





1978  
YEAR BOOK OF  
**DENTISTRY**



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# The YEAR BOOK of **Dentistry** 1978

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*Professor and Chairman of Oral Surgery, College of Dentistry;  
Chairman, Department of Dentistry, University Hospitals;  
Clinical Professor of Oral Surgery, College of Medicine,  
University of Iowa; National Consultant, Oral Surgery, to the  
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*Professor, Department of Removable Prosthodontics, and  
Director of Research, Training and Program Development,  
College of Dentistry, New York University*

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## Current Literature Quiz

The significant advances described in this YEAR BOOK introduce new diagnostic and therapeutic procedures useful for treating conditions seen frequently in your practice. The following questionnaire will test your familiarity with the current literature. The correct answers are given in the back of the book.

1. Does the range of the most readily available size of anterior artificial teeth duplicate the size and range of natural teeth?
2. Is counseling about nutrition useful and readily acceptable by patients when provided by dentists and hygienists?
3. Do currently available soft lining denture materials have a clinical longevity equal to hard methyl methacrylate resins?
4. Do Dolder bar-type connectors joining roots for overdentures distribute occlusion forces more effectively over ridge areas than if the roots were left unconnected?
5. Do denture cleansing agents corrode nonprecious metal portions of removable dentures if dentures are soaked overnight for 8 hours?
6. Is it generally advisable to modify patients' old and defective removable partial or complete dentures, using them as interim appliances to induce changes in vertical dimension, centric relation and esthetics?
7. Can margins with 30- and 40-degree bevels from a plane perpendicular to the tooth surface for gold inlays be finished and polished more effectively than butt joints at 90 degrees to the tooth surface?
8. Should aging patients requiring comprehensive dental care including surgical, restorative and prosthodontic services have an incremental treatment program with reevaluation after each treatment phase to determine their levels of biologic, psychologic and socioeconomic coping skills?
9. Are patients more sensitive and able to discriminate small differences in thickness of occlusion marking papers when differences are extremely thin at normal occlusion heights than when the mouth is wide open in an open bite or overclosed vertical dimension?
10. Is placement of the upper and lower anterior artificial incisors



- with appropriate horizontal and vertical overjet essential to induce the sibilant speech sound "s"?
11. Do high-speed rotary diamond stones with water create increasing pulp changes, such as extravasated red blood cells and other signs of inflammation, the closer the grinding is to the pulp?
  12. Are tapered clasp arms in removable partial dentures more vulnerable to fracture and fatigue with wear than untapered clasp arms?
  13. Are role modeling techniques suggested as a superior substitute for the "tell, show and do" approach?
  14. In his article on communication, does David Chambers suggest asking a child to repeat in his or her own words what was said?
  15. Doctors White and Tsamtsouris believe that tomography should not be considered as a substitute for clinical examination and conventional intraoral radiography. True or false?
  16. Acid etching patterns in primary teeth tend to show the same variations as in permanent teeth. True or false?
  17. In a study of injuries to teeth, a lower incidence of subsequent pathologic change was found in permanent teeth whose roots were developing at the moment of injury than in teeth with closed apices. True or false?
  18. The ameloblastic fibro-odontoma is more aggressively invasive than the ameloblastic odontoma. True or false?
  19. Driscoll et al., in reporting effects of caries reduction through use of phosphate-fluoride chewable tablets, suggest that this is a simple, practical method for implementation in schools from the primary grades through high school. True or false?
  20. In discussing cariostatic mechanisms of fluorides, Ericsson indicates that topical action of fluoridated water may be greater than the systemic effect. True or false?
  21. The article on microleakage around pit and fissure sealants suggests a limitation of their use because of this problem. True or false?
  22. In a study of parent-child similarities in dental caries rates, it was found that father-child similarities were greater than mother-child similarities. True or false?
  23. Is there a single cavity liner that will seal the dentinal tubules and the cavity margin?
  24. It has been demonstrated that burnishing an amalgam restoration will produce margins that are comparable to those of a restoration that has been carefully polished. True or false?
  25. In the treatment of inflammatory periodontal diseases, is it important that any necessary surgical procedures be accomplished before an acceptable level of plaque control is achieved by a patient?

26. Vitamin C deficiency does not initiate gingival inflammation, but may modify the tissue response to microbial agents. True or false?
27. Will a composite resin with a low viscosity penetrate into an etched enamel surface significantly better than one of a high viscosity?
28. The most common reason given for the failure of a restoration is the presence of recurrent caries. True or false?
29. The sugar fructose is noncariogenic and should be recommended to patients as a substitute for sucrose. True or false?
30. The panoramic radiograph is extremely diagnostic for detecting proximal caries and should replace the usual periapical and bite-wing radiographs, resulting in less radiation exposure to patients as well as decreased costs. True or false?
31. Has a 5-year success rate of over 50% been reported for various types of endosteal implants?
32. A study that evaluated the quality of dental radiographs submitted to a third-party carrier noted that a high percentage of these films was of such poor quality that the films were not diagnostic. True or false?
33. Do the submandibular salivary glands often exhibit focal areas of adenitis in adults?
34. What is forensic pathology?
35. How long an interval should be allowed between extraction of teeth and irradiation for head and neck malignancy?
36. Long-term hemodialysis may result in secondary hyperparathyroidism. What oral manifestation might one be most likely to see radiographically?
37. What benign tumor of the jaw easily may be mistaken for sarcoma?
38. Does leukoplakia ever disappear spontaneously?
39. Is widening of the periodontal ligament space frequently seen in patients with scleroderma?
40. Why should renal transplant patients receive preoperative dental evaluations?
41. Was the most common presenting complaint of a group of patients seen in a temporomandibular joint-facial pain clinic restricted jaw movement, pain in the face, mouth or neck, or clicking of the joint?
42. What are the most frequent signs and symptoms of the allergic patient?
43. When should pigmented oral lesions be excised?
44. Are laser beams useful in fixation of dental appliances to teeth?
45. The Gow-Gates local anesthesia technique provides complete coverage of the 3d division of the 5th cranial nerve with one injection. True or false?

46. Intravascular injections should be preceded by aspiration tests prior to administration of local anesthetics. True or false?
47. Can postoperative swellings be decreased by the intramuscular injections of 4 mg Decadron Phosphate?
48. Surgical perforation of the buccal mucosa and the buccinator muscle may allow the buccal fat pad to extrude into the surgical field. True or false?
49. Is interdental wiring the treatment plan of choice for acute temporomandibular joint pain problems?
50. Circumligation of lower dentures whenever available is usually a satisfactory method for immobilizing atrophic edentulous mandibular fractures. True or false?
51. Homologous grafts usually are preferable to autogenous grafts. True or false?
52. Arteriovenous shunts can be diagnosed and ruled in or out by good dental radiographs. True or false?
53. Gustatory sweating is never a complication of an oral surgery procedure. True or false?
54. Skin grafts are more hygienic intraorally than are dermal grafts. True or false?

## Oral Physiology

**Monitoring Mastication.** David M. Watt<sup>1</sup> (Univ. of Edinburgh) monitored several parameters of mastication by different techniques used separately and in combination. Gnathosonics is the study of sounds made by the masticatory mechanism. The snapping sounds of the teeth provide analogues of occlusion, but they are more difficult to interpret than the simple sounds of tooth contact. The monitoring system is illustrated in Figure 1. Gnathosonic records of mastication were made in 32 subjects. The records monitor the time course of masticatory events. Electromyographic records of the masseter muscles were made in 14 subjects chewing different foods. Ultrahigh-speed films of mandibular velocity were made with synchronous electromyographic and gnathosonic records to identify any change in velocity associated with the production of silent periods in masseter muscle activity. Two types of pressure transducer were used to monitor food pressure and tooth pressure (Fig 2). The latter was slightly less sensitive and indicated pressures beyond the maximum point of the food pressure transducer.

The closing phase of each masticatory stroke began with the mandible in its depressed position. Masseter activity was seen at the start of the closing movement, but the other channels were silent until contact with food occurred. The first sign of food contact was a gnathosonic sound, followed almost immediately by a rise in pressure in the food pressure transducer. The tooth pressure transducer showed a peak at the start of the squeeze phase, as the mandibular velocity diminished (Fig 3). The squeeze phase was characterized by relative silence in the gnathosonic record and maximal mandibular elevation. A separation phase, with a negative peak in the tooth pressure transducer, followed. The opening phase was characterized by silence in both pressure traces and in the masseter electromyographic and

(1) J. Dent. 4:271-278, November, 1976.

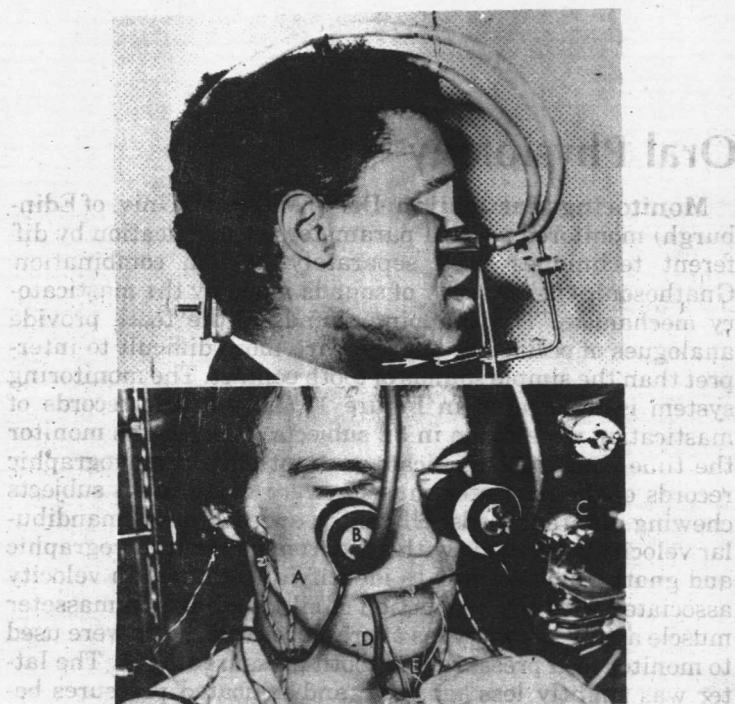


Fig 1 (top).—Gnathosonic monitoring of mastication. Opening of switch below chin (arrow) marks start of each chewing stroke on gnathosonic record.

Fig 2 (bottom).—Multichannel monitoring of mastication. A, masseter electromyographic electrodes; B, gnathosonic transducer; C, mandibular movement transducer; D, rubber tube of food pressure transducer; E, leads of tooth pressure transducer. (Courtesy of Watt, D. M.: J. Dent. 4:271-278, November, 1976.)

gnathosonic records, whereas the mandibular movement trace dipped to its lowest point. The amplitude of mandibular motion appeared to be inversely related to the degree of comminution of food. The number of silent periods in masseter muscle activity decreased as hard foods were comminuted.

**Subcortical Approach to Swallow Pattern Therapy.** Failures of tongue-thrust therapy programs have been observed, as has regression after therapy. Failures have been attributed in part to lack of motivation and to interpersonal factors in the patient-clinician relation. Mervyn L. Falk,

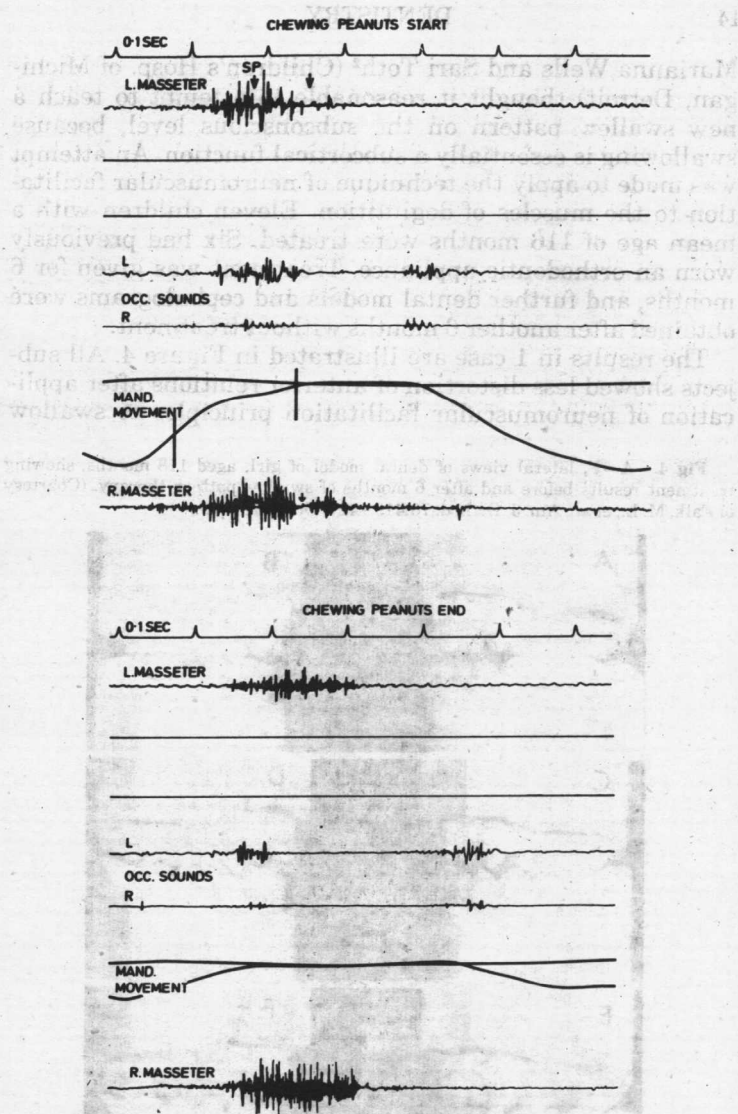
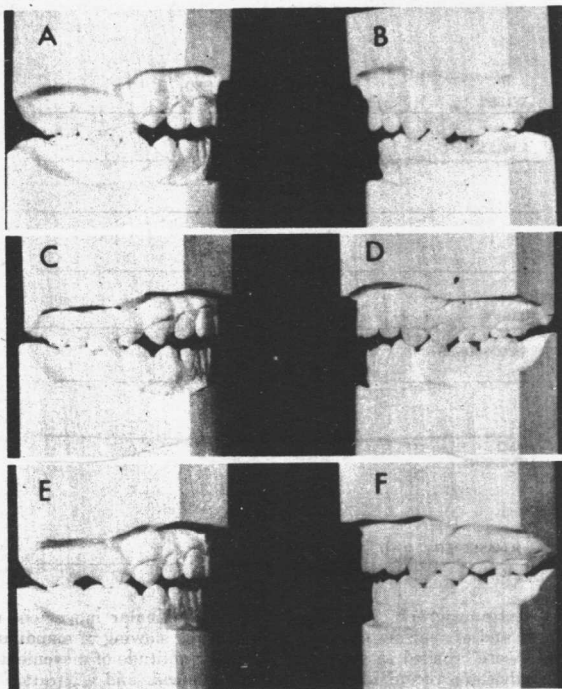


Fig 3.—Electromyographic, gnathosonic and mandibular movement records at start and near end of chewing peanuts. Note marked slowing of mandibular movement as nuts were crushed at start and smaller amplitude of movement at end of chewing. Gnathosonic record identified contact, squeeze and separation phases of mastication. (Courtesy of Watt, D. M.: J. Dent. 4:271-278, November, 1976.)

Marianna Wells and Sari Toth<sup>2</sup> (Children's Hosp. of Michigan, Detroit) thought it reasonable to attempt to teach a new swallow pattern on the subconscious level, because swallowing is essentially a subcortical function. An attempt was made to apply the technique of neuromuscular facilitation to the muscles of deglutition. Eleven children with a mean age of 116 months were treated. Six had previously worn an orthodontic appliance. Treatment was given for 6 months, and further dental models and cephalograms were obtained after another 6 months without treatment.

The results in 1 case are illustrated in Figure 4. All subjects showed less distortion of anterior relations after application of neuromuscular facilitation principles to swallow

Fig 4.—A—F, lateral views of dental model of girl, aged 118 months, showing treatment results before and after 6 months of swallow pattern therapy. (Courtesy of Falk, M. L., et al.: *Am. J. Orthod.* 70:419–427, October, 1976.)



pattern therapy. Nine of the 11 subjects showed no regression during the 6 months after treatment. The results were not apparent on examination of dental models, and reliable cephalographic data could not be obtained. The treatment involved the use of positioning, brushing, icing, pressure and resistance to stimulate the sensory receptors and obtain a motor response through the reflex arcs, without voluntary control by the patient.

Neuromuscular facilitation, by brushing, icing and pressure, applied in a home-training program for 6 months, was useful in swallow pattern therapy in this series. The regression observed in 2 subjects might have been prevented by use of a partial program of reinforcement during the second 6-month period; in which no treatment was administered.

► [A new approach to tongue therapy surely is needed. The suggestion that training of a new swallowing pattern should be at the subconscious level is not original, but is important because reflex swallowing is surely a subcortical function. Because of my own interest in the maturation of the swallow and the correction of the abnormal swallow, I welcomed this article. The title was most intriguing; unfortunately, the methods are not clearly given in the article and the original sources quoted are of less use than I had hoped. The method of quantifying results is not satisfactory and the sample is small. What a pity that such an excellent idea was reported too soon for clinical practicality! I am sure that we can count on further work from this group that will be useful. Let us hope the authors have the answer we all have been seeking for so long. — R.E.M.] ◀

**Effect of Auditory Sense on Interocclusal Microdiscrimination and Size Discrimination of Persons with Natural Dentitions and Full Dentures.** The auditory sense has been mentioned as a possible contributory factor in detecting bodies placed between the teeth. Pentti Laine and Hannu S. Siirilä<sup>3</sup> (Univ. of Helsinki) attempted to determine whether the auditory sense contributes to detecting thin bodies and thickness differences between natural and artificial teeth. Studies were done in 6 male and 6 female subjects, aged 15–41, with a healthy natural dentition; 12 artificial denture-wearers, 8 with full dentures in both jaws and 4 with upper dentures only; and 8 deaf subjects, aged 8–31, with healthy natural dentition. The degree of deafness in the last group ranged from 60% to 75%. Aluminum and tin foils of varying thicknesses were placed between the teeth, and contact sounds were eliminated with masking white noise.

(3) Proc. Finn. Dent. Soc. 73:27–31, February, 1977.



The mean threshold in microdiscrimination without masking noise was 0.012 mm with natural teeth and 0.033 mm with artificial teeth. The corresponding mean values with masking noise were 0.033 and 0.144 mm. The mean threshold with masking noise was about 3 times the threshold without masking noise in the natural-dentition group and about 4 times greater in the denture-wearers. The differences were highly significant. Deaf subjects had a mean threshold of 0.046 mm. Natural-dentition subjects had an error rate of 8.85% without and 26.15% with masking noise. Masking noise did not impair size discrimination in natural-dentition subjects with mouth openings of 10 and 20 mm, but impairment was seen with a 0.5-mm mouth opening.

It is concluded from these findings that the auditory sense contributes in detection of thin bodies placed between natural and artificial teeth.

► [This interesting study discusses another neurologic mechanism the dentist needs to observe when modifying the occlusion. The study indicating that adventitious sounds like doors opening or even possibly some psychologically sensitive spoken words can induce perceptual distortion of touch, texture and stereognostic stimulation. The study opens new opportunities for further investigation on sound localization and malocclusion, acoustic acuity discrimination and head posture, and even sound pollution like rock music and industrial noise in relation to occlusion traumatism. — S.I.S.] ◀

► ↓ The following two articles testing discrimination skills provided by the periodontal ligaments at different degrees of opening seem to contradict the findings in articles on sound stimulation and discrimination skills (see the preceding article). Unfortunately, the degrees of thickness tests were done at different degrees of opening relative to the role of periodontal receptors. Openings of 8–9.5 and 43–44.5 mm are used in one study and 2.0- and 2.5-mm rods in the other. The auditory test study used microdiscrimination tests ranging from 0.008 mm differences. The investigators found marked discrimination skills at these levels, which probably were not perceived as stimuli by muscle and joint receptors. However they also tested the effect of sound on wide openings of 20 and 30 mm and found at these levels of opening that the discrimination skills were not lost as at the minimal openings. It is suggested that the periodontal ligament is an important guidance mechanism at tooth contact levels of occlusion function, and the muscle spindle and other receptors are dominant at gross levels of jaw opening and occlusion function.

A further clinical implication of these studies is that occlusion records with natural teeth with an overdenture taken close to a vertical dimension approximating the patient's original position are more likely to be reproducible than one that is overclosed or overextended. In the overclosure or underclosure the muscles dominate the guidance and in the appropriate