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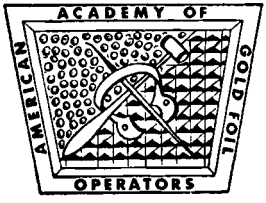

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President's Message

DONALD K. PHILLIPS
President

In reviewing the messages from the Presidents past, I am impressed with one outstanding characteristic of each of them, their devotion and dedication to the American Academy of Gold Foil Operators. This spirit prevails today among the members I am sure. Evidence of this is in the excellent cooperation and help I have had from the officers, council members, committeemen and general membership during the time I have been acting president.

With all this help I am sure our Annual Meeting is going to be worth attending both from essays and clinics.

Reading the messages brings memories of past meetings and places, memories of friends, some of them no longer with us except in spirit. All of this is good, but we cannot live in the past. Thanks to the efforts of these men the American Academy of Gold Foil Operators is a living, very vital organization with objectives and purposes for the future.

Our programs, and the activities of the Academy and committees must be geared to the future, while retaining the best of the past. By adding to our basic knowledge and experience the future of dentistry can indeed be bright.

Members of this Academy who are engaged in research are actively looking for materials or combinations of materials by which we can better serve our patients. Research into preventive dentistry will perhaps in time reduce the incidence and activity of carious processes. When such a time comes the stature of permanent fillings will be more important than ever.

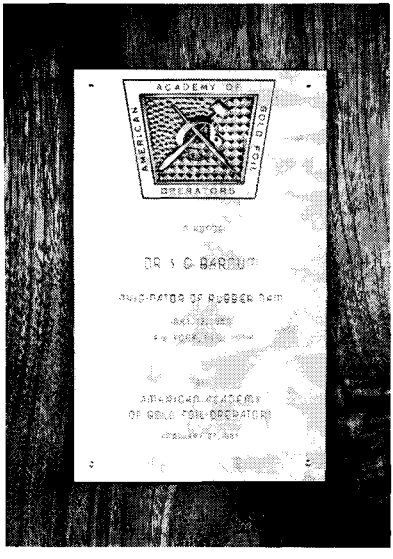
Hence, it is imperative that we perfect ourselves in the use of the most permanent of materials and the one that can be used in the most conservative of cavity preparations.

The program for the annual meeting has been tailored along this line of thinking. All of us connected with the preparation of the agenda hope you enjoy it.

DONALD K. PHILLIPS

Barnum Honored

On February 26, 1966, Dr. Donald K. Phillips, President-Elect, presented a plaque to the American Dental Association in honor of Dr. S. C. Barnum. This presentation was accompanied with the following message by Dr. Phillips:



Mr. President – etc.

Out in our part of the country we honor a man as the founder of Arbor Day with the phrase – "He gave the world a great idea – Plant trees." We would like to honor a man here who gave to the dental profession a great idea – "The Rubber Dam."

Listed in the By-Laws of the Academy of Gold Foil Operators under objectives is the paragraph:

"It will encourage by practice and by teaching the performing of restorative procedures in the best possible field in respect to operative cleanliness. In this phase of its program it will utilize as its medium and its criterion of other materials – the rubber dam.

It may be that the future will bring a better material than gold foil, and a better operating field than that provided by the rubber dam. If and when such is the case, the Academy will use and advocate the improvements after critical comparison and evaluation have proved them to be such."

With this background for our sentiments it is only fitting that the Academy presents the Plaque in the memory of Doctor Stanford Christie Barnum, the man who gave to dentistry, not for his own profit, but for the good of the profession, the idea and technique of the rubber dam.

It is our hope that it will occupy a place of honor and serve as an inspiration to men in the future to be as dedicated and unselfish with regards to their chosen profession.

Annual Meeting

Dedicated to the Memory of Dr. Alex W. Jeffery

PROGRAM

Thursday, November 10, 1966

Executive Council Meeting, Adolphus Hotel, Dallas, Texas

Friday, November 11, 1966

8:00 a.m.	**Registration** — Adolphus Hotel
8:30 a.m.	**Opening**.....Dr. D. K. Phillips Invocation.....Dr. Ralph Boelsche Remarks, Local arrangements chairman.....Dr. Charles Bouschor Introduction of Essayists.....Dr. D. K. Phillips
9:00 a.m.	"Current Concepts Regarding Etiology and Prevention of Dental Caries" Dr. David Bixler, University of Indiana, Indiana
10:00 a.m.	"Direct Gold Restoration in the Adolescent Dentition" Dr. Carlo DeLaurentis, Coronado, California
10:30 a.m.	Coffee Break
10:45 a.m.	"Why's and Why Not's of Cavity Preparations as Seen By An Examiner's Eye" Dr. Roy Fetterman, South Pasadena, California
1:00 p.m.	Clinics — Baylor University School of Dentistry Commercial Displays Table Clinics
6:00-7:00 p.m.	Social Hour — Adolphus Hotel
7:00 p.m.	Dinner and Annual Business Meeting

Saturday A.M., November 12, 1966
Baylor University

8:00 a.m.	Continuation — "Current Concepts Regarding Etiology and Prevention of Dental Caries" Dr. David Bixler, University of Indiana, Indiana
9:00 a.m.	"Application of Rubber Dam in Pedodontics" Dr. Gene Sargent, Burlingame, Washington
9:30 a.m.	"Gold Foil in Mandibular Anteriors" Dr. Paul Dawson, Loyola University, Chicago, Illinois
10:30 a.m.	Clinics . . . Table Clinics . . . Commercial Exhibits

Friday P.M. Operators

Class V

John Coughlin	Lexington, Kentucky
W. H. Wilson	Tulsa, Oklahoma
L. E. Long	Tulsa, Oklahoma
T. S. Gerald	Amarillo, Texas
D. J. Fong	Amarillo, Texas
H. L. Cox	Pampa, Texas
James F. Alexander	Pampa, Texas
Don H. Loring	Dumas, Texas
H. A. Cavness	Hereford, Texas
Perry Powell	Vermillion, South Dakota
Bob Simon	Clayton, Missouri
Loren Hickey	San Diego, California
Paul Loflin	Beckley, West Virginia
Ron Heath	Lansing, Michigan
Willard Powell	Vermillion, South Dakota

Class III

Carlo DeLaurentis	Coronado, California
Harvey Imber	Belville, Illinois
Tom Barker	Highland, Illinois
Vic Lofgren	Lincoln, Nebraska
Stephen F. Dale	Tulsa, Oklahoma
J. W. Carpenter	Lubbock, Texas
W. T. Logan	Borger, Texas
Robert Mendenhall	Colorado Springs, Colorado
W. B. Owen	Hereford, Texas

Class III, Inc.

Bill K. Forbus	Dumas, Texas
Joe P. McCloud	Tulsa, Oklahoma

Class II

Kenneth Longeway	San Diego, California

Saturday A.M.

Class V

Gene Sargent	Burlington, Washington
H. W. Gilmore	Indianapolis, Indiana
N. E. Lyons	Mountain View, California
Ray Shaddy	Omaha, Nebraska
Walter Williamson	St. Louis, Missouri

Class III

William M. Walla, Jr.	Fremont, Nebraska
R. C. Wieland	Lincoln, Nebraska
Roy Fetterman	Pasadena, California
K. C. Christensen	Lincoln, Nebraska
Fletcher Craig	San Francisco, California
William J. Roberts	Houston, Texas
Carl L. Boyles	Houston, Texas
Patrick F. O'Brien	Portland, Oregon

Nominees for Academy Officers

The Nominating Committee has submitted the names of the following members for offices during the 1966-67 term:

Dr. Donald K. Phillips.....President

Dr. Gerald D. Stibbs.....President Elect

Dr. Paul H. Dawson.....Vice-President

Dr. Hunter Brinker.....Member of the Council

Dr. H. William Gilmore.....Secretary-Treasurer

The balloting will take place at the annual business meeting on November 10, 1966 at the Adolphus Hotel, Dallas, Texas.

Histological Evaluation of Gold Foil Restorations

HENRY J. BIANCO, JR., D.D.S., M.S. AND D. VINCENT PROVENZA, PH.D.,
BALTIMORE, MARYLAND

The effect of gold foil restorations on pulp has been a subject of concern among both basic and clinical investigators, yet a systematic search of the literature reveals that little has been accomplished to effect continuity of the voids in knowledge that exist in this area.

The studies directly related to gold foil restorations (James and Schour, 1955; and James, Schour and Spence, 1959) indicate that the procedures produced inflammation which ranged in intensity from moderate to high, that the intensity of inflammation was positively related to the depth of the cavity preparation and stimulus and that secondary dentinogenesis was directly correlated to inflammatory acuity.

The present study was conceived to observe the histological alterations in the dental pulp which are associated with gold foil procedures. Particular emphasis was directed toward the response of the pulp and dentin to cavity preparation and postoperative stimuli involved in gold foil restorations.

MATERIALS AND METHODS

Eight male Rhesus monkeys of an average of 4 years and average weight of 8.5 lbs. were used in this study. The operative procedures were performed under intravenous sodium nembutal after the animals had been premedicated by intramuscular demerol and atropine. While under anesthesia, the experimental animal was tattooed on the ear lobe for identification.

OPERATIVE PROCEDURES

Roentgenograms were taken prior to cavity preparation and/or immediately after placing the restorations, depending on the accessibility of the x-ray unit. In this study, a Class V Ferrier cavity preparation (Fig. 1) was selected as the standard operative procedure.

Gold foil restorations were placed in the lateral and central incisors of the mandibular and maxillary teeth. One or two of the aforementioned teeth were used as controls and restored with zinc oxide

This study was supported by a grant from the United States Public Health Service, Grant No. DT 46 (C2).
From the Departments of Operative Dentistry and Histology and Embryology, Baltimore College of Dental Surgery, Dental School, University of Maryland.

and eugenol. A cuspid or bicuspid was used for normal histological study.

In conjunction with the rubber dam, a compound supported S.S.W. No. 212 cervical clamp was placed on the tooth in order that the finished margin of the restoration might be established in the gingival cervice upon removal of the dam and clamp. This outline was followed in accordance with the principle of extension for the prevention of further caries progress. The outline form was geometrically a trapezoid with the base facing the incisal. Many variations of this basic form are used when caries are present. The instruments used in cavity preparation are indicated in Figure 1. Cavosurface bevels were not utilized.

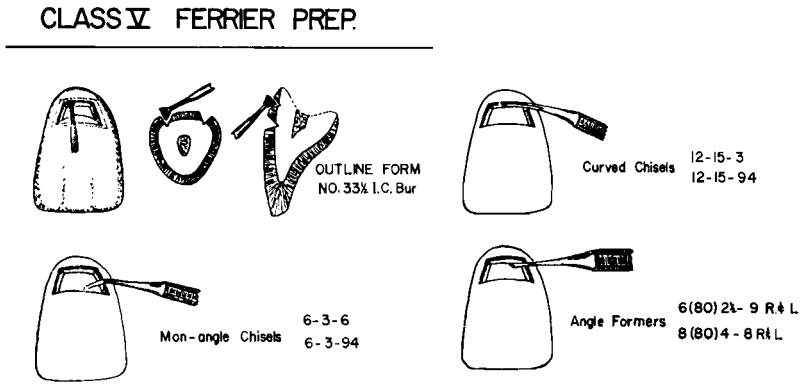


Figure 1. Cavity design and Instrumentation.

INSERTION AND CONDENSATION OF GOLD FOIL*

Pellets were prepared by cutting the sheets into 1/64 and 1/128 of a sheet, rolling the pieces between the thumb, index and middle fingers. An Electro-Mallet was employed for condensation of the gold foil (Figure 2). A measuring device was constructed in order that the force applied during condensation might be determined. This mechanism consisted of a sphygmomanometer bulb, air gauge, a ½ inch aluminum piston in a brass housing and a handpiece bracket. The piston was brought into contact with the condenser point. When operation of the instrument was initiated, the pressure could be read directly from the gauge in pounds per square inch.

Annealed, 1/128 pellets were placed with a University of Washington B-12 foil carrier and maintained with a Woodbury 23 foil assistant. A triangular bar was placed from the mesioaxioincisal point angle to the mesioaxiogingival point angle. The bar was condensed with a round 0.5 mm. straight condenser point.

*—Gold foil supplied by Morgan, Hastings and Company of Philadelphia, Pa.

The Electro-Mallet settings, the point sizes and the pellet sizes used in the various steps are contained in Table 1.

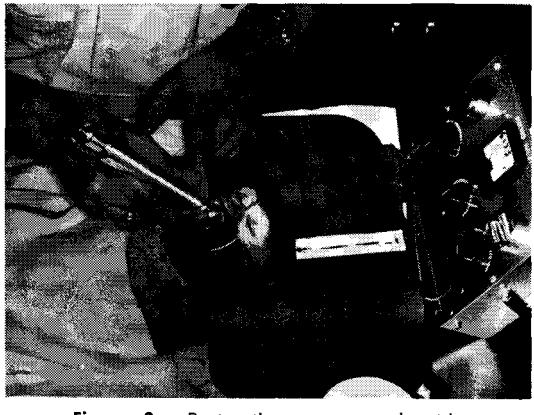


Figure 2. Restorations compacted with Electromallet. Force of condensation is measured simultaneously.

TABLE 1
Summary of Condensation Technic

Procedure	Electro-Mallet		Point Size (mm)	Pellet Size (Fraction of 4"x4" Sheet)
	Intensity	Frequency C.P.M.		
Triangular Bar	2-3	400-600	0.5 round	1/128
General Build-up	4-6	1800-3600	0.5 round 0.5x1.0	1/128 1/64
After Condensation	6	3600	1x18-3-3	

Base speed was constant at minimum.

Upon anchoring the triangular bar the foil was condensed over the axial wall and banked against the surrounding walls, thus forming

a saucer-shaped mass. Pellets extending over the enamel margins were burnished to protect the enamel rods and to insure good adaptation. This procedure was executed with the 0.5 mm. round and the 0.5x1.0 parallelogram points. The general build-up of the concavity was accomplished with the parallelogram. A foot condenser (1x18-3-3) was then employed to finish the contour and to post-condense the surface.

Appreciable overfilling was avoided so that finishing factors which might have added to the pressure employed during condensation were obviated. All of the experimental teeth used were prepared and condensed in the manner described.

DURATION AND PERFUSION TECHNIC

The experimental interims for the animals were as follows: two-24 hours, one-3 days, one-7 days, one-4 weeks and two-9 to 10 months.

Death was induced by rapidly injecting 5-10 cc. of undiluted sodium nembutal, or by fixative perfusion.

FIXATION

A variety of fixation procedures was employed, the most successful of which involved smaller tissue segments which were treated under vacuum. The vacuum pump used for the oven was connected to a series of 3 flasks (Fig. 3). The first flask remained empty, the second contained water and the third contained the specimen with cold 10 per cent neutral formalin. Water was placed in the second flask to absorb vapors emanating from the third flask containing formalin.

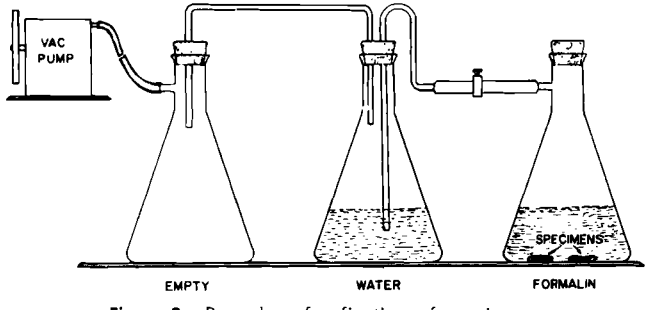


Figure 3. Procedure for fixation of specimens.

HISTOLOGICAL TECHNICS

Upon completion of the fixation period, the specimens were prepared for demineralization. They were processed first by washing in tap water for approximately 24 hours, followed by 72 hour changes of 5 per cent formic acid buffered with sodium citrate to pH of 3.2. Complete decalcification required an average of 32 days. This process

was not considered complete until a radiograph showed a uniform radio-opacity.

The specimens were rewashed with tap water, tagged, placed in an autotechnicon and processed overnight. The tissues were then placed in a vacuum oven at 58°C and infiltrated with paraffin at 28

TABLE II
Clinical Histological Data

Clinical					Histological				
*Specimens		Tooth Number F—Foil Z—ZnOE	Prep. Time in Min.	Cond. Time in Min.	Remaining Dentin in mm	Cavity Depth in mm	Pulp Response (+) Mild (++) Moderate (+++) Severe (Rec) Recovery	Type and Amount of Reparative Dentin (I) Irreg. (R) Reg.	Ditching by #212 Clamp (+)
Duration	No.								
24 HOURS	1	7—F	10	10	1.0	0.50	+++		+
	2	8—F	10	13	1.3	0.45	+++		+
	3	9—F	12	12	1.3	0.40	++		
	4	10—Z	10	—	1.1	0.50	++		
	5	24—Z	8	—	1.2	0.40	++		
	6	25—F	8	10	0.9	0.75	+++		
	7	26—F	8	10	1.1	0.50	++		
3 DAYS	8	7—F	10	15	0.6	0.70	+++		
	9	8—F	10	17	1.0	0.60	++		
	10	9—Z	10	—	1.1	0.50	++		
	11	24—Z	7	—	1.1	0.50	+++		
	12	25—F	8	12	0.8	0.80	+++		
	13	26—F	8	10	0.4	0.95	+++		
7 DAYS	14	7—F	7	12	0.6	0.40	+++		
	15	8—F	15	18	1.1	0.40	++		
	16	9—Z	10	—	0.9	0.50	+		
	17	24—F	8	10	1.1	0.40	+++		
	18	25—F	10	12	1.0	0.45	+++		
	19	26—F	8	12	0.9	0.50	++		
1 WEEK	20	7—F	12	15	0.4	1.00	**++++	I—0.03	
	21	8—F	10	15	1.3	0.80	++	I—0.06	
	22	9—F	12	20	1.3	0.75	++	I—0.04	+
	23	10—Z	10	—	0.8	0.80	++	I—0.02	
	24	24—F	8	12	0.6	0.60	+++	I—0.02	
	25	25—F	8	10	0.9	0.40	++	I—0.03	
4 WEEKS	26	7—F	9	14	0.8	0.60	+++	I—0.10	
	27	8—F	10	15	1.0	0.60	+++	I—0.10	
	28	9—F	15	15	1.1	0.60	++	I—0.10	
	29	23—Z	6	—	0.5	0.85	+++	I—0.05	
	30	24—F	7	10	0.8	0.60	+++	I—0.10	
	31	25—F	7	9	0.7	0.70	+++	I—0.10	+
9 TO 10 MONTHS	32	7—F	10	20	0.9	0.50	Rec (+)	R—0.40	
	33	8—F	12	25	1.2	0.40	Rec (++)	R—0.23	
	34	9—F	10	25	1.0	0.60	Rec (+)	R—0.32	
	35	10—Z	8	—	1.0	0.50	Rec	R—0.05	
	36	23—F	10	12	0.85	0.50	Rec (++)	R—0.30	
	37	24—F	8	9	1.0	0.40	Rec (++)	R—0.28	
	38	25—F	10	10	0.9	0.60	Rec (+)	R—0.30	
	39	26—Z	8	—	0.9	0.40	Rec (++)	***R—0.40	
	40	7—F	8	15	1.2	0.40	Rec (++)	R—0.20	
	41	8—F	11	18	1.2	0.50	Rec	R—0.35	
	42	9—F	12	20	1.4	0.30	Rec	R—0.25	
	43	10—Z	8	—	1.0	0.35	Rec	R—0.05	
	44	23—Z	9	—	0.9	0.40	Rec	R—0.10	
	45	24—F	7	12	1.0	0.40	Rec (+)	R—0.20	
	46	25—F	7	10	0.9	0.45	Rec (+)	R—0.11	
	47	26—F	8	9	1.1	0.40	Rec (+)	R—0.20	
Averages			9	14	0.96	0.54			

*35 Foils and 12 ZnOE

**Possible Abscess

***ZnOE partially present at sacrifice.

- Average Reparative Dentin in Mm.

Duration	Foil	ZnOE
1 Week	0.036	0.02
4 Weeks	0.10	0.05
9 to 10 Months	0.26	0.066

pounds pressure for an average of 90 minutes. The specimens were then embedded first in "Tissuemat" and later in "Paraplast."

Serial sections, 6 to 8 microns, were stained with hematoxylin and eosin.

RESULTS

Explanation of Data Chart

The pertinent clinical and histological data is summarized in Table II.

Serial sections of 60 specimens were examined. Forty-seven were acceptable for recording, 3 were cariously exposed, 10 were discarded because of inadequate fixation.

The number appearing in the third column of the chart indicates the location and type of tooth examined. The letter adjacent to the number indicates the material placed into the cavity preparation. For example, (7F) refers to the maxillary right lateral incisor with a gold foil restoration, (23Z) refers to the mandibular left lateral incisor with a zinc oxide eugenol control.

The average amount of dentin remaining after cavity preparation was 0.96 mm. Measurements were made from the center of the cavity and in a line approximately perpendicular to a line tangent to the subjacent pulp. The amount of dentin removed by instrumentation was measured and the average was 0.54 mm. The average total amount of cervical dentin was, therefore, 1.50 mm.

The criteria used in comparing the extent of pulpal response are defined as follows:

The pulp tissue was divided into two portions — the superficial layer and the pulp core. Included in the superficial layer were the odontoblastic layer, the zone of Weil and the cell-rich zone. The remaining portion which contains the bulk of the supporting tissue was referred to as the central area or core. Figure 4 illustrates normal pulp tissue with the indicated areas.

A code was employed to express the approximate location and extent of tissue response based on the layer or area of tissue that was affected. Thus, a lesion limited to the odontoblastic layer was graded as mild (M), one extending into the subodontoblastic layers as moderate (MOD) and one involving the core of the pulp tissue as severe (S). The amount of reparative dentin, irregular (I) or regular (R), which appeared during recovery was measured in millimeters.

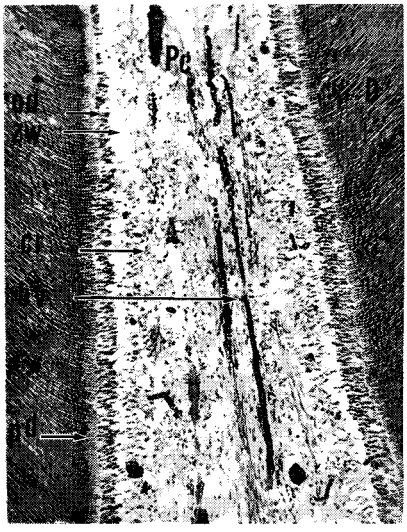


Figure 4

Figure 5

Figure 4. Normal pulp tissue: **OD,** Odontoblasts; **ZW,** Zone of Weil; **CR,** cell rich zone; **BV,** capillaries; **PC,** pulp cores; **PD,** predentin.
Figure 5. Ditched cementum resulting from operative procedure at arrow.

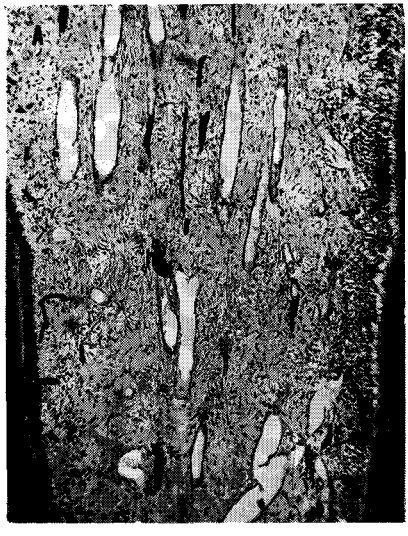


Figure 6A

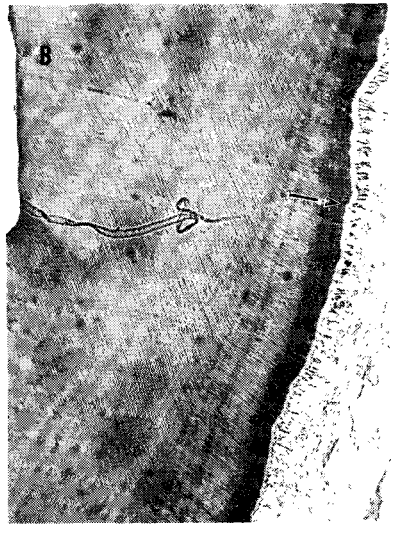


Figure 6B

Figure 6A & 6B. Twenty-four hour post-operative response: (A) Foil, (B) Control.
Figure 6A. Hyperemic pulp. Compare inflammatory response with normal pulp in Figure 4.
Figure 6B. Disruption of odontoblastic area at site of cut dentinal tubules at arrow.

Results involving the animals in the long term experiments (9 to 10 months) required additional coding because of the changed histological features of the pulp tissue and dentin. Recovery-data were determined by comparison with normal, controlled and the previously examined experimental pulp tissues. The reparative dentin was measured, and if odontoblastic activity was still present, one or more plus signs (+) appear after the recovery symbol (Rec.), i.e., according to the relative amount of odontoblastic activity.

When a groove or ditch appeared in the cementum (Fig. 5) as a result of the operative procedure, a positive sign (+) was placed in the designated column.

HISTOLOGICAL FINDINGS

Twenty-four Hour Duration. The 7 specimens in this group manifested definite evidence of moderate to severe pulpal responses (Fig. 6 A and B). The disruption of the odontoblastic layer was confined to the area of the cut dentinal tubules. The zone of Weil, which is normally cell-poor, demonstrated evidence of initiatory fibroblastic and leukocytic infiltration. The blood vessels were dilated with some margination of leukocytes, with accompanying moderate edema in both the superficial and central portions of the pulp tissue. The 4 teeth restored with gold foil were similar in appearance to the 2 control teeth, except that in the latter edema was for the most part re-

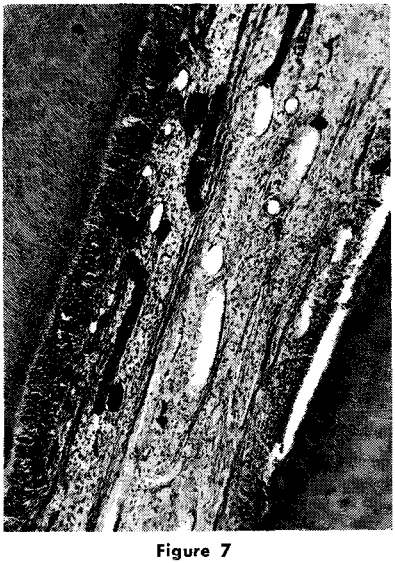


Figure 7

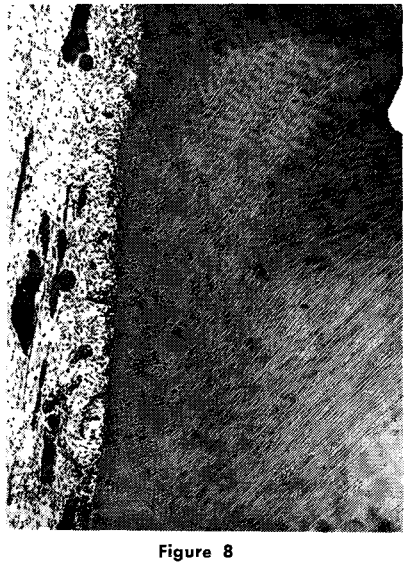


Figure 8

Figure 7. Three day post operative response to foil showing leukocytic infiltration.
Figure 8. Seven day response to gold foil indicating mild pulpal inflammation.

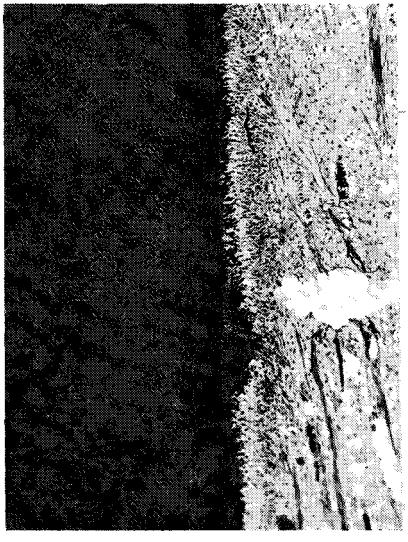


Figure 13

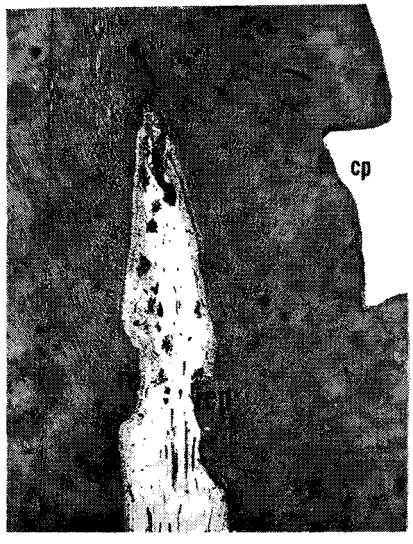


Figure 14

Figure 13. Ten-month foil response. Reparative dentin can be seen. Pulp tissue appears normal following repair.
Figure 14. Reparative dentin under caries and cavity preparation. Similarity is noted. **CP,** cavity preparation; **rCP,** reparative dentin under cavity preparation; **rC,** reparative dentin under caries.

The fourth control had 0.40 mm. of reparative dentin, but the dressing was absent at the time of death.

Specimens With Caries. Two of the teeth utilized contained lingual cervical caries. Since these lesions were not extensive, cavity preparations were made and foil was condensed into 2 of the specimens and the third was restored with zinc oxide and eugenol. One of the foil specimens was definitely in a state of severe distress, while the other exhibited signs of recovery (Fig. 14). The reparative dentin due to caries is very similar to that produced experimentally. The zinc oxide and eugenol control indicated less repair than the foil specimens.

DISCUSSION

That any change in the normal climate of the dental pulp, like any other tissue in the body, will elicit a response has been established.[3,19] The stimulus involves all of the instrumentation and procedures required to complete a gold foil restoration. Accordingly, a specific group of dentinal tubules which were normally protected by a layer of enamel have now been exposed to the atmosphere. Due to the cavity preparation and the subsequent forces of condensation, the dentinal tubules and the protoplasmic processes of the odontoblasts

have not only been exposed to the atmosphere, but have been cut and subjected to other insults. Since the pulp tissue is to a greater extent responsible for tooth vitality and since it is histologically similar to other loose fibrous connective tissues, responses initiated by the cellular, intercellular and vascular components of the dental pulp are to be expected. If the reactions are consistent with the pathognomonic changes of connective tissue, an inflammatory process will follow. On the other hand, caution must be exercised in absolute evaluation since the histologic picture presented by the prepared specimens cannot be expected to reflect *in vivo* conditions.

The initial sign observed in the dental pulp was that of acute inflammation. Concomitant activity relative to vascular changes and exudation of fluid was demonstrated in the 24-hour, 3-day and 7-day specimens. By the second week the inflammatory process was accompanied by reparative dentin formation which would be similar to the healing phase or scar formation of connective tissue.[3,19] It was interesting to note the rapidity and irregularity of the reparative dentinogenesis from the onset of repair to the fourth week. During this interval the quantity of repair tripled (0.03 mm. to 0.10 mm.). In 10 months the amount of reparative dentin was again more than doubled (0.26 mm.) and the outline was more regular in appearance. The cellular activity in the 10-month specimens was confined to the superficial layer adjacent to the reparative dentin. This zone contained some odontoblastic activity with small localized areas of lymphocytes denoting (a) a chronic state of inflammation and (b) that complete recovery is definitely an extended process. The central portion of the pulp was much less edematous, the vessels were diminished in caliber and the cellular and intercellular components were relatively normal. Complete recovery was not present in any of the specimens.

Because of the high thermal conductivity of gold foil, the depth of the prepared cavity and the condensing forces during foil insertion, more aggravated irritation of the pulp was anticipated. It is possible that all of these factors may contribute to the sustained presence of lymphocytes and odontoblastic activity. The magnitude of this effect is as yet undetermined and bears further investigation.

A dramatic illustration of cause and effect is observed when comparing the dental pulps over a 10-month period. Even more important than establishing the presence of inflammation as a response evoked by an operative stimulus is the ability of the pulp tissue to recover from the stimulus. This is the real point of issue when examining the effects of a dental material and technic being used *in vivo* by the dental practitioner.

Ogilvie[13] in his report, indicated that the cervical clamp may be responsible for the ditching of the cementum and resorption of the labial crest of alveolar bone. While these observations were confirmed in this project, further involvement of the dentin was noted. Whether this phenomenon is solely a product of the cervical clamp or combined effect of clamps as well as disc and files is unresolved. It is quite possible that the latter two play a more destructive part in ditching.

In retrospect one might conclude that the data extracted from the literature and those of this project reveal several common conditions. It is significant that the intrinsic defense mechanism of the pulp tissue to combat external irritants of the magnitude employed during gold foil technics was well illustrated in this study. The potency of this mechanism was demonstrated by the amount of reparative dentin present in 10 months as a result of gold foil manipulation. Investigations employing other materials such as silicates, high speeds, resins and amalgams have demonstrated that similar pulpal responses occur.[5,6,21,22,23] The relative effect of gold foil, however, seemed to evoke a more acute and rapid response.[13]

The results do, however, indicate the importance of selecting only those teeth in which the biological conditions are favorable to the procedure. This applies to all phases of restorative dentistry, but is a more critical factor in gold foil technics. Further study is indicated to determine the optimum force which can be tolerated by the dental tissue.

SUMMARY AND CONCLUSION

This study indicates that gold foil technics were traumatic to the pulp tissues. Although tissue recovery was slow, there were indications that damage was sustained by the dental tissue. Repair was confined to the dentinal tubules directly associated with the stimulus, and the repair was located apical to the cavity preparation due to the histological configuration of the dentin. Thus, according to the data presented, the various lines of force induced during the condensation of gold did not transmit impulses to other areas of the pulpal tissue thereby evoking a more generalized response. Conclusions based upon the more general response are no longer valid since the tissue reactions are qualitatively similar to those produced by other restorative materials, but which quantitatively are somewhat greater.

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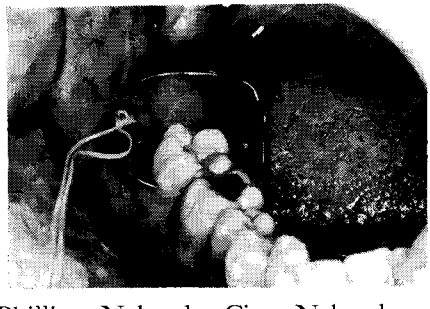
Dam Gems

It is the intent of the Rubber Dam Committee to publicize, at regular intervals, various techniques that will be of use to students and practitioners. Some of these will be time-proven and others will be new. Your comments, suggestions and ideas for assisting others with various steps of dam techniques will be appreciated. If photographs are necessary, the Committee will make every effort to be of assitance to you. Please send your ideas to Cdr. Loren V. Hickey, DC, USN, Dental Service, U.S. Naval Hospital, San Diego, California 92134.

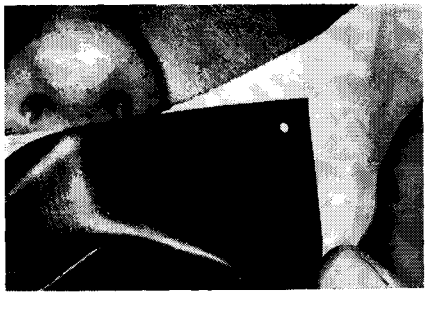
Safety Precaution

In placing clamps on partially erupted or short teeth, a clamp may be disengaged and become lodged in the throat or aspirated into the trachea. A long piece of dental floss fastened to the bow, and hung from the mouth can provide an excellent safety measure as illustrated.



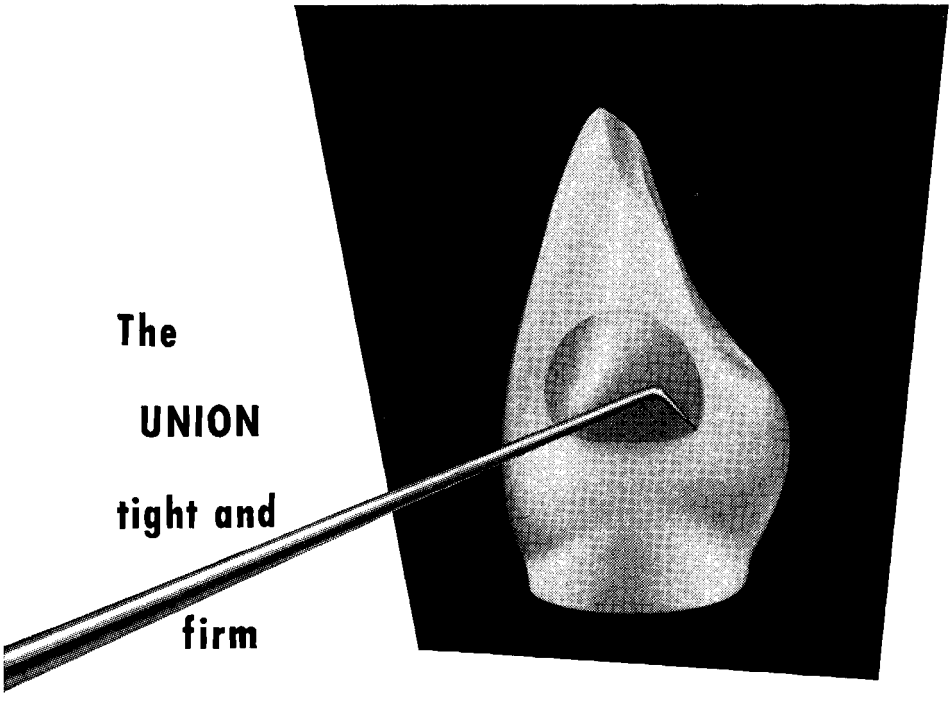
Suggested By: Dr. Donald K. Phillips, Nebraska City, Nebraska

Orientation of Dam



To assist in orientation of the edges of the rubber dam prior to attaching the holder, it is very helpful to punch the upper left corner of the dam at the same time the rubber dam is punched.

Suggested By:
Dr. James P. Vernetti,
Coronado, California



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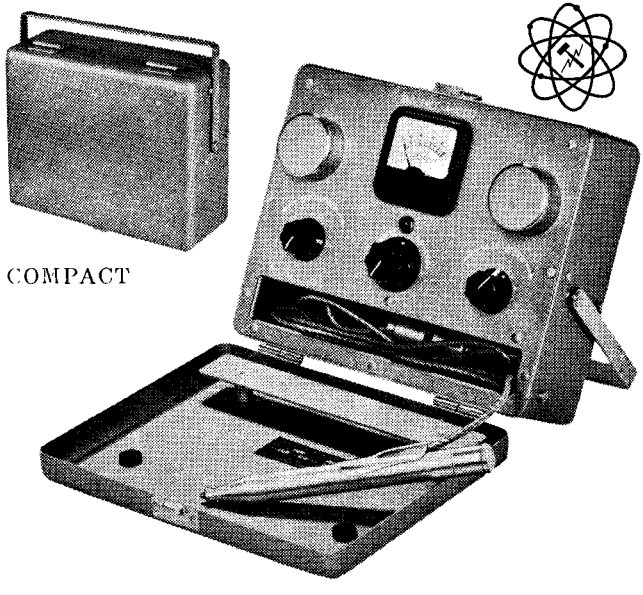

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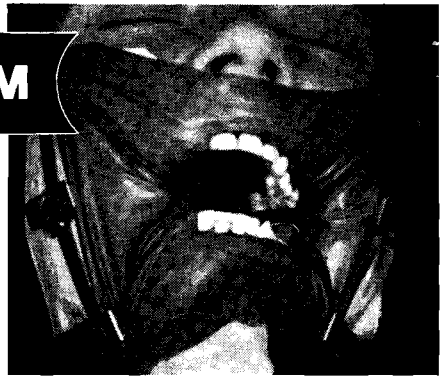

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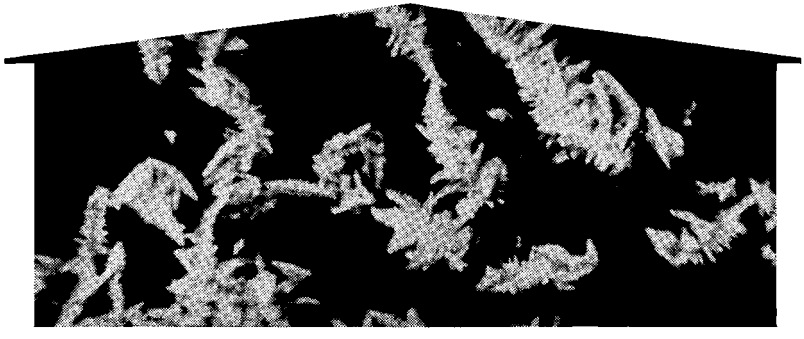

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