Restorative dentistry—A half century of reflections

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I intend to present what I have learned from my studies in 55 years of practice. Through the years, I have discussed various occlusal philosophies. These concepts included gnathology, Pankey-Mann-Schuyler, transographics, segmental occlusion, and so on. Many of these discussions were on controversial topics.

In going over my material, I asked and answered questions to the best of my ability. A number of questions occurred to me and it took me five months of careful work to obtain the answers. I provided about 300 patients with total occlusal rehabilitation in the period from 1930 to 1973. Of these, 21 were treated between 1930 and 1940. In that period, little was known about rehabilitation, and little oral rehabilitation was undertaken. From 1940 to 1950, I rehabilitated 85 patients; from 1950 to 1960, 136 were rehabilitated; and from 1960 to 1973, I rehabilitated 62 patients. In addition, extensive restorative procedures, but not complete rehabilitation, were carried out for at least another 100 patients over the same 43 year period. Thus, the total is at least 400 patients treated and documented.

I used several kinds of articulators. These included: the Hanau Model H articulator for 180 patients, the Stephens model (m) articulator for 70 patients—this is a simple articulator and includes the unilateral model (Fig. 1), the Hanau Kinescope articulator for 24 patients, the Hagman balancer for 13 patients, the transograph for eight patients, the gnathoscope for five patients, the special Model H Hanau articulator for five patients—this articulator has curved condyle paths and provides for an axis-orbital plane and a transverse hinge axis, and the Hanau Arcon articulator for one patient.

At least 130 of the patients had periodontal disease.

I used all of the theories of occlusion that were known at the time the patients were treated. These included chew-in techniques, segmental occlusion, bilateral balanced occlusion, transographics, and gnathology.

Read before the Greater New York Academy of Prosthodontics in New York, and the Academy of Denture Prosthetics in Houston.

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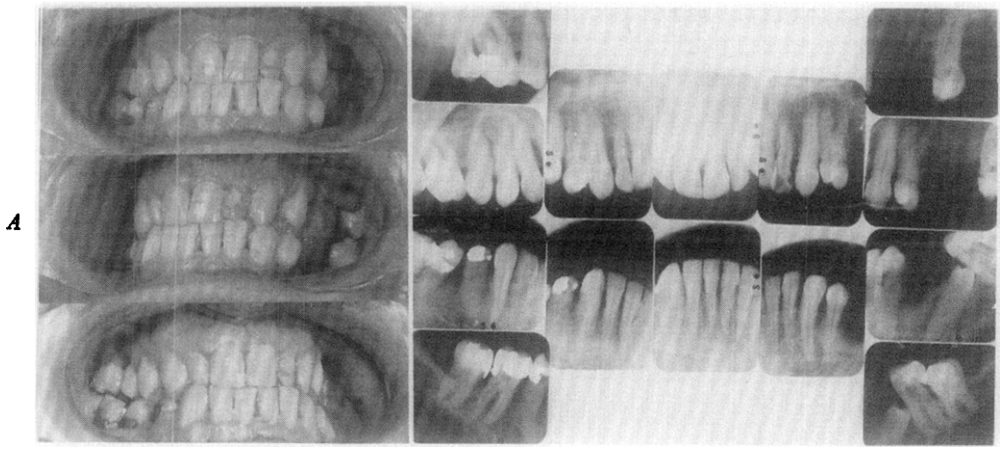

Fig. 1, A and B. Rehabilitation of an open-bite patient (due to tongue thrust) using simple unilateral articulators: *A*, mouth in 1952 at start of treatment (tongue thrust is very evident); *B*, radiographs at start of treatment (1952). (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 584, 589.)

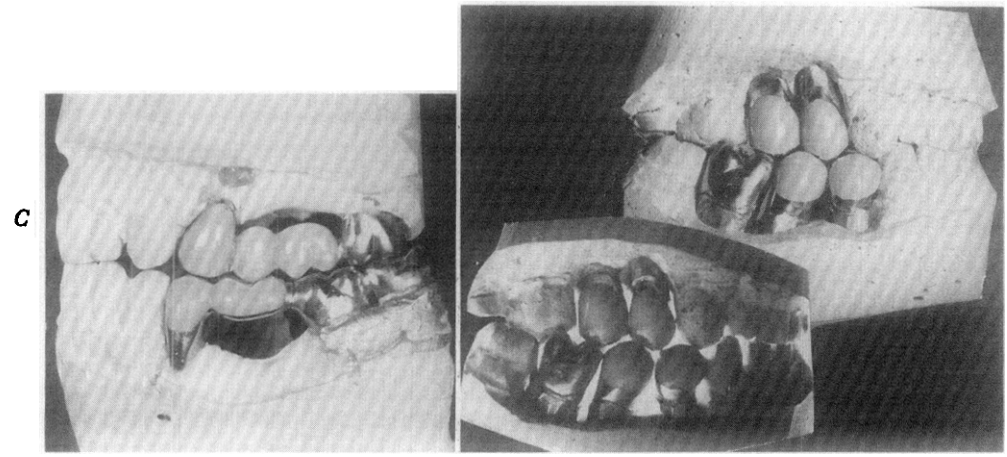

Fig. 1, C and D. Rehabilitation of an open-bite patient (due to tongue thrust) using simple unilateral articulators: *C*, the completed left side (The upper and lower sanitary fixed bridges permitted the tongue freedom of movement in the buccal direction. The prostheses were constructed on simple unilateral articulators.); *D*, the completed right side. Large embrasures gave a small amount of freedom to the tongue. The illumination from the lingual surface (lower left) shows the spacing more clearly. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, Vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 584, 589.)

Twenty-one of the reconstructed occlusions were reconstructed again after a period of years.

The ages of the patients ranged from 16 to 75 years, but most were between 50 and 65 years of age.

About one third of the patients were men and two thirds were women.

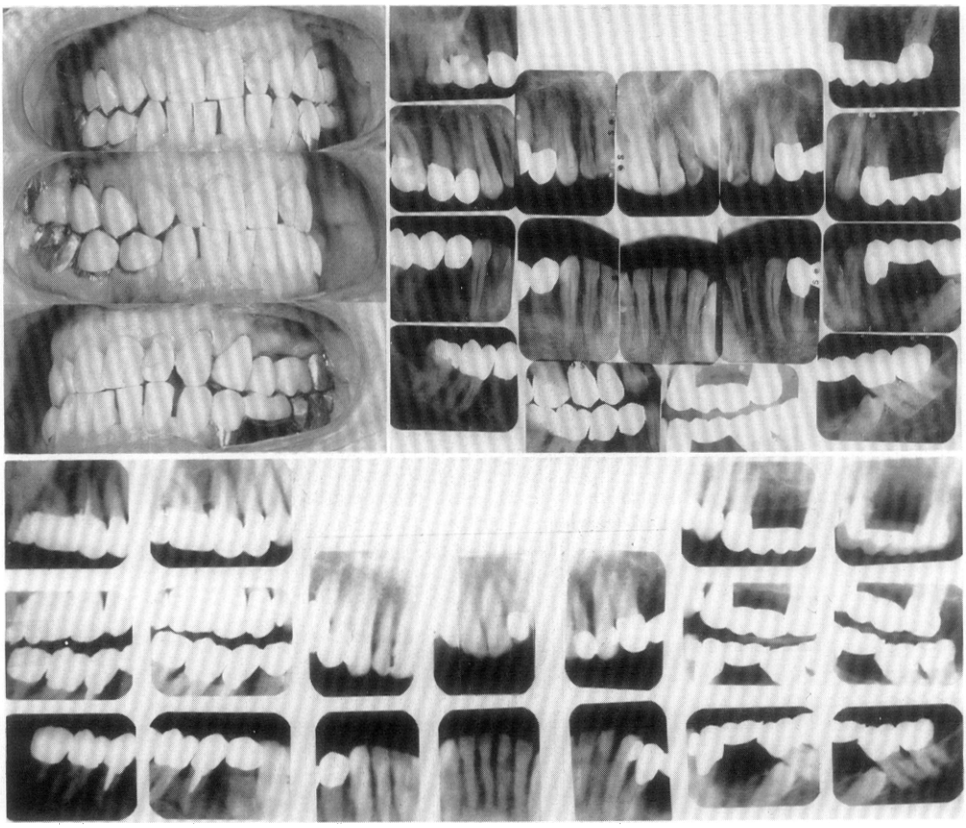

Fig. 1, E and F. Rehabilitation of an open-bite patient (due to tongue thrust) using simple unilateral articulators: *E*, the mouth at completion of the rehabilitation in June, 1953; *F*, radiographs at the completion of treatment in June, 1953. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 584, 589.)

Fig. 1G. Rehabilitation of an open-bite patient (due to tongue thrust) using simple unilateral articulators: radiographs made in April, 1973 (20 years after completion of the restorations). (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 584, 589.)

About 62 patients died over the years covered in this report. There may have been more than that, but not all of the patients were traceable.

EVALUATION OF TREATMENT

Relative success of treatment. It is difficult to determine the percentage of successfully treated occlusions, the failures, and the limited successes. I considered a result successful (1) if the loss of bone was minimal, (2) if few, or no, teeth had been removed since the rehabilitation, (3) if there was adequate function, (4) if the tooth and bone structure were preserved, (5) if the esthetics were pleasing, or certainly passable, and (6) if the doctor-patient relationship was good (Fig. 2).

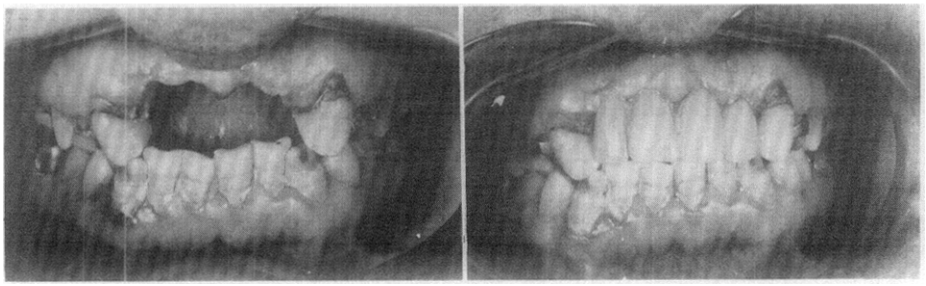

Fig. 2A. The use of the blade technique to rehabilitate the mouth of a 36-year-old woman: mouth at start of treatment in 1942. She wore a removable partial denture. (From Schweitzer, J. M.: Oral Rehabilitation, St. Louis, 1951, The C. V. Mosby Company, pp. 1101-1115.)

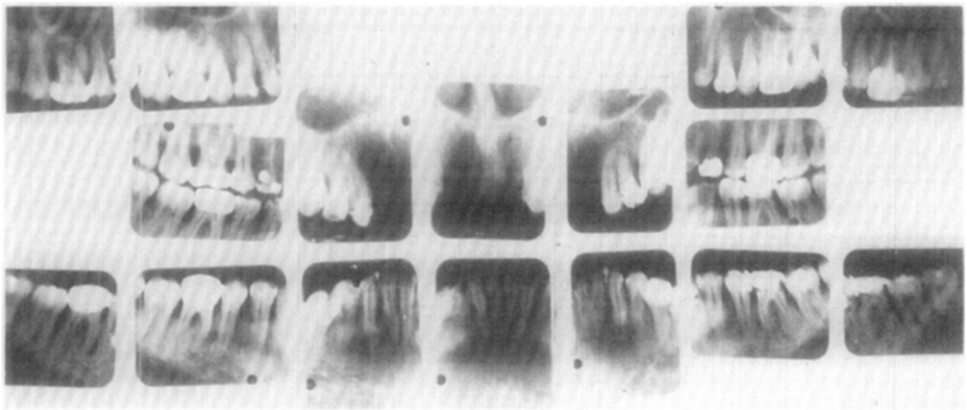

Fig. 2B. The use of the blade technique to rehabilitate the mouth of a 36-year-old woman: radiographs made in 1942. The oral structures were normal. (From Schweitzer, J. M.: Oral Rehabilitation, St. Louis, 1951, The C. V. Mosby Company, pp. 1101-1115.)

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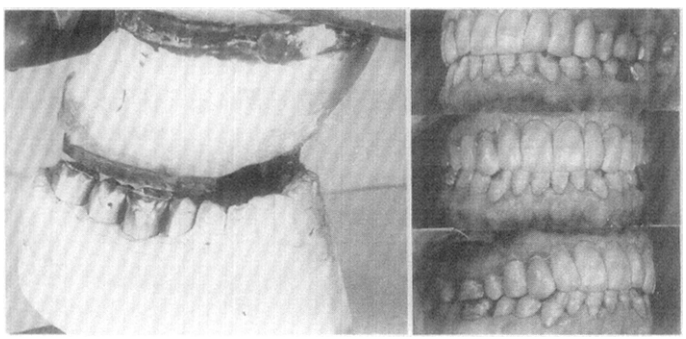


D

Fig. 2, C and D. The use of the blade technique to rehabilitate the mouth of a 36-year-old woman: *C,* use of the blade technique to carve the lower wax patterns (The maxillary cast has been replaced by a cast which holds the blade. The Hanau model H articulator was used.); *D,* the mouth at completion of treatment in 1943. (From Schweitzer, J. M.: Oral Rehabilitation, St. Louis, 1951, The C. V. Mosby Company, pp. 1101-1115.)

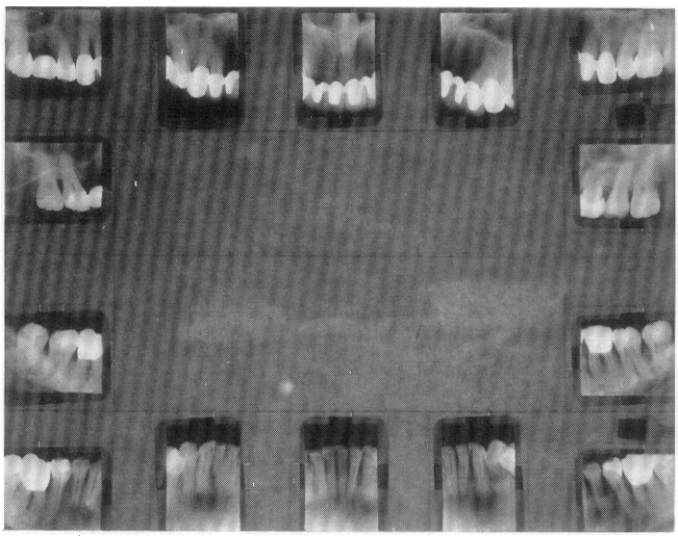


Fig. 2E. The use of the blade technique to rehabilitate the mouth of a 36-year-old woman: radiographs made in 1947 (four years postinsertion). (From Schweitzer, J. M.: Oral Rehabilitation, St. Louis, 1951, The C. V. Mosby Company, pp. 1101-1115.)

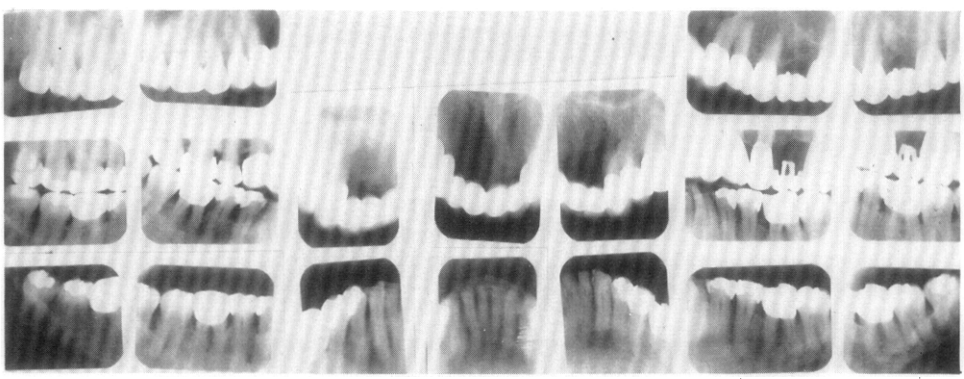


Fig. 2F. The use of the blade technique to rehabilitate the mouth of a 36-year-old woman: radiographs made in 1973. The upper anterior restoration was changed in 1970. Structures are excellent at age 67 after 31 years of service. (From Schweitzer, J. M.: Oral Rehabilitation, St. Louis, 1951, The C. V. Mosby Company, pp. 1101-1115.)

I would consider the result a failure (1) if there was serious deterioration of the tissues since the rehabilitation, (2) if there was loss of many or all the teeth, (3) if there was inadequate function, (4) if esthetics were poor, or (5) if there was a poor doctor-patient relationship. Failure does not necessarily mean a failing to perform a duty although it may have that connotation (Fig. 3).

Limited success would mean neither success or failure, but rather success that is restricted in extent or duration due to extenuating factors beyond our control.

Results of treatment. I have divided my results with 240 patients as follows:

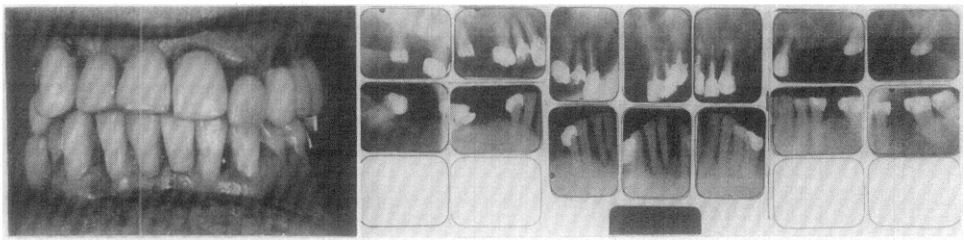


Fig. 3, A and B. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: *A,* her mouth at start of treatment in 1943 (she had been receiving specialized periodontal treatment for a considerable time before I saw her); *B,* radiographs made at start of treatment. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

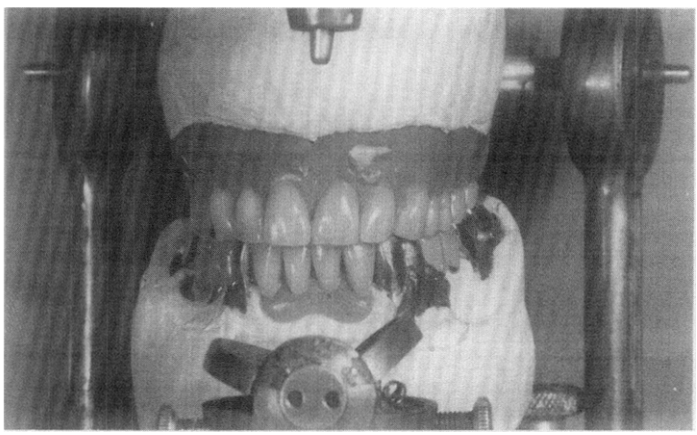


Fig. 3C. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: the complete prostheses. Balanced occlusion was developed on a Hanau articulator. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

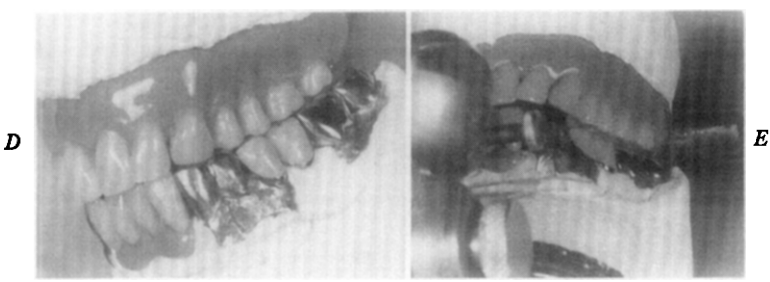


Fig. 3, D and E. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: *D,* left lateral working occlusion; *E,* left lateral balancing occlusion. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

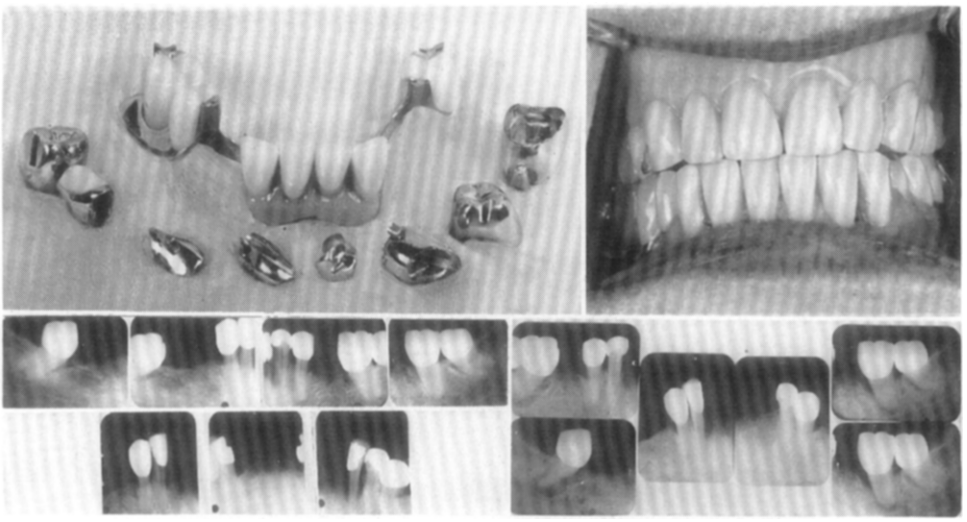


Fig. 3, F and G. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: *F,* the lower precision-attachment removable partial denture (each tooth had a casting which related to its neighbor by means of lugs and rests); *G,* at completion of treatment in 1943. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

Fig. 3, H and I. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: *H,* radiographs made in 1945; *I,* radiographs made in 1948. The molars were removed shortly after. (From Schweitzer, J. M.: Oral Rehabilitation, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

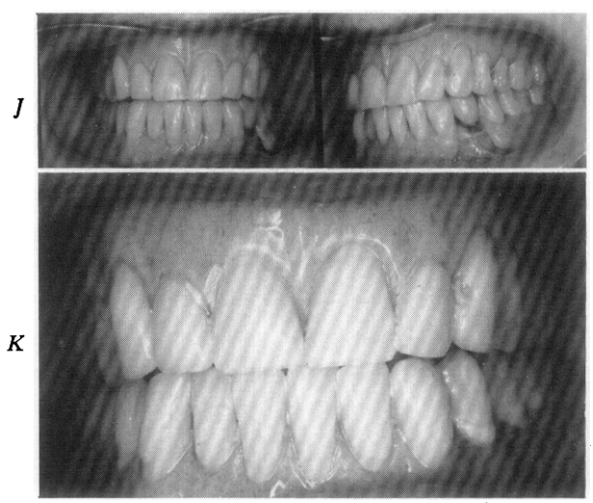


Fig. 3, J and K. An example of failure of rehabilitation. A 46-year-old woman had been afflicted with severe periodontal pathosis at a very young age: *J,* in 1961, the left bicuspid was the only remaining tooth (the others had been removed prior to 1954); *K,* complete dentures in 1973 at age 76. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

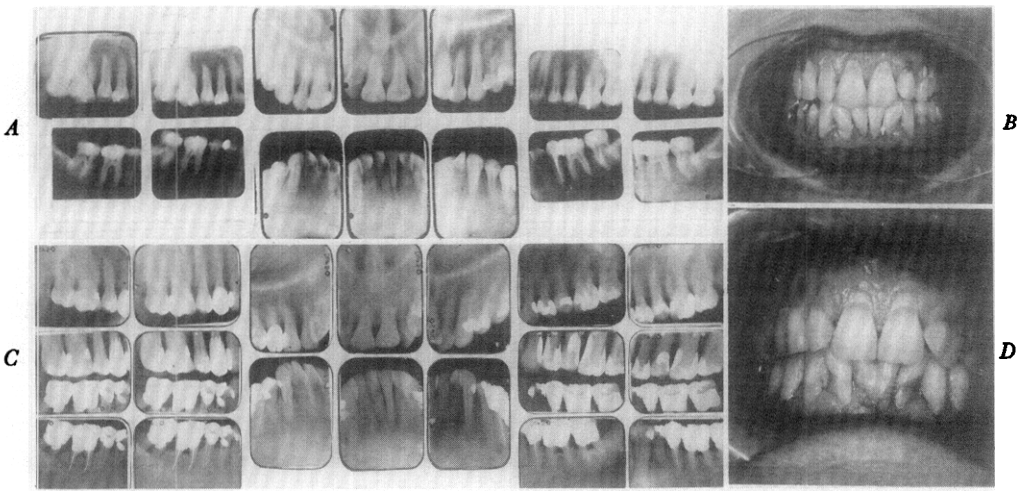


Fig. 4, A-D. An example of patients with emotional problems and maladjustment resulting in oral defects: *A,* radiographs made in 1936 of a woman at age 22; *B,* her mouth at age 36 (1950); *C,* radiographs made in 1963 show rampant caries and deep-seated periodontal problems; *D,* her mouth in 1973 at age 59. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 630-633.)

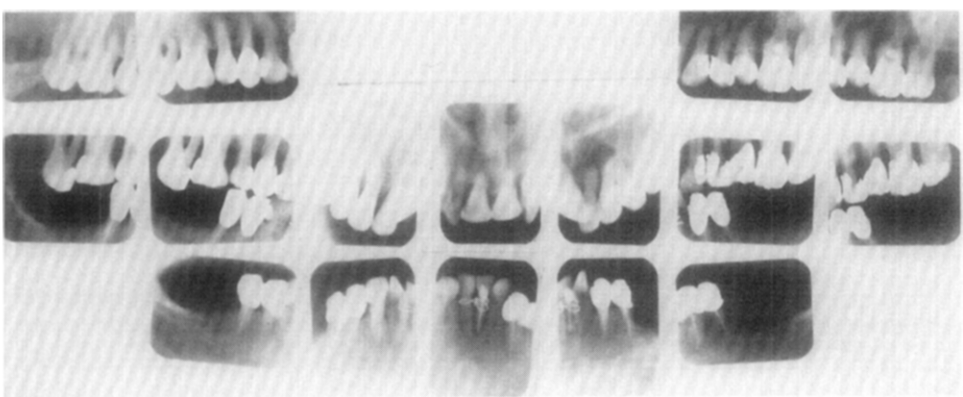


Fig. 4E. An example of patients with emotional problems and maladjustment resulting in oral defects: radiographs made in 1973. Note the continued deterioration in a period of 36 years. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 630-633.)

failures, 15; limited success, 58; good, 167. However, my judgment is subjective.

Of 94 patients who were under my care from 20 to 50 years, but whose mouths were not completely rehabilitated, the results in 73 were good, there was limited success in 20, and one was a failure.

Twenty-one patients had emotional problems, and 17 of these had deep psychiatric problems which seriously interfered with their dental treatment (Figs. 4 and 5).

Among my patients, I have listed 40 whose oral structures were excellent. These patients did not require any dental treatment other than examinations, a possible

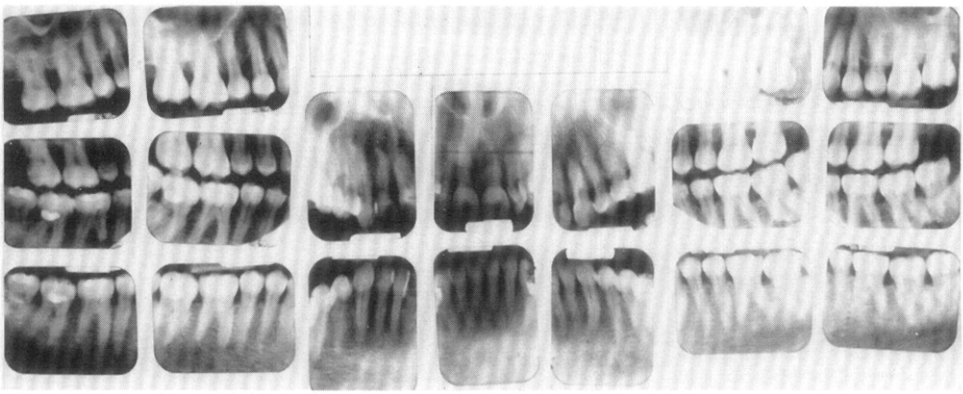


Fig. 5. Radiographs of a sister of the patient reported in Fig. 4. She is well adjusted. Her tissues are so much healthier in spite of her 61 years. In 1963, her oral structures were excellent, and these radiographs show a slight deterioration. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, p. 633.)

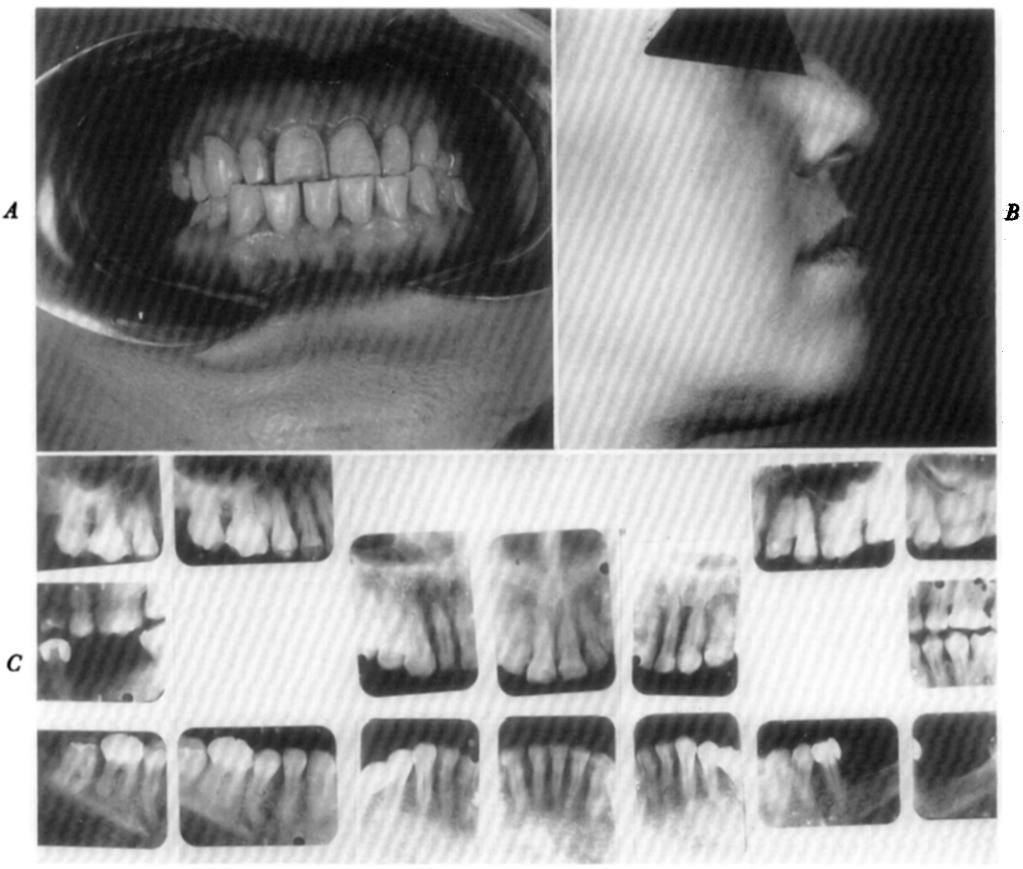


Fig. 6, A-C. The rehabilitation of a 38-year-old woman with a tendency toward dental prognathism: *A*, at start of treatment in 1946 (prognathic); *B*, her prognathic profile; *C*, radiographs made in 1946.

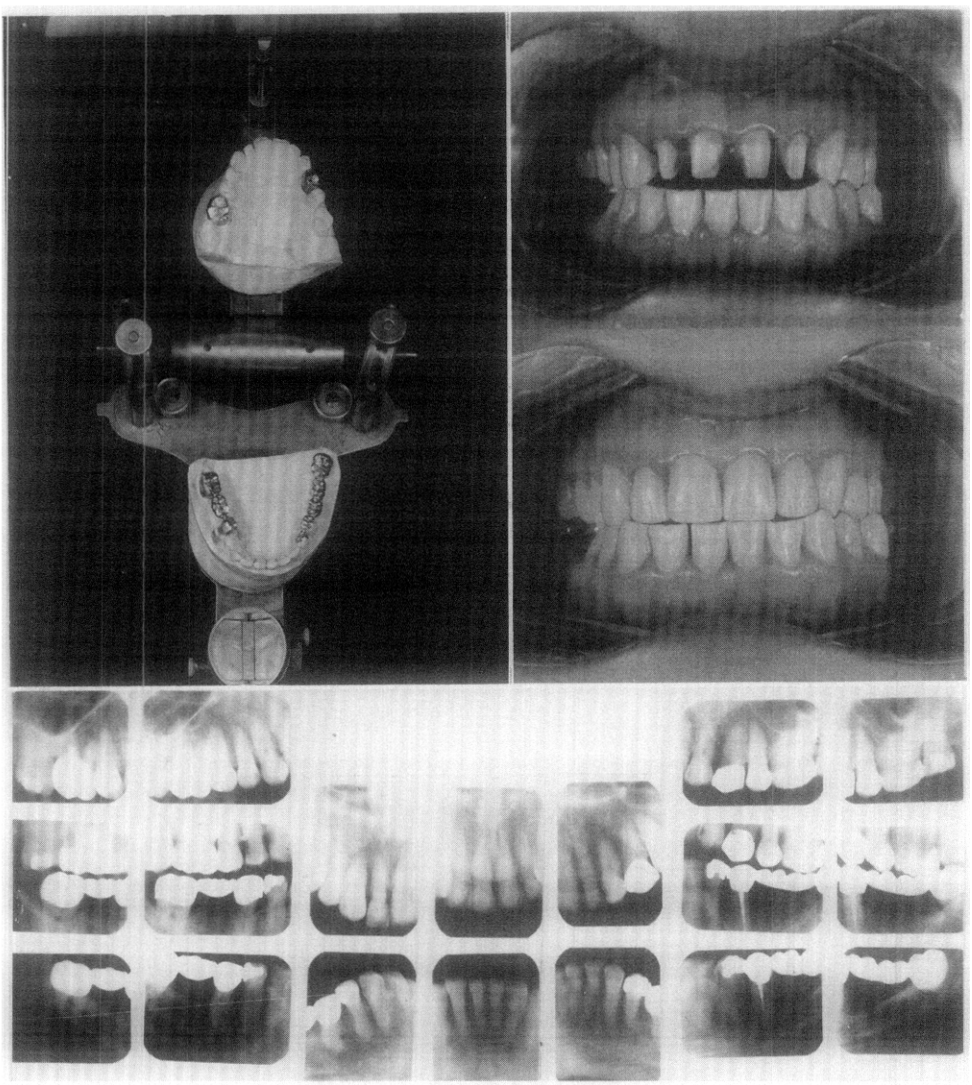


Fig. 6, D-F. The rehabilitation of a 38-year-old woman with a tendency toward dental prognathism: *D,* the completed prostheses (the upper-incisor porcelain jacket crowns are yet to be constructed [1947]); *E,* before insertion of the porcelain jacket crowns and at completion of treatment (the tip-to-tip occlusion was maintained, as was the original occlusal vertical dimension); *F,* radiographs made 25 years postinsertion (1972). The oral structures were good and have remained good to age 65.

filling, and prophylaxis. Their genetic background could play an important role in their excellent structures. They were under my dental care from 20 to 50 years.

The mechanical and physiologic approach. While many tasks in dentistry have the outward appearance of craft procedure, the very nature of our service requires the exercise of moral and professional judgments, however simple they may appear to be. If we are not allowed to exercise our judgment in determining the benefit to

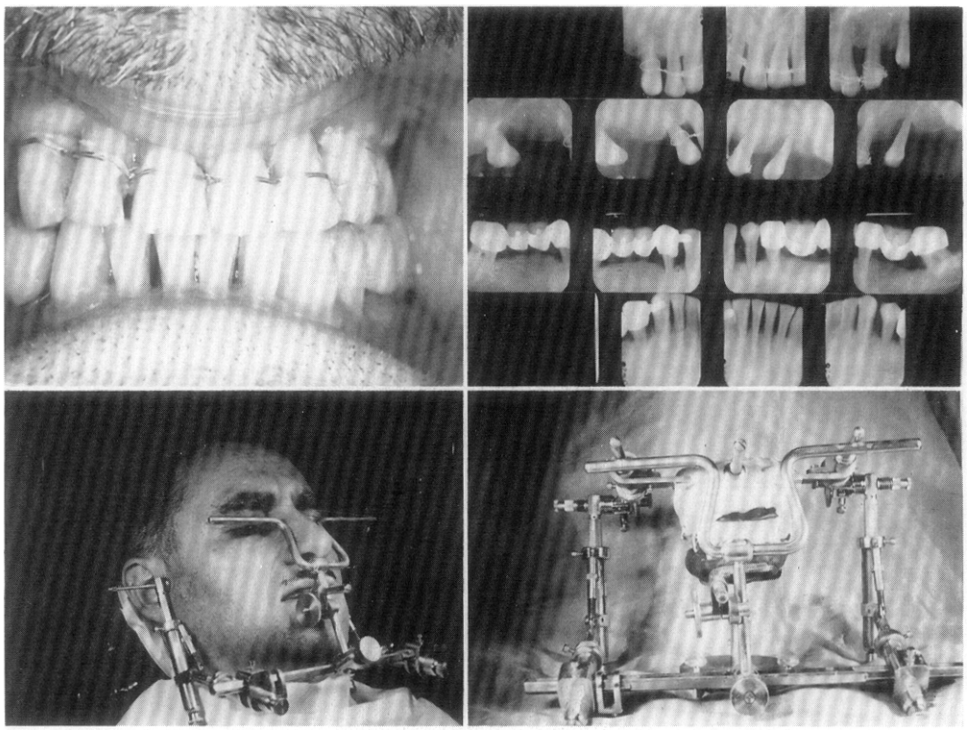


Fig. 7, A-D. Periodontal pathosis was evident in the mouth of a 45-year-old man treated in accordance with the transographic concept: *A*, in 1956, he was under specialized periodontal treatment (the upper incisors were wired together when he presented himself for examination); *B*, radiographs made at start of treatment; *C*, the transograph being used as a face-bow (the mandibular hinge axis is located by means of this instrument); *D*, the face-bow becomes the articulator. The upper cast is being attached to the upper frame. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 241-247.)

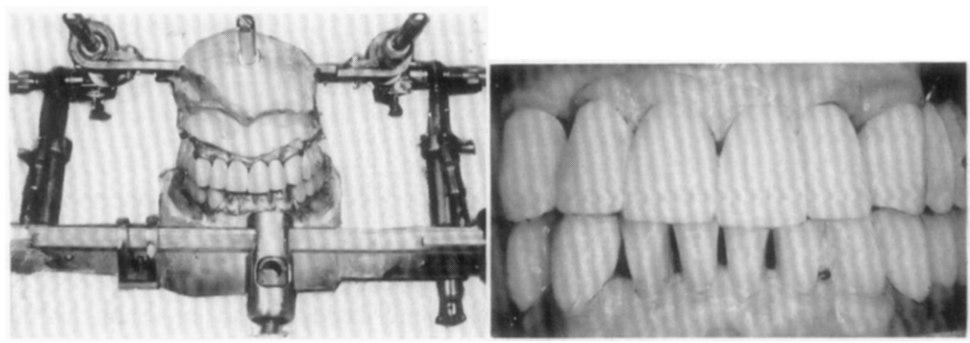


Fig. 7, E and F. Periodontal pathosis was evident in the mouth of a 45-year-old man treated in accordance with the transographic concept: *E*, the completed prostheses assembled on the transograph; *F*, the completed prostheses in 1957. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 241-247.)

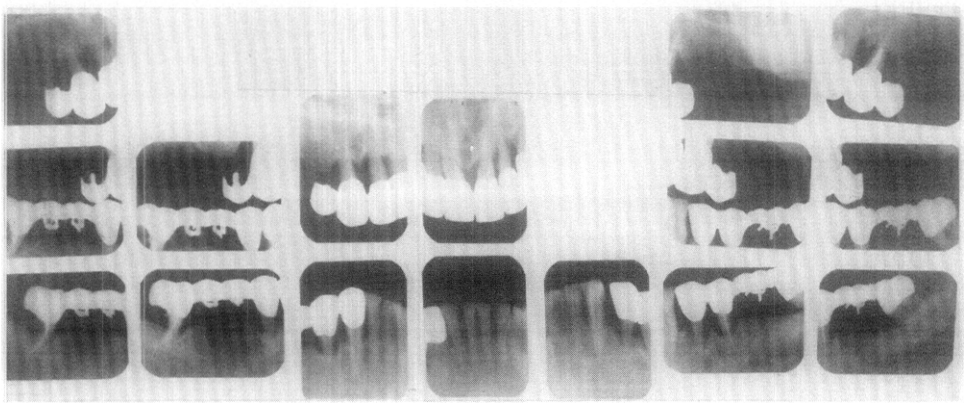


Fig. 7G. Periodontal pathosis was evident in the mouth of a 45-year-old man treated in accordance with the transographic concept: radiographs made in 1972, 16 years after completion. The periodontal disease has continued. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 241-247.)

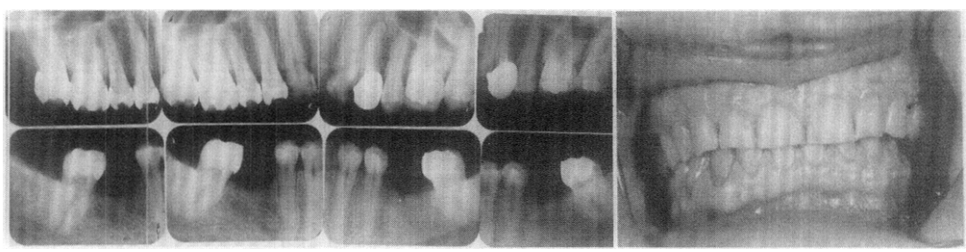


Fig. 8, A and B. Tooth disintegration caused by imbibing of lemon juice by a 34-year-old woman: *A*, radiographs of her mouth made in 1933 at age 34; *B*, the mouth in 1943; the cause of the erosion of the upper incisors was lemon juice taken daily. (From Schweitzer, J. M.: Restorative Dentistry, St. Louis, 1947, The C. V. Mosby Company, pp. 255-256.) (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 409-411.)

the patient, our services become a craft and our profession a guild. With this in mind, it is not my intention to stress the mechanical and neglect the physiologic, anatomic, and biologic factors.

OCCLUSION

How important is occlusion? How complex do we intend to allow the problem of occlusion to grow? How many new occlusal theories, each with a new articulator, do we intend to give birth to? No dental subject has received more attention or is considered to be more important. In dental literature, in dental colleges, in postgraduate teaching, in seminars held at dental meetings, in research activities, and in other areas of dental study, functional and nonfunctional movements of the mandible, whether concerned with natural or artificial teeth, have been the subject of continuous discussion and relentless pursuit, with no apparent agreement. It is

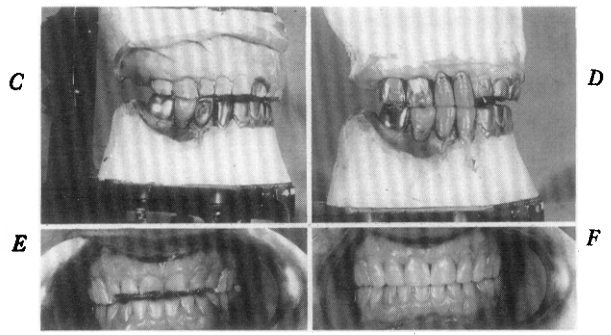


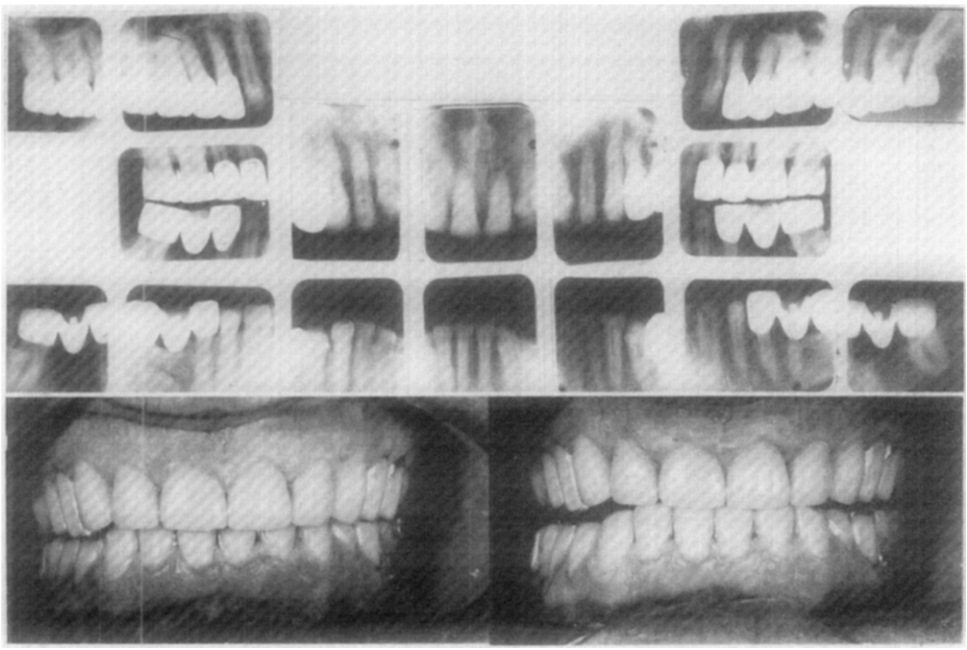
Fig. 8, C-F. Tooth disintegration caused by imbibing of lemon juice by a 34-year-old woman: *C*, the lower posterior restorations were completed first (the increase in the occlusal vertical dimension was divided equally between the mandibular and maxillary teeth); *D*, the upper posterior teeth were built to occlude with the lower teeth (this demonstrates the total increase of the occlusal vertical dimension); *E*, the posterior castings have been cemented on the teeth (note the lemon juice erosion); *F*, at completion of treatment in 1943. (From Schweitzer, J. M.: Restorative Dentistry, St. Louis, 1947, The C. V. Mosby Company, pp. 255-256.)

my feeling that occlusion is being stressed out of all proportion to its importance and out of all bounds if measured by its clinical significance.

Almost all dental ills have been attributed to faulty occlusion. I do not subscribe to this theory. My observations lead me to believe that there is a large area of the unknown, and because we do not know, there is a great deal of conjecture and speculation as to what really causes dental ills and what is the correct interocclusal relationship. What part does genetics play in the over-all dental-health picture? How are the teeth supposed to meet during function and nonfunction? What constitutes malocclusion (Fig. 6)? Why do we find so many patients who present an obvious malocclusion in which the upper and lower teeth are incorrectly related according to our concepts, yet in which the periodontal and osseous structures are in healthy condition? This is found too often to be relegated to the area of accidental happenings. Why is it impossible to control several types of severe periodontal disease regardless of the perfection of the occlusal scheme? Why, in severe periodontally involved mouths, do we find some teeth which are never affected?

Complete disagreement between the occlusal concepts. Why does the "cuspid protection theory," also known as the "cuspid lift" (the disengaging of the posterior teeth by the cuspid as the mandible moves into a lateral excursion) as advocated in one occlusal concept, differ so radically from the "cuspid guidance theory" (the mandible moves laterally into its working position and the cuspid and all the posterior teeth continue into simultaneous contact at least until their cusp tips are reached) as is advocated by another occlusal concept? Why does still a third occlusal concept differ radically from the other two? And yet all of these philosophies or concepts of occlusal integration claim successful results, and there is no question in my mind that these claims are true.

I have always regarded occlusion as important. I maintain, however, that it is no more important than several other factors in a restorative procedure. For any of us to indulge in the complicated gadgetry, which is displayed more and more and



G

H

Fig. 8, G and H. Tooth disintegration caused by imbibing of lemon juice by a 34-year-old woman: *G,* radiographs made in 1944; *H,* in 1950, all upper and lower anterior teeth were covered by porcelain jacket crowns (this was done because the upper porcelain crowns were abrading the lower incisors); *I,* radiographs made in 1972, 30 years after completion. The oral structures are still in excellent condition. The patient is 74 years old. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 409-411.)

which only serves to confuse sincere practitioners, may be dramatic but is both unfair and unnecessary.

EVALUATION OF MATERIALS AND TECHNIQUES

Convictions arrived at by long experience. Many young dentists speak loudly with little clinical experience. They have still to evaluate the effects of time upon their work. Many with broader experience may be misinterpreting the facts. There are others who have commercial motives.

I have used fully adjustable articulators and probably have taken every conceivable record in order to set them. These included hinge axes, pantographs, cranial planes, Bennett movements (either vertical or horizontal), plaster records, metal records, and wax records (Fig. 7). I have had patients collapse under the strain of some of the attached instrumentation. As a curious student, a teacher, and a clinician, I have no regrets for the voluminous time and effort I spent in acquiring the necessary knowledge. But frequently my heart and head never fully accepted the results I obtained as being far superior to those obtained by simpler methods. It is my feeling that many of you, if you were given the opportunity, could stand up and testify to the truth of what I say.

Results as measured by the time factor. If my results were to be graded by the

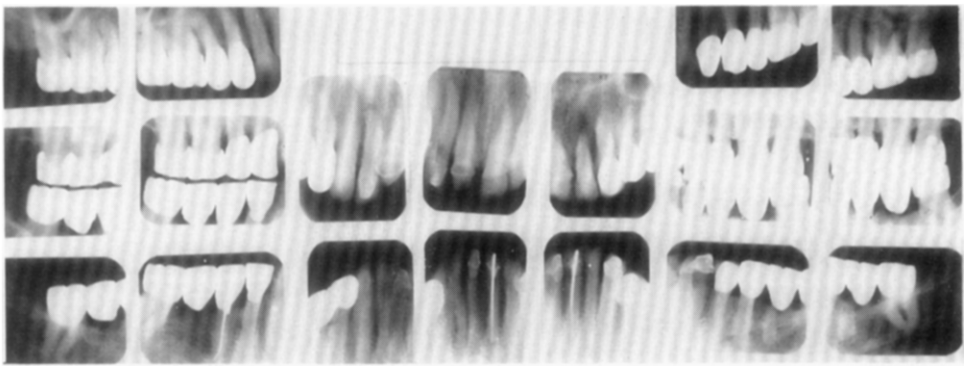


Fig. 8I. Tooth disintegration caused by imbibing of lemon juice by a 34-year-old woman. Radiographs made in 1972, 30 years after completion. The oral structures are still in excellent condition. The patient is 74 years old. (From Schweitzer, J. M.: Restorative Dentistry, St. Louis, 1947, The C. V. Mosby Company, pp. 255-256.) (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 409-411.)

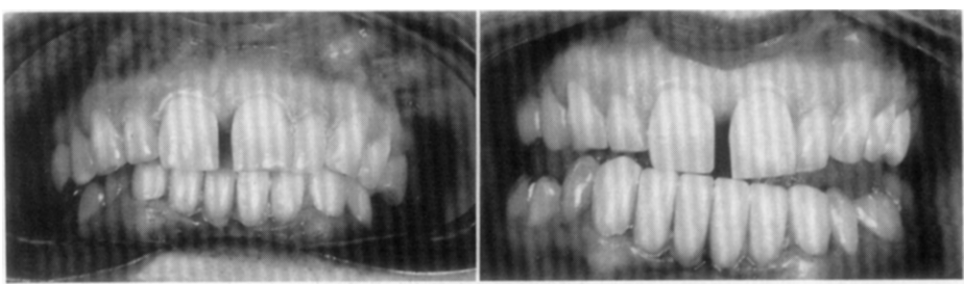


Fig. 9A. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: at the start of treatment in 1950. A porcelain coping bridge replaces the lower incisors: (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

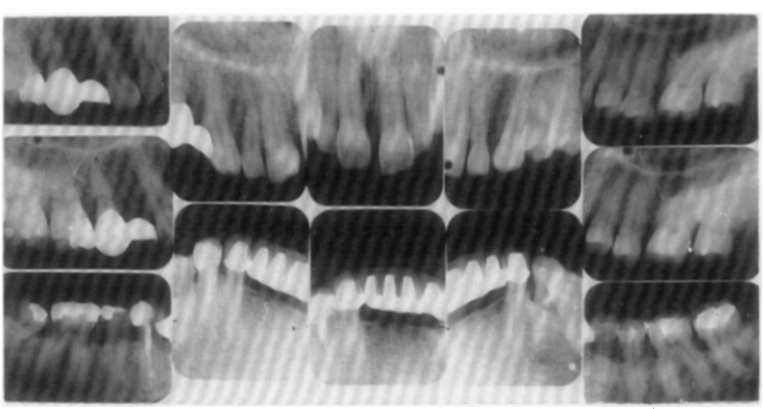


Fig. 9B. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: radiographs at the start of treatment. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

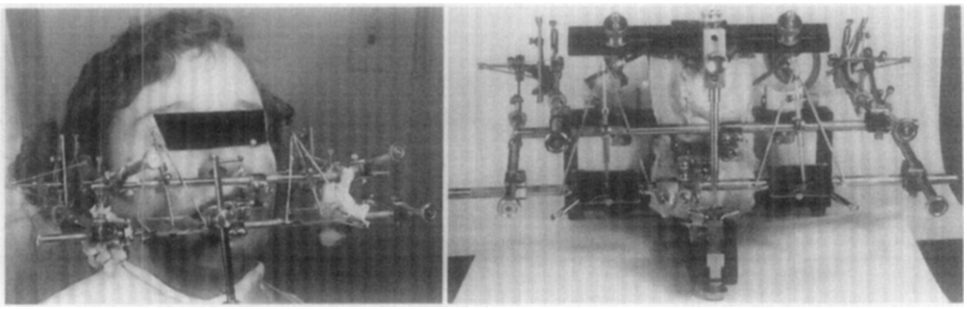


Fig. 9, C and D. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: *C,* gnathologic records; *D,* gnathologic articulator adjustment. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

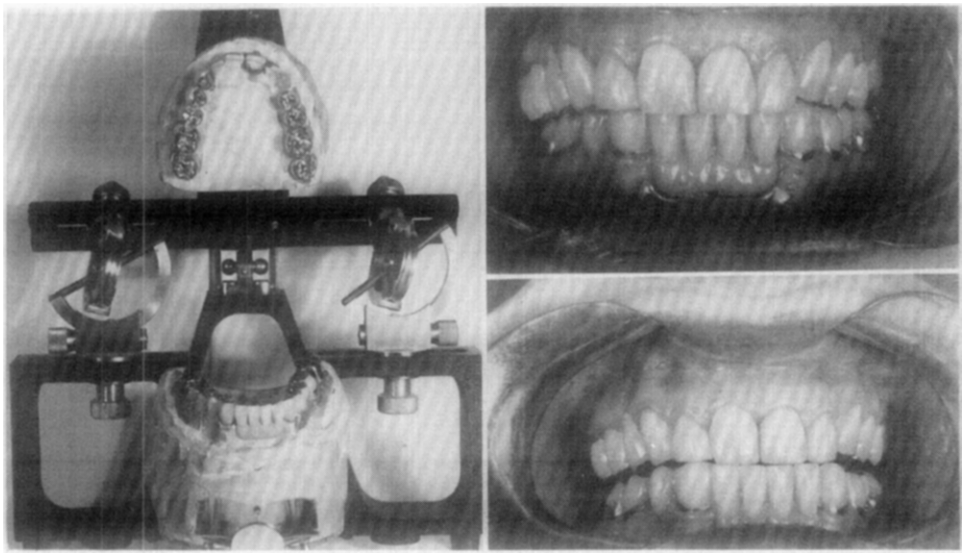


Fig. 9, E and F. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: *E,* completed restorations; *F,* at completion of treatment in 1951. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

length of time required to successfully perform the rehabilitation as judged by conventional standards (such as acceptability to the periodontal tissues and the preservation of the osseous structures and adequate function), I must admit that in my hands the semiadjustable articulators and the simple techniques (Fig. 8) proved equally as efficient as the more complex techniques and fully adjustable articulators. I served as the common denominator. My evaluation of the existing conditions and my guidance through the treatment seemed to be of greater importance than the articulator I used.

Changing the interocclusal relationship can be dangerous. There are important considerations to which we must give our priorities when dealing with extensive prosthetic procedures. First, and of extreme importance, we must ask ourselves

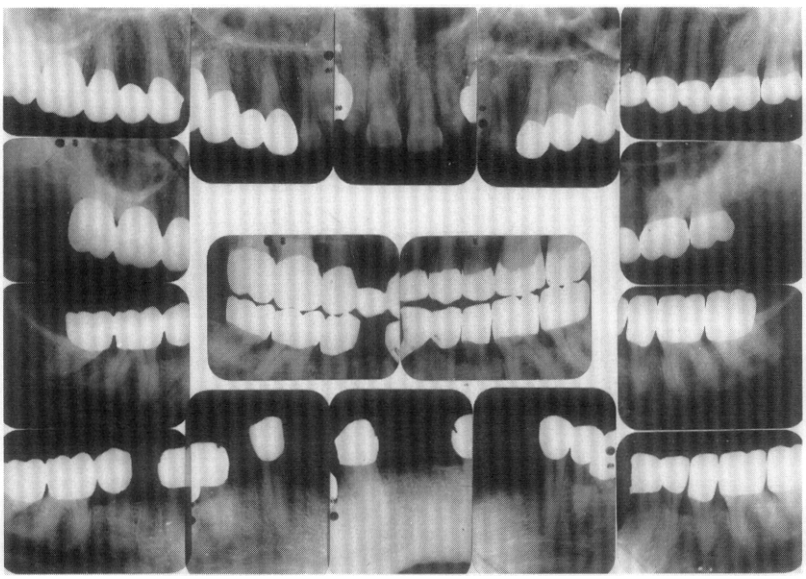


Fig. 9G. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: radiographs at completion of rehabilitation. The upper central incisors had not been completely brought together, and the lower left posterior teeth were yet to be splinted. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

whether or not the stomatognathic system under consideration should be taken apart. As a pioneer in this area of dental practice, I have been exposed to the results of many of those engaged in this difficult and complex form of treatment. Experience and knowledge, plus technical ability, are required to successfully carry out total oral rehabilitation. Undergraduate training hardly equips the student for this type of procedure. The results of finished treatment do not justify the approval of the dental profession. Too many patients have been made dental cripples. Far too many mouths have been "wrecked." As a result of having been subjected to severe dental and physical trauma, a good number of these patients have been afflicted with persistent emotional problems of serious consequence.

There are many patients whose vertical dimension and interocclusal relationship are correct, but who are in need of extensive dental repair. These patients bring us valuable landmarks and references. Many of them have no pathologic symptoms other than diseased teeth. Too many of us discard these well-established neuromuscular and proprioceptive records. We cut down all the teeth and thereby destroy these reference guidelines. Once lost, the original interocclusal relationship is extremely difficult to re-establish, and in some instances, it can never again be located.

Errors induced by oral apparatus. I am familiar with the methodology of the various occlusal concepts in their efforts, by means of their apparatuses, to establish mandibular centricity, the occlusal vertical dimension, and rest position; but once their complex instruments are attached to the jaws, difficulties arise. If a pantograph is to be used, the weight of the instrument must be considered. When a central bearing pin and plate are inserted to facilitate lateral jaw movements, the action of

November
Eighth
1967

Dr. Jerome H. Schweitzer
730 Fifth Avenue
New York, New York 10019

Dear Dr. Schweitzer:

Mrs. ———— came in for an examination and we have given her appointments for curettage and home care instruction. We plan to do a primary treatment on her mouth before deciding on methods of pocket elimination. It is hard to see why she has broken down so badly. The occlusion seems to be perfect and your very finely fitting crowns are certainly not a contributing cause.

We will re-evaluate her case a little later on and determine just what methods are necessary to eliminate the pockets. I will give you a progress report at this time.

Thank you again for your confidence in me.

Sincerely yours,

Fig. 9H. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: a letter from the patient's periodontist in 1967 expressing surprise at the periodontal breakdown in spite of the excellence of the prostheses. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

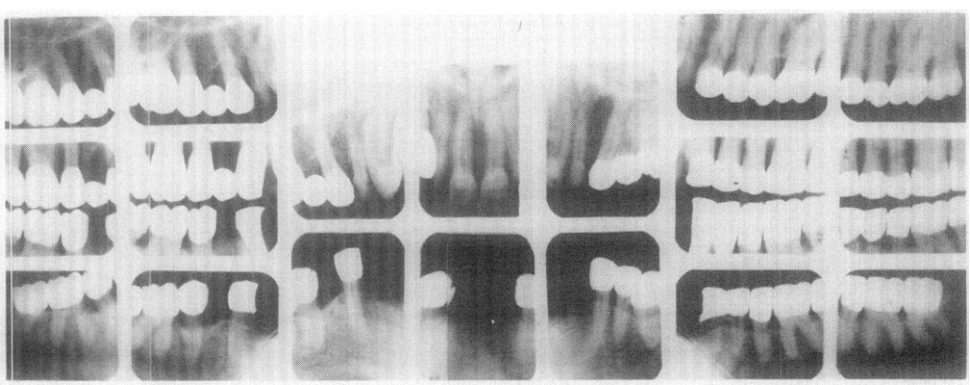


Fig. 9I. The mouth of a 38-year-old woman rehabilitated in accordance with the gnathologic concept: radiographs made in 1969. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 2, St. Louis, 1964, The C. V. Mosby Company, pp. 465-475.)

the closing muscles is altered or eliminated (Fig. 9). "That these movements may repeat themselves exactly and several pantographic tracings of them may be superimposed and proved identical, does not mean that they portray and prove function; it demonstrates only that they are identical tracings of identical artificial movements forced upon the helpless condyles by identical obstructions; that is the pin and

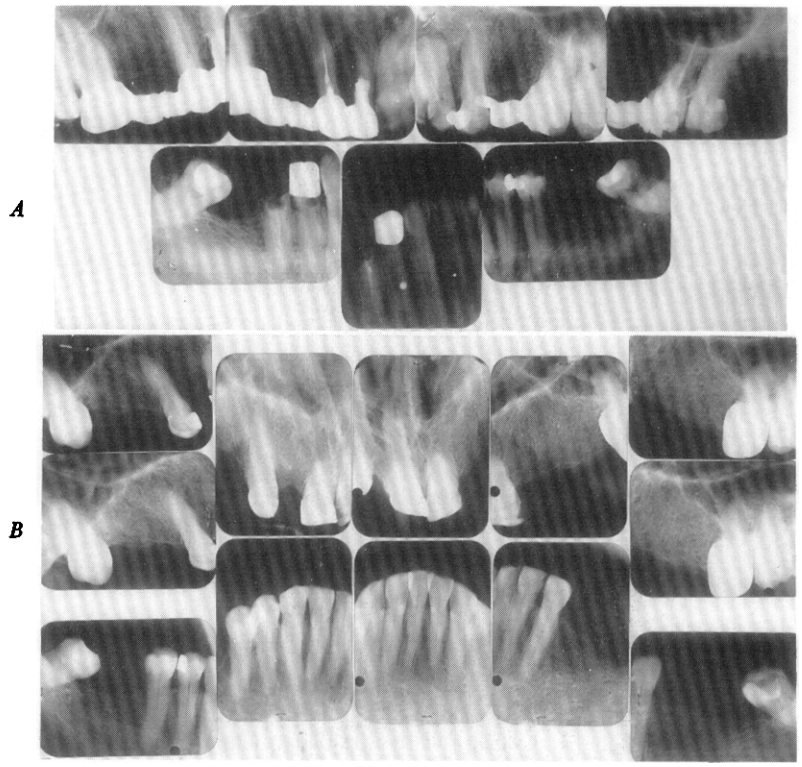


Fig. 10, A and B. The rehabilitation of a 44-year-old woman with an extremely deep vertical overlap carried out on a model H Hanau articulator: *A,* radiographs made in 1926; *B,* radiographs made in 1937. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 17-25.)

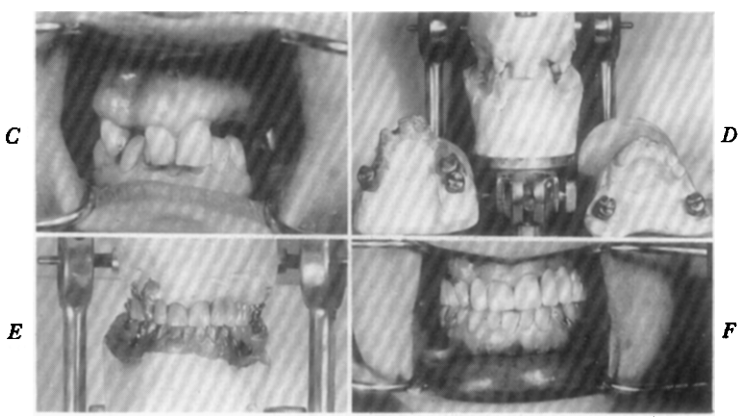


Fig. 10, C-F. The rehabilitation of a 44-year-old woman with an extremely deep vertical overlap carried out on a model H Hanau articulator: *C,* at the start of reconstruction in 1937; *D,* Hanau model H articulator was used; *E,* completed prostheses (use of upper and lower partial clasp removable dentures); *F,* at completion of treatment (1937). (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 17-25.)

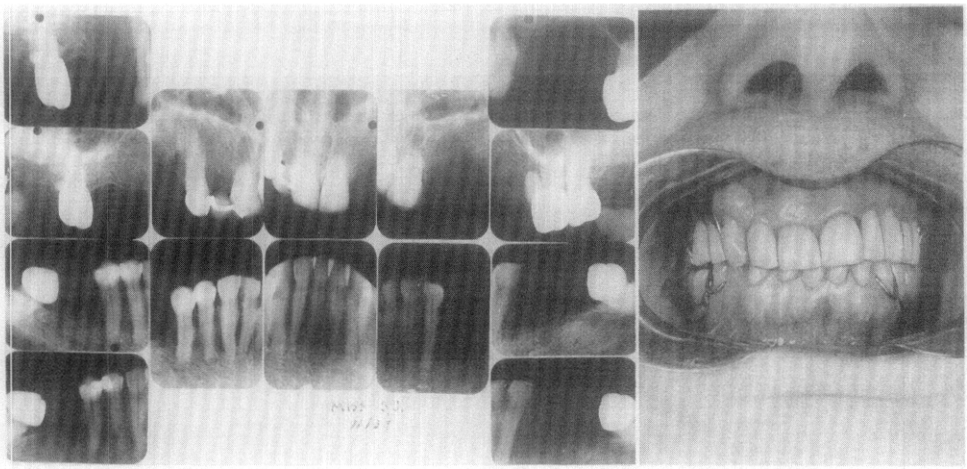


Fig. 10, G and H. The rehabilitation of a 44-year-old woman with an extremely deep vertical overlap carried out on a model H Hanau articulator: *G,* radiographs at completion of treatment; *H,* in 1950, 13 years postinsertion. Note the reduced occlusal vertical dimension. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 17-25.)

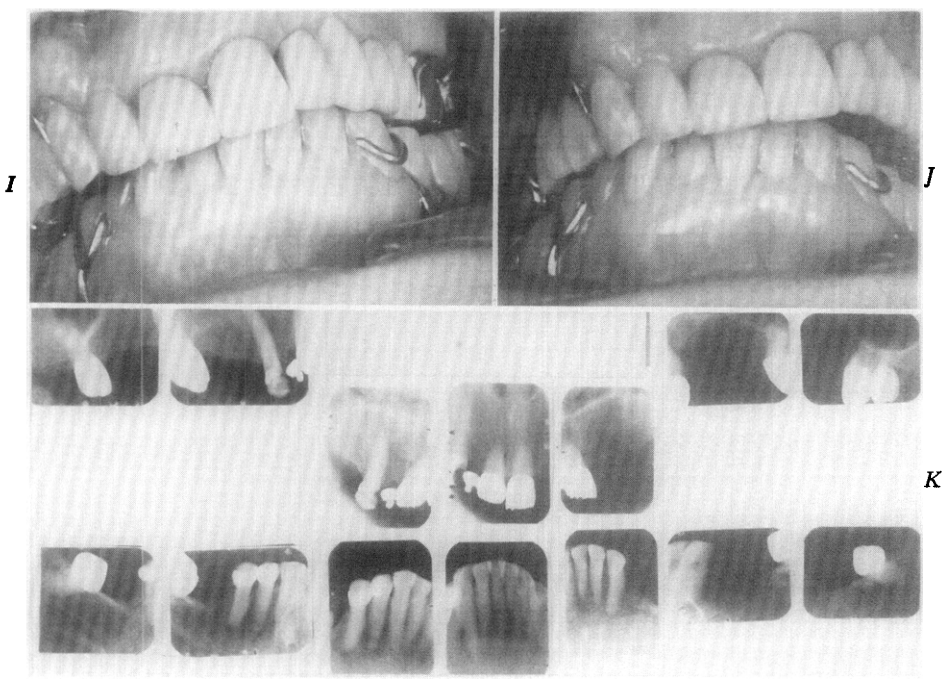


Fig. 10, I-K. The rehabilitation of a 44-year-old woman with an extremely deep vertical overlap carried out on a model H Hanau articulator: *I,* there is a complete lack of balance in the *left* lateral mandibular position; *J,* there is a complete lack of balance in the *right* lateral mandibular position; *K,* radiographs made at age 90 (1972). The oral structures were excellent in 1937 and are excellent 47 years later. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 17-25.)

Fig. 11, A and B. The oral rehabilitation of a 45-year-old woman who has diabetes. Systemic disease plays an important role in the failure of some oral rehabilitations: *A*, radiographs made in 1963 at start of rehabilitation; *B*, radiographs made at the completion of treatment (1964).

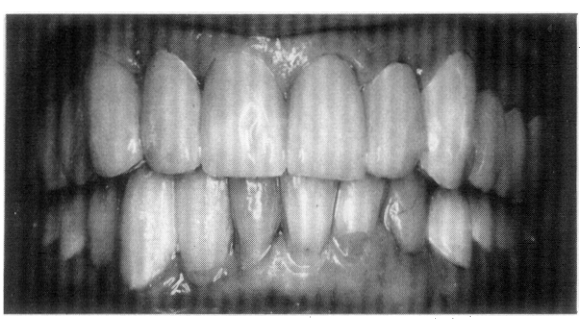


Fig. 11C. The oral rehabilitation of a 45-year-old woman who has diabetes. Systemic disease plays an important role in the failure of some oral rehabilitations: mouth at completion of treatment.

plate" (Page, H. L.: Occlusal Movements and Obstructions, Dent. Dig. **61:** 344-349, 1955).

To establish the "generated path," occlusion rims are necessary. They, too, limit muscular action and normal function. Patients may grind the teeth out of occlusion rather than into the correct occlusion.

Other recording materials, such as softened baseplate wax and plaster of paris,

Fig. 11, D and E. The oral rehabilitation of a 45-year-old woman who has diabetes. Systemic disease plays an important role in the failure of some oral rehabilitations: *D,* radiographs made two years postinsertion (in spite of continuous specialized periodontal treatment and a team of medical specialists treating her for diabetes, the periodontal breakdown continued at at alarming rate); *E,* radiographs made in 1969 reveal the severe periodontal pathosis.

Fig. 11, F and G. The oral rehabilitation of a 45-year-old woman who has diabetes. Systemic disease plays an important role in the failure of some oral rehabilitations: *F,* radiographs made in 1973 show that only five lower teeth remain; *G,* in 1973, the patient has a complete upper denture and a removable partial denture (age 55).

Fig. 12A. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman balancer articulator: at the start of treatment in 1933. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

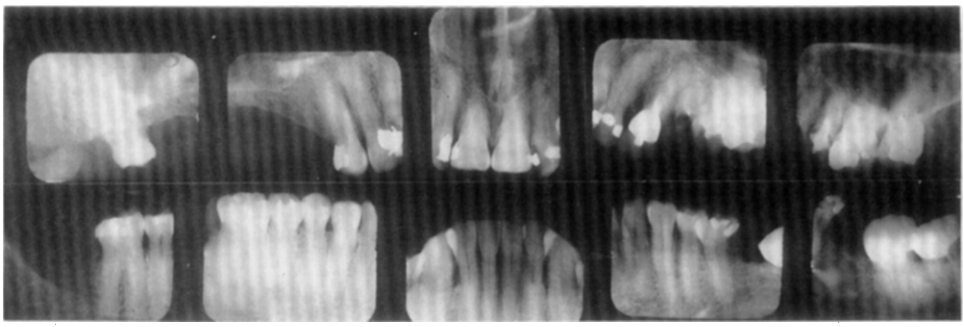


Fig. 12B. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman Balancer articulator: radiographs made in 1932. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

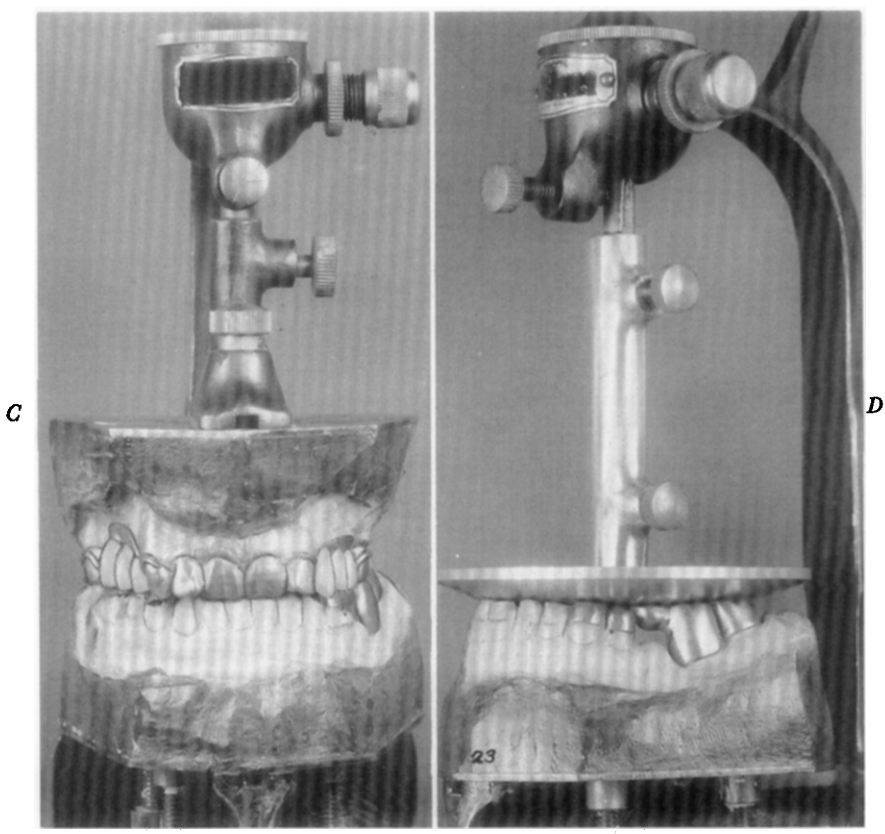


Fig. 12, C and D. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman Balancer articulator: *C,* the finished prostheses on a Hagman balancer; *D,* the lower teeth were built up to contact this arbitrary 4 inch disc. The mandibular prostheses were completed first. The maxillary prostheses were then constructed to conform to the lower completed restorations. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

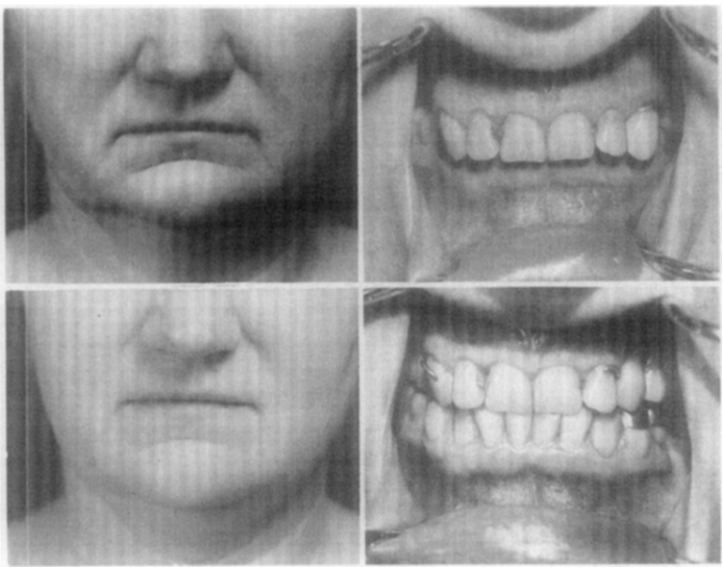


Fig. 12E. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman balancer articulator: the mouth and face before and after rehabilitation (1934). (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446).

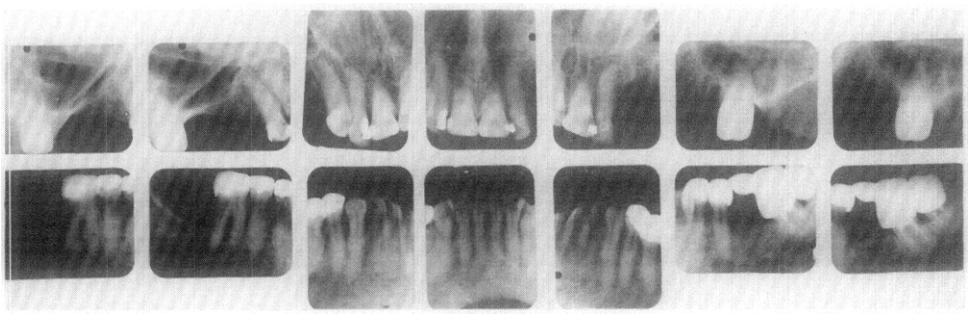
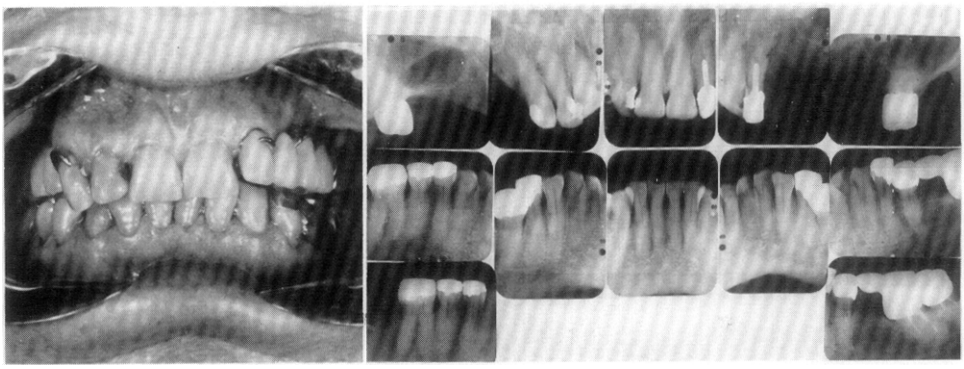


Fig. 12F. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman balancer articulator: radiographs made at completion of the rehabilitation. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

often distort the pull of the masticatory muscles. Proprioception is obstructed, and the neuromuscular mechanism is only left with its interoceptive means of establishing its three-dimensional position. Experience has proved that this is insufficient. My documentation has demonstrated that many repositioned mandibles return to their original positions after the occlusion has been reconstructed.

Dangers induced by extensive changes in the vertical dimension. Whether or not to change the occlusal vertical dimension is another important consideration. Any drastic change, either in increasing or decreasing it, must first be tested for a sufficient time by means of temporary restorations to determine whether the neuro-

G



H

Fig. 12, G and H. The rehabilitation of a 46-year-old woman with an extremely deep vertical overlap carried out on a Hagman balancer articulator: *G*, 16 years postinsertion; *H*, radiographs made 17 years after completion. The bone structure was excellent at the start of treatment and excellent until the patient died in 1952. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 440-446.)

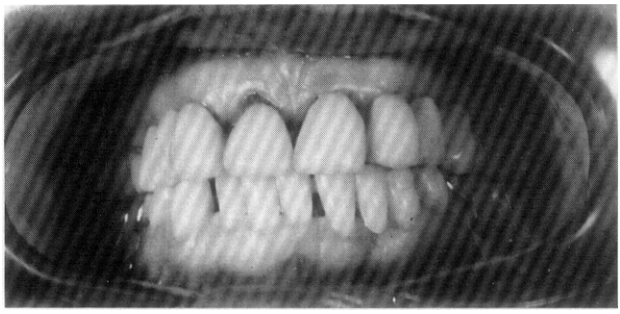


Fig. 13A. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: her mouth in 1947. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

musculature will adapt to the change. This requires a background of experience. Those of us who have attempted to increase or decrease the occlusal vertical dimension and have failed are in better position to evaluate these situations (Fig. 10).

To alter the position of the natural teeth in order to develop a harmonious interocclusal relationship, in which mandibular position and maximum tooth contact coincide, can tax the ingenuity of the most experienced dentist. Therefore, when a patient has an acceptable occlusion and a total unawareness of his teeth, we should have a very good reason for upsetting this innocuous relationship. Once an occlusal awareness has been established in the patient due to our meddling, all kinds of problems including emotional disturbances may result. These may tax the efforts of the most able among us.

Additional important considerations. Adequate function is important. Our patients should be able to comminute food. Adequate function includes ease of speech, breathing, coughing, and sneezing. The number one goal agreed to by all concepts and theories of occlusion is the preservation of the stomatognathic system in good

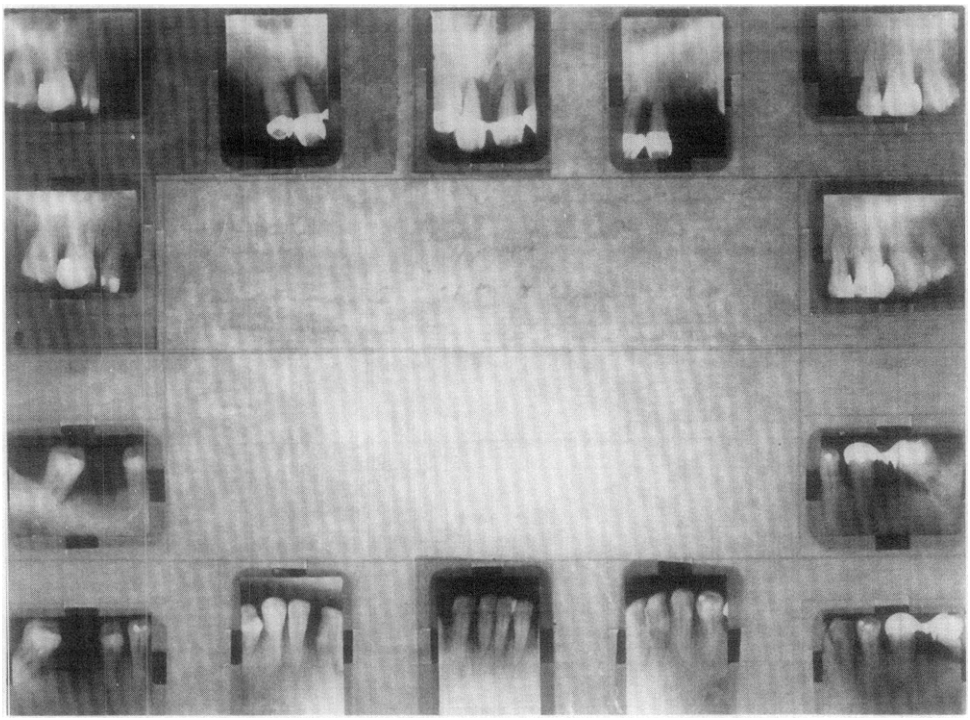


Fig. 13B. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: radiographs made in 1947. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

health for the life-span of the individual. This would include minimum deterioration of the hard and soft tissues and pleasing esthetics. All concepts claim to be able to achieve this result, but we are aware that it is beset with multitudinous obstacles. Over some of these, we have limited control, while we have little or no control over others. Even as I write this, we are emphasizing plaque control. Plaque is said to cause caries and periodontal disease. Those factors over which we have little control are systemic disease and general bodily disintegration. These will directly affect our most carefully planned and correctly executed biomechanical efforts (Fig. 11).

CONCLUSIONS DRAWN FROM PATIENT HISTORIES IN MY PRACTICE

The photographs and dental histories of the 12 patients reported in this article represent a total of 313 years of treatment or an average of 26 years for each patient. The earliest one started treatment in 1926. Ten of these people are still being treated in my office in 1973. The thirteenth patient is treated by another dentist, but she is the sister of one of my patients. These patients were chosen to represent both successes and failures. Five different theories of occlusion were used in their treatment, each with a different articulator. I was the common denominator.

In retrospect, I probably would have approached the rehabilitation of some of these occlusions differently. However, if one considers the intangibles, other than the concepts and techniques involved, my results may not have been different even if treatment was undertaken now with our more extensive knowledge.

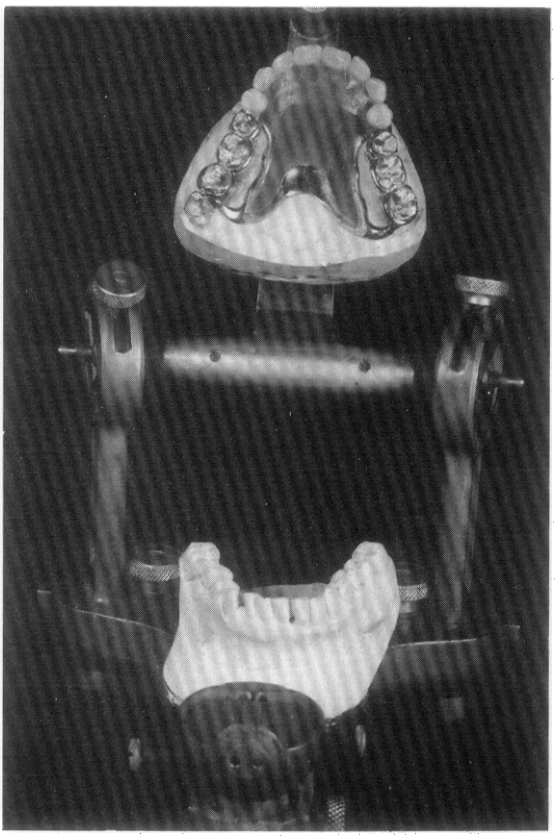


Fig. 13C. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: the completed maxillary prostheses. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

Variation of response. In the treatment of these patients, variation stood out as an important factor. No two situations were alike or responded in the same manner, yet there were quite a few predictable cause-and-effect relationships. For example, in most patients with reduced occlusal vertical dimensions that were increased in the treatment, the original relationship usually returned (Fig. 12). It was necessary, therefore, to inject the fourth dimension, time, in these studies. However, given the time factor, the evidence was unmistakable. Although this does not mean that these occlusions were not to be restored by increasing the occlusal vertical dimension in order to permit the insertion of prostheses that seemed impossible, the increasing of the occlusal vertical dimension is a complex procedure. In the majority of the patients, the prosthesis accommodated the altered occlusal vertical dimension. This usually occurred by the process of intrusion of the teeth and the recession and/or atrophy of the bone and/or soft tissues.

Articulators. Although articulators are recommended in coordinating the interocclusal relationship, they are difficult to rely upon, because the records and the settings are the work of the dentist. Inaccuracies are consciously or unconsciously

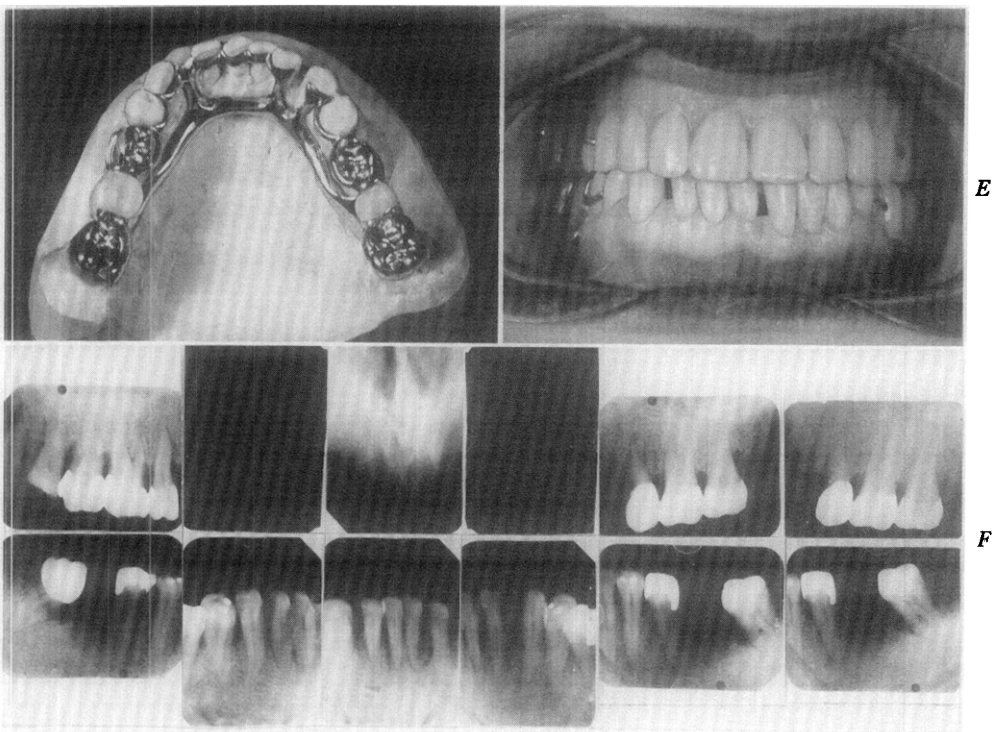


Fig. 13, D and E. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: *D,* completed mandibular prostheses; *E,* at completion of treatment (1947). (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

Fig. 13F. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: radiographs at completion of treatment. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

injected that upset the entire theory upon which the articulator is dependent. The correction of any theory of occlusion is largely based upon the background and the ideas of the human mind behind it. This, in turn, depends upon man's ideas of how a person performs functional and empty chewing movements. My experiences teach caution in promoting any specific school of thought. On the other hand, since articulators must be used when oral rehabilitation is undertaken, the dentist should strive to become proficient in the theory and operation of one or more of those available. All concepts of occlusion are open to discussion. Good results have been obtained even in complex complete oral rehabilitation cases by skillful, experienced dentists using different techniques with dissimilar articulators. However, all of these dentists were meticulous in carrying out all details of the technique and were aided by skillful technicians.

Oral health. Too often the examination of the mouths of elderly patients has revealed that, not only have a large number of natural teeth been retained, but that their investing tissues are in good condition in spite of existing malocclusions. In others of this age group, teeth that had been extracted in youth and had not been

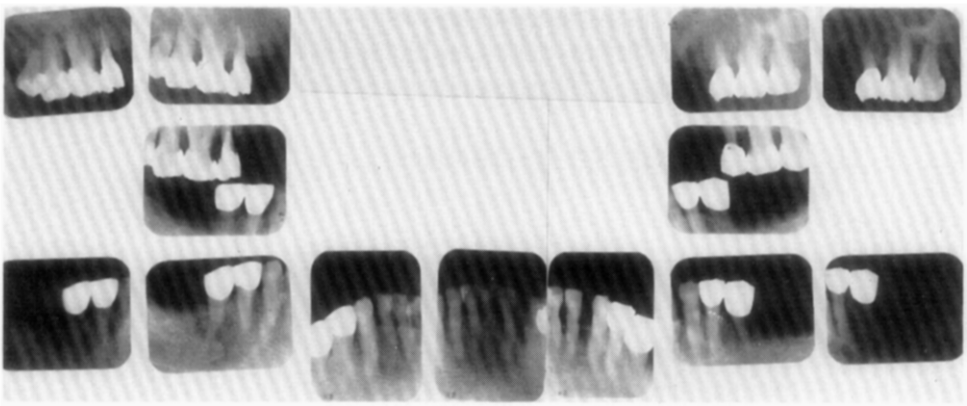


Fig. 13G. Rehabilitation of the mouth of a 44-year-old woman who had severe periodontal pathosis for many years: radiographs made 26 years postinsertion. The patient is now 70 years old. Other than the two molars that were deeply involved periodontally, no teeth have been removed since the treatment. (From Schweitzer, J. M.: Oral Rehabilitation, Problem Cases, vol. 1, St. Louis, 1964, The C. V. Mosby Company, pp. 175-178.)

replaced cause no serious interference with either structure or function. Although it would be presumptuous of me to draw any definite conclusions as to the cause of the longevity of teeth in these individuals, I cannot help but consider the systemic factor, rather than the interocclusal relationship, as the main cause of the good health and normal function. Given a good systemic factor, the interocclusal relationship seems to be of secondary importance. On the contrary, with an excellent interocclusal relationship but a subnormal systemic factor, deterioration will occur regardless of our efforts. The difficulty in finding the best solution to oral problems is that we do not know what constitutes a good systemic factor. It is not the local environment. We suspect that the small amount of time used in functional chewing cannot be responsible for the great amount of damage, as has been suggested. Idle grinding, clenching, and the gritting of natural teeth during a large portion of the day and night seem to be the chief offenders in dentitions whose deterioration is supposedly caused by a traumatic interocclusal relationship.

For the individuals just mentioned, it is important that the interocclusal relationship and the jaw position be coordinated to our specific idea of what constitutes a nontraumatic interocclusal relationship. Many ideas have been advanced for this, among which are the following.

1. Functional contact of only individual groupings of teeth at one time: This can be designated as segmental occlusion.

2. Multitudinous simultaneous contact of all teeth in centric occlusion and during functional movements (balanced occlusion): These contacts should be on or near the horizontal plane.

3. Contact of all the teeth only when they engage in the final 1.0 or 2 mm. of closure: This has been called the "terminal functional orbit."

4. Cuspid protection: In this concept the cuspids act to protect the posterior teeth from wear. The upper cuspids are so arranged in the final interocclusal relationship that they cause the posterior teeth to separate as lateral gliding movements are made.

5. Cuspid guidance: The cuspids act as a pattern for forming the entire posterior interocclusal relationship. In this theory, the cuspids act as guides and direct the formation of the posterior cusp carvings for the final work. Contrary to the theory of "cuspid protection," the cuspids and the posterior teeth have simultaneous contact in lateral excursions on the working side. This concept is based upon the theory of the functional chew-in.

OCCLUSION AND PERIODONTAL PATHOLOGY

Those who would ascribe tooth loss mainly to periodontal disease maintain that faulty occlusion is largely responsible for this periodontal pathology. Quite naturally, they prescribe the correction of faulty occlusion as the major aim of dentistry. Although I do not wish to deny that correct occlusion is desirable, many of my documented patient histories do not substantiate the contention that periodontal disease is caused by an incorrect interocclusal relationship. The etiology of many types of periodontal disease is still unknown. It is often referred to as the "systemic factor" because of its general rather than local background. Only in certain patients has periodontal pathology been eliminated by correcting the interocclusal relationship and/or the maxillomandibular relationship (Fig. 13). It has also been stated that the problem of articulation, is without a doubt, the basis of all our dental problems and that evidence is ever mounting that most of our periodontal problems are strictly those of occlusion.

Neither clinical nor laboratory investigation substantiates the above statements. Periodontists and orthodontists are still seeking the causes of the diseases and malocclusions encountered in their specialties, and insofar as prosthodontists are concerned, there is still considerable disagreement as to what constitutes ideal static and dynamic interocclusal relationships. Until more valid answers can be advanced, we must conclude that, at least for the present, the articulation of teeth is not the basis of all our dental problems. Dentistry has many aims. It strives to maintain optimal health in the stomatognathic system. This includes longevity and adequate function without premature deterioration. It also includes pleasing esthetics. To attain these goals, many services are required, such as efficient periodontics, orthodontics, oral surgery, prosthodontics, pedodontics, endodontics, and operative dentistry. Dentistry does not distinguish one area as being more important than another.

SUMMARY AND CONCLUSIONS

Is not all this enough to keep conscientious dentists busy without subjecting them to the ramifications of fully adjustable articulators and intricate occlusal theories? Let us not confuse experience and good judgment plus ability with the validity of this or that occlusal concept. In addition, we must give due credit to the important role played by our technicians. Their experience and ability play an important part in the successful outcome of our endeavors. Perhaps what I have said might be regarded as a form of empiricism restrained by reason. I prefer to permit the discordant data to speak for itself. With the evidence of my life's work, to me the problem of dental occlusion is still "unfinished business."

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