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COVER

Virginia Dental Association Office Building
5006 Monument Avenue, Richmond, Virginia
EDITORIAL

Well, we finally have a home! An attractive, two-story colonial-style office building! Your Executive Council and House of Delegates have unanimously approved purchase of the building pictured on the cover. Settlement was made September 30, 1988. Although the asking price was $290,000, the Committee appointed by Clark Brown, (Steve Bissell, French Moore and Ken Copeland, Chairman) negotiated until the owners settled for $244,000. A great deal of effort went into this purchase and your officers hope you share their pride in this delightful and functional center for VOA activities.

Your Executive Committee anticipates renting out part of the first floor to help defray the cost. Considering the annual rent now paid for our existing location, it is estimated that our purchase will involve little or no additional out of pocket monthly expenditure. The property is in an excellent location (Monument Corporate Centre, 5006 Monument Avenue, Richmond, Va.) and the expected appreciation will allow us to look forward not only to a useful and efficient Virginia Dental Association Central Office but also to a good investment.

The lease on the present site expires in April, 1989 which will give ample time for painting, carpeting and minor renovations of the new location.

In the Spring, you are invited to come on by and visit your new home! Pat Watkins and your staff would enjoy seeing you and would be delighted to show you around!

A FIVE-YEAR DENTAL SCHOOL CURRICULUM
A CONTROVERSIAL POSITION

(Editor's note: In order to stimulate debate and to provoke discussion a controversial position will occasionally be taken by your editor. As always, your response is welcome.)

In this nation, dental educators do an outstanding job in producing young dentists. And yet, rumblings are heard. Private practitioners occasionally express concern that neophyte dentists could be better trained in the established clinical sciences (prosthodontics, pediatric dentistry, oral surgery, restorative dentistry, etc.). More than a few educators worry that newly-developing courses (cariology, community dentistry, geriatric dentistry, treatment planning, seminars, esthetics, implantology, etc.) are being “jammed” into an already crowded curriculum and may infringe on teaching time in other courses. It is clear that rapidly evolving science continues to vitalize our profession and is therefore absolutely necessary in the education of a dentist.

BUT: Does including the new mean demeaning the traditional? Do contem-
porary educational time constraints require the sacrifice of something of value? If so, should we not address the time constraint issue rather than deleting necessary clinical experiences for the dental student?

I suggest a five-year dental school curriculum, with the fifth year being devoted to clinical experience. Students would graduate with broadened clinical skills, improved judgmental and decision-making abilities and a better appreciation for and an understanding of private practice.

A concomitant evaluation of post-doctoral programs would also be in order. Oral and Maxillo-Facial Surgery has recently gone to a four year residency. It might be productive for Pediatric Dentistry to go to a three year program so as to enhance its hospital/general anesthesia training, especially in light of its excellent commitment to care for the handicapped. Periodontics is becoming more involved in IV Sedation/Anesthesia and in Implantology and might well give consideration to a three-year post-doctoral program.

There are obvious downsides to the concept of lengthening curricula:

1. Many view it as an impediment to recruitment, especially when we already have recruitment troubles. However, if we view our responsibility to be optimum patient care and if it takes five years to prepare students to develop their ability to deliver that care, then that objection may not be tenable.

2. I have been told that a few private practitioners might feel threatened by graduates of five year programs. These dentists might prefer to sacrifice the concept to protect their own image. As general dentists don't feel threatened by graduates of General Practice Residences (GPR), I would assume that such personal insecurities would not be a factor in supporting a five-year curriculum.

3. All dental schools must go to a 5 year curriculum. The competition for students, especially highly qualified students, is fierce. If only a few schools were to continue to give DDS/DMD after 4 years, applicants would flock to these schools and the entire concept would fail. Therefore, the accreditation mechanism of American Dental Association must mandate the change on a simultaneous and universal basis for all dental schools.

This concept, and the parallel ones of requiring a GPR or the establishment of a national one year dental “internship” are not new. However, the curricular problems are becoming more acute and the education of students is increasingly coming into question. I suggest that now is the moment for serious consideration.

Richard D. Wilson, D.D.S.
FITZHUGH FUND CONTINUES TO GROW

The William “Bill” FitzHugh Fund Committee wishes to express its sincere appreciation to everyone who has made memorial contributions to this fund. The endowment has received gifts totaling $16,830 to date, and continues to receive funds weekly. “We have received several gifts in memory of other individuals with the requests that the monies be designated to the FitzHugh Fund”, said Thomas C. Burke, Director, Office of External Affairs.

The classes of Dentistry ’88 and ’89 combined their efforts and funds to have a plaque made in honor of Bill which hangs in the Wood Memorial Clinic.

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CARING DENTIST'S COMMITTEE
Virginia Dental Association
P.O. Box 6906
Richmond, Virginia 23230-0906

CALENDAR OF EVENTS

(Mark your calendar now for these future meetings)

VIRGINIA DENTAL ASSOCIATION COMMITTEE MEETINGS
January 27–29, 1989, Hyatt Hotel, Richmond

VIRGINIA DENTAL ASSOCIATION COMMITTEE MEETINGS
June 9–11, 1989, Resort & Conference Center, Virginia Beach

VIRGINIA DENTAL ASSOCIATION 120th ANNUAL MEETING
September 21–24, 1989, Richmond Marriott Hotel

AMERICAN DENTAL ASSOCIATION 130th ANNUAL MEETING
November 4–9, 1989, Honolulu, Hawaii
EXECUTIVE DIRECTOR’S REPORT

By
Pat K. Watkins

IMPORTANT INFORMATION FROM ADA LEGAL COUNCIL

THIRD PARTY AUDIT OF DENTAL RECORDS

The claim form which is presented by the patient to the dentist, to be completed by the dentist and forwarded by the dentist or patient for reimbursement, almost universally contains an authorization for the dentist to release the patient’s dental records to the third party.

This provision protects both the third party and the dentist from a charge that the privacy of the patient has been invaded by release of the information in the dental records.

PPO, capitation and participation agreements commonly contain contractual provisions that require production of patient records or submission to audits for the records of plan members. However, except in those instances where the dentist has a contract with the third party, the dentist is under no obligation to submit records or to permit an audit by the third party.

Absent any agreement between the dentist and third party directly, the submission of a claim form with record release language does not in my opinion involve the dentist in a contractual agreement with the third party with respect to the patient’s records. Accommodating the patient by assisting the patient to file a claim with the third party is a very tenuous base on which to impose a contractual obligation on the dentist with respect to production of the patient’s records to the third party or to permit the entry of an agent of the third party into the dentist’s office for examination of records.

In sum, a dentist who has a third party’s auditor arrive and request access or copies of a patient’s records is free to produce those records after ascertaining that the patient has executed an appropriate release on the claim form or otherwise. However, where the dentist is under no direct contractual obligation with the third party and the third party has no court supported order of process for production of the records, the dentist is also free to refuse the request. Moreover, I can envision no set of circumstances where requests from the patient and/or third party, without prior agreement by the dentist, would require the dentist to disrupt the office schedule to produce dental records on demand and to permit an audit of those records in the dentist’s office.
Subjective Evaluation of Ridge Augmentation and Extension Procedures

Jeffrey N. Kenney, D.D.S.
Chief Resident, Medical College of Virginia
Dept. of Oral and Maxillofacial Surgery
Richmond, Virginia

Robert L. Campbell, D.D.S.
Professor, Medical College of Virginia
Dept. of Oral and Maxillofacial Surgery
and Anesthesiology
Richmond, Virginia

ABSTRACT

The prosthetic rehabilitation of edentulous patients with moderate to severe atrophy is challenging. Implants are very promising in many cases, but, for a variety of reasons, some patients are not implant candidates. The purpose of this study was to examine patients' subjective evaluation of other available options for ridge augmentation and/or extension. Four groups surveyed included patients who underwent either: 1) Mandibular vestibuloplasty with split thickness skin graft (STSG); 2) Mandibular hydroxylapatite (HA) augmentation; 3) Mandibular HA augmentation followed by mandibular vestibuloplasty and STSG; or 4) Maxillary HA augmentation. The vast majority of the patients in all groups were glad they underwent the procedure (86–100%) and most (78–100%) felt their denture wearing ability was greatly improved. Only painful post-operative mental nerve dysesthesia was associated with patient dissatisfaction. The results suggest that patient acceptance is high and all of these procedures are satisfactory options in selected cases.

INTRODUCTION

The prosthetic rehabilitation of edentulous patients with moderate to severe mandibular atrophy has always been challenging. An adequate set of dentures is often difficult or impossible to fabricate in many patients with class III and IV mandibles without prior surgical intervention. A class III mandible is defined as one with complete alveolar ridge resorption down to basal bone, while class IV patients have resorption of the basal bone, producing a pencil-thin mandible. Procedures to augment and/or extend the available ridge have met with various degrees of success. Implant procedures are now proving to be promising, however cost is sometimes prohibitive. The purpose of this study is to examine patients' subjective evaluation following either mandibular vestibuloplasty with split-thickness skin graft (STSG), mandibular hy-
droxyapatite (HA) augmentation, or mandibular HA augmentation followed by vestibuloplasty with STSG.

MATERIALS AND METHODS

Patients from the Medical College of Virginia who underwent the various preprosthetic procedures from 1984–1986 were sent questionnaires (Table 1) for a subjective post-operative evaluation of each procedure. Thirty questionnaires were returned. Four groups surveyed included: I) mandibular vestibuloplasty with STSG (Fig. 1); II) mandibular HA augmentation (Fig. 2); III) mandibular HA augmentation followed by mandibular vestibuloplasty and STSG; IV) maxillary HA augmentation (Fig. 3). Responses were recorded for each question and results totalled and compared between groups. Panorex radiographs were also evaluated, and the shortest mandibular midbody bony height recorded.

RESULTS

Group I patients had mandibular midbody height averaging 19.3mm, with a range of 12 to 27mm. Group II patients averaged 12.3mm body height, with a range of 8 to 16mm. Group III patients averaged 11.8mm, with a range of 8 to 19mm. Table 1 summarizes the results for each question by category.

DISCUSSION

When patients with severe mandibular atrophy (i.e. inadequate vestibular depth or poor ridge form) cannot have a satisfactory prosthesis constructed, there are several pre-prosthetic surgical options. Implants (e.g. transmandibular and endosseous) are rapidly gaining acceptance, but patients often cannot afford this treatment modality. Also, there are relative contraindications to implants, including patients not motivated to care for implant superstructures or those with poor healing potential. Another procedure, bone grafting, had been used more in the past, but there is a predictably high degree of graft resorption within the first several years, again leading to difficult prosthetic rehabilitation.

In light of these problems, the practitioner must still have other options. Mandibular vestibuloplasty with STSG has long been a standard treatment for mandibular atrophy. Bell surveyed 21 patients and approximately 95% were highly satisfied with the procedure and would elect to have the surgery again. In our series, 13 patients underwent mandibular vestibuloplasty with STSG alone. Approximately 92% were glad they had the procedure, and 78% stated their denture wearing ability was greatly improved. Skin grafting procedures were generally used for patients having 15mm or more of mandibular height (mean height = 19.3mm) and adequate ridge contour.

Patients undergoing mandibular HA augmentation alone had severe class IV atrophy with a mean posterior height of 12.3mm. There was generally posterior mandibular troughing present. This deformity was frequently caused by previous long term denture function. Ridges of this type usually have insufficient basilar bone to place endosseous implant
bodies to offer posterior support. In these cases augmentation was done in conjunction with simultaneous lowering of the buccal vestibule. A lip-switch technique (Fig. 4) was used to create a buccal sulcus in conjunction with the augmentation. Approximately 86% were glad they had the procedure, and 83% reported greatly improved denture wearing ability. Cranin et al.\textsuperscript{5} reported that about 66% of patients undergoing HA augmentation demonstrated better denture acceptance.

Patients undergoing mandibular HA augmentation with a secondary vestibuloplasty with STSG also had severe atrophy (11.8mm mean posterior body height). These patients generally had an inadequate lingual vestibular sulcus, and therefore required an eventual vestibuloplasty. In these cases, the HA was placed via a subperiosteal tunnel and the HA particles were kept below the periosteum (to allow for an easier secondary procedure dissection). The secondary procedure, a skin graft vestibuloplasty done under general anesthesia, was performed 3–4 months later. Of the patients in this group, 83% felt their denture wearing ability was greatly improved.

These procedures are not without morbidity. At the time of the survey, 46% of Group I patients, 57% of Group II patients, and 71% of Group III patients had subjective signs of residual alteration of mental nerve sensation. This is consistent with other reported results [6] and as Desjardins points out, some degree of continued paresthesia is not uncommon. A plausible explanation for the 71% of Group III patients with residual paresthesia is that these patients were subjected to two surgical procedures. It is important to note the paresthesia does not appear to be related to patient dissatisfaction, and many of these paresthesias will probably resolve over time.

Interestingly, all of the patients in all groups who were unhappy with the surgical result or who felt their denture wearing ability was unimproved or worse had post-operative dysesthesia (painful alteration of sensation) of the mental nerve. Thus, it appears that dysesthesia is positively associated with patient dissatisfaction. It is not possible to predict which patients will develop dysesthesia, but this possibility should be included in pre-operative informed consent, and care should be exercised in surgical manipulation of the nerve.

In addition to the mandibular procedures, five patients had maxillary HA augmentations. Most of these patients had maxillary anterior atrophy with opposing natural teeth in the mandible. Of these patients, 100% felt their denture wearing ability was greatly improved. Patient acceptance is very high following the maxillary procedures.

**SUMMARY**

The results suggest that all procedures discussed are acceptable in indicated cases. The majority of patients in all groups were positive (86–100%) and would have the procedure again, and most (78–100%) felt that their denture wearing ability was greatly improved.
Mental nerve paresthesia is relatively common, but does not seem to be associated with dissatisfaction, while dysesthesia is associated with dissatisfaction.

Along with the known advantages of HA augmentation including lack of resorbability and donor-site morbidity, this study suggests that patient acceptance is high. This is important, especially for those patients, who, for a variety of reasons, are not implant candidates.

Reprint Requests to: Robert L. Campbell, D.D.S., Professor, Medical College of Virginia, Dept. of Oral and Maxillofacial Surgery, Box 566, Richmond, Virginia 23298.

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<td><strong>Group Number</strong></td>
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<tr>
<td>1. Are you glad you had it done?</td>
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<td>2. Considering everything, would you go through the procedure again?</td>
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<td>3. Which part of the procedure or follow-up caused you the most discomfort? (Choose one or more answers):</td>
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<tr>
<td>a. donor site from where the bone or skin graft was taken</td>
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<td>b. mouth during first week following surgery</td>
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<td>c. actual removal of the stent of bolsters approximately one week to 20 days following surgery</td>
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<td>d. other</td>
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<td>4. Was there any change in feeling in your tongue, lip, or chin following surgery?</td>
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<td>5. Do you still have any change in feeling in your tongue, lip, or chin?</td>
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<td>Which one:</td>
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<td>—lip</td>
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<td>6. Did you have any pain associated with your lower mouth, tongue, lips, or chin before surgery?</td>
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11
7. Do you now have any pain associated with your lower mouth, tongue, lips, or chin?

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8. Please rate your ability to wear dentures: (choose only one):

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<th>a. greatly improved</th>
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9. Do you feel your lower gum has less feeling in it than your upper gum?

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10. Do you have any pain or change in sensation at the place from where the graft was taken?

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11. Does having skin in your mouth bother you?

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12. Does the way the area looks from where the skin graft was taken bother you?

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<td>85%</td>
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Bibliography

FIGURE 1
A. Preoperative intraoral view of patient with mandibular atrophy; note inadequate vestibular depth.
B. Same patient after mandibular vestibuloplasty and skin graft; note significant improvement of vestibular depth and quality of denture-bearing area.
FIGURE 2

A. Preoperative radiograph demonstrating moderate to severe mandibular atrophy; note suggestion of posterior troughing.

B. Postoperative radiograph after mandibular HA augmentation; note improvement of mandibular height.
FIGURE 3
A. Preoperative radiograph demonstrating severe maxillary anterior atrophy and mandibular posterior atrophy.
B. Postoperative radiograph showing maxillary anterior and mandibular posterior HA augmentation.
FIGURE 4: Schematic of mandibular HA augmentation; diagram represents frontal section through the mandibular mid-body region, with buccal mucosa on left and tongue on right.

A. Preoperative view demonstrating inadequate buccal vestibule and mandibular troughing.

B. Intraoperative view showing incision through buccal mucosa, and incision and elevation of mandibular periosteum to expose the atrophic crest of the ridge.

C. Postoperative view of HA particles augmenting the crest of the ridge and simultaneous vestibuloplasty accomplished by suturing the buccal mucosa flap to the lateral mandibular periosteum.
In recent years there has been an explosion in the knowledge and the technology of orthodontics that makes it possible to achieve a higher level of excellence in treatment than ever before.

- Acid-etch adhesives provide the means to place orthodontic brackets directly on the enamel without fitting a stainless steel band around the tooth.
- Miniature brackets are now available that further reduce the metallic look of past appliances.
- Clear or translucent ceramic brackets provide excellent esthetics, with no compromise in fine movements of the teeth, as was true of plastic brackets.
- Lingual brackets are the ultimate esthetic appliance. They are virtually invisible to all but the most penetrating eye. Many orthodontists are achieving excellent results with lingual appliances. However, everyone who has used them will testify they are considerably more difficult to use than labial appliances.
- Archwires, made of new alloys with very high moduli of elasticity, have been developed that can be used to deliver light forces over a wide range. Made of Nickel and Titanium, they resist distortion to virtually all forces. Actually, that is also a disadvantage, because they cannot be reshaped from their original form. Despite this, they are very useful in the early stages of treatment.

Functional appliances have made significant inroads in American orthodontics. Formerly limited to European countries, allegedly for economic reasons, American therapists are using them for initial correction of a wide range of problems. While there have been no reports in refereed journals to support the claims of advocates that they cause greater mandibular growth, functional appliances appear to be effective clinically in correcting Class II malocclusions. In the near future, definitive research reports on their mode of action and ultimate influence of the teeth and supporting bones should appear.

Until approximately fifteen years ago, the only surgical procedure on either jaw was the mandibular osteotomy. Now, as a result of research on the blood supply of the maxilla, a broad spectrum of surgical procedures can be performed on the maxilla, to raise or lower it, to advance or retract it, or to widen it in the transverse plane.

Currently, orthodontists, oral surgeons and primary care dentists can work together to plan treatment that corrects the offending bones. Formerly, all Class III's, for example,
had the mandibles set back. Now, if the problem is caused by a retruded maxilla, that bone can be advanced.

Surgical orthodontics has facilitated obtaining a new level of excellence in children and adults. Like any new modality, there may be a tendency to overuse it. The challenge is to use this powerful instrument only on those cases that cannot be treated successfully with conservative orthodontics.

An area that is receiving an enormous amount of attention is the influence of orthodontic treatment on Temporomandibular Joint health. Numerous research reports confirm that the incidence of TMJ problems is the same in orthodontic and non-orthodontic populations. In his review Moyers states, "It may still be debated whether or not orthodontic treatment reduces TMJ disorders, but it surely cannot be argued any longer that orthodontic treatment creates TMJ disturbances." Despite this, some lecturers claim that orthodontic treatment is a significant iatrogenic cause of TMJ problems when the treatment includes bicuspid extractions, or the use of headgear or Class II elastics.

We know a great deal more about the TM joints in health and disease than ever before. It appears that any treatment that distalizes the condyles in the fossae risks precipitating painful symptoms and possibly limitation of movement. Also, pre-existing conditions can be exacerbated by such movement. Opening clicks without painful symptoms may represent an early stage of TMJ dysfunction. Blaufstein notes, "Jaw joint sounds are ubiquitous. Various investigators have described their incidence in the adult symptomatic and asymptomatic population as ranging from 39% to 80%." Brandt has reported that patients with deep overbites have a high incidence of joint sounds and TMJ disorders. Stress and its accompanying bruxism appear to be important in the progress of TMJ problems. It may explain why 80% of patients presenting with TMJ symptoms are young (20–40) and female. In today's society, women are expected to be superwives, supermothers, and superemployees. Apparently the TMJ’s are bearing part of the burden of American women’s impossible triple role.

Anterior repositioning splints that cover the entire occlusal plane are important adjuncts to maintain joint comfort during acute episodes of pain. The final occlusion upon completion of orthodontics (or crown and bridge procedure) must allow the condyle to seat in a centered position in the fossa. The contemporary orthodontist must stay abreast of advances in the understanding of TMJ function to be certain that his treatment is consistent with healthy function.

Simplistic condemnation of bicuspid extraction, use of headgear or Class II elastics is without foundation. Literally millions of patients have been treated successfully with these methods.

There has been renewed interest in some circles in second molar extractions, in part reflecting an attempt to find an alternative to bicuspid extraction. In carefully selected cases this approach can be reasonable, and the third molars can erupt in good func-
Advocates of this concept should be prudent with the forceps, and apply the treatment only to appropriate cases. All extractions for orthodontic purposes should be carefully reviewed to be certain they are clearly in the patient's best interest, both for occlusal and facial esthetic considerations.

With increased interest in facial esthetics, as manifested by the growing numbers of adults seeking orthodontic treatment, and the increase in orthognathic surgery, orthodontists are prescribing fewer extractions than just a few years ago. There is a recognition that bicuspid extractions in patients with straight facial profiles can result in a "dished-in" face. Currently flat faces with moderate crowding are likely to be treated with interproximal stripping and with no extractions. This shift in philosophy does require prolonged retention. Fortunately the acid-etch adhesives provide a means to bond flexible coaxial wires on the lingual surfaces to prevent return of the crowding or rotations.

For over 100 years there has been a debate among orthodontists whether mouthbreathing alters facial growth. In recent years there have been numerous reports supporting the thesis that nasal airway obstruction, leading to mouthbreathing, can cause increased vertical facial growth. To reverse this tendency, adenotonsillectomy, allergy treatment and rapid palatal expansion have been recommended. Primary care dentists are in an excellent position to identify young children at risk for the Long Face Syndrome. Early referral for ENT and allergy consultations presents the best possibility for prevention. Recently small and powerful repelling magnets have been used on the posterior occlusal surfaces to intrude the posterior teeth, reducing the anterior face height, and eliminating the need for surgery.

Magnets are being used in other orthodontic applications, principally to move posterior teeth distally. Early reports are promising, although magnets follow the inverse square law, leading to rapid drop-off in force as the teeth move. Springs, on the other hand, obey Hook's Law, which is linear. As the tooth moves, the force decays more gradually.

With the retention of more teeth among older citizens, orthodontics can provide a useful service in preparing mouths for extensive restorative work. Uprighting tipped abutments, consolidating spaces and correcting rotations are among the services orthodontists can provide, allowing the restorative dentist to perform excellent dentistry.

Another area where orthodontists and primary care dentists should work together involves correction of tooth size discrepancies. There is a precise size relationship that must exist between the maxillary six anterior teeth and the lowers to insure a proper overbite/overjet occlusion. The anterior segment is like two concentric sections of a circle whose diameters are precisely related. Next to the third molars, the upper laterals are most variable in size. With acid etch techniques available, the orthodontist or interested GP can open space mesial and distal to the laterals to allow placement of composite to adjust the
size of the undersized lateral. This technique is very useful to eliminate central diastemas where bonding of the centrals would result in overly large teeth. In some TMJ cases, this technique can provide just enough overjet for the mandible to advance to a more centered and non-click position.

Increasingly it is being recognized that teamwork between primary care dentists, orthodontists, periodontists and oral surgeons provide the finest opportunity for excellence in dentofacial health and esthetics. As decay continues to decline, the team approach should become more popular in meeting the health and esthetic requirements of the public.

References


INTRODUCTION

The goal of successful endodontic treatment is to fill the entire root canal system completely to the prepared length with nonirritating hermetic sealing agents and to seal the access opening with a permanent restoration. Historically, a variety of materials and techniques have been utilized to obturate canal systems. For many years silver cones were used due to their ease of placement, rigidity, and radiopacity. Since Dow and Ingle reported that 53% of root canal failures were believed to have been caused by incomplete obturation of the root canal system, a great deal of research has been conducted to identify the ideal obturation materials and delivery methodology. Silver cones were identified as extremely cytotoxic and having poor sealing properties. Gutta-percha evolved as the most widely used root canal filling material due to its inertness, plasticity, solvent solubility, and sealing capability when used in conjunction with a root canal cement. Many techniques have been developed to utilize gutta-percha in the filling of root canals. To date, the standard to compare new technology is the lateral condensation method. The purpose of this article is to update the general practitioner of the current materials and methods in canal obturation.

A. THERMOPLASTICIZED GUTTA-PERCHA

Most dentists who perform endodontic treatment for their patients have probably at one time or another said, “there has to be a better and easier way to fill canals other than lateral condensation of gutta percha”. Schilder advocated vertical condensation of gutta-percha. He used heated instruments to soften the gutta-percha and then plunger pressure to condense the gutta-percha into the root canal system. This method achieves a greater density of gutta-percha in the root canal system than lateral condensation. This system is significantly better when used in conjunction with a root canal sealer. Vertical condensation of gutta-percha is not widely used by general practitioners probably because few schools teach the technique. The technique is
somewhat difficult to master and is time consuming especially during the learning period.

In 1977, Yee et al. introduced a special gun (Whaledent International, New York, NY) to inject-molded gutta-percha heated to 160°C to fill root canals. Studies showed no apical leakage, excellent adaptation to the root canal walls but overfilling was a problem if the apex was open.

In the late 1970's McSpadden introduced the thermo-compaction method of generating heat in the root canal. His self-study courses for thermatic condensation of gutta-percha were conducted across the country during the early 1980's. There was a great deal of early interest in the McSpadden Compactor but frequent overfills and lack of support from dental educators probably contributed to this method's lack of acceptance.

Presently there exist three delivery systems which utilize thermoplasticized gutta-percha: (1) the Obtura technique (Unitec Corp., Monrovia, CA); (2) the Ultrafil system (Hygenic Corp., Akron, OH); and (3) the Endotec system (Caulk/Dentsply, Milford, DE).

1. Obtura Technique

The Obtura delivery system is often described as a high-temperature method to thermoplasticize gutta-percha. Gutmann describes the method of heating the gutta-percha to approximately 160°C in an insulated chamber prior to its injection through highly thermal conductive silver needles. Once injected into the prepared system, with root canal sealer the softened material is condensed until the heat dissipates and the material hardens. There have been several questions about the system; concern over the injection of highly heated material (160°C), volumetric shrinkage of heated gutta-percha as it cools, and the use of additional root canal sealer during compaction. Further research regarding these concerns are warranted, however, recent studies indicate that root canals can be obturated safely and efficiently using this system.

2. Ultrafil System

The Ultrafil delivery system is often described as a low-temperature method of thermoplasticized gutta-percha. The system was first introduced and described by Michanowicz and Czonstkowsky. The gutta-percha is heated (70°C) and injected into the root canal system with or without root canal sealer and is not routinely vertically condensed. George reported that if there was an apical barrier (patency #10) then there was little likelihood of extrusion of gutta-percha beyond the working length. It should be noted however that none of his specimens were molar teeth. The Ultrafil system is relatively easy to use, has excellent canal wall adaptation, and has good apical sealability. The gutta-percha used was the same that Hygenic uses for their cones but the formula has been changed recently because the gutta-percha was too tacky. The newer formula appears to be much improved.

3. Endotec System

The Endotec delivery system is quite different. It is best described as
a warm lateral condensation technique. The Endotec Condenser is a cordless handpiece with quick change tips (spreaders), pushbutton controlled heating element, and rechargeable batteries. The technique is like lateral condensation except the spreader is warmed (operator controlled) so that each accessory cone coalesces and fuses with the master cone, etc. This produces excellent adaptation to the canal walls and a more dense and homogenous filling. The system is very new so little has been written about it. Authors experience—frequently pull the master cone and accessory cones out when removing the hot spreader. Probably the lack of experience with the system caused this problem but basically it is not faster than lateral condensation.

B. ROOT CANAL CEMENTS

Regardless of the numerous methods of obturation of root canal systems, the use of a sealer or cement in conjunction with solid and semisolid filling materials is advocated because sealers significantly improve the apical and lateral seal. Sealers are necessary to fill voids between the primary filling material and the dentin canal walls. Specific requirements and characteristics of an ideal root canal sealer were described by Grossman.

1. Zinc Oxide and Eugenol Cements

Grossman-type nonstaining zinc oxide and eugenol sealers are the most commonly used sealers with gutta-percha as the core material. Zinc oxide and eugenol sealers don't meet all the requirements of an ideal sealer but they are the standard of today's quality.

2. Calcium Hydroxide Cements

Calcium hydroxide is widely used in root canal and pulp therapy. Calcium hydroxide has been advocated for use in the induction of a calcific barrier at the site of root perforation, management of inflammatory root resorption, and as an intracanal medicament in cases where exudate control is a problem. Since calcium hydroxide has been shown to have these desirous results when placed in root canals, several new sealers containing calcium hydroxide are now commercially available.

a. Sealapex (Kerr Manufacturing Company, Romulus, MI)

Sealapex is a non-eugneol, polymeric resin, calcium hydroxide root canal cement. It has a hard surface set, increased radiopacity, promotes formation of reparative cementum, easy to mix and has a long working time. Alexander and Gordon showed that Sealapex produces an apical seal equal to that produced by the Grossman-type nonstaining cement (Roth Drug Company, Chicago, IL).

b. Calciobiotic Root Canal Sealer

(CRCS: Hygenic Corp, Akron, OH)

CRCS has 40% less eugenol than a typical Grossman-type sealer and calcium hydroxide for increased biocompatible root canal cement. It has a hard surface set, easy to mix, long working time and is dimensionally stable. Alexander and Gordon showed that CRCS when used in conjunction with gutta-percha laterally.
condensed produced more apical leakage than did Sealapex and Grossman-type cement. Rothier found no significant difference in leakage when compared with Sealapex and Kerr Pulp Canal Sealer (Tubli-Seal, Kerr Manufacturing Company, Romulus, MI).

G. APICAL DENTIN PLUGS

Intentional packing of dentin chips into the apical portion of the root canal was reported by Gollmer in 1936. Gollmer and many others recently observed that when clean dentin debris is packed in the apical 1–2 mm little or no inflammation is observed after 6 months and that most specimens demonstrate cementogenesis adjacent to the dentin filings. Yee concluded that the dentin plug may affect the density of the root canal filling by forming a matrix against which to condense. Patterson's study suggested that careful preparation of the root canal system 0.5 to 1 mm short of the radiographic apex will frequently create a dentinal plug. Since there is overwhelming evidence that the formation of a dentin plug in the apical 1–2 mm of a root canal is beneficial to periradicular repair, it is only natural that dentin plugs be utilized in cases of an open apex.

1. Technique for Placing an Apical Dental Plug

When the canal preparation has been completed and during drying with paper points it is concluded that the apex is open and there is no “apical stop” the following procedure should be followed. Use a #2 or #3 Gates Glidden bur in the dried canal and gently rub the cleansed canal walls (NOT furcation walls) in the middle third of the root to create loose dentin chips. Take a larger paper point than the last file used and push and sweep the dentin chips apically. The dentin chips are then compacted into the apical 1 to 2 mm by counter-rotation of a file 1–2 sizes larger than the last instrument used. The dentin chip plug is only considered adequate when a #15 or #20 file will not penetrate the barrier under strong pressure. Be reminded that the Working Length is now 1 mm less than before or 2 mm from the radiographic apex. This technique can be varied by using files to scrape the walls to create dentin chips or calcium hydroxide powder can be used instead of or in conjunction with dentin chips.

CONCLUSIONS

There are a number of new methods to obturate root canal systems. The low-temperature (70°C) thermoplasticized gutta-percha system looks very promising especially if there is a definite apical stop. The idea of utilizing “clean” dentin chips to form a biocompatible apical barrier appears to be the way of the future. With an acceptable method to create the apical barrier the utilization of thermoplasticized gutta-percha will find its place in endodontics. The root canal sealer of the 1990’s may well be formulated with calcium hydroxide. Future and long range results will be worth waiting for, but for now laterally condensed gutta-percha using zinc oxide and eugenol is a very acceptable standard.
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The presence of a supernumerary “fourth molar” is occasionally noted, but is particularly rare in the mandible. Even less frequent is the fusion of a supernumerary molar with the mandibular third molar. This condition may be overlooked or misdiagnosed radiographically, with the radiographic image being attributed to poor resolution, artifact, or technique error in the radiograph exposure.

CASE REPORT

The patient, a 17 year old Caucasian female, presented to the hospital dental service at Ft. Eustis, Virginia, for dental care. The dental examination revealed an impacted left mandibular third molar. The panoramic radiograph also revealed a widened distal pulp chamber and distal root canal of the third molar. (Figure 1.) Due to the radiographic indication of a large, possibly fused supernumerary tooth, the surgical flap design was enlarged to fully expose the tooth. The tooth was removed intact, at which time the tooth was noted as being a fusion of the mandibular third molar with a supernumerary molar. (Figure 2.)
Figure 2. Post extraction appearance of the fused third and fourth molars.

References


*Dr. Gobo is serving in the MACH Dental Clinic, Dental Activity, Fort Eustis, VA 23604
Our Spring Meeting broke all previous attendance records with a turnout of five hundred and six registered people to hear Dr. Gordon Christiansen. Dr. Christiansen lived up to his reputation as the number one dental speaker in the country.

Installed at our Annual Meeting on August 24, 1988 were: President—Leroy Howell, President-Elect—Jerry Clarke, Recording Secretary—Bud Zimmer, Treasurer—Chris Hamlin, Executive Councilor—Arnold Hoffman. There were two recipients this year for the first time of the prestigious Simmons Award for outstanding services to the profession: Pat Barham and Sonny Lefcoce.

Component One members again received many honors at the V.D.A. Annual Meeting in Roanoke.

Elected as fellows on the Virginia Dental Association were Truman Baxter, Arnold Hoffman, Sonny Lefcoce, Hugo Owens and Charlie Smith. Only six percent of the V.D.A. membership may be Fellows. Congratulations.

Harry Ramsey and Larry Cash were selected for the Pierre Fauchard Academy National Honor Society.

The following were presented with Life Memberships: Bob Adams, Larry Cash, Les Gore, W. B. Jones, Sonny Levy, Aubrey Reeves, Bill Stokes, and Tom Warrick.

Check your mail for flyers on the next Southeastern Dental Symposium in Williamsburg. An excellent program is planned. Bring your family for a pleasant weekend in Colonial Williamsburg.
Mark Twain once lamented that the coldest winter he ever endured was the summer he spent in San Francisco. Mr. Twain, were he alive, should have visited the Peninsula this past summer. Our component's dentists having just spent the past few weeks repairing their scorched lawns with what must surely be a collective ton of grass seed, now turn their attention to the new year. A smooth transition took place this past September as outgoing president Dr. G. Curtis Dailey passed the gavel to Dr. McKinley L. Price and his slate of officers and committee chairpersons.

At that first meeting of the fall quarter, Dr. Harry Simpson, VDA chairman of the Caring Dentist Committee, presented a film pertaining to substance abuse and the dentist. Our thanks go to Harry and his entire committee, both local and statewide, for their commitment and tireless efforts.

Upcoming general membership meetings will include October 11th, when we will host Wayne McMasters who will address the topic of "Physical Therapy and the TMJ Patient" and November 29th our annual Legislators Night.

Component II will be host to VDA Statewide continuing education course "Negative Emotions in the Workplace" presented by Charles B. Bissell to be held in Williamsburg on October 14th.

Ongoing committee work on the part of our CPR committee members will allow Peninsula dentists and their staffs to attend recertification courses on both November 5th of this year as well as January 14th of 1989. An organizational meeting of the Dental Health and Public Information Committee was held as co-chairpersons Dr. Gisela Fashing and Dr. Catherine Oden began coordinating NCDHM with the women's dental auxiliary, dental hygienists, dental assistants groups as well as local dental public health providers. Additionally, our component's constitution and bylaws are presently being revised by committee as we attempt to organize along the lines of state and national leadership. Continued encouragement to Dr. Erwin Cogan who chairs this committee.

For now, until Tahiti, so long.
COMPONENT III

SOUTHSIDE DENTAL SOCIETY

Kenneth E. Copeland, Jr.
Associate Editor

Congratulations to Pat Watkins, her Staff, and the Piedmont Dental Society on the success of this year’s Annual Meeting in Roanoke. The acquisition of the new office building for the VDA headquarters should prove to be a good move for the future of our Association. Dr. Ronald Jordan’s program on “Esthetic Composite Bonding—A Materials-Technique Update” was most informative and well attended.

We of the Southside Dental Society give our thanks to Dr. Larry Hensley on his fine job as our President for the 1987–88 term. We would also like to wish Drs. Bob O’Neill, Ray Meade and Jay Slagle the best of luck in their terms as our new officers.

We also need to mark our calendars for the upcoming Southside Dental Society meetings. On Tuesday, January 10th at 6:00 p.m., we will have our annual social meeting in conjunction with the dental auxiliary at our usual meeting place, the Holiday Inn Petersburg South. Dr. Gordon Prior will speak about family drug abuse. Spouses are definitely invited. The following month, on Tuesday, February 21st at 6:00 p.m., we will have our business meeting, again at the Holiday Inn.

I look forward to seeing you all there. Enjoy this wonderful fall.
The signs of Fall surround us. The nights are growing cooler and longer. The leaves are turning a multitude of colors before fluttering to the earth. Another sure sign of Fall is the accelerating activity of the Richmond Dental Society.

Our September meeting was held on the 8th to install the officers for the coming year. Dr. Lindsay M. Hunt, Jr. gave a presentation on the future of dentistry and Drs. Jeff T. Blackburn and Mike O. McMunn gave a presentation on the United Way.

Our program committee has been extremely busy compiling an excellent group for the coming year. Dr. Robert Steadman will speak on “Splint Therapy” in October. Dr. Joe Niamtu will speak on “Oral and Maxillofacial Surgery Update” in November. Our annual Christmas program for spouses featuring Madri-jazz from Lee Davis High School will be held in December. Dr. Steve Saroff will speak on “Periodontics of Tomorrow—Today—Laser Surgery and Implants” in January. Dr. Norman J. Marks will speak on “Posterior Composites” in February. Laboratory Night will be held starring local labs in March. Dr. Benita A. Miller will speak on “Periodontal Disease Activity—Some New Approaches to an Old Problem” in April. Coach Dick Tarrant will speak on “College Basketball” in May.


I would like to take this opportunity to welcome the new members to the Richmond Dental Society: Doctors Tom H. Chapman; Scott J. Farrell; Russell N. Mosher, Jr.; Edward L. Mustian, III; Paul A. Neumann; Andrew S. Norman; Richard G. Preston; Rebecca L. Rosier; James L. Stanley; and Paul L. Vitsky.

I hope everyone has a great winter, a Merry Christmas, and a Happy New Year!
The 119th Annual Meeting of the Virginia Dental Association was held at the Roanoke Airport Marriott Hotel and the Sheraton Airport Inn, Roanoke, Virginia.

Dr. Mike O'Keefe, Annual Meeting Chairman, from Salem and Dr. Dan Grabeel, Program Chairman, from Lynchburg, and the entire Annual Meeting Committee should be congratulated for an outstanding meeting.

Dr. Arthur A. Dugoni, President-Elect of the ADA, addressed the Opening Session of the House of Delegates. Dr. Dugoni projected a bright future for the dental profession in a time of changes and challenges which will be easier to deal with when a dentist is a member of organized dentistry. He praised the dentists in Virginia for having 90% membership in the ADA.

Dr. Ronald E. Jordan, Associate Dean of Clinical Affairs and Professor of Restorative Dentistry at the University of Western Ontario, Canada, presented an outstanding continuing education program from 9:30 AM to 5:00 PM on Saturday. The title of the course was “Clinical Update onesthetic Composite Bonding: Techniques and Materials.” If you missed this program, I strongly recommend you try to attend any course he presents. Dr. Jordan was excellent.

On Sunday morning, Dr. James H. Gaines, Sixteenth District Trustee, presented the trustee report on what is happening in our district and at the ADA. Dr. Gaines presented the following conceptual statement—Imagine where each of us would be without the VDA and the ADA and had to deal with the problems facing the dental profession on an individual basis.

On Sunday morning during the presentation of certificates, Dr. Tom Upshur was presented with a silver bowl engraved as follows: Founder of the VDA Fellows—Presented by the Fellows in Appreciation September, 1988.

Dr. Fred G. Alouf, Jr. was named a VDA Fellow. Drs. Marvin Midkiff, Mike O'Keefe and Garrett Hurt were inducted into the Pierre Fauchard Academy. Dr. R. Wayne Burnett was installed as the President of the Piedmont Dental Society.

Dr. James E. Johnson, Jr. from Bedford, Member of the Piedmont Dental Society and the Lynchburg Dental Society was elected President-Elect of the VDA. Jim has been a friend for many years and we are duly proud of him.

Congratulations to these outstanding member dentists who were recognized at the VDA meeting.
August in Abingdon is always exciting, entertaining, and hospitable. With the Highlands Festival in full swing exhibiting crafts, arts, and antiques, the Barter Theater and Playhouse offering the finest plays, Abingdon becomes more attractive than ever. What a setting for a VDA sponsored program on “Dental Insurance” by Dr. Tom Limoli. We of Southwest Virginia and our guests were so blessed August 12, 1988.

The following Component Officers were also elected at that same meeting: President—Donald Martin; President-Elect—Glenn Young; Vice-President—John Lentz; and Secretary-Treasurer—French Moore, III.

Congratulations to Doctors Pete Mowbray and Carole Pratt from our Component who were recently inducted into the Pierre-Fauchard Academy at the Annual Meeting of the Virginia Dental Association.

On a sad note, we would like to express our sorrow and condolences to the families of Dr. Lewis R. Semones, Radford, and Dr. Paul K. Kapp, Galax, who died during 1988.
Greetings! The Shenandoah Valley Dental Association held our fall meeting in Charlottesville at Boar's Head Inn on August 19. There was a good sized crowd at the meeting which was highlighted by a presentation on Periodontal Therapy 1988; Dogma or Fact by Dr. Sigmund Stahl, Professor and Chairman of Periodontics from New York University.

The Component was honored to have Mrs. Pat Watkins (Executive Director of the VDA) present and she spoke to those assembled on several dental matters of statewide interest. Among the topics she discussed were the following: in the future, registration of dental x-ray machines will be required. This registration will be done in conjunction with the machine’s inspection and the fee will be $5 a year per machine; the VDA is investigating the possibility of purchasing a building; OSHA has issued a directive requiring dental offices to keep a record book showing dates of training related to infection control and hazardous material and signed by the employees; legal counsel has advised that hard copy records are better records than those generated by a computer in malpractice suits.

At the conclusion of the business meeting, Dr. Raleigh Watson, Jr. installed the new component officers: Dr. Thomas Gromling-President; Dr. Steven L. Saunders—President-Elect; and Dr. J. Darwin King—Secretary-Treasurer. Congratulations! Dr. Gromling presented a certificate of appreciation to outgoing President Roger Troyer for the work he has done for the component during the past year.

The Shenandoah Valley Dental Association will host Dr. B. Ben Bissell for an all-day continuing education program at the Sheraton Hotel in Harrisonburg on Friday, March 3, 1989. The topic for discussion will be “Managing Change and Stress”. The program is scheduled from 9 am until 3 pm and is designed for the entire office team. Fees are as follows: $20—dentists and auxiliaries in Component 7; $50—dentists outside of Component 7; and $30—dental auxiliaries outside of Component 7.

Registrations will be accepted on a first-come, first-served basis. The registration deadline for this course is February 24, 1989. The Office of Continuing Education at VCU/MCV School of Dentistry is cosponsoring this program, and registration for the course is being handled through that office. For further information regarding this program, please call (804) 786-0869.
After our annual business meeting at the McLean Hilton on September 7, the Northern Virginia Dental Society is off and running with another fine program planned for this year. At the recently completed State dental meeting in Roanoke, our 31 delegates represented the largest delegation present.

We welcomed 15 new members into our ranks recently. They are Dr. Alonzo Bell, Alexandria, Dr. Terry Berger, Fairfax, Dr. Michael Dungan, Reston, Dr. Anthony Falbo, Springfield, Dr. Judith Thomas, Springfield, Dr. Joe Guest, Arlington, Dr. Kenneth Ison, McLean, Dr. Scott Lindeman, Vienna, Dr. David Rogowski, Fairfax, Dr. Frank Romano, Alexandria, Dr. Janet Song, Alexandria, Dr. Karl Tylski, Falls Church, Dr. Brenda Young, Annandale, Dr. Samuel Yun, Annandale, and Dr. Michael Kuzmik, Reston.

Our officers for this year are president Dr. John Bruno, president-elect Dr. David C. Anderson, vice president Dr. Bill Wallert, and secretary-treasurer Dr. Michael Fabio.

Bill Wallert is also serving as our program chairman for 1988–1989. We will kick off our program on Wednesday, October 26 with an all day meeting featuring Dr. Robert L. Vanarsdale from the University of Pennsylvania discussing “Orthodontic-Periodontic Interrelationships.” This seminar will present state-of-the-art therapy for many of the problems we see in our practices today. Thursday evening, November 17, one of our own members, Dr. Bernie Fink, will present his views on “Taking an Associate.” Then on Wednesday, February 15, 1989, Linda Miles will return to present Course III, so plan to bring the staff. Ms. Miles’s program last year drew an overflow crowd.

Three of our members were recently elected to the American College of Dentists. They include Dr. Will Allison, Dr. Gary Arbuckle, and Dr. Ted Trapp.

With regret we note the passing of Dr. Jack D. Brady, Dr. Robert L. Williams, and Dr. Benjamin J. Pritchett.

We are looking forward to the joint ADA-FDI meeting scheduled for the first week of October.
DENTAL MEETINGS

Chicago Dental Society 124th Midwinter Meeting has selected "United Through Knowledge" as the theme of the Meeting, to be held February 19–22, 1989 at the Hyatt Regency, Marriott and Fairmont hotels in Chicago. For more information, contact: Chicago Dental Society, 401 North Michigan Avenue, Suite 300, Chicago, Illinois 60611-4205.

The 1988 Greater New York Dental Meeting is expected to have approximately 35,000 dentists and allied health professionals attend the world's largest continuing dental education forum. The meeting will be November 26–December 1, 1988 at the Jacob K. Javits Convention Center in New York City. For additional information, contact the Greater New York Dental Meeting, 1700 Broadway, 4th Floor, New York, NY 10019.

The Thomas P. Hinman Dental Meeting will be held in Atlanta, March 17–20, 1989. Additional information may be secured from: The Hinman Dental Society of Atlanta, 1819 Peachtree Rd., Suite 603, Atlanta, GA. 30309-1847.

Plans are underway for Dental Alumni HOMECOMING '89 to be held at the Richmond Marriott in Richmond on March 31 and April 1. The honored classes will be comprised of those individuals whose year of graduation ended in a 4 or 9. Dentists and dental hygienists, mark your calendars now for these dates!

POSTGRADUATE COURSE IN HEAD AND NECK ANATOMY

A four-day course entitled "The Alton D. Brashear Postgraduate Course in Head and Neck Anatomy" will be held at the Medical College of Virginia, Department of Anatomy, February 20–23, 1989.

Fresh specimens (unpreserved) whenever possible are used in the dissections and individual surgical approaches are welcomed. Lectures and demonstrations will augment the laboratory work. The course is approved for 40 elective hours by the American Academy of General Practice and Academy of General Dentistry.

Further information may be obtained from Dr. Hugo R. Seibel, Department of Anatomy, Box 709, Medical College of Virginia, Richmond, Virginia 23298.
SIXTY AND FIFTY YEAR CERTIFICATES PRESENTED

In recognition of their contribution to the dental profession and the public, the Virginia Dental Association honored the following members at the Annual Meeting in Roanoke, September 18, 1988.

Sixty Year Certificate presented to Dr. Lindell I. Leathers

SIXTY YEAR CERTIFICATES

Component IV
Dr. William C. Webb
Ashland

Component V
Dr. Lindell I. Leathers
Salem

FIFTY YEAR CERTIFICATES

Component I
Dr. Ernest L. Bayton, Jr.
Portsmouth
Dr. Leonard L. Levin
Norfolk

Component II
Dr. Phillip N. Davis, Jr.
Carrollton
Dr. Apollon G. Orphanidys
Newport News

Component IV
Dr. M. M. Neale, Sr.
West Point

Component VII
Dr. Frederick E. Markley
Staunton

Component VIII
Dr. Lester M. Lucas
Alexandria

Component V
Dr. Kyle T. Lee, Jr.
Salem
Dr. Sanford A. Lipford
Bassett

Component VII
Dr. Howard M. Hanna
Staunton

Component VIII
Dr. Lucas H. Blevins
Arlington
Dr. Robert L. Cohen
Arlington
The following members were presented certificates at the VDA Annual Meeting in Roanoke, September 18, 1988.

Component I
Dr. Robert W. Adams
Palmyra
Dr. George Harden Barnett
Suffolk
Dr. Lawrence Herschel Cash
Norfolk
Dr. Leslie Babe Gore
Virginia Beach
Dr. Wesley Barrett Jones
Windsor
Dr. Seymour J. Levy
Norfolk
Dr. Aubrey Tucker Rives
Norfolk
Dr. William Albert Stokes
Virginia Beach
Dr. Thomas G. Warrick
Norfolk

Component II
Dr. Jesse H. Hogg, Jr.
Hampton

Component IV
Dr. Dewey H. Bell, Jr.
Richmond
Dr. Roland Judson Elliott
Richmond
Dr. Watson Odean Powell, Jr.
Richmond

Component V
Dr. Hilton Grady Bonney, Jr.
Appomattox

Dr. William Albert Coleman
Lynchburg
Dr. Fred Bryant Cornett
Danville
Dr. William Leonard Nufer
Danville
Dr. Luke Pillis
Lynchburg
Dr. Henry Fox Thaxton
Lynchburg

Component VI
Dr. Charles Randolph Crews
Radford
Dr. Kemper D. McCloud, Jr.
Wytheville

Component VII
Dr. Oliver Lee Burkett, Jr.
Woodstock
Dr. William Jennings Sweeney
Front Royal
Dr. Howard Banks Watkins
Charlottesville

Component VIII
Dr. Thomas Weedon Armstrong, Jr.
Culpeper
Dr. James Peyton Brady
Arlington
Dr. William Percy Gillette Dodson
Alexandria
Dr. Richard C. Fisher, Jr.
Falls Church
Dr. Francis Joseph McCloskey, Jr.
Alexandria
The following members were presented certificates at the VDA Annual Meeting in Roanoke, September 18, 1988.

**Component I**
- Dr. Truman D. Baxter, Jr.
  Virginia Beach
- Dr. Arnold M. Hoffman
  Virginia Beach
- Dr. Sanford L. Lefcoe
  Norfolk
- Dr. Hugo A. Owens
  Portsmouth
- Dr. Charles L. Smith, Jr.
  Norfolk

**Component II**
- Dr. Donald W. Cherry
  Williamsburg

**Component IV**
- Dr. Maury A. Hubbard, Jr.
  Richmond
- Dr. Richard D. Hylton
  Bowling Green
- Dr. James R. Lance
  Richmond

**Component V**
- Dr. Fred G. Alouf, Jr.
  Salem

**Component VIII**
- Dr. Rodney J. Klima
  Burke
119th IN PICTURES

Registration

U.S. Marine Color Guard
Annual Meeting Chairman Edward M. O'Keefe, Welcomes Dentists

Board of Dentistry Members
Dr. Arthur A. Dugoni, ADA President-Elect speaks to Opening Session

MCV Dental Student Representatives
VDA House of Delegates

Dr. William H. Allison, Speaker, House of Delegates
VDA President and President-Elect Address House of Delegates
Opening of Commercial Exhibits
Drug Prevention and Education

The Honorable Thomas C. Kelly, Deputy Administrator, Drug Enforcement Administration
R. Drew Moren, Special Agent, DEA

Buddy Curry, Atlanta Falcons Linebacker, Retired, DEA Spokesman
Stairwell Trio, Country Western Entertainment for Friday Evening

State Senator Daniel W. Bird, Jr., Membership Luncheon Speaker
Scientific Speaker, Dr. Ronald E. Jordan

Dr. Thomas T. Upshur honored by VDA Fellows
Dr. Charles F. Fletcher, recipient of Pierre Fauchard Academy Award

New Members, Pierre Fauchard Academy
Dr. James H. Gaines, Sixteenth District Trustee, Addressed Membership Meeting and Installed Officers

Dr. James E. Johnson, Jr., Elected VDA President-Elect
1988–1989 State and Component Officers
REPORT OF EXECUTIVE COUNCIL
MEETINGS
September 15 and 18, 1988
Roanoke Airport Marriott Hotel, Roanoke, Virginia

ACTIONS IN BRIEF . . .

September 15, 1988

1. Approved Life Members for election by the House of Delegates.

2. Received information regarding purchase of building for the VOA Central Office.

3. Received as information report on referrals to the House of Delegates.

4. Approved Bylaws amendment referred to the Reference Committee on President’s Address and Administrative Matters.

5. Received as information report of MCV School of Dentistry by Dr. Lindsay M. Hunt, Jr., Dean.

September 18, 1988

1. Elected Dr. Kenneth E. Copeland as Chairman and Dr. David A. Whiston as Vice-Chairman of the Executive Council for 1988–1989.


3. Approved that the VDA Executive Director write a letter to the Roanoke Airport Marriott Hotel and the Sheraton Airport Inn expressing our sincere thanks for a most successful Annual Meeting.

4. Approved that the Virginia Dental Association commend Dr. Edward M. O’Keefe and his Annual Meeting Committee for their hard work in arranging and implementing an outstanding 119th Annual Meeting.

5. Received as information report on action by the Board of Dentistry during their meeting held in conjunction with the VDA Annual Meeting.

6. Approved $20,000 for decorating and furnishing the VDA Office Building.
OPENING SESSION

The Opening Session of the Virginia Dental Association was called to order by Dr. Clark B. Brown, President. The U.S. Marine Corps Color Guard of Roanoke, Virginia Advanced the Colors and Dr. Brown led the Pledge of Allegiance to the Flag of the United States of America. The Invocation was given by Dr. Bert Osborne of Danville, Virginia. Mr. Howard Musser, the Vice-Mayor of Roanoke, welcomed members and guests to Roanoke and Dr. Edward M. O'Keefe, Annual Meeting Chairman, extended a cordial welcome on behalf of Southwest Virginia dentists.

Distinguished guests representing allied professions, auxiliary groups and others, were introduced by Dr. Brown.

Our keynote speaker, Dr. Arthur A. Dugoni, President-Elect of the American Dental Association, gave an interesting and informative report on the affairs of dentistry throughout the country. We have requested a copy of Dr. Dugoni’s remarks for publication in a future Journal.

As Treasurer of the American Dental Association this year, Dr. Dugoni advised that there would be no ADA dues increase but he said that if needed services were to be provided by the state and national dental organizations, dentists would need to pay for them. He challenged dentists to make professionalism and ethics an important part of their dental practice. Membership recruitment, particularly the under 40 dentists, must be a high priority to insure active members for the future. He concluded that dentistry is a healthy and viable profession and he recommended that dentists encourage the bright college students to become dentists. Dr. Dugoni invited all members to attend the ADA Meeting in Washington, D.C. in October.

Dr. J. Wilson Ames, Jr., Chairman of the VDA History and Necrology Committee, conducted a memorial service for fifteen members who died during the past year.

Dr. Brown turned the meeting over to Dr. William H. Allison, Speaker of the House of Delegates.

HOUSE OF DELEGATES MEETING

The First Business Meeting of the Seventeenth Annual Session of the Virginia Dental Association House of Delegates was called to order by Dr. Allison, Speaker of the House. He introduced the Secretary of the House, Mrs. Pat K. Watkins, and the
Parliamentarian, Dr. Gary R. Arbuckle.

Dr. Allison introduced the eight dental student representatives from MCV School of Dentistry who are members of the House of Delegates.

Dr. Samuel C. Patteson, Jr., Co-Chairman of the Credentials Committee, reported that credentials were in order and a quorum present.

Dr. Allison introduced Dr. Clark B. Brown, who delivered his President’s Address.

Dr. Brown talked of the Dental Family, who wear many hats and move in various directions, but dentistry is the lifeblood of this family. Speaking of the Academic arm of the dental family, Dr. Brown commended MCV School of Dentistry for a successful accreditation and for their efforts in promoting membership in organized dentistry to the new graduates. He spoke of the relationship with the Board of Dentistry, our big brother, who does what is best for the citizens of the Commonwealth, with a touch of benevolence. He thanked the VDA Central Office for being helpful relatives with a smile. In commenting on some of the immediate issues facing dentistry, Dr. Brown talked of OSHA guidelines that require barrier techniques and staff training about hazardous materials; the development of regulating disposal of hazardous waste and the ongoing agitation from the Federal Trade Commission. He spoke about alternate delivery plans, the shortage of dental auxiliaries and the need for everyone to be involved in membership recruitment and retention. Dr. Brown concluded his address with the optimistic approach that the dental family would soon own its home instead of renting. The issue will be considered by the House of Delegates and after viewing the building and location; which can be paid for with some reserve funds and payments less than our rent, Dr. Brown heartily recommended approval of the purchase of this building for our Association. He thanked the many members who were always available and willing to help and expressed the honor and pleasure he and Mrs. Brown will cherish for many years to come.

Dr. Stephen L. Bissell, President-Elect of the Virginia Dental Association, was introduced for the President-Elect’s Address.

Dr. Bissell expressed pride in the dental profession and humility and honor as he assumes the presidency of our Association. He congratulated Dr. and Mrs. Brown for their successful year as our First Family, and he also expressed the need for the purchase of a VDA office building. His emphasis for the coming year will be Professionalism and Ethics, a rededication to the ethical practice taught in dental school and achieving the higher standard granted the profession of dentistry. The VDA Leadership Conference will address this topic and Dr. Bissell asked the Professionalism Committee, working with the Dental School, to develop a booklet on Professionalism and Ethics.

Dr. Kenneth L. Copeland, Chairman of the Executive Council, presented actions of the Council included in the House of Delegates portfolio. The actions of the Executive Council
as submitted for the past year were approved by the House of Delegates. Dr. Copeland nominated twenty-nine members who have met eligibility requirements for Life Membership in the Virginia Dental Association. The motion to elect members submitted for Life Membership was adopted by the House of Delegates.

NEW BUSINESS

Dr. Bernard I. Einhorn, Chairman of the Tidewater Dental Association Delegation, presented the following motion:

1. Most professionals must provide for their own retirement. A lifetime of preparation can be lost as the result of a single accident or action because these funds are subject to legal attachment. On the other hand, large corporate and government retirement funds are secure from this exposure. This is a matter of vital interest to every profession and small business in the Commonwealth. Equity and fairness would seem to cry for uniform protection of all funds in qualified retirement plans. Some states have taken action to provide this protection already.

Therefore be it RESOLVED, that the Virginia Dental Association commence activity to seek legislation to exempt qualified retirement plans from attachment to satisfy a non-domestic judgment.

Dr. Allison referred this motion to the Reference Committee on President’s Address and Administrative Matters meeting on Saturday.

There being no further business, the First Business Meeting of the House of Delegates was adjourned until Sunday, September 18th, to be held immediately following the Annual Membership Meeting.
VDA HOUSE OF DELEGATES ACTIONS IN BRIEF . . .

September 18, 1988

1. **Approved** that the Virginia Dental Association dues be increased $25.00.

2. **Approved** adoption of the proposed 1989 Budget.

3. **Approved** Bylaws amendment combining the Financial Aid Committee and the ad hoc Committee on Dental Auxiliaries as a VDA Standing Committee.

4. **Approved** Bylaws amendment that the History and Necrology Committee Chairman shall handle appropriate correspondence with the families of deceased members.

5. **Approved** Bylaws amendment giving the Executive Director authority to sign corporate and tax filings with the Federal and State governments.

6. **Approved** the purchase of a building for the VDA Central Office at 5006 Monument Avenue at a cost of $244,000. Payment for this building will be $100,000 from VDA reserve funds and $144,000 financed through Signet Bank.

7. **Recommended** that the Virginia Dental Association support legislation to exempt qualified retirement plans for attachment to satisfy a nondomestic judgment.

VIRGINIA DENTAL ASSOCIATION
ANNUAL MEMBERSHIP MEETING

Dr. Clark B. Brown, President, called to order the 119th Annual Membership Meeting of the Virginia Dental Association at 9:00 a.m., Sunday, September 18, 1988. He led the assembly in the Pledge of Allegiance to the Flag of the United States of America.

Dr. Brown introduced Dr. James H. Gaines. Dr. Gaines is currently serving his second year as ADA Trustee from the Sixteenth Trustee District, consisting of the three states of North Carolina, South Carolina, and Virginia.

REPORT OF ADA SIXTEENTH DISTRICT TRUSTEE—Dr. Gaines

Dr. Gaines congratulated Dr. Brown for his outstanding year as President and extended greetings from the Officers and Board of Trustees of the American Dental Association.

Dr. Gaines stated that he was proud to be a dentist, proud of the profession and he felt we are entering the golden era of dentistry. We will enter this era if we are willing to pay the price. He stated that we all covet the fact that dentistry is a true, learned profession and a major criteria for a profession is that it be self-governing. So if we want to maintain our ability to control our profession, the more influence we have with the organization who sets the standards and who represents the profession, the better. Virginia and the Carolinas now have substantial representation in the American Dental Association. Today, not only do we have a Trustee from the 16th District to sit on the Board of Trustees, we also have twelve members serving on councils and commissions, which is membership on all but three ADA Councils—education, therapeutics and research. In Washington, three weeks from now at the Annual Meeting, there will be seven reference committees and the 16th District will have delegates serving on five of these committees, including one chairman. Be assured that the individuals serving this District are effective and influential—we have input into all ADA policies and can make it a better and stronger organization. In addition to Virginia’s 18 respected and hard working ADA delegates and alternate delegates, several of them serve with distinction in important positions—David Whiston—on the Council on Community Health, Hospital, Institutional and Medical Affairs; Manny Michaels—Commission on Relief and Disaster Fund Activities; Steve Radcliffe—Commission on Young Professionals; and Bennett Malbon is Treasurer and member of the Executive Committee of the American Political Action Committee. In addition to Council seats, you are providing leadership in many other areas. Bennett Malbon serves as chairman of the 16th District Caucus, French Moore serves as Secretary, and Pat Watkins provides the support, advice, experience, and efficiency to make us all look good.
Dr. Gaines stated that membership and retention is higher in Virginia than in any of the states in the 16th District and that the District ranks second in the country. ADA is devoting valuable resources to membership recruitment and retention but Chicago and Richmond cannot solve the problem. Every survey of reasons dentists do not become members, list cost as first and second is “no one ever asked me”. ADA can send letters and brochures but a personal invitation to join should come from a local member to assist in membership recruitment.

In discussing other items, Dr. Gaines said that we have been again challenged by the FTC. We see a large, unelected bureaucracy attempting to exceed their authority by overturning dental practice acts in the 50 States. We really do not know exactly what they plan to do with the box car load of materials they have legally demanded. But by the nature of their requests, they appear to want to again challenge our code of ethics as it relates to advertising. We have lived up to the consent agreement in allowing advertising as long as it is not false or misleading and we do not intend to give in to them on this issue. They apparently are also studying the way we establish, recognize and regulate the specialities in dentistry. We are attacking their challenge by suing the FTC on grounds that they are violating the consent agreement to which they are a party. This is a pro-active move on our part and reflects the desire of the membership to do all we can to strengthen and not weaken our code of ethics. This year we initiated litigation in Federal Court against a major corporation for not serving our members in a manner according to a contractual agreement. This suit has been settled out of court and our relationship should be strengthened, for this company realizes now that we will not compromise the well being of our members and that the American Dental Association will play “hard ball” when the need arises.

Dr. Gaines informed the membership of actions by the Environmental Protection Agency and the ADA in settling a case against several dentists in Connecticut and Massachusetts. The worse part would have been the EPA declaring amalgam a hazardous material—not a hazardous waste and he asked the members to imagine the problem that this would have generated. The ADA, in cooperation with the two state dental associations, worked with the dentists, encouraged them not to settle prematurely and with the combined utilization of the ADA scientific, political, legislative and legal resources, reached a satisfactory settlement for ADA. He discussed several other actions being handled by ADA, which continue to protect the public. He said that the issue of licensure by credentials and reciprocity is looming as the big issue in the near future.

In discussing ADA membership, Dr. Gaines stated that there will be no new request for dues increase this year. The Board of Trustees have cut back programs, eliminated positions on the staff, and they think very hard before suggesting new programs. He asked the members to assist in membership recruitment and to stay in-
formed, to keep our ranks intact and our guard up.

OTHER BUSINESS

Dr. French H. Moore, Jr., Secretary-Treasurer, gave the credentials report and declared a quorum present. Total number of dentists in attendance was 380, 18 dental students and total registration for the meeting was 811.

Dr. Moore presented Life Membership Certificates, and Certificates in recognition of fifty years and sixty years of service to the dental profession and public, to members of the Association.

Dr. Raleigh H. Watson, Jr., Chairman of the VDA Fellows Selection Committee, gave a brief history of the VDA Fellows' category of membership which was conceived in 1965 as a method of honoring those who have served the VDA, the dental profession, and patients in an outstanding manner. Candidates are nominated by Fellows in their component societies and acted on by a state selection committee. Candidates must have shown leadership and service to the profession well above and beyond that of the average member. It is a distinct honor to be chosen by one's peers for this special recognition. The Fellows are an important force, a spirit which flavors and enriches the Virginia Dental Association. Because of this belief, the Fellows Selection Committee honored the "Father of the Virginia Fellows Program"—Dr. Thomas T. Upshur. Dr. Upshur was presented a token of appreciation from the VDA Fellows. Dr. Watson presented Fellows Certificates to members elected for 1988.

Dr. Richard D. Wilson, presented the 1988 Pierre Fauchard Academy Award to Dr. Charles F. Fletcher, stating that over the last decade or so, our profession has been subjected to a lot of challenges and as a consequence our values, our ethics and even our quality of care have been affected and yet in spite of that, the image of our profession in the public eye remains excellent. The reason is the respect and the esteem that our communities have for the professionalism of the individual dentist. If there is any career that more perfectly exemplifies the ideal professionalism of a dentist, it is the career of our 1988 award recipient. Dr. Fletcher has demonstrated dedication and service to organized dentistry, to his community, and to his alma mater. After Dr. Fletcher completed his term as President of the VDA, he continued to sustain his energies and was one of the moving forces behind the Virginia Dental Association's successful efforts to raise over two million dollars for our dental school.

Dr. Wilson said that the purpose of the Pierre Fauchard Academy Award is not only to recognize the achievements of one person but also to remind the rest of us to emulate those same achievements.

Dr. Leslie S. Webb, Jr., who will succeed Dr. Wilson as Chairman of the Academy, presented certificates and pins to the Pierre Fauchard Academy candidates elected into membership for 1988 and reminded them that this carries with it the responsibility to further their achievements, to con-
continue to serve and to sustain their energies for the dental profession.

ELECTION OF OFFICERS

Dr. Brown appointed Tellers to serve for the election of VDA officers.

The Nominating Committee submitted the name of Dr. James E. Johnson, Jr. for the office of President-Elect. A motion was adopted that nominations be closed and Dr. Johnson was unanimously elected President-Elect. Dr. Johnson expressed his sincere appreciation to those who made this day possible. He said that the membership can rest assured that he shall endeavor to fulfill all the obligations and responsibilities that have been assigned to this office.


Dr. Gaines installed VDA Officers and Component Presidents for the coming year.

Dr. Brown turned the gavel over to Dr. Stephen L. Bissell, incoming President. Dr. Bissell expressed his appreciation for the opportunity to serve as President and stated that the telephone lines and door are always open in order to have a good year and to keep the family together.

On behalf of the Virginia Dental Association, Dr. Bissell thanked Dr. Brown for a job well done and presented gifts of appreciation to Dr. and Mrs. Brown for their dedication and service during the past year.

There being no further business to come before the Annual Membership Meeting, the meeting was adjourned.
**VIRGINIA DENTAL ASSOCIATION**

**1989 BUDGET**

**Income:**

1. State Dues .................................. $372,000
2. *Journal* Advertising ....................... 8,000
3. Interest and Dividends .................... 20,000
4. Other Income ................................ 500
   **Total Income** .......................... $400,500

**Expenditures:**

1. Committee Expense .......................... $19,400
2. Contributions, Dues & Fees ................ 2,600
3. Office Expense .............................. 52,500
4. Salaries, Wages and Fees .................. 135,700
5. Travel & Expense Allowance ................ 52,350
6. *Journal* Expense ............................ 42,700
7. Statewide Continuing Education Program .... 33,280
8. Annual Meeting ................................ 2,000
   **Total Expenditures** ...................... 340,530

**Income over Expenditures**

   **Operating Expense**

1. *Committee Expense*
   - Caring Dentist ................................ $2,500
   - Dental Care Programs .......................... 1,000
   - Dental Delivery for the Special Needs Patient .... 500
   - Dental Health & Public Information ............... 2,000
   - Dental Trade & Laboratory Relations ............... 200
   - Executive Council ................................ 500
   - Insurance ........................................ 500
   - Legislative ....................................... 4,500
   - Professionalism ................................... 1,200
   - Other Committees, Conferences & Meetings .......... 6,000
   - Executive Council Discretionary Fund ............. 500
   **Total Operating Expense** ................... $19,400

2. Contributions, Dues and Fees
   - ADA Sixteenth District Dues ................... $1,500
   - Professional Associations ..................... 600
   - Virginia Health Council ....................... 500
   **Total Contributions, Dues and Fees** ........... 2,600

3. Office Expense
   - Insurance and Taxes ............................ $6,000
   - Depreciation of Office Equipment ............... 5,000
   - Maintenance of Equipment ....................... 2,500
   - Postage and Mailing Permits .................... 7,500
   - Printing and Office Supplies ................... 5,000

**Total Operating Expense** .................. $59,970
Office Rent ................................ 18,000
Telephone ................................... 7,500
Other Office Expense .......................... 1,000 52,500

4. Salaries, Wages and Fees
Executive Director and Clerical ............... $100,000
Employee Benefits and Retirement .......... 20,000
Social Security Employer Taxes ............... 8,000
Professional Fees: Legal ..................... 14,000
                                      Accounting 3,700
Transfer to journal Expense .................. (10,000) 135,700

5. Travel and Expense Allowance
Delegates to ADA Meeting ..................... $ 13,500
Alternate Delegates to ADA Meeting .......... 13,500
ADA Annual Meeting Expense ................. 2,500
President .................................... 5,000
President-Elect ................................ 2,750
Secretary-Treasurer ........................... 3,500
Executive Director ............................ 6,500
Immediate Past President ..................... 500
Chairman & Vice Chairman, Executive Council .. 1,100
Automobile Expense ........................... 1,500
Automobile Depreciation ...................... 2,000 52,350

6. Journal Expense
American Association of Dental Editors ....... $ 100
Editor's Expense ............................. 1,000
Printing ....................................... 31,500
Other journal Expense ....................... 100
Transfer from Salaries, Wages & Fees .......... 10,000 42,700

7. Statewide Continuing Education Program .... 33,280

8. Annual Meeting ............................. 2,000

Total Expenditures .......................... $340,530
## VIRGINIA DENTAL ASSOCIATION 1987 FINANCIAL AUDIT

### ASSETS

**Cash on Deposit:**
- Checking Account ........................................ $18,433
- Savings Account ........................................... 20,269

**Investments:**
- Certificates of Deposit ................................... 183,900

**Prepaid Expense:**
- Statewide Continuing Education Program .............. 1,022

**Equipment:**
- Office Furniture, Fixtures and Automobile ........... $47,067
- Less Accumulated Depreciation ......................... 30,737

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<tr>
<td>Checking Account</td>
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<td>Savings Account</td>
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### LIABILITIES

**Accounts Payable:**
- VDA Dues 1988 ........................................... $30,570
- Deferred Compensation ................................ 19,071
- Statewide Continuing Education Program ........... 1,719

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**Fund Equity:**
- Balance, January 1, 1987 .............................. $183,434
- Income over Expenditures ........................... 5,160

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### INCOME AND EXPENSES 1987

**Income:**
- Virginia Dental Association Dues .................. $296,819
- Journal Advertising ................................. 7,707
- Current Assets Interest Income .................. 9,240
- Other Income ......................................... 1,610
- Investments Interest Income ...................... 12,310

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**Expenditures:**
- Committee Expense ................................... $13,937
- Contributions, Dues and Fees .................... 2,050
- Office Expense ....................................... 47,821
- Salaries, Wages and Fees ......................... 148,152
- Travel and Expense Allowance ................... 41,728
- Journal Expense .................................... 42,020
- Statewide Continuing Education Program ....... 25,164
- Annual Meeting ..................................... 1,654

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**Income over Expenditures**

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STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
Required by 39 U.S.C. 3685)

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<th>6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, EDITOR, AND MANAGING EDITOR</th>
<th>8. KNOWN BONDHOLDERS, MORTGAGEES, AND OTHER SECURITY HOLDERS OWNING OR HOLDING 1 PERCENT OR MORE OF TOTAL AMOUNT OF BONDS, MORTGAGES OR OTHER SECURITIES (If there are none, so state)</th>
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<tr>
<td>EDITOR (Name and Complete Mailing Address)</td>
<td>Virginia Dental Association, P. O. Box 6906, Richmond, Virginia 23230-0906</td>
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<tr>
<td>Dr. Richard D. Wilson, P. O. Box 6906, Richmond, Virginia 23230-0906</td>
<td>P. O. Box 6906</td>
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<tr>
<td>MANAGING EDITOR (Name and Complete Mailing Address)</td>
<td>Richmond, Virginia 23230-0906</td>
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<tr>
<td>Mrs. Pat K. Watkins, P. O. Box 6906, Richmond, Virginia 23230-0906</td>
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<tr>
<td>Business Manager</td>
<td>Pat K. Watkins</td>
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DICOR is a joint product system of Dentsply International and Corning Glass Works.

Rear illumination shows how conventional crown metal substructure (right) impedes light while DICOR crown (left) exhibits lifelike translucency.

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