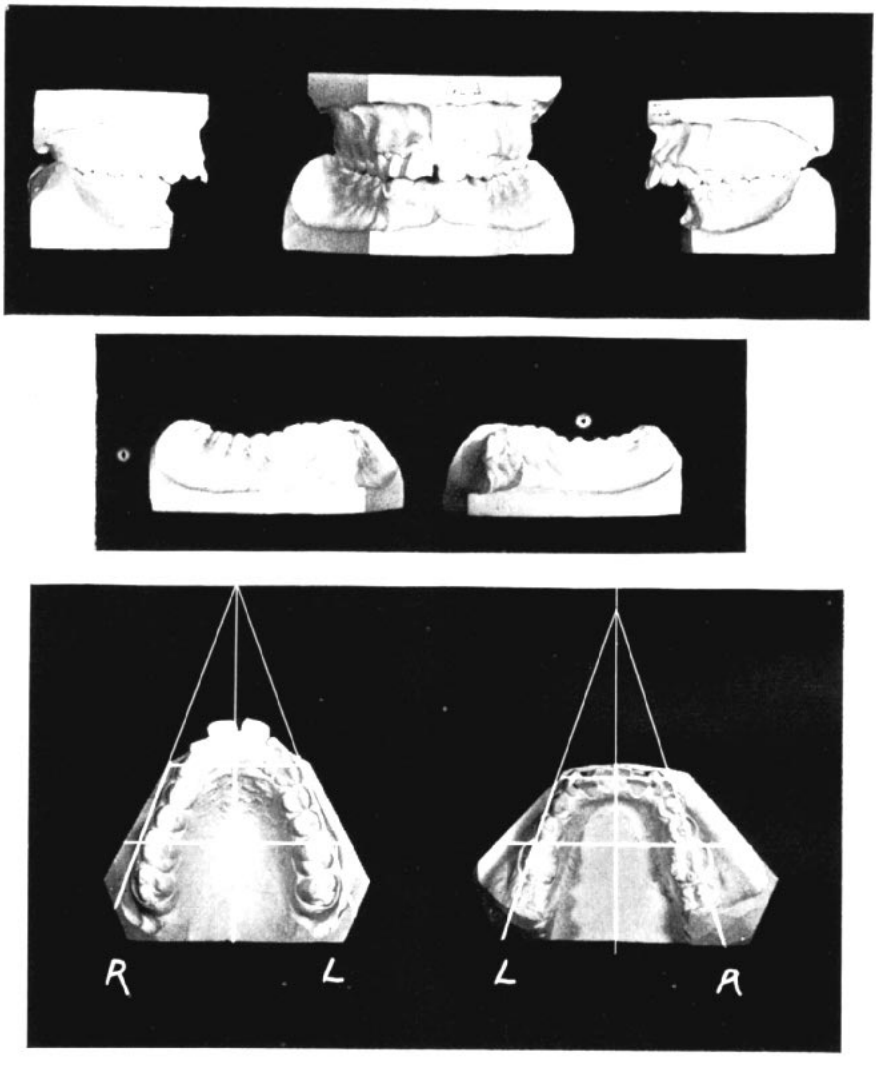


Fig. 7

Models and Symmetroskop reading of Case III.

growth of the mandible. The occlusal views show a symmetrical case with marked decrease of lower arch length, the break being equally divided at the right and left cuspid-lateral contacts. The cuspids are severely tipped forward. The successful appliance treatment of this case implies the re-establish-

ment of inclined plane relationship and the correction of axial inclinations without damage to the supporting alveolar process. It is necessary that axial inclination be corrected as this is an essential force in natural retention and balance of the denture. It also must be accomplished if we are to hope for acceleration and maintenance of mandibular growth.

Classification

This case has a mesial drift classification similar to the preceding one in that the lower buccal teeth are mesial to their alveolar process and mandibular base, but not mesial to cranium.

Case IV

The fourth case presenting this problem of collapsed dental arch length is a Class III in a man of 20 years. (Fig. 8.) This patient, a medical student, is a vigorous, athletic type. While not severe, his is the typical Class III mandible. His facial development is noticeably asymmetrical, there being a distinct swing to the right side.

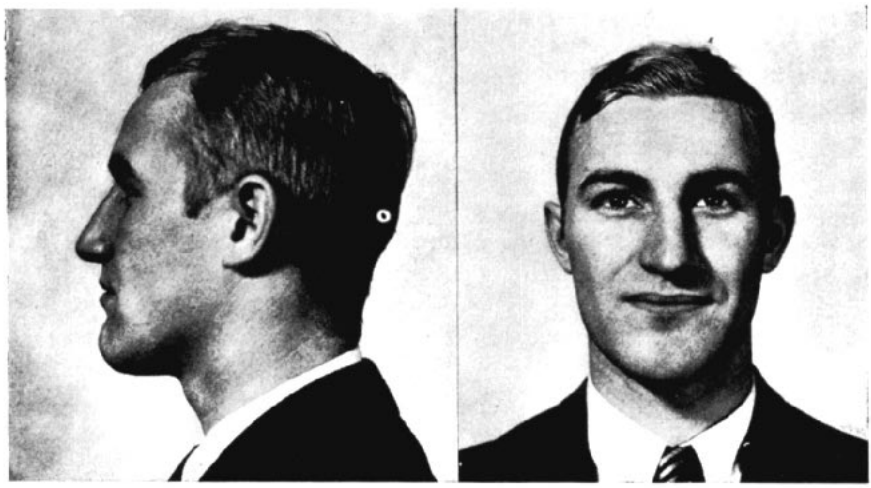


Fig. 8
Case IV.

The models in Fig. 9 show why this case is not as severe as is usually found in Class III of this age. Fortunately for the patient, the upper incisors have held on the lowers. In doing so they have caused the lower incisors to tip lingually quite badly. The locking of the incisors, no doubt, has acted as a check to the usual progress of this type of malocclusion. Again, as in the other cases, we are dealing with a decreased dental arch

length in the lower sufficient to block out a cuspid and an incisor. In the upper both cuspids are about one-half blocked out.

Analysis on the symmetroskop shows that this case is asymmetrical in its deformity. (Fig. 9.) In the upper arch the median line is correct. The loss of contacts in the anterior segment indicates a mesial drift of the buccal

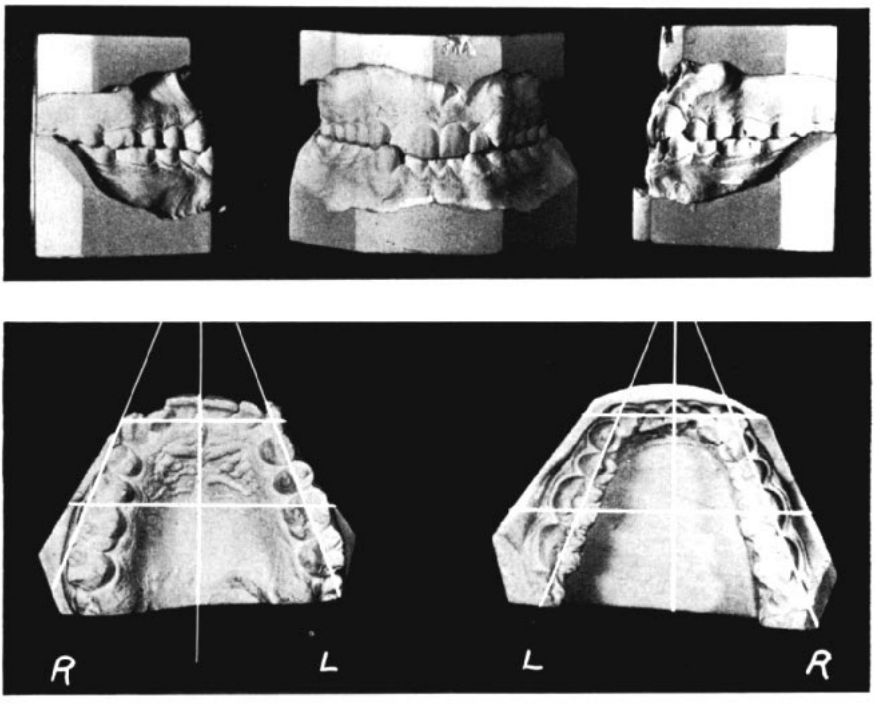


Fig. 9
Models and Symmetroskop reading of Case IV.

teeth as well as a probable retardment, or crush, of the incisors. The left side is further forward than the right. It is also further buccal, more so in the molar than the bicuspid area. In the lower arch we find a condition contrary to that which we would expect. The right side where the cuspid is labial to the uppers, does not have as much mesial drift as the left. This is apparently due to the fact that the most severe break in the upper arch has occurred at the left cuspid-lateral contact, allowing a greater drift of the upper left side. This in turn would speed up the drift of the lower left segment. The median line has shifted to the right. The right cuspid has been forced labially and the left lingually, but they are nearly in the same line because the left has slipped contact more than the right.

Classification

This case presents two types of mesial drift. In the upper the teeth are mesial to the alveolar process and maxillary base, but not to the cranium. In the lower the drift is mesial to the alveolar process and cranium, but not to the mandible. The use of the above analysis in this case in particular, must be coordinated with the evident asymmetry of facial form in preparing a treatment plan.

Relationship of Teeth to Alveolar Process

It will be noted that the analysis and classification of these four cases have been based on the relationship of the drifted teeth to three anatomical parts: (1) the alveolar process, (2) the maxilla and mandible, and (3) the cranium. The reasons for doing this are as follows: The alveolar process is the bone which surrounds the roots of the teeth. Histologically, it is not differentiated from the underlying bone. Physiologically, it is considered as a separate entity because it grows as the teeth develop and is resorbed when the teeth are lost. It is well known that the alveolar process also follows the teeth in their positions of malocclusion. In each of the four cases shown, one or both arches are deficient in length from molar to molar; therefore the alveolar process is deficient in length. We can say then that the buccal teeth have drifted mesially in their alveolar process. This statement is made advisedly, recognizing the fact that the failure of alveolar development may be due largely to a retarded or an actual lingual crush of the anterior segment of the arch, and that the buccal teeth may still be distal to their normal relationship to the cranium.

When we analyze the causes of collapse in dental arch length the reason the buccal teeth have drifted mesial in the alveolar process becomes clearer. Arch length is maintained by normal proximal contact relationship of the teeth. In all but those few cases characterized by generalized spacing of the teeth, any disturbance of contact points liberates two opposite major forces. They are the distal pressure of musculature and the anterior component of force. Briefly stated, the muscular force comes from the orbicularis oris and those muscles which insert into it. Physiologically, these may be divided into two groups, those which radiate from the orbicularis oris, with origins that are not in the immediate denture area, and the buccinator, which encompasses the denture. The latter muscle, after crossing the arch distal to the last molar, is continued by means of the pterygomandibular raphe, and the superior constrictor of the pharynx to a cranial attachment on the basilar portion of the occipital bone.

The antagonist to the distal force of musculature, or the anterior com-

ponent of force, as it is frequently called, is a powerful forward driving force produced by a combination of factors. By far the most important one becomes effective with the eruption and occluding of the first permanent molars. Because of their anatomical form these teeth do not dissipate stresses along their long axes. Their occlusal surface is not at right angle to the tooth axis, therefore a vector of force is formed which is in a forward direction. This is assisted by the muscular force of the buccinator as it crosses the denture, and by the forward push of the masseter in contraction. The anterior component of force from the molars is powerful, and is transmitted through the contact points to the teeth mesial to them, even beyond the median line. Clinical evidence of this force is an every-day observation in all three classes of malocclusion. It does not follow, however, that because the anterior component of force is liberated, the buccal teeth will drift beyond their normal dentocranial relation. There are many other factors associated with denture growth which may be perverted.*

Relationship of Teeth to Maxilla and Mandible

We can now discuss the relationship of the teeth to their denture bases, the maxilla and mandible. I believe we all accept the theory that bone is a plastic, easily modified tissue which is undergoing a continual change in response to the stimulation of function. The sources of local stimulation to the maxilla and mandible are stresses transmitted through the teeth, muscular pulls and pressures and stresses evolved through all associated functions. The effect of stresses transmitted through the teeth is dependent upon the magnitude and direction of the force, and the manner in which the teeth dissipate these stresses to the bones. In the latter factor I refer to the axial inclination of the teeth. It has a great deal to do with the relationship of the dental arches to the maxillary and mandibular bases. When teeth, particularly those in the anterior segment, become tipped mesially, or the buccal teeth have drifted mesially in their alveolar process, we find the dental arches mesial to the maxillary and mandibular bases. This occurs because the stimulation of occlusal function delivered to the bones through the teeth, according to the axial inclination and position of the teeth, is perverted in direction and amount.

Another factor having an influence on the relationship of the teeth and arches to their bases is systemic in nature, and has to do with the metabol-

* For a detailed analysis of the anterior component of force and contact points, the reader is referred to an article by Dr. Allan G. Brodie, "The Significance of Tooth Form," published in the October, 1934, and January, 1935, issues of THE ANGLE ORTHODONTIST.

ism of these tissues. In other words, there is often an arrest in growth of the facial bones from other than local causes. Thus, because of a deficiency of local and systemic stimulation, the maxilla and mandible may fail to reach a proper state of development. If at some time there is a lack of balance of the forces which maintain arch length, mesial drift of the teeth will occur. Then the deduction can be made that the buccal teeth have drifted beyond a satisfactory relationship with their maxillary and mandibular bases.

Relationship of Teeth to Cranium

Particularly in three types of cases the buccal teeth will drift beyond their normal relationship to the cranium in addition to a mesial drift with respect to their bases. They are, Class I cases where loss of contact relationship has been the major etiological factor, the other forces of occlusion being normal or but slightly perverted; Class III cases, where a loss of contact permits a mesial drift in relationship to the alveolar base and exaggerates the forward position of the buccal teeth to cranium; and, occasionally, in the maxillary arch of Class II malocclusions.

Classification of Mesial Drift

Thus we see that a collapse of dental arch length indicates one or more of the following:

1. Some degree of mesial drift of buccal teeth in relationship to their alveolar process.
2. A mesial drift in relationship to maxillary and mandibular denture bases.
3. A mesial drift in relationship to cranium.

Cases involving the latter have been called maxillary mandibular, or bimaxillary protrusions. Needless to say, there are cases involving combinations of these.

Differential Diagnosis

A differential diagnosis of mesial drift is not always easy to make. Simons' "Law of the Canine" has not proved satisfactory. Broadbent, in his ten years of study of cephalometric x-rays, has not offered us a rule or standard applicable to the individual. The axial inclination of the cuspids has been said to be an important diagnostic point, but I believe this evidence is not reliable. We find them in positions of perverted axial inclination in all three classifications of mesial drifts. It appears that judgment and deductions based on an analysis of the forces of occlusion and on facial type are the only reliable means that we now have at our disposal.

Treatment

The ultimate object of orthodontic treatment is to place the teeth in their correct relationship with the cranium, according to type, so that the patient may have a denture which is maximum in function, esthetic in its appearance and stimulating in its reactions to the supporting tissues, in order that the facial contour may be maintained or improved. This is an ideal which cannot always be attained. When such a result is obtained it is becasue of at least two factors:

1. The operator's success in placing the teeth in such relationships to each other and to their supporting tissues that it is possible for them to deliver normal stimulation to the maxilla and mandible. This implies a normal axial inclination of all the teeth. The operator, of course, must eliminate all other etiological factors and restore normal functional movements. What the orthodontist does with his appliance and associated therapy may be considered as the first stage of a treatment.

2. The other factor in the success of a case depends upon the response that Nature makes to the altered conditions. It is what Nature will do with this reestablished occlusion to cause a proper growth and development of the maxilla and mandible, and associated tissues, that might be termed the second stage of treatment. Nature apparently can do very little while the teeth are under the influence of appliance forces, but will take up her task soon after the case is in retention, provided the retention does not inhibit the teeth from transmitting stimulation in a normal manner. The above is the reasoning, or philosophy behind the treatment planning of the following cases:

Case V

The first case is that of a 12-year-old girl who was small of stature, but apparently of good development. She was an accomplished acrobatic dancer. Facial analysis (Fig. 10) indicates good development of the upper face and a definite lack of mandibular growth. Facial musculature was considered to be within a normal range. She was a normal breather, and no perverting habits were found.

The models (Fig. 11) show a case of decreased length of both arches, bilateral in the lower, and unilateral in the upper. The etiology of the arch collapse is early loss of deciduous tooth material. The lower left second bicuspid is completely blocked out. The lower right second bicuspid space is one-third closed. The disturbance in the upper is entirely on the right side, the cuspid and second bicuspid being partially blocked out.

It was rather difficult to analyze the mesial drifts which had occurred. In the first place, the lower left molar is markedly tipped forward to a

Before Treatment.

After first Period of Treatment.

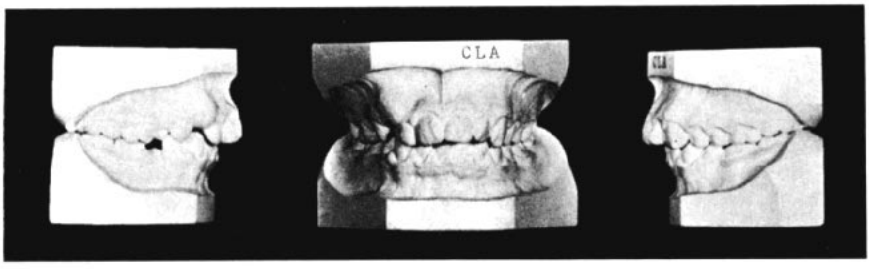
Fig. 10

Treatment Case I.

contact with the first bicuspid, but we find this tooth in Class I relationship with its opponent, which is in the only uncollapsed quadrant of the denture. Furthermore, the upper left molar is distal in its relationship to the upper right molar. The reason for this, however, is clear when we examine the

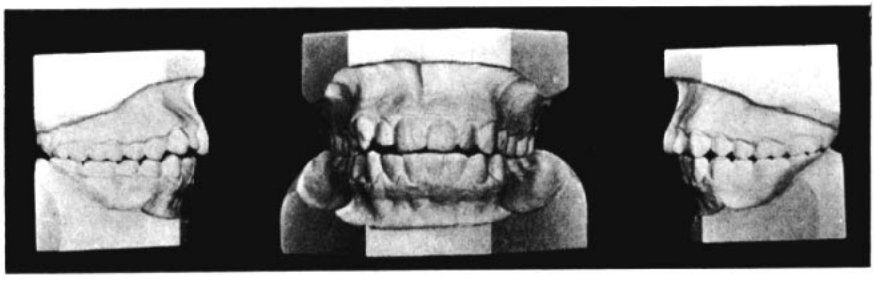
right side where we find partial breaks, permitting a mesial drift of the upper molars.

The symmetroskop reading (Fig. 12), from which the relative tooth positions were determined, show the lower left side to be collapsed more from both a mesial drift and a distal arrest, or crush, than the right side. Buccolingual symmetry is not materially disturbed, and the median line has moved slightly



Before Treatment.

Right Left



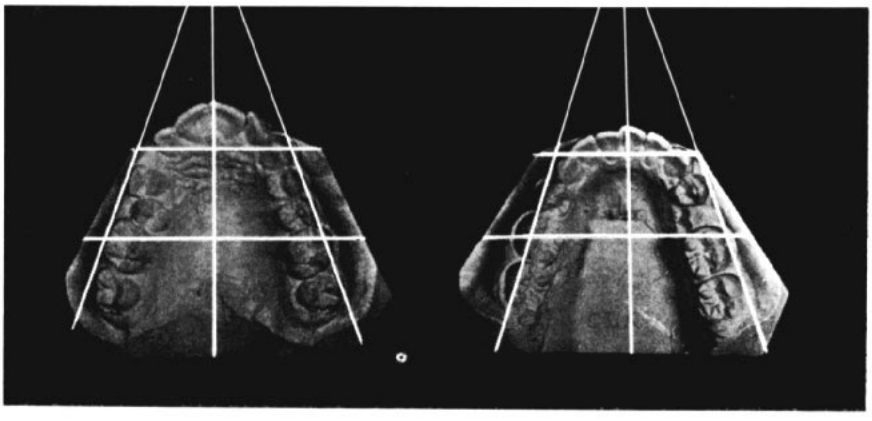
After first Period of Treatment.
Fig. 11
Treatment Case I.

to the left. In the upper we find a correct median line, very little distal collapse of the right anterior teeth, but a distinct mesial drift of the right molars.

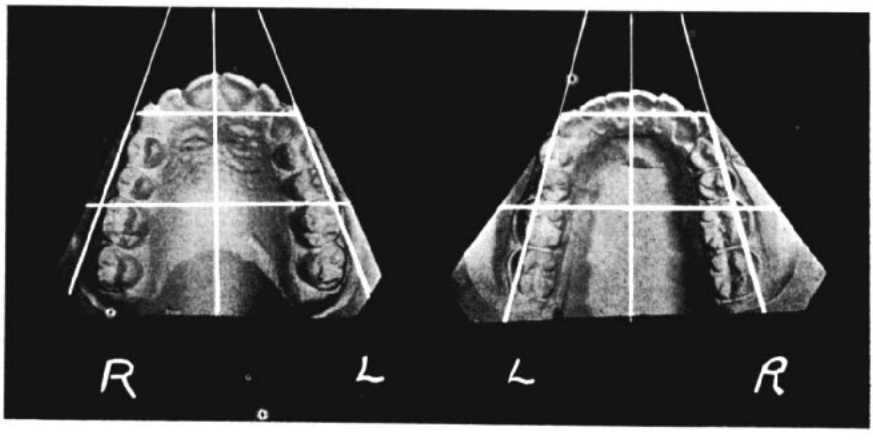
Several important findings have been brought to light by the symmetroskop. The excessive mesial drift of the lower left molar has not thrown this tooth forward of the upper molar. The mesial drift of the lower right molar has been accompanied by a similar mesial drift of its opposing molar. These two facts, along with the apparent lack of mandibular growth should designate this case as a Class II malocclusion.

The classification of mesial drift is as follows:

Upper. No mesial drift on the left side. A drift of the right buccal segment in relationship to the alveolar process, and the maxillary base, but probably not to cranium. (This latter point is debatable.)



Before Treatment.



After first Period of Treatment.

Fig. 12

Symmetroskop reading of treatment Case I.

Lower. Mesial drift of the molars of both sides to their alveolar process and mandibular base, but not to cranium.

The treatment of this case was based on the mesial drift analysis. It

was felt that if a successful end result was to be obtained it was essential that the axial inclination of the lower anterior must be kept normal, and that the lower denture should not be moved forward in relation to its mandibular base. With this in mind, the appliance adjustments were concentrated on distal movement of the posterior teeth to gain the space necessary for the blocked out teeth. The same plan was followed in the upper arch.

The lower arch was treated 18 months, and the upper 9 months, each independently, that is, intermaxillary traction was not used. Then the appliances were removed and the case placed in retention for a rest period. (Fig. 11.) The models at this stage indicate that distal movement of the molars had been accomplished, but there was also an undesirable forward movement of the lower anteriors. The reduction of the asymmetry is shown in Fig. 12. The photographs (Fig. 10) show what has happened to the face. There is very little change to the maxillary region or the chin. The lower lip has been carried forward, thus increasing the angle of the lower part of the face. The prognosis for future facial growth after treatment has been completed is none too favorable.

Case VI

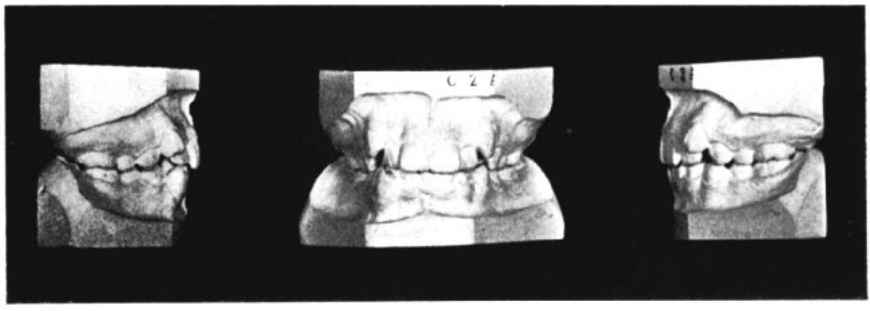
The other case is of a girl 11 years of age. (Fig. 13.) She has satisfactory facial development. This case was under observation several years before treatment, not on my advice, but because the parents could not decide to have the work started. When we first saw the child, at 9 years of age, the first deciduous molars had been shed, and the bicuspids were erupting. All deciduous cuspids, except the lower left, had been lost and the spaces were over half closed. The teeth had not been lost from caries. It appeared to be what Lewis calls ectopic eruption. The case would not have been difficult to handle at this time. Two years later (Fig. 14), when presented for treatment, it was a difficult problem. Both upper cuspids and the lower right cuspid were blocked out of the arch, and all of them had perverted axial inclinations. The first impression was the extreme mesial drift of the lower right segment because this cuspid appeared to be so far forward.

The symmetroskop proved its worth on this case by revealing an equal mesial drift of all four buccal segments. (Fig. 15.) The apparent mesial position of the lower right cuspid was due to the fact that it had been forced labially while the left cuspid had maintained contacts as it was crushed lingually. On this side the mesial drift was carried through the incisors, causing the mid-line to shift to the right. This case was classified as a Class I with mesial drifts of all four segments in relation to alveolar process, maxillary

Before Treatment.

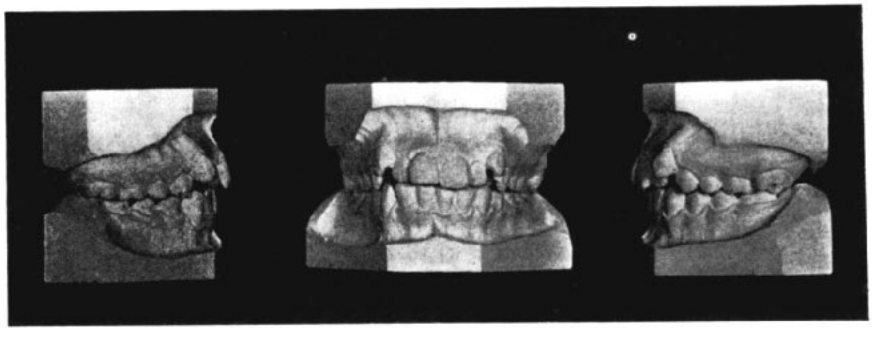
After first Period of Treatment.
Fig. 13
Treatment Case II.

and mandibular bases and to cranium. All of the dangers involved in treatment of mesial drift are in this case. They consist of toothy denture, teeth too far forward to permit future facial growth, perverted axial inclina-



Before Treatment.

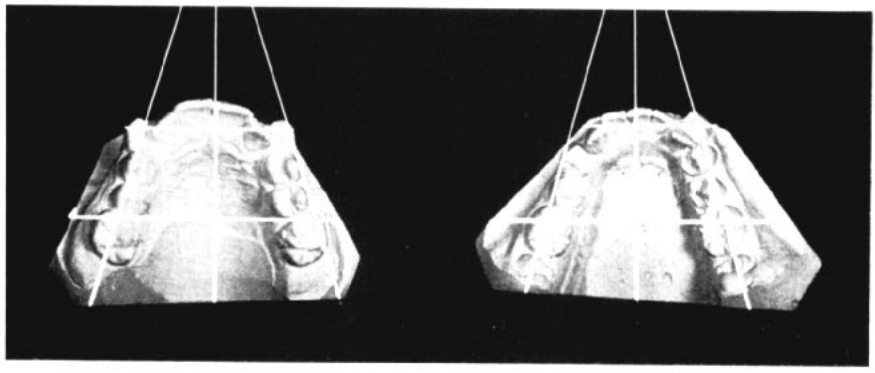
Right Left



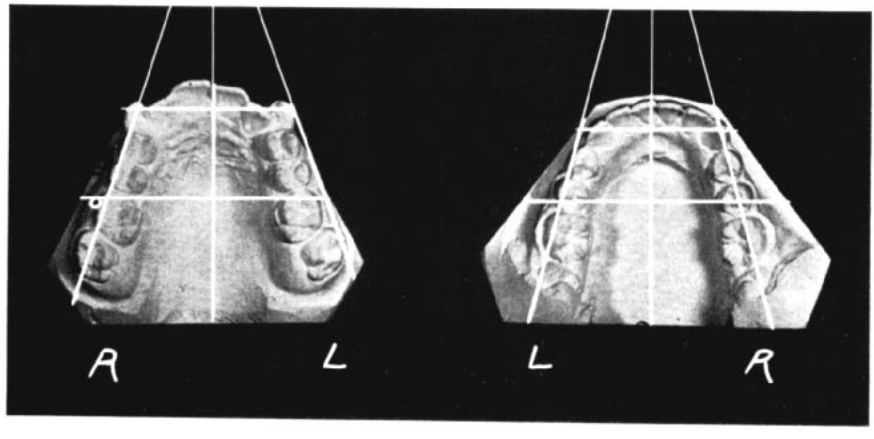
After first Period of Treatment.
Fig. 14
Treatment Case II.

tions and possible injury to the supporting tissue, particularly of the lower anteriors.

There seemed to be only one course of treatment advisable. That was to set the buccal teeth distally. This was undertaken in the lower arch first. It required twenty-two months to gain an adequate dental arch length. However, six months of this time was necessary because of an early treatment error in judging the amount of space required. No appliance was placed in the upper arch during this period of treatment. When the lower teeth were brought into normal contact relationship, the appliance was removed, and retention placed for a rest period. Fig. 14 shows the case at the end of the first period of treatment. The first molars have gone from Class I to Class II relationship, and there has been some forward movement of the upper incisors. The comparative symmetry at the beginning and at the end of the first period of treatment is revealed in Fig. 15 and the photograph.



Before Treatment.



After first Period of Treatment.
Fig. 15
Symmetroskop reading of treatment Case II.

(Fig. 13.) Tissue response, cooperation and general growth were very favorable during this period of treatment, and the prognosis of the case is considered very good.

Conclusion

In closing, the author wishes to state again that mesial drifts are amenable to analysis. That they can be classified according to the relationship of the drifted teeth to (1) the alveolar process, (2) the maxillary and mandibular bases, and (3) the cranium. Such analyses have proved a valuable aid in treatment planning.

Graham Building