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TABLE OF CONTENTS



	PAGE
Editorial Grossman	18
Hot Water and Steam in the Treatment of Putrescent Pulp Canals Davis	19
Interradicular Pathology as Related to Accessory Root Canals . Johnston and Orban	21
Preliminary Report on the Use of Indium as a Root Canal Filling Material . Pearson	26
Report of the Library Committee	27
Report of the Study Club Committee	28
National Award in Endodontia	29
Obliteration of the Root Canal with the Open Apex Hare	31

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Editorial

OUR RESPONSIBILITY

At the Midwinter Meeting in Chicago, an essayist made a number of devastating statements against pulpless teeth that were both inaccurate and misleading. Unfortunately, no discussion was permitted by the chairman. According to memoranda made at the time, the speaker stated that: (1) he had never seen a "dead" tooth that was not infected; (2) once the pulp is dead, the tooth is dead; (3) this is followed by atrophy of the periodontal membrane, then hypertrophy; (4) streptococcus viridans was almost always recovered from "dead" teeth and since they were not present in the mouth, where could they come from except infection in the tooth.

The essayist was an energetic, persuasive speaker but one who apparently lived in the scientific past and still carried on a crusade against pulpless teeth. The writer wondered how many shared his views but were less expressive, and how this unnecessary situation could be remedied.

There is much that still has to be learned about pulpless teeth but enough is known from the clinical, medical, bacteriologic and pathologic aspects to warrant an adequate

defense for their treatment. Such information should be spread by word of mouth in our contacts with physicians, fellow-dentists, and patients. The mantle of mud that enveloped the pulpless tooth 30 or more years ago has not been shaken altogether and it is up to each of us to help clear the fringes.

In addition, more could be done by means of the printed word. While older studies have been invalidated by more recent work, they are still generally accepted. This is particularly true of bacteriologic studies of pulpless teeth upon which much of the prejudice is based. Little has appeared in dental literature to correct the mistaken notions of the past. Let us not default with silence.

Our constitution states that one of the objectives of the American Association of Endodontists is "to help maintain a high standard of endodontic practice within the dental profession by disseminating information through lectures, clinics, publications, etc." Are we meeting our obligation? Is each one of us helping to shoulder the responsibility?

LOUIS I. GROSSMAN.

Hot Water and Steam in the Treatment of Putrescent Pulp Canals

By W. CLYDE DAVIS, A.M., M.D., D.D.S.

Previous to 1924, we were using all kinds of drugs and chemicals with oft repeated dressings for endodontic treatments. We approached these cases with fear and trembling lest they become active and reactive. At first the most potent antiseptic was sealed into the cavity. The next visit the treatment was placed one-third the way to the canal end. The third appointment called for a treatment two-thirds the way, being sure not to poke any infected material through the foramen. If it blew up, we made an external incision and curetted or excised the root end.

Cultures of smears from the canal after the application of strong antiseptics, disinfectants and caustics were not to be depended upon as they picked up drugs from the saturated dentine. A negative finding meant nothing. A tooth sore to percussion meant that cases often ended up in the clutches of an Exodontist.

Anterior teeth more often than not were discolored a little when first seen and darkened as the course of treatment lengthened, to continue for years thereafter. We grasped every new drug, discarding others, in an effort to find one that did not discolor and did not give us periapical soreness. Every new method that would shorten the time of each visit and cut down the number of visits was tried.

The advent of the root canal driers on a Ritter Master Unit in 1924 seemed to be the step in the right direction, as with this method patients had less soreness following canal fillings. We discarded all chemicals, disinfectants, antiseptics, ionization and drugs in cases of putrescent pulp canals and have relied entirely on the hot water and steam treatment.

In case the reader has never used this method he is in no position to start a

discussion. However, after completing eight or ten cases using the technic which is to follow, all antagonism will have left him. The great and universal disinfectant is heat, moist and dry, from the heat of the sun down to the steam and boiling lava beneath the earth crust. All can be used in such form as to destroy every living thing and creature. We can control much of it to our good.

TECHNIC FOR PUTRESCENT CASES ONLY

Spray the field to remove any debris that may be present. Place the rubber dam using a clamp on the tooth to be operated and ligate the other teeth, painting the gingivae of the exposed teeth with a quick drying varnish.

The tooth to be treated should be opened in the center on the lingual surface progressing directly toward the pulp, regardless of the presence of proximal cavities or fillings which may exist. The enamel is removed to the dentine with a round diamond point about 2 mm. in diameter. Then with a little smaller round steel bur remove the dentine to fully uncover the pulp chamber. Next, with spoon excavators and the above round bur, clean out the debris as low as the gingivae. With a smooth broach expose a path to near the foramen. This explorer should be held above a flame and heated short of red heat.

Pass a paper point as far as it will go, allow to remain for about a minute, using a pair of small pliers which have been flamed to below red heat. The culture oven should have been started having therein three tubes of culture media, all at $37\frac{1}{2}^{\circ}$ centigrade. The media is Leffler's blood serum slants in four-inch tubes. The cork is removed, the cotton plug is removed and held between the first and second

fingers and the tube in the same hand.

The pliers are again singed, the paper point is removed and placed on the slanting surface of the media. The cotton is shoved in the tube to place, singed over the flame, the cork replaced, and the tube immediately returned to the incubator.

Now, with reamers and barbed broaches, each flamed before using, the canal is smoothed and cleaned of its entire contents to the accessible foramen. The canal is then flooded with tap water from the warm spigot. We use two electrically heated points. One, a ball slightly smaller than the opening to the pulp chamber, is heated until it will send the water out as steam. This will give you a fairly sterile pulp chamber. The second heated instrument is a smooth needle that is not quite as large as the pulp canal and will reach to the foramen. The canal is again pumped full of tap water and the heated needle passed about half way down the canal with all water converted to steam. In case the tooth becomes uncomfortably warm withdraw the needle and allow the tooth to cool. Then again fill the canal with tap water and insert needle clear to the end of the canal. The third time, in case of an open foramen, push the needle slightly beyond the foramen as a slight amount of steam destroys the veridans.

Now take a second culture to the apex with a paper point and place in the incubator as previously described. Then put another finer paper point just past the foramen, remove, place in culture tube and incubate all tubes for four days at 37° C.

Sixty per cent will show growth on the first smear. Ninety per cent will show negative on the smear point taken after steam treatment and the third smear point will show negative in the cases except those which have never been opened to the flora of the mouth and have no granuloma. The last should receive a second steam treatment after the four days necessary for incubator findings. The patients are generally dismissed for a second sitting one week hence at which time the canal is again steamed according to showing of culture

smears. This thermal treatment is of advantage in cases of hemorrhage or serum coming into the canal as the hot point will check it at once. We occasionally use an immediate canal filling in cases where the patient is leaving the city on that or the next day or have come several miles to get endodontic treatment. However, we prefer to have an interim to allow for culturing. A dressing is placed in the canal to check the growth of any bacteria that might have escaped the steam.

THE DRESSING FORMULA

(by weight)

Powder one part Penicillin D; 24 parts Sulfanilamide; 25 parts Bone Meal calcined at 300° F.; 50 parts Bismuth Subnitrate, Liquid Lanolin Oil and water equal parts. Boil out the water for sterilization.

Mix a fresh paste from the above for each dressing and pump the canal full of the paste and with a small square of vulcanite rubber crowd a small quantity through the foramen. In case a first sitting canal filling is to be used, clean out the canal with Chloroform. If immediate canal filling is to follow, use the same technic to clean out the oil. Used as a time dressing the paste can be thoroughly sealed by heating the end of the temporary stopping stick quite hot, dipping in Eucalyptus, and filling the pulp chamber.

CANAL FILLING TECHNIC

Flood the canal with chloroform, wipe clean and flood again. Dip the lower half of a previously measured and fitted canal point in eucalyptus, lay on bottle top, the free end protruding beyond. Pump the canal full of varnish, place canal point to place. Allow point to remain a minute or two and with a pumping motion settle the point as low as can be done. The softened end of the point will fill the foramen to complete and permanent closure.

Remove any gutta percha in the pulp chamber. Thoroughly clean the dentinal walls. Bleach walls by boiling therein 20 to 30 per cent peroxide using the ball electrode. Thoroughly dry and cover walls with a snow white cement or posterior

porcelain and finish as desired with a permanent restoration.

With molars the technic is the same for each of the canals. We must have direct access to each canal and it is often necessary to so change the crown of the tooth that a gold crown is advised.

SUMMARY

There is no sterilization method that is so complete as heat, moist or dry. Nothing

else is so cheap or easily obtained and used. The time consumed is the least of all methods. The danger to tissue is almost negligible. Teeth treated as above become comfortable in the course of a few minutes, and do not become sore or painful even after placing the permanent canal filling. The healing of a periapical lesion follows most rapidly when this method is used.

Lincoln, Nebr.

Interradicular Pathology as Related to Accessory Root Canals

By HARRY B. JOHNSTON, and BALINT ORBAN,

The authors independently made some observations in endodontia which, when correlated, seem to explain otherwise obscure pathologic conditions occurring in the bifurcation of root-canal treated multi-rooted teeth.

The following three cases were observed by one of us (B. O.).

Case No. 1 is that of a man about forty years of age. The lower left first molar carried a bridge for several years without any disturbance. However, in 1944 some discomfort developed, increasing with time, which necessitated removal of the bridge and subsequent removal of the vital but inflamed pulp. Fig. 1A shows the roentgenogram at the time of completion of the root canal filling (2-22-41). A new bridge was constructed and there was no complaint for several years. Fig 1B, (6-18-42). However, in 1944, discomfort again set in and, within a short time, considerable bone destruction, starting at the bifurcation and extending gradually along the roots, made extraction of the tooth necessary (Fig. 1C), (2-18-44). This patient suffered no periodontal disease.

In Case No. 2, the first left lower pulpless

molar of a man in his thirties had to be retreated (Fig. 2A). It was impossible to carry out the complete cleaning and filling of the distally curved mesial root canal. The pulpless second bicuspid and the mesial root of the second molar was extracted, the distal root retained as an abutment for a bridge. The root canal filling was placed (11-21-41). There were no complaints of any subjective nature during the following four years and annual roentgenographic examinations revealed no pathologic process. However, in 1946, a sudden swelling occurred on the buccal surface of the mandible, corresponding to the bifurcation of the first molar. The roentgenogram taken at that time (6-17-46) revealed a complete destruction of the interradicular bone septum of this tooth (Fig. 2B). There was no increase of periapical pathology; the disturbance was localized to the interradicular space. There was no indication of any periodontal disease in this patient.

The third case observed (Fig. 3) is that of the left lower second molar of a woman about forty years of age. Considerable subjective discomfort was present at the time the tooth was opened and large

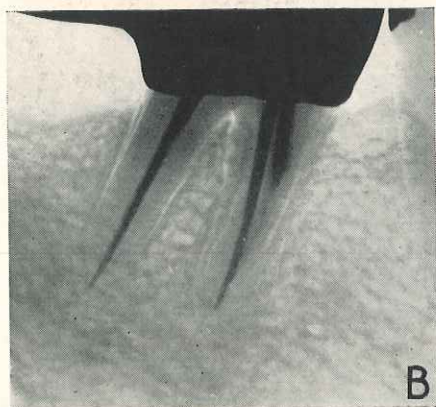
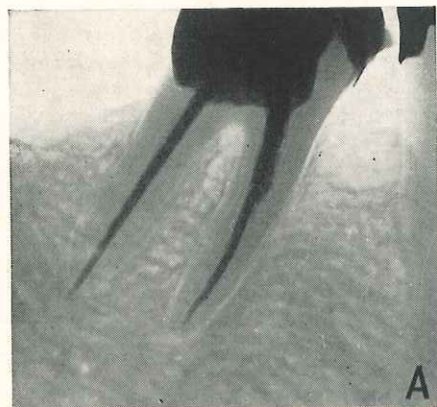


Fig. 1

periapical rarified bone areas are seen in the roentgenogram at the time of completion of the root canal filling (4-18-45). Later examinations revealed no pathologic conditions (4-10-46) (Fig. 3B). There were no subjective symptoms. However, in 1947, discomfort at closure of the mandible and chewing appeared and soon a swelling occurred on the buccal side of the mandible corresponding to the bifurcation of the tooth. A roentgenogram revealed bone rarefaction in the bifurcation but no pathology at the apices (5-7-47) (Fig. 3C).

The following two cases from the material of one of us (H. B. J.) shows a different picture. Case No. 4 is that of the lower

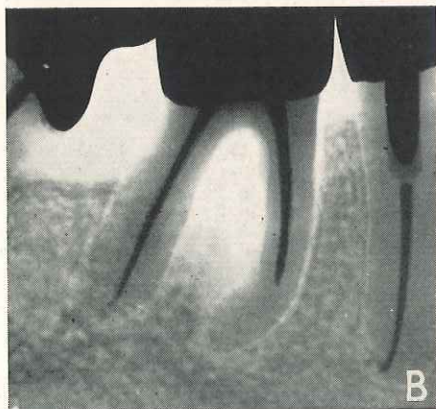
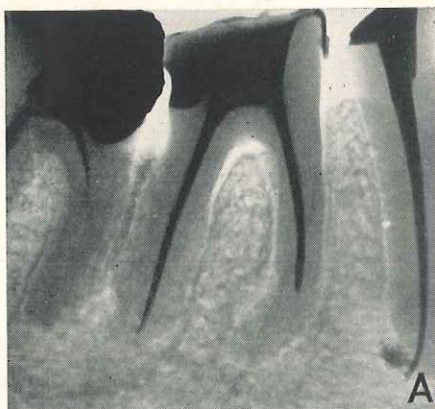


Fig. 2

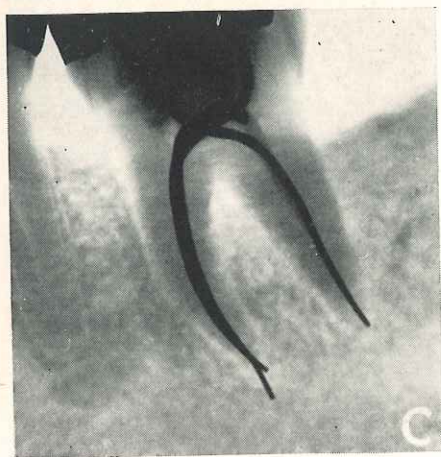
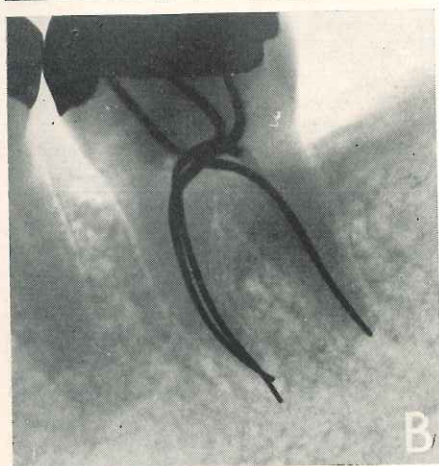
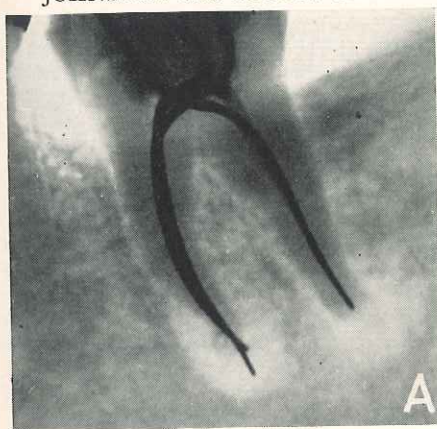


Fig. 3

molar of a young woman. The tooth is pulpless. The pulp canals were infected and putrescent. The interdental bone septum is completely resorbed, the resorption extending into the periapical area (Fig. 4A) (2-27-34). Root canal therapy was carried

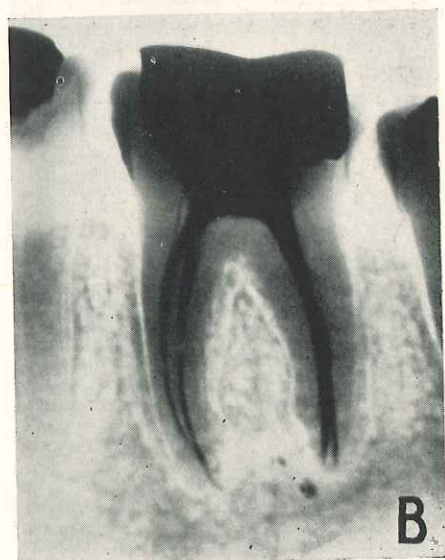
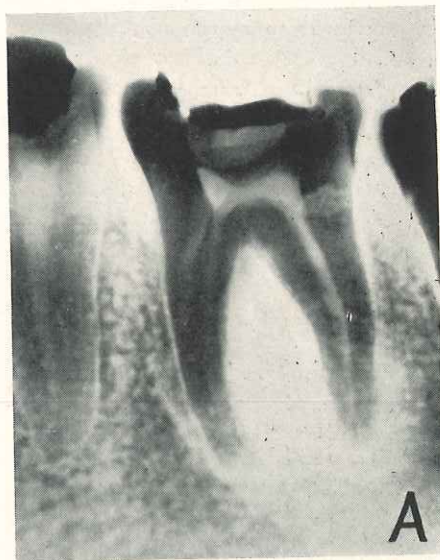


Fig. 4

out and the canals were filled. No subjective or objective symptoms occurred during the following years and the roentgenographic checkup (5-28-38) revealed a complete regeneration of the interradicular bone septum (Fig. 4B).

A similar result occurred in Case No. 5, a man of about forty-five years. The interradicular bone septum is completely resorbed (Fig. 5A). Root canal therapy and filling were carried out in 1944. A check roentgenogram in 1947 reveals complete regeneration of the interradicular bony septum (Fig. 5B).

Why does interradicular pathology occur

in some multi-rooted teeth several years after what can be considered successful treatment, as in the first three cases? Why does interradicular pathology disappear in other cases after root canal treatment, as demonstrated in the last two cases?

Although a definite answer to these questions is not always possible, the explanation is, in all probability, the frequent occurrence of accessory canals in the bifurcation of multi-rooted teeth. In microscopic specimens, such accessory canals have been demonstrated (Fig. 6).

The following two cases (Fig. 7, A and B) illustrate such interradicular accessory canals filled with Callahan's method (H. B. J.). In both cases interradicular pathology is present as indicated by radiolucency due to bone resorption. Following electro-chemical sterilization, the bone regenerated in a reasonable length of time in both cases.

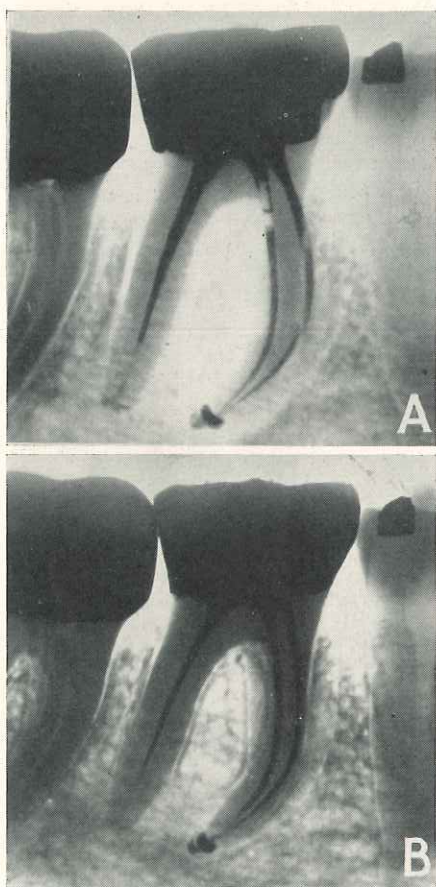


Fig. 5

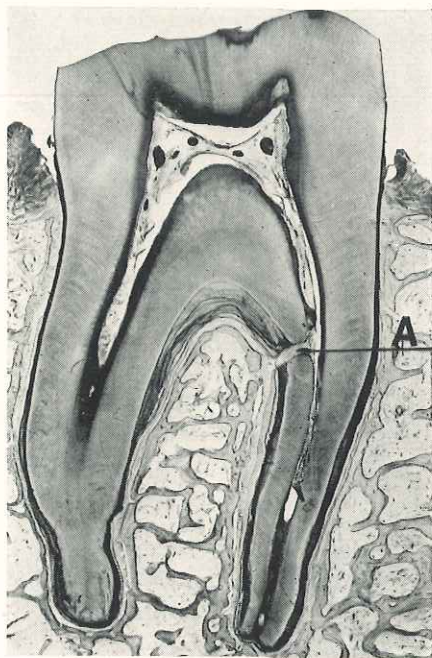


Fig. 6

It has been claimed* that pulp pathology might start through the communication of a periodontal pocket with the pulp, via an accessory interradicular canal, and the reverse is just as possible. If there is an accessory canal in the bifurcation, the pathologic process might manifest itself in the bifurcation. It is even conceivable that, if such a canal is present and is not treated and filled, and, if some organic material, possibly infected, is left during the operation, at some later date a pathologic process might set in (Cases 1-3). If, in the course of treatment, such infected material is removed, and the canal is disinfected, even though it is not filled, the pathologic process may clear up (Cases 4-5).

From the practical point of view, we must conclude that, in treatment of infected teeth, a method must be used which will eliminate or disinfect organic materials from hidden inaccessible canals by chemical or electro-chemical means. Obviously, these canals should also be filled and their foramina sealed if possible against reinfection.

Atlanta, Ga.

Chicago, Ill.† and Colorado Springs, Colo.‡

*Sicher, H., The Problems of Pain in Dentistry, "The Bur," December, 1944.

†University of Illinois, College of Dentistry, Department of Histology.

‡Dr. Urban has accepted an invitation to direct research and post-graduate courses at the Colorado Dental Foundation, a newly established organization. He will spend nine months of the year in Colorado Springs and three months in Chicago, keeping his affiliation with the College of Dentistry, University of Illinois.

REPRINTS NEEDED

Will you please supply reprints of your articles on endodontia for the file which has been established for the use of members of the Association? Please forward reprints to the Chairman of the Library Committee, Dr. Harry J. Healey, Indiana University School of Dentistry, Indianapolis, Indiana.

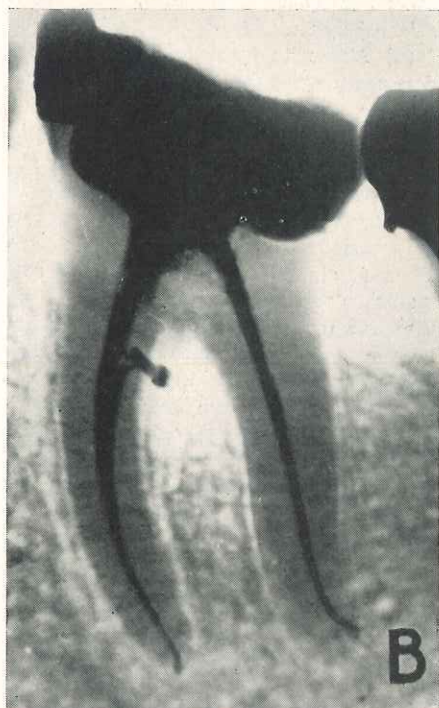
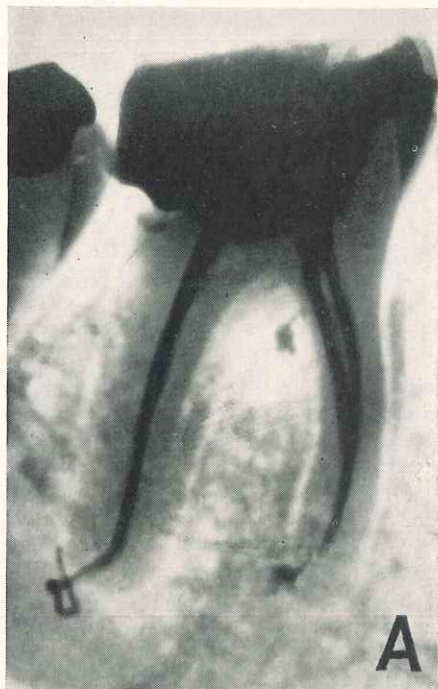


Fig. 7

Preliminary Report on the Use of Indium as a Root Canal Filling Material

By H. H. PEARSON, D.D.S.

Endodontia is defined as the Science that deals with the treatment of pulp involved teeth, so as to make them functionally serviceable and tissue tolerant (1). One of the most important factors necessary to accomplish this is the complete obliteration of the canal by hermetically sealing it with a filling. The ideal root canal filling material should have the following properties (2):

(a) Compressability; so that the apical opening may be thoroughly sealed and the material thoroughly adapted to the walls of the canal.

(b) Flexibility and softness; to simplify insertion and the removal of part or whole when necessary.

(c) Inertness; so that it will not shrink, or otherwise change its form, and not be affected by tissue fluids.

(d) Tissue tolerant and bacteriostatic; non-irritating to the tissue in the periapical area.

(e) It should be easily sterilizable.

(f) Opaque to x-rays.

In the past many different materials were used for this purpose such as beachwood, orangewood, lead, irridio-platinum, gold, silver amalgam, and fibre glass and other materials too numerous to mention. Up to the present writing pure silver cones have been accepted as the ideal for all posterior and lower anterior teeth, but for the upper anterior teeth certain required qualities are missing in silver, therefore gutta percha is used as a substitute material. In the writer's search for the material that would come closer to the ideal a metal called Indium was found to contain the necessary physical and biologic qualities.

The following is a report of the results of our studies of the use of this material in a limited number of cases to date. Therefore

this report must be considered a preliminary one and not a conclusive one. It is hoped that further research will prove that Indium is nearer to the ideal than either silver or gutta percha as a root canal filling material for upper anterior teeth.

PHYSICAL PROPERTIES

Phylbrick and Holmyard (3) report that Indium is a metal that was discovered in 1863 by Reich and Richter. It is only within recent years that industry and medicine have begun to take cognizance of its possible uses.

It is an elemental metal of silver color.

Atomic weight.....	114.76
Specific gravity.....	7.3
Melting point.....	155° C.
Boiling point.....	1450° C.

A few years ago, no practical application was found for Indium because of the difficulty of procuring it in pure form from ores in which it is found mixed with other metals. Now, demands are made for its extensive use in transportation, electrical, ceramic and dental fields. It is employed in industry for non-ferrous plating diffusion purposes. It may be applied by electro deposition, or by heat treatment where the diffusion is similar to amalgamation. Because of its corrosive resistance and ability to impart surface hardness and fatigue prevention it is used in automobile and aircraft engines. Very shortly, surgical instruments will be finished through the process of Indium diffusion. It is softer and more malleable than lead, and is untarnished by air and unaffected by water.

It may be cut as easily as wax, and burnished without the use of excessive pressure. When placed between two glass slabs it may be rolled into wires or cones of various thickness, using only thumb and finger pressure.

Because of its low melting point, it may be melted with a hot plugger or spreader while in the canal of the tooth or the excess removed from the pulp chamber with a hot excavator. In resection operations the apical excess may easily be burnished or even melted off to make a perfect seal. Because of its softness it will follow a curve in a canal more readily than a silver point.

McCord, Meek and Harrold (4) report: "Discs of metallic Indium were implanted in 15 rabbits subcutaneously intra-abdominally and in the deep back muscles. After a period of 156 days no abnormal manifestations, other than a not remarkable degree of foreign body reaction were observed. There was no evidence of unusual inflammation nor did any organs show signs of any degree of impairment." The failure to detect other than foreign body reactions to these implanted discs suggest scant opportunity for harm to humans, but the possibility of allergic states is not denied.

"The prolonged daily feeding of Indium sulphate to rats produced no demonstrable changes at the 58 mg./kg. level. The equivalent daily dosage in man would be 123 grains."

The implanted discs used in these experiments were made of pure silver with Indium impregnated by diffusion or by plating on their surfaces. The reason this method was followed instead of using discs of pure Indium may be readily understood when one realizes that Indium up to recent times cost \$2,472 per ounce. Today because of improved production methods and wider use the near current price per troy ounce is less than \$10.00 or about eight cents per root canal filling.

Indium was tested in the following solutions to find means for sterilizing and maintaining sterility. Cones were placed in:

- (a) Petroleum ether, no observable chemical reaction.
- (b) Alcohol and Chloroform, no observable chemical reaction.
- (c) Metaphen antiseptic, mercuric deposit.
- (d) Zonite, crystals of Indium chloride deposited.

- (e) Zephrine chloride, no observable chemical reaction.

Indium may be sterilized in the autoclave or in boiling water and stored in alcohol.

After rolling Indium between slabs of glass the surfaces become blackened from the abrasion. This is readily removed by dissolving in 10% sulfuric acid for a few moments, leaving a clean silver white surface.

BIBLIOGRAPHY

1. Archambault, M. B., Richardson, A. D., Pearson, H. H., "Symposium on Endodontia" presented to the American Association of Endodontia, February, 1947.
2. Grossman, L. I., Text Book on Root Canal Therapy.
3. Philbrick, F. A., and Holmyard, E. J., Text Book, "Theoretical and Organic Chemistry," Publishers, J. M. Dent and Sons, Ltd., London W. C., England.
4. McCord, Meek and Harrold, Journal of Industrial Hygiene and Toxicology, Vol. 25, 6, 1943.
5. Hyams, B. L., Williams, R. V., Personal Communications.

500 New Birks Building,
Montreal, Quebec.

REPORT OF THE LIBRARY COMMITTEE

During the past year, plans have been made to develop a program for accumulating reprints of contributions to the current literature on endodontia. It is evident that the progress of forming such a reprint file will be slow and that its value will not be truly reflected until a number of years have passed. It is felt that its existence in the future will be valuable as a source of reference material and as a record of scientific investigation in endodontia.

Co-operation of the members of the Association by forwarding reprints of previous as well as future publications to the Chairman of the Library Committee will be solicited and will greatly assist in the development of this file.

HARRY J. HEALEY, D.D.S.,
Chairman of the Library
Committee.

Report of the Study Club Committee

In order to stimulate the formation of local Study Clubs it seemed advisable to formulate an outline for the activities of such Study Clubs.

The members of the Study Club Committee, Drs. B. Orban, H. H. Pearson and G. Stein, have exchanged views and the following recommendations have emerged as a basis for discussion in the Study Club Committee.

Dr. H. H. Pearson suggested four points for that discussion:

1. Methods for the formation of Study Clubs.
2. What the American Association of Endodontists has to offer by way of assistance.
3. Should such clubs confine the membership only to individuals who now practice Endodontia or open them to all who desire to learn the new technics?
4. Should such clubs be branches of other Dental Societies (State, District, etc.) or completely new organizations?

Dr. G. Stein contributed the following outline for the activity of Study Clubs:

The purpose of forming Study Clubs on Endodontia is:

1. To familiarize the members with and to stimulate discussions on, current problems on Endodontia.

While current problems of Endodontia are presented and discussed at the Annual Meetings of the Association, a more extensive discussion is possible in smaller groups. Suggestions for topics to be discussed in the annual meetings may emanate from these groups.

2. To stimulate and encourage further research in the field of Endodontia.

This stimulation for research will probably develop from the activity under 1, and members of the Study Club may be selected to carry out certain phases of research with the support of the whole group. A suggestion for some type of research is given below.

3. To create interest in Endodontia and to spread knowledge about its achievements in the profession.

Topics for papers to be read before the local Dental Societies could be selected by the Study Clubs. Suggestion for a Study by Study Clubs:

One of the most difficult problems of Endodontia is the evaluation of the success of the treatment performed. All clinical tests such as local examination of teeth and bone for tenderness and by means of X-rays do not satisfy scientific demands. The only satisfactory test would be histological examination. While this is generally acknowledged, it is considered that the condition of the periapical region as revealed by repeated X-ray examinations, though not proof, gives valuable information about the success of root canal therapy. One way to compare the effectiveness of the many different methods of root canal therapy suggested, would be to compare the X-ray results of these methods, if carried out under certain standard conditions.

The conditions required for a comparative evaluation have been suggested as follows: X-ray pictures should be taken of every case:

- a. Before start of treatment.
- b. After completion of treatment.
- c. After one year.
- d. After two years.
- e. After three years.

All cases, without exception, treated within a given period, should be included in that study and it is suggested that their number should not be less than fifty. As it will prove practically impossible to get check X-rays from fifty cases in succession, it should specifically be stated how many cases were excluded from the study because of the impossibility of getting the check X-rays required. But the X-rays "a" and "b" should be submitted. This would make statistical evaluation of the reports possible.

Each operator, or group of dentists, who

are favoring or recommending one method, should submit the material collected to the Study Clubs. It is assured that such a study will have to go on for a number of years until sufficient comparative material will have been collected.

More detailed information will have to be worked out concerning the groups of teeth and pathology involved to be included in this study.

Activity reports were submitted from the Study Club of Philadelphia and the Montreal Endodontia Society.

"The *Philadelphia Study Club* on Endodontia held a meeting during the spring of 1947 at which time S. Gershon-Cohen, M.D., a roentgenologist, presented a paper on 'Repair of Bone,' which was discussed by A. M. Rechtman, M.D., an orthopedic surgeon. Also, I. B. Bender, D.D.S., spoke on 'Root Canal Treatment with Penicillin' and illustrated this with slides."

Report of the *Montreal Endodontia Society*
 "On our program since 1944 we have had lectures on Histology, Pathology, Anatomy, Physiology, Therapeutics, Diagnosis, Anaesthesia by teachers of these subjects, with practical demonstrations by our members on actual cases. So far this term we have had:

- (a) Lecture on 'The Enervation by the 5th Cranial Nerve.'
- (b) 'The Micro-organisms found in pulp canals' was a subject dealt with by one of our leading Bacteriologists and Serologists.
- (c) A demonstration at the Hopsital clinic on a patient showing 'The immediate sterilization and resection technic.'
- (d) A lecture on 'Electrolytic Medication.'
- (e) An illustrated talk on 'Restoration of fractured anteriors with pulp involvement.'

As for research there are several investigations now in progress by our members, and it is hoped that very interesting reports will be made in the near future.

So stimulating has been this program that many of the newer members have been impatient and have gone to the various Universities to take short postgraduate courses.

No meetings were reported from the Chicago Study Club.

Preliminary talks for the formation of a Study Club in New York were held.

GEORGE STEIN, M.D., D.M.D.,
*Chairman of the Study Club
 Committee.*

National Award in Endodontia

This award or prize is to be awarded annually to a senior dental student. The award is to be made on a competitive basis for extra-curricular activity in the field of Endodontics.

The greatest latitude will be permitted regarding the nature of that activity. It may be in the nature of (1) a critical review of some branch of endodontia; (2) the demonstration of unusual competency or technical ability in endodontics; (3) the treatment of unusual cases, or cases treated in an unusual manner, which work is supported by case history, and radiographic evidence; (4) any original project or series of

observations conducted by the student on any subject pertinent to the field of endodontia.

The contestants must submit the completed theses in triplicate to the Secretary of the Association on or before May 1st. The theses to be judged by the Students Award Committee and the prize to be based primarily upon (1) the subject chosen; (2) evidence of originality; (3) if original, the methods employed; (4) if a review, the completeness of same; (5) the quality of the thesis.

It is proposed that the Secretary of the Association upon receiving these theses

remove all evidence which would identify the author or the school in which he is a student and submit the papers to the Committee identified only by number.

The Committee members will report to the Secretary rating the papers as first, second, third, and fourth choices. The first choice receiving 4 points, the second choice 3, the third choice 2, and the fourth choice 1. The paper receiving the highest total number of points from the various members of the Committee to be judged the winner of the award.

It is proposed that the amount of the award be left to the Association after a consultation with the Budget Committee. It is suggested that the award be money. The recipient would be expected to attend the next annual meeting of the A.A.E. at which time the award would be made.

JAMES R. BLAYNEY,
HARRY B. JOHNSTON, SR.,
THOMAS J. HILL, *Chairman*.

BOOK REVIEW

Muller, Oskar, *Pathohistologie der Zahne*. Benno Schwabe & Co., Verlag, Basel, 1948.

This textbook is written primarily for students of dentistry and for practitioners who wish to bring themselves up to date in the histologic aspects of disease of the teeth. Enamel hypoplasia, abrasion, erosion and caries are discussed very briefly and hypoplasia of the dentin is not mentioned. Hereditary enamel hypoplasia is omitted in the list of causative factors. The illustrations are, however, excellent.

The presentation of abrasion and erosion

is brief but competent. Caries is presented in orthodox fashion. A novel feature is the superposition of an explorer tine on a number of photomicrographs of carious enamel to indicate relative magnification.

The histopathology of the pulp is treated in much greater detail and is beautifully illustrated. The effect of arsenicals, para-formaldehyde, eugenol and other drugs on pulp tissue is described and demonstrated in excellent photomicrographs.

There is a short section on the effect of experimental scurvy on the dental pulp including illustrations of healing after the administration of antiscorbutics.

The use of calcium salts in stimulating new dentin formation both under deep caries and over pulp tissue after pulp amputation is discussed and a number of photomicrographs illustrating reparative new formation of dentin are shown. The use of ivory particles and of calcium hydroxide (calxyl) after pulp amputation is also discussed and illustrated.

The diseases of the periapical tissue are also considered in detail. The results of root treatment of various types including root amputation are shown. Periodontitis and granuloma formation are discussed and profusely illustrated. Root cysts are discussed briefly.

Periodontal diseases are considered in the final section. These again are discussed briefly and in orthodox fashion.

The book is well bound and printed on excellent paper. It is profusely illustrated and the photomicrographs are superb. The illustrations of pulp and periapical tissues will be of special interest to endodontists.

There is no index, but the table of contents is detailed and clear. No bibliography is given as such but there is a list of the author's publications, and of doctoral dissertations from his laboratory. Many of these are concerned with the subject of endodontia.

PAUL E. BOYLE.

Obliteration of the Root Canal with the Open Apex

DR. GEORGE HARE, Toronto

One of the more distressing problems which faces the endodontist is that of the incompletely calcified root. The child may present a root apex which varies in diameter from a millimetre to that in excess of the coronal orifice. Many attempts have been made to obliterate such canals in a satisfactory manner. In the hands of some men the sectional method has proven satisfactory, while in other hands copper amalgam has solved the problem. Yet another group makes use of pastes or cements alone to seal the apex. Let us consider these methods of obliteration.

The sectional method consists of judging the diameter of the apex and of cutting a section of gutta percha cone to correspond to that diameter. The section is attached to a warmed plugger, coated with a cementing medium and gently carried to place. Unfortunately, just as the cone is part way up the canal the hand may waver, the section separates from the plugger and disappears in the cement. By the time a radiograph is taken and processed the cement may have commenced to set and the section can neither be advanced nor retrieved.

There are a few men who have become marvelously adept with copper amalgam but we average individuals all too often find that only a periapical curettage can remove the particles which have escaped through the apex. Little is heard today about the use of pastes and cements alone as they have fallen into disrepute from their lack of stability.

A modification of the lateral condensation method used with gutta percha has proven of great assistance in securing a perfect seal in open apex cases. After the canal has been prepared in the usual manner and judged

ready for obliteration, a large gutta percha cone is placed within the canal and cut flush with the incisal edge of the tooth. A radiograph is taken to ascertain the exact length of the canal. After correction has been made in the cone length a second radiograph is taken to prove the correction. If the canal walls are parallel or converging all cones are placed in the canal with the small end first. If, however, the walls of the root diverge toward the apex, select two large gutta percha cones and cut the butt ends down to the exact length leaving the cut surfaces flat and at right angles to the long axis of the cone. Choose a number of fine and extra fine cones and likewise cut them to the exact length of the tooth. Every cone which is to be placed within the root canal must be the exact length of the tooth. Coat the inner walls of the canal with a cementing medium such as Rickert's or Grossman's formula, and in the case of diverging walls place the first large cone *butt first* within the canal until the tip is flush with the incisal edge of the tooth. Repeat this procedure with the second large cone upon the opposite wall of the canal. With a Kerr Spreader Number 3 upon which has been placed a rubber dam marker corresponding to the length of the tooth, force the cones to either wall and add a third cone. Add one cone after another until no additional cones can be condensed; at all times closely watch that the exposed end of no cone passes beyond the incisal edge of the tooth. If this rule is followed a radiograph will show a smooth, even line of gutta percha flush with the apex of the tooth and an evenly condensed mass obliterating the length of the root canal. Should you unhappily have missed one or two points and have permitted them to pass beyond the

incisal edge all is not lost. Grasp the exposed mass of cones with a hemostat, withdraw and refill correctly. By following this technic you may still have your night out with the boys and a happy result on the morrow.

2487 Bloor Street West.

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