Overbites *

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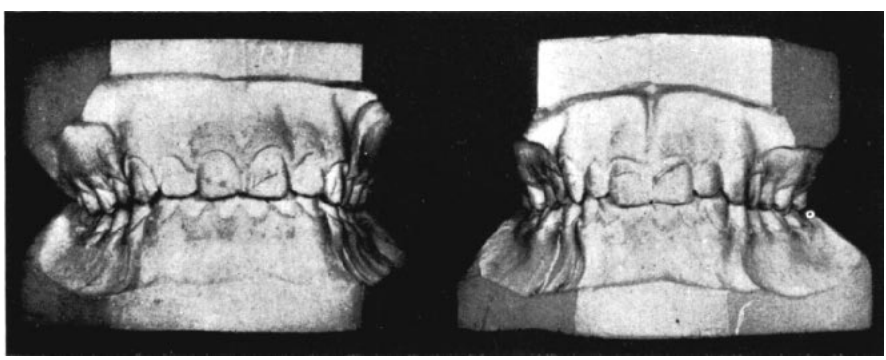
MUCH IS SAID these days about overbites and their treatment in orthodontic cases. There is no little argument as to the advisability of bite-plates, bite-planes, splints cemented on posterior teeth, and similar methods of propping open the bite so that the incisors overlap to the satisfaction of the orthodontist, who thereupon attempts to find some means for holding the teeth and jaws in this strained position. Those using the edgewise arch with bicuspids banded find the difficulties presented by abnormal overbites automatically cared for in their treatment by the placing of the advisable Curves of Spee in their upper and lower local Ideal arches after bracket control has been established. Thus there is little for these dentists to



A B

Fig. 1.—Two distinctly different kinds of excessive overbites.

consider from the standpoint of treatment. In the diagnosis of their cases, however, serious attention should be given to analysis of the overbite so that their treated cases will be maintained by function and without appliances.

In this paper any arrangement of the teeth in which the maxillary incisors overlap those of the mandibular arch when the jaws are closed is considered an overbite, whether or not an overjet may be present as well. Only cases of permanent dentition before the eruption of the third molars will be discussed at this time. Photographs are not used since growth and development during correction tend to obliterate the changes in the face due to change in the overbite. The Curve of Spee refers to a plane passing through the tips of the buccal cusps of the first molars (and second molars if present), the bicuspids, cuspid tip, and incisal edges of the lateral

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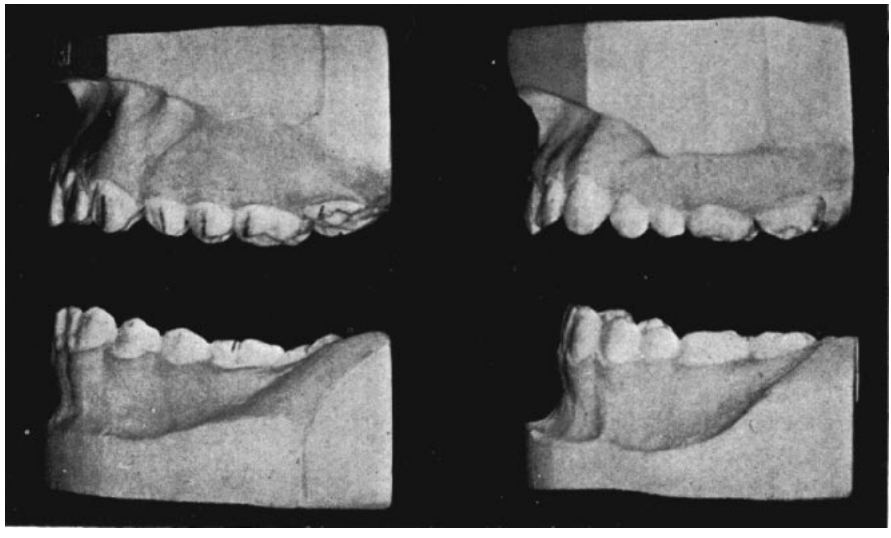
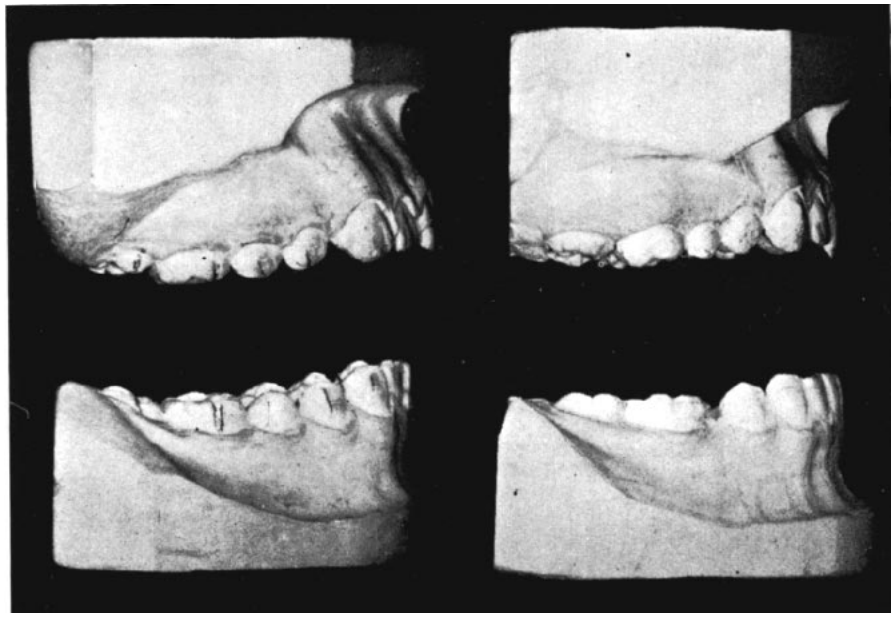


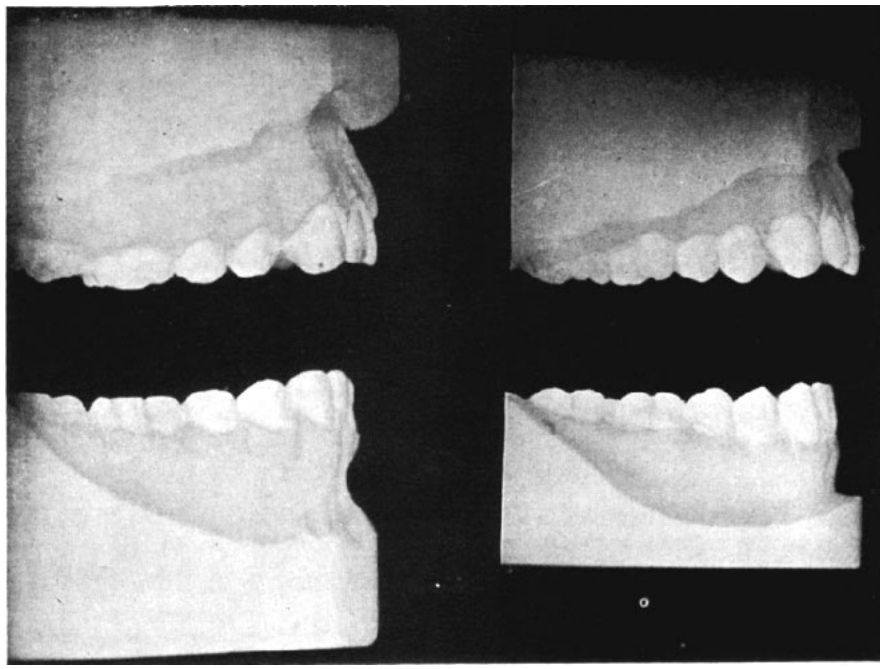
A B

Fig. 2.—The upper and lower Curves of Spee on the left side of the two cases all are advisable. (In B, upper left incisor elongated and to be disregarded. See text.)



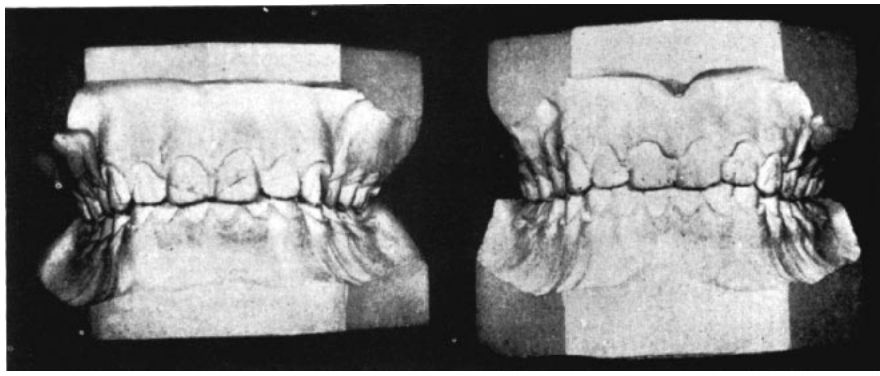
A B

Fig. 3.—Right sides of the two cases: A—Advisable upper, excessive lower Curve of Spee. B—Advisable lower, reverse upper Curve of Spee.



A B

Fig. 4.—Right side of the cases two years after completion of treatment: A—upper still advisable and unchanged; lower Curve of Spee flattened to this advisable curve. B—upper Curve of Spee reversed to this advisable curve (disregarding Central Incisors, see text) which has persisted; lower still advisable and unchanged although sufficient space was made for the second bicuspid to erupt into position.

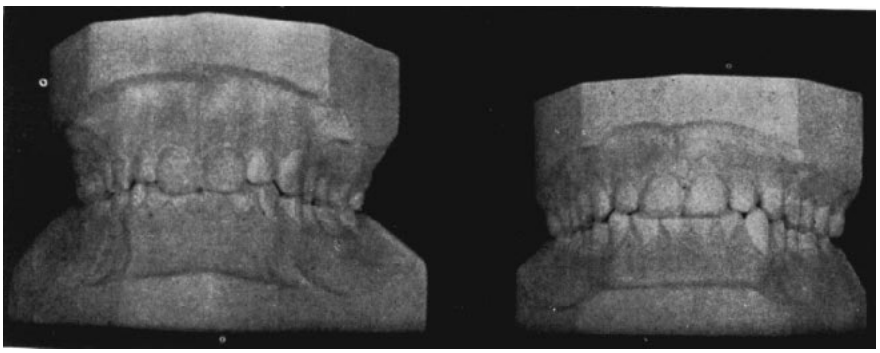


A_1 A_2

Fig. 5.—A_1—Case A before treatment. A_2—Case A two years after completion of treatment.

and central incisors. The disto-buccal cusp of the upper first molars is disregarded since it may normally extend below this plane. Thus any dentition or pair of models presents four Curves of Spee: upper right and left, and lower right and left.

The solution of an overbite difficulty lies in the proper diagnosis of the overbite or, in other words, analysis of the Curves of Spee in both upper and lower arches. For example, the photograph in Fig. 1 shows two models having the same amount of excessive overbite. To assume that they may be corrected in the same manner is common through fallacious reasoning. Let us analyse them from the standpoint of their Curves of Spee in order to establish a logical basis for diagnosis. Their left sides, shown in Fig. 2, appear to be within the limits of a normal Curve of Spee. The two cases



B_1 B_2

Fig. 6.—B_1—Case B before treatment. B_2—Case B two years after completion of treatment.

are still alike except for the upper central incisors of the model on the right (B) which overhang. It is very difficult to establish any rule by which the upper central incisors may be precisely oriented to the Curve of Spee. Their elongation is extremely variable in cases where the overbites seem identical and advisable. Some correlation with height of cusps and tooth form seems likely.

Considering the Curves of Spee on the right side of the models in Fig. 3 we find the first difference between them. A has an excessive lower Curve of Spee while B seems within normal limits. In the upper arch A is slightly irregular but still advisable, while B has a reverse Curve of Spee. Thus the diagnosis of the overbites of A and B as determined by their four respective Curves of Spee shows them to be very different even though the amount of overbite is the same.

Treatment based on this Curve of Spee diagnosis required an advisable Curve of Spee to the lower right side of A, Fig. 4, and upper right side of A_2, Fig. 5. When this was accomplished (the Ideal edgewise arch with banded bicuspids was used) the overbites were established to an advisable amount (Figs. 6 and 7). No change occurred in the Curves of Spee on the left side of either A or B. The right side of A had to be changed from a developing Class II to a full Class I in order to correct the line of occlusion; and in B

the upper centrals were depressed 1 mm. and space was made for the lower right second bicuspid without changing the advisable Curve of Spee originally present. The use of bite-plates, bite-planes, splints and the like is contraindicated unless they could produce an identical change needed in the Curve of Spee.

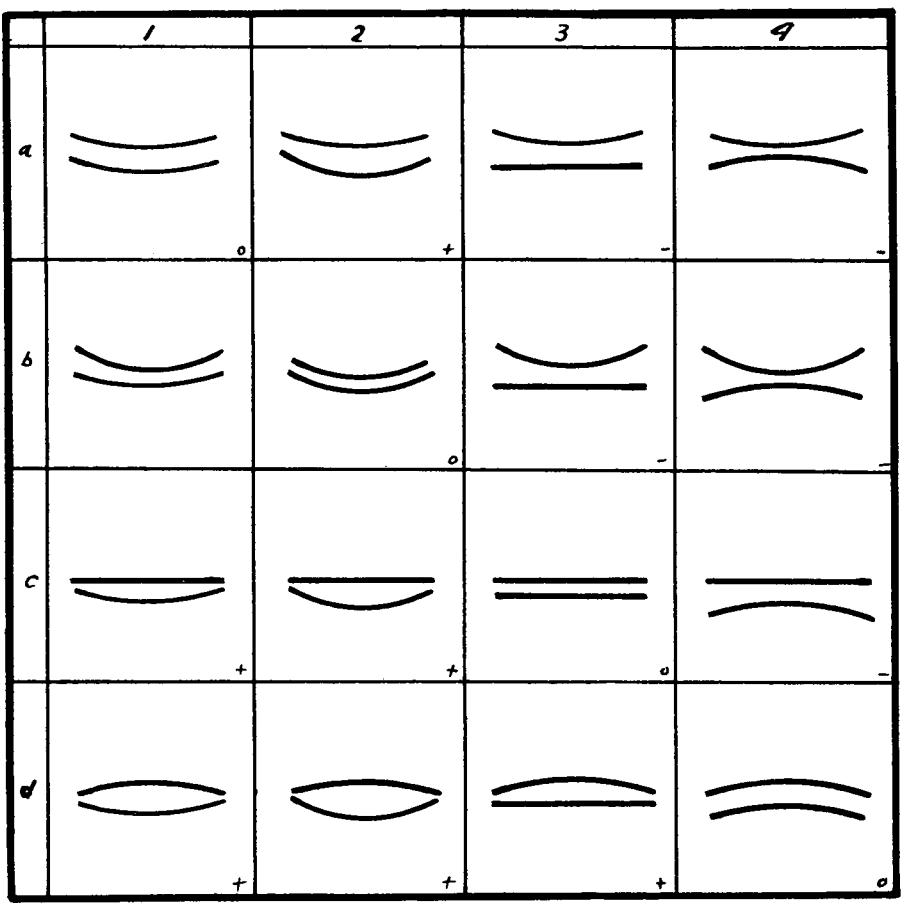


Fig. 7.—Curves of Spee. Lowers in Columns: 1) advisable; 2) excessive; 3) flat or absent; 4) reverse. Uppers in Rows: a) advisable; b) excessive; c) flat or absent; d) reverse.

\+ Excessive overbite
o Advisable overbite
— Open bite.

Generally speaking a Curve of Spee can be of four types: 1. advisable; 2. excessive; 3. flat or absent; 4. reversed. These are illustrated in Fig. 7 where the columns indicate the types as follows: one shows advisable lower Curves of Spee; two, excessive lowers; three, flat lowers; and four, reverse lowers. Row a presents advisable uppers; b, excessive uppers; c, flat uppers; and d, reverse uppers. There are 16 different varieties on the chart. In addition there is an infinite number of intermediate possibilities between

those illustrated. For common practise column four can be eliminated because reverse lower Curves of Spee are a rarity. Although 1a, 2b, and 3c will all produce equitable overbites, only 1a presents advisable Curves of Spee. Types 2b and 3c should be corrected to advisable Curves of Spee even though their overbites seem normal, because their function will be abnormal otherwise. Excessive overbites result from Curves of Spee such as found in 1c and d; 2a, c and d; and 3d, while open bites result from 1b, 3a and b.

Class II and Class III relationships may change the overbite presented by a given Curve of Spee, but this will not be discussed here. Suffice it to know this may occur and to be on guard for the variations when present. Correction of the Curve of Spee, however, will correct the overbite only if the Class II or Class III relationship is returned to normal and alignment is perfect.

A tongue habit or lack of vertical growth in the premaxillary region, for example, may tip an advisable upper Curve of Spee, resulting in an open bite. Vertical elastics have been used successfully in this type of problem and no retention is needed when in the former instance the tongue habit is and remains broken.

The foregoing are some of the diagnostic principles underlying overbites and open bites. Correction of the Curves of Spee produces an advisable overbite just as correction of a Class II to a Class I eliminates an overjet provided the upper and lower arch alignment is corrected in both instances. The overbite of a mixed dentition is a separate study. The permanent incisors and molars are larger than the corresponding deciduous teeth present at this time. Also the concomitant root absorption and loss of the deciduous teeth constantly changes the Curves of Spee during this developmental period. Very little assistance in controlling the overbite can be expected from growth and development at this time, so that the best which can be hoped for is the attainment of a good functional relationship after correction of the Curves of Spee.

Before concluding, it should be mentioned that some, in using the term Curve of Spee, mean the curved occlusal plane involving lingual as well as buccal cusps of posterior teeth. This concept may lead one to grind the teeth to articulation. This practice seems unnecessary before the period of adulthood because growth, development and function should adjust the articulation if correct occlusion has been restored. Judicial grinding and other means of obtaining desired articulation may more wisely be considered after eruption of the third molars, or about the age of 18 years, when little additional growth and development can be expected. When doing this it is well to remember that one is then dealing with a more static dentition. Further changes will be due largely to function and wear.

In conclusion, overbites are *not* bugbears; they are merely the indication of incorrect Curves of Spee. They must be diagnosed from the standpoint of their nature and etiology. Treatment and retention are then easy and successful if diagnosis is correct, etiology determined, and the patient's cooperation is enjoyed.

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