Early Treatment

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When Angle advanced his all-embracing biologic concept of normal occlusion, he provided all of dentistry with a firm foundation upon which to rear its edifice. He further strengthened that foundation for the orthodontist, in particular, when he formulated his definition of the Line of Occlusion. Here was no static and unchanging structure or system, but rather one that reflected all of the vital propensities of life — its arrival at the human stage of evolution and its ability to adapt itself in each individual to those modifying influences that result from its inheritance.

The teeth and their occlusion still have as their main function the comminution of food, but that portion of the face which supports them has come to assume a wide variety of other functions. The teeth are immutable once they are formed and, unlike almost all other tissues and organs, have no ability to repair or adjust themselves. Set in labile bone, they are passive victims of all of the forces that play upon them. Heredity, the timing of growth, the vigor of function, and even the instability of those most recent acquisitions, the muscles of expression, are the true determinants of the occlusion. Both normal and abnormal occlusion represent an equilibrium of all of these forces *at any given instant of time*. Our gravest errors as orthodontists, however, arise through our failure to remember this last point. What a denture represents at any instant of time gives only a clue as to what it has been or what it might be in the future. To defer treatment until almost the entire denture is developed, as is so generally done, is to ignore the basic fact that children grow and by our neglect we fail to take advantage of the help that such growth can give us.

In Figures 1 and 2 are shown the models of two cases in which early simple treatment resulted in excellent dentitions. The first was a Class I malocclusion with marked deficiency of the incisor region, both mandibular and maxillary, coupled with a deep overbite.

A bite plane was made for this patient at seven years of age and was worn intermittently for two years with the result shown. No other treatment was ever necessary.

The case illustrated in Figure 2 was a Class II malocclusion when first seen at eight and one half years. The face had a decided Class II, Div. I appearance. In this case a bite plane in conjunction with cervical traction was used for a period of two years, and no further treatment was necessary.

I anticipate the arguments that will immediately be brought against this more optimistic point of view; viz., that the size of man's jaws is diminishing at a faster rate than that of his teeth; that background radiation is raising hob with his mutation rate, and all the rest of the "scientific" evidence to which we have been subjected and which we have swallowed "hook, line, and sinker" in a desperate effort to excuse our ig-

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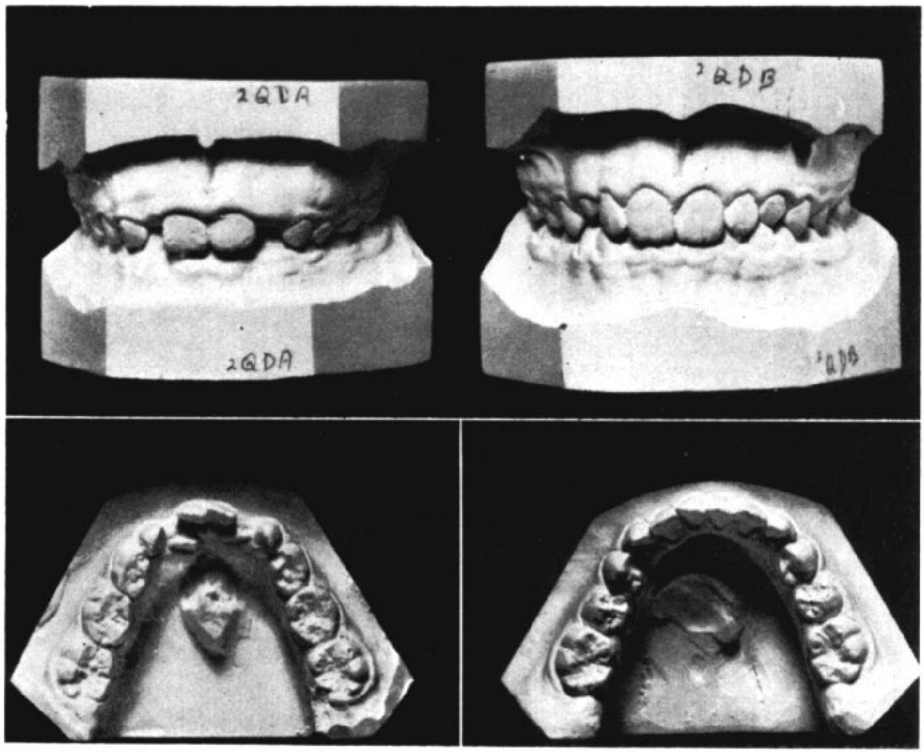

Fig. 1 Models of patient treated only with bite plane. Models on left show the occlusion at the start when patient was seven years old; those on the right show the case after intermittent wearing for two years.

norance, rationalize our procedures and avoid any unnecessary or serious cerebration of our own.

By the way of rebuttal, however, I should like to point out that no mention is ever made of the opposite side of these questions; viz., the frequency of congenital absence of teeth or of spaced dentures without such absences; that the significance of those recent researches that disregard that sacred cow "statistics" and reveal the individual as unique in the truest sense of the word has not yet dented our collective consciousness. Finally, I should like to call attention to the fact that dried skull evidence of adult material is a poor source of information upon which to base any sweeping conclusions as to the phylogenetic destiny of Man. Experience with living, growing children quickly reveals that the potential for adequate growth and normal occlusion is still present in the modern child, although, perhaps, more frequently thwarted or even inhibited by relatively minor factors. It seems to me that it is our duty as scientific men to delve more deeply into this aspect of our work instead of resigning ourselves to an attitude of compromise with what we mistakenly think of as inevitable limitations.

Now, I am not counseling a return to our former naive belief that every child is born with a potential for well-integrated and adequate development. The three faces illustrated in Figure 3 indicate the lack of good integration among the variables that go to make

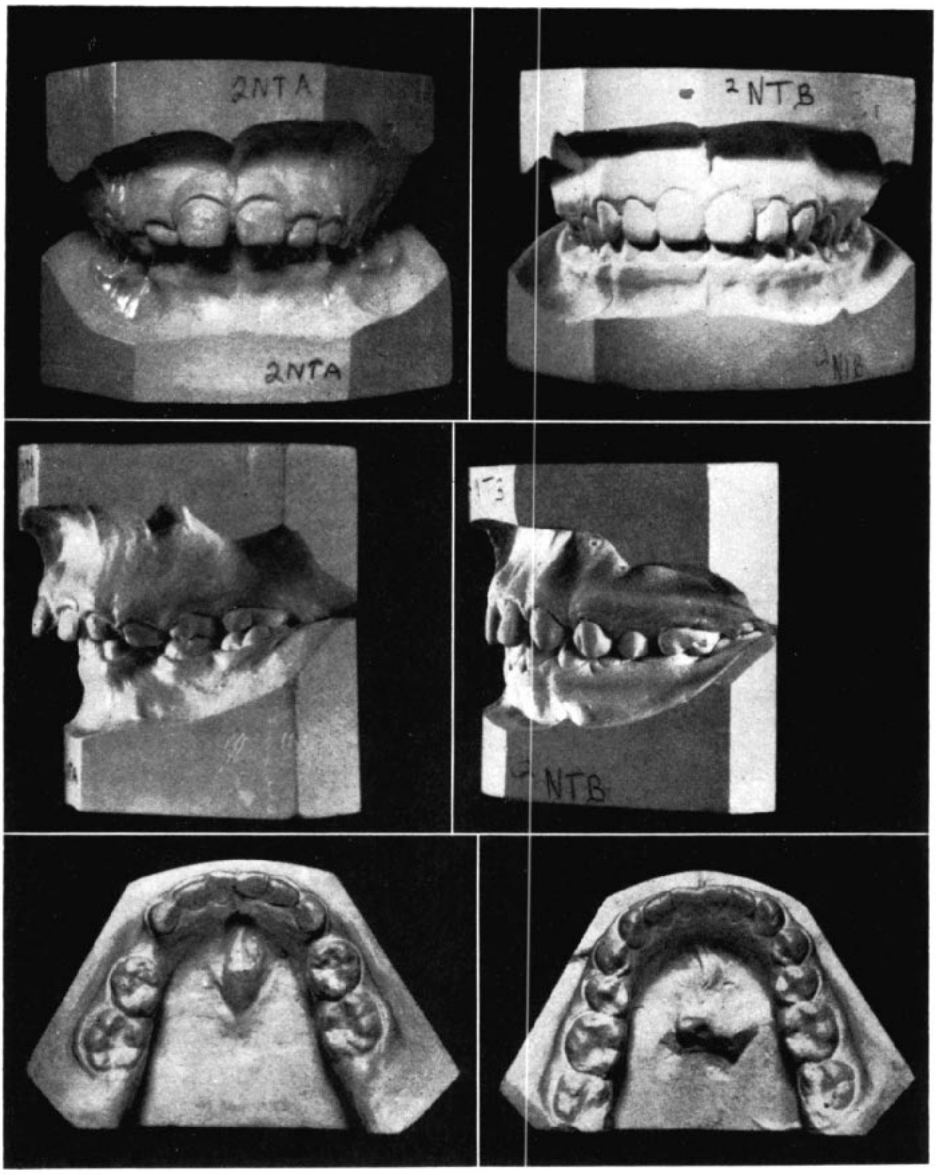

Fig. 2 Models of patient treated with only bite plane and cervical traction. Models on left show occlusion at the start at eight and one half years; those on the right show the case after two years' management with bite plane and cervical traction.

up the face. The fault, of course, lies in the genes which in these cases gave rise to parts that were too far out of the usual range to permit harmonious adjustment. When we consider that this factor of variation (due to lack of genetic harmony) exists throughout the long range from such monstrosities to the ideal, and that there are a large number of such variants interacting upon each other, we should not be surprised at a slipped contact occasionally.

The two cases illustrated in Figures 4 to 7 inclusive indicate different sets of conditions. In both, the prognosis would appear to be very poor in the first records. In the first (Figs. 4 and 5) there was a severe Class II, Div. I malocclusion complicated by lingually blocked lower lateral incisors at nine years of age. Obviously the jaws were growing slowly and the dentition was even further delayed.

Treatment consisted of applying extraoral anchorage to the upper first permanent molars until a Class I relation was established. In the meantime the lower deciduous canines were lost with some of the space they had occupied, and cervical traction was shifted to the lower first molars. Without the banding of any other teeth or the employment of arches, the results shown were obtained. This case continued to

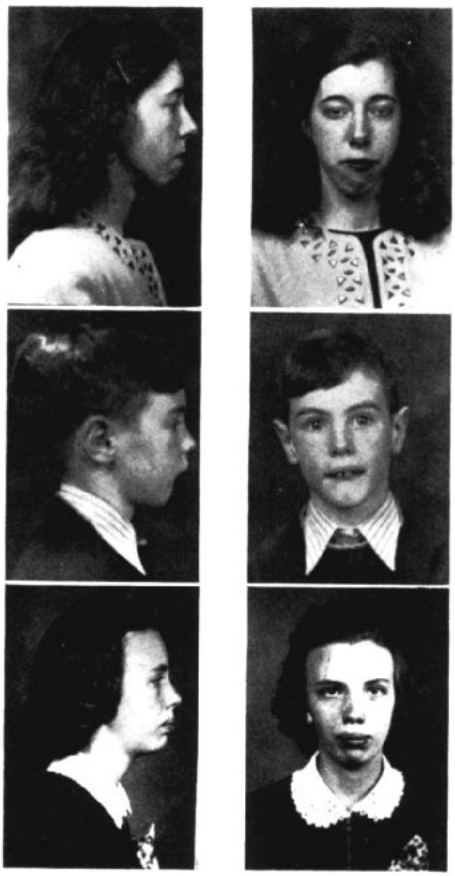

Fig. 3 Photographs of three faces showing marked deviation of facial harmony. Here the genes seem to have played havoc.

Fig. 4 Photographs of patient before treatment at nine years of age (top); at the end of treatment at twelve years (middle) and two years after completion (bottom).

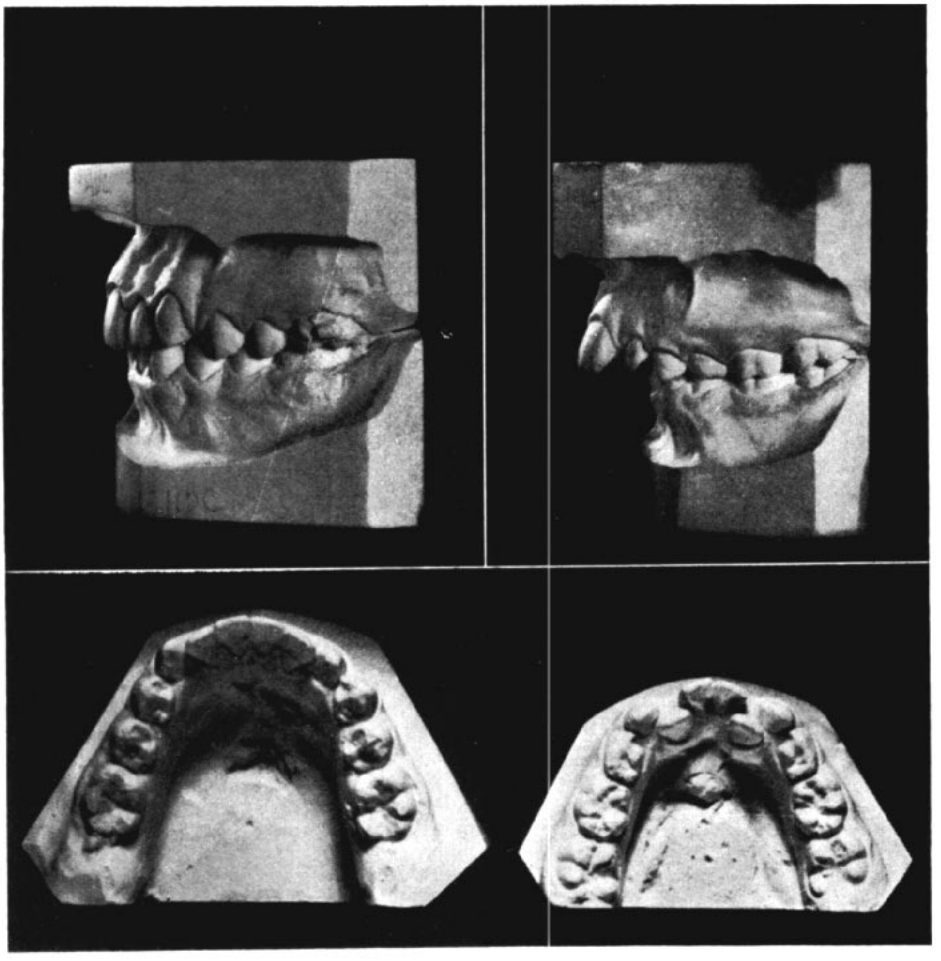

Fig. 5 Models of patient shown in Fig. 4. Before treatment, right; two years after completion, left.

improve after treatment.

The case shown in Figures 6 and 7 is quite similar to the previous one so far as the crowded mandibular incisors are concerned, although the facial type is different. With the same method of treatment as that described above, the result shown (Fig. 6) was obtained in a period of two and one half years after the eruption of the complete permanent dentition. I wished to place a complete appliance for the finishing of details but the patient refused. The final records show the case at age thirteen. This patient persists in a lip-biting habit which, I believe, accounts for the slipping seen in the lower anterior region.

In contrast to these last two cases, note the records of the girl illustrated in Figures 8 and 9. She was thirteen years old when treatment was started with a complete appliance following the extraction of the four first premolars. Although a satisfactory occlusion was obtained, there was no improvement in the face. Early, simple treatment might well have obviated the

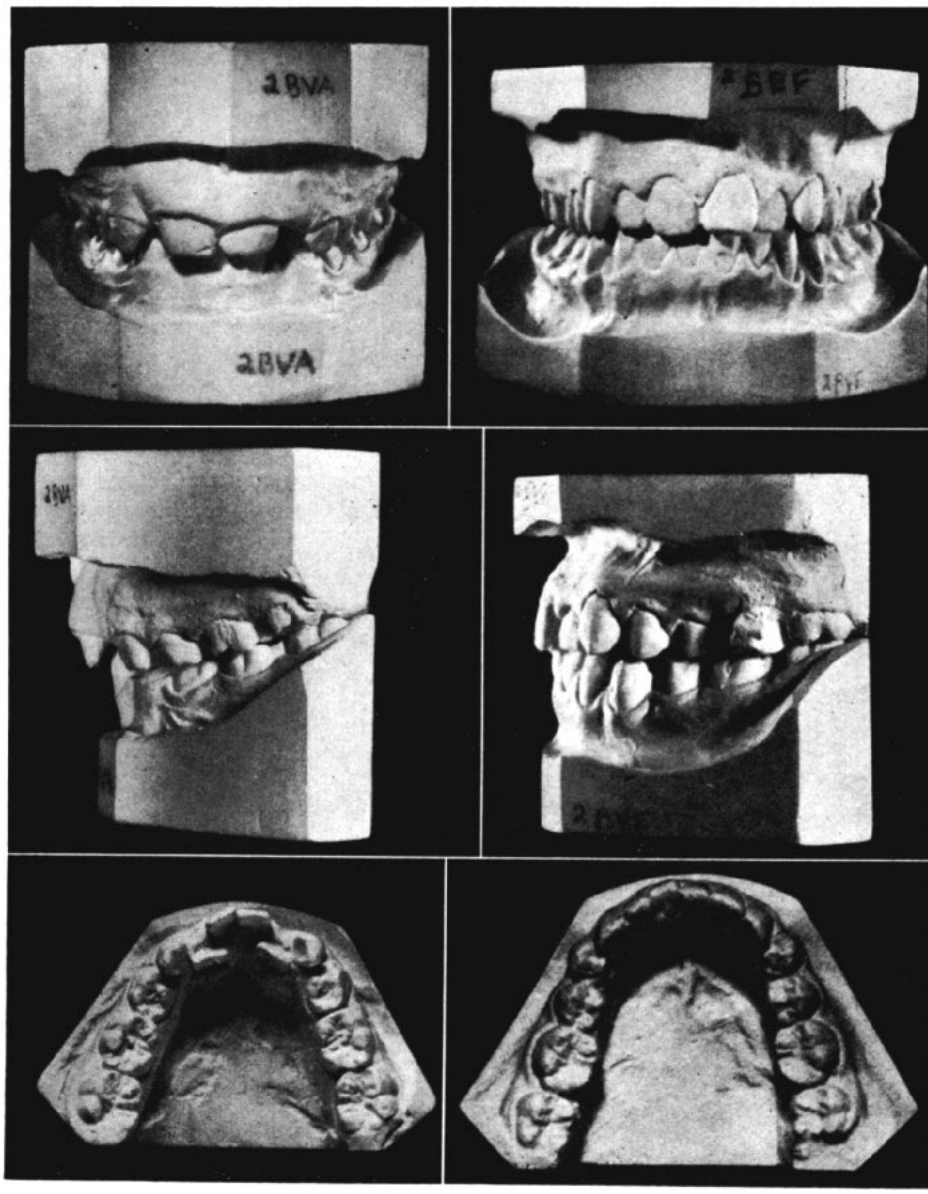

Fig. 6 Models of patient shown in Fig. 7 before treatment (left) and a year after completion (right).

Fig. 7 Photographs of patient before treatment at eight and one half years and at thirteen years, after treatment with bite plane and cervical traction had been discontinued for over a year.

necessity for extraction but would not have improved the appearance.

The complexity of our problem makes it absurd to expect to treat eighty or ninety per cent of our cases by formula. No philosophy can obtrude the truths of biology by proclaiming the face of Yoknapatawpha County as the true creation, and the contracted, diminished arch — the true archetype. Yet we constantly deceive ourselves that such pat theories and philosophies are indeed the truth and that happy formulae may eventually remove the onerous task of thinking for ourselves. Such theories attract followers who cling to the precepts taught them long after they have been completely disproved.

Fig. 8 Photographs of patient after treatment which included extraction of four first bicuspids.

I have treated six members of one family, all of whom had Class II, Div. I malocclusions with long, contracted faces and narrow arches. Both parents had the same type of malocclusion. Of the six cases, three remained stable in ideal occlusion over the years. One was stable for over five years, when a lower lateral incisor began to slip lingually. It had to be extracted ultimately because it became an irritant. The space closed without help by itself, and the rest of the dentition is now well balanced.

Another of the children (Fig. 10) suffered total relapse after two or three years, and the upper second molars were extracted at seventeen years of age. Occipital traction of one year's duration completed the case, and the third molars erupted in the second molar positions. The sixth case also relapsed and was retreated by the removal of the impacted third molars at sixteen years of age followed by the employment of cervical anchorage. If I had been able to choose the time, all of these children would have been treated by means of extraoral anchorage in the deciduous dentition.

Of relatively recent date we have witnessed what is to my mind one of the greatest misuses of a valuable research tool ever to be placed in the hands of the orthodontist. I refer to the cephalometric x-ray developed by Broadbent for the scientific study of the

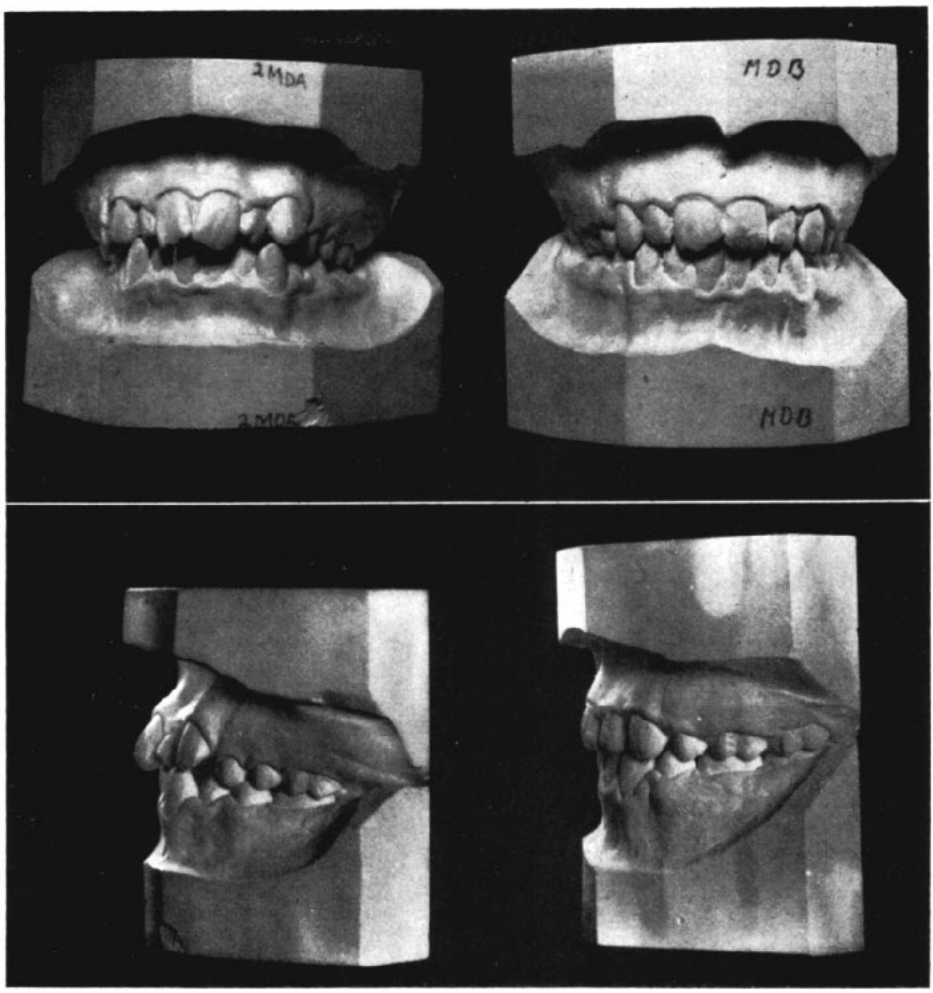

Fig. 9 Models of case shown in Fig. 8 before (left) and after (right) treatment by extraction of four bicuspids.

growth of the head. It made possible the study of the changes that look place in relation to *time*. But this most distinctive advantage of the method is the one that is ignored.

It has become routine practice in many offices to trace the lateral headplate, measure certain angles and dimensions, throw them into the statistical grab bag, shake well and pick out the answer. This answer seems, in a suspiciously large percentage of cases, to indicate an insufficiency of development for the accommodation of all of the teeth. It never seems to be realized that this headplate tracing — made from a picture snapped at one moment in time — represents the individual at only that one instant — it tells nothing of what he has been or what he will become — only his present morphology, but nothing of his physiology or fate.

And what many cases do become is a constant source of wonderment to one who has the patience modestly to aid Nature as the child grows. Some-

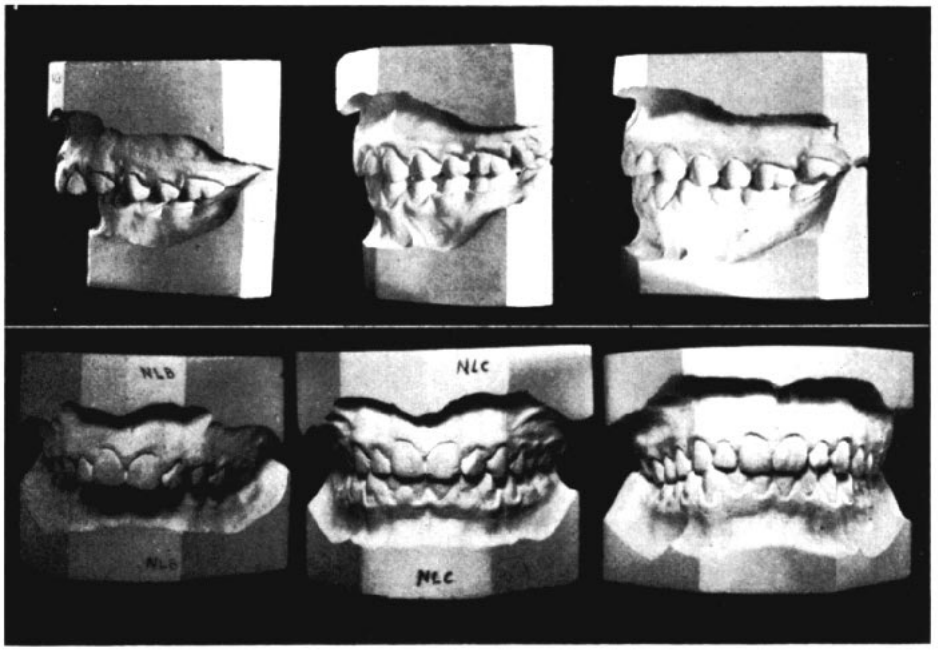

Fig. 10 Case before treatment shown on left; at beginning of relapse in center, and after retreatment by extraction of upper second molars and cervical traction of one year's duration.

times the much deplored bimaxillary protrusion disappears or seems to fade into pleasing proportionality with the face, if left alone.

I sometimes doubt the advisability of a critical appraisal of the headplate before treatment is completed. The analyses, both angular and linear, keep getting more and more complicated as more Ph.D's are conferred, and each seems to set further limitations on us. As we learn of the problem of the infinite number of integrations of parts that must prevail in order to bring forth a "normal" face, it seems that we can hope for little in the way of complete success.

The child, far from being a unit fixed at one stage, is shown to be an ever-changing organism, the parts of which are constantly growing at rates and at times that refuse to obey statistical laws. How these may ultimately make out in any given case will determine whether harmony of function and form will ultimately prevail. But it should be recalled constantly that the child is the result of millions of years of human genetic influences, and that during growth he is retreading that path. This, of course, explains why the results of treatment by competent men so frequently belie the pessimism of the prognosis. It is surprising and not very flattering to us that we are taken in so easily by scientific jargon. A wise man once said, "if your clinical observations do not agree with your laboratory findings, you had better throw away the laboratory findings."

The influences to which I have just referred might all be lumped under the heading of "heredity". They are the things over which we have little, if any, control. But there are other influences than these which act on the

child's face as he goes along, and it is sometimes possible to do something about them. You will at once think of habits and the word "habit" could correctly be applied, although I am not thinking here of these very evident acts, such as the sucking of the thumb or the wetting of the lips. Rather I have in mind those subtle states of muscular posture or function that endow each one of us with a distinct personality. These muscles of our face are recent acquisitions, still very unstable although very adaptable. They respond to all sorts of states and conditions and frequently persist in an adaptive act long after the need for it has passed. The child with an abnormal jaw relationship such as Class II cannot use his musculature according to the accepted pattern; he must adapt to what he has. It would seem wise, therefore, to establish normal relations for him at an early age so that his adaptation to the normal be possible.

Beyond these rather easily understood conditions there is another group which would have to be called psychosomatic. Our rising rates in heart disease and duodenal ulcers are not the only indices of the increasing stresses of modern life. The faces of American children, when contrasted with those of more leisurely lands, tell much to the observant eye. What the orthodontist can do here, I do not know, but I am convinced that more than one broken lower incisal contact could be blamed on such causes. Every nuance of muscle movement, conscious or unconscious, every acquisitive reflex responding to internal or external stimuli, is relayed to the facial musculature where idiosyncrasy of patterns of activity, once set up, brings on consequences that may affect ultimately the equilibrium and stability of some segment of the denture.

If we are going to wait to see what the child will look like as a young adult, or if we do not have the opportunity to see him before that time, it seems indeed that we are limited in what we can do. Under these circumstances, compromise may be indicated. But it seems presumptuous, to the author at least, to set ourselves up as the judges of the outcome of such a little-understood process as that of growth. There is more than a little truth in the adage that a homely baby makes a beautiful adult and orthodontists and pediatricians should know this above all other men. On the other hand the extraction of teeth for aesthetic reasons or for ease of handling in many cases seems to lead to only fleeting improvement in many cases and is soon lost.

Figure 11 presents the photographs of a boy of seven years with a very disfiguring Class II malocclusion who was treated to a Class I occlusion without much improvement of his appearance.

Fig. 11 Photographs of patient of seven years of age before treatment (above). Below are photographs of same case after second period of treatment which included extraction of four first bicuspids.

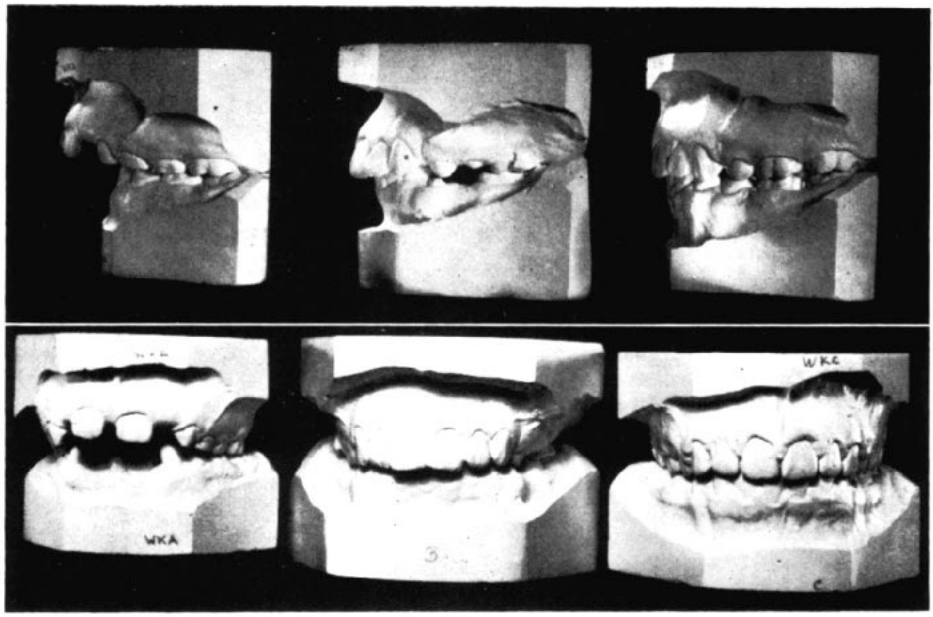

Fig. 12 Models of case shown in Fig. 11 (left) before treatment, (center) after reduction of Class II relation, and (right) after extraction of four first bicuspids and full appliance treatment.

Upon the complete eruption of his second dentition at about twelve years of age, there having still been little improvement in the fullness of the mouth, it was decided to extract the four first bicuspids and close the resulting spaces.

The models of the case at the beginning of treatment, at the time the bicuspids were extracted and following the completion of treatment are shown in Figure 12. I seriously doubt that the end result in this case was affected significantly by the extractions.

The photographs of the patient shown in Figure 13 before treatment, following the extraction of four bicuspids and ten years later tell the same story. One is reminded of those early cleft palate, harelip surgical procedures by which hideous monstrosities were changed to cute babies, only to slip gradually back into lifelong ugliness.

Treatment in the Primary Dentition

No one would deny that good occlusion in the first dentition with the jaws in a Class I relation and the face well developed is a favorable precursor to the same desirable conditions in the permanent dentition. It is also true that some temporary disharmonies of the early mixed dentition are self-correcting or correctable by very simple means, if properly timed.

The Class II and Class III malocclusions, however, do not correct themselves, and it is these cases that give parents and pediatricians concern. They cannot understand why, if other deformities are more easily corrected at an early age, the same should not hold true for the face. The early correction of the occlusion is the greatest aid to the promotion of the health of the denture through the development

Fig. 13 Photographs of patient (top) at beginning of treatment, (middle) after extraction of four bicuspids and full treatment, (bottom) ten years later.

of normal masticatory and facial habits as well as the beauty of the face.

The claim could not be made that the treatment of the three year old is as pleasant as that of the child of eight years, and it is certainly not recommended as a pastime to the orthodontist short on patience. It is difficult, time consuming, but rewarding. Many thus treated never need further attention, and even those who do show some relapse seem to be easily corrected later. Rapidity of result depends on the severity of the condition to some extent, but more on the state of health and rate of growth of the child.

Figure 14 represents a very severe case which was first treated by simple extraoral means at three and one half years of age for the correction of the jaw relation. The lower arch was in complete lingual relation to the upper, and it was necessary to band the buccal teeth and employ bucco-lingual intermaxillary elastics in conjunction with

Fig. 14 Photographs of boy three and one half years at start of treatment (top), after six months of treatment with simple appliance (middle), and fourteen years after finishing treatment with appliances (bottom).

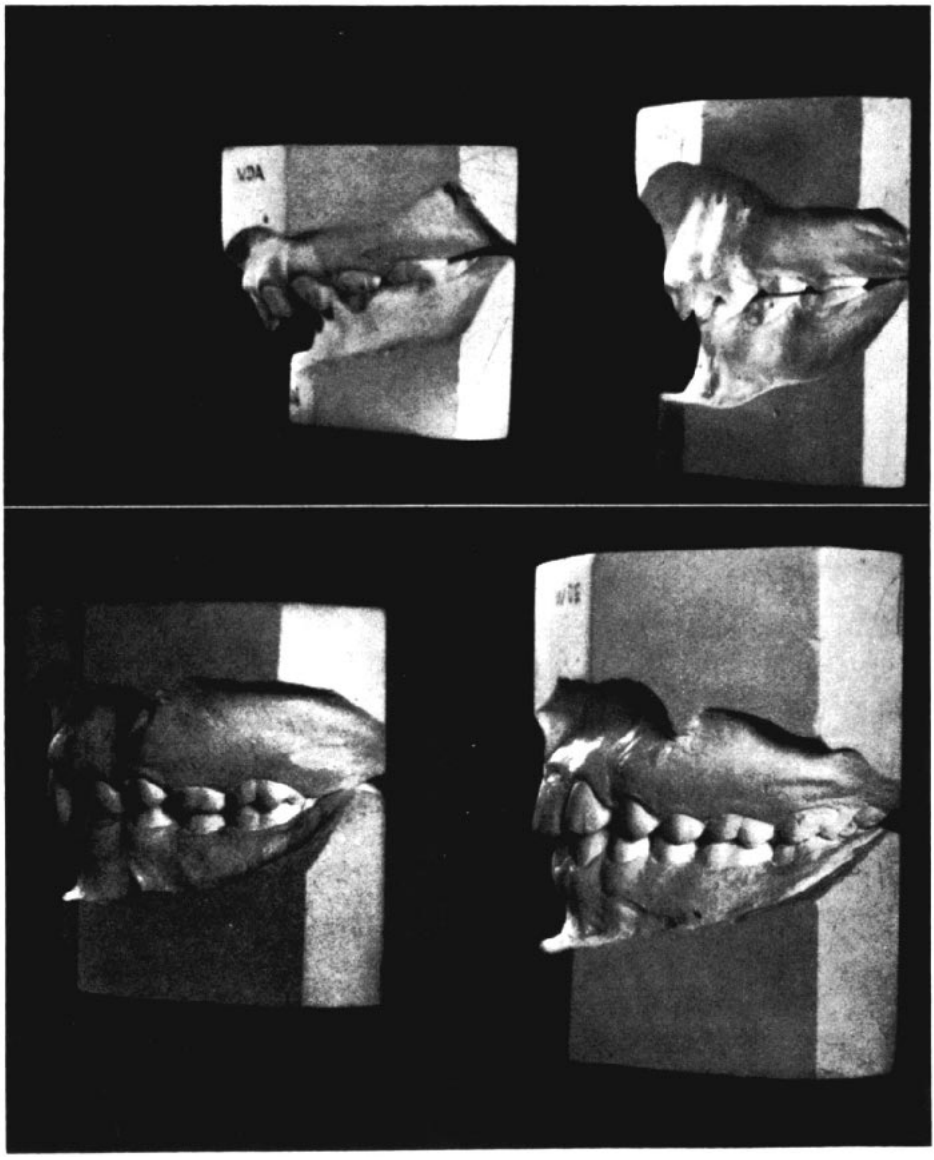

Fig.15 Models of case shown in Fig. 14. Top models before and after six months of simple treatment described in text. Bottom, models before and after appliance therapy to position upper left canine.

the face-bow and cervical traction. Upon the eruption of the permanent teeth, the case was completed by a short period of full appliance therapy to position the upper left canine in the place of the missing lateral incisor. Models of this case are shown in Figure 15.

As in all orthodontic treatment, we must be prepared to encounter variations in patients' response to treatment. In some there will be correction of the entire arch without change of its form; in others the buccal segments will be corrected, but the anterior teeth will remain nearly in their original positions. Such cases are frequently benefited by a retainer of the Hawley type, the incisors being retracted by periodic tensing of the labial wire. Too much attention should not be paid to the detailed placing of individual teeth before the denture is fairly complete, allowing natural forces to do what they will unhindered. The results are frequently surprising. And early treatment, followed by rest, permits a molding of the denture by its own peculiar and individual forces that lends a naturalness to the result quite at variance to many of the artificial looking dentitions created by later treatment.

Needless to say, all successful treatment in orthodontics depends on the growth of the child, and it would be of inestimable value to the orthodontist to know when the jaws are going to exhibit their maximum growth. We do not have this knowledge at present and must rely on the generalization that the tempo of growth diminishes with age. The only conclusion this permits us is that, the earlier treatment can be instituted, the better one's chances for success.

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