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President's Message

As the population of our great country grows, so does the backlog of unfilled teeth and the need for replacements caused by the most prevalent of all human diseases—"caries of teeth." Every dentist (and there is no need for a conscientious dentist not to be busy) is aware of the increasing load and the existence of potential health problems of not only his personal clientele but his friends and associates socially. Too often we are forced to believe that this pressure forces the issue to the point that, "Oh well, the task is insurmountable anyway, and any old service will satisfy the unsuspecting patient who doesn't know the difference between a superb service and one of mediocre quality—or even less."

The Academy is a young group within the profession of dentistry, yet it represents standards and achievements of individuals and study groups that are unexcelled anywhere within the confines of the dental profession. This is by no means an indication that the laurels are so

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Dr. Merchant was born and raised in Magnolia, Iowa. He received his early education in Magnolia High School and Woodbine Normal and graduated from the latter in 1908. Dr. Merchant graduated from Creighton Dental College in 1913 and first set up practice in Randolph, Nebraska. He moved to Omaha in 1916 and has since practiced there except for two years as a medical missionary in the South Sea Islands. Before and after his sojourn in the Islands he was a member of the Creighton Dental School faculty. He has always been a willing and honored worker for his profession.

He is a past president of the Omaha District Dental Society and of the Nebraska State Dental Association and has been a member of the Nebraska State Board of Dental Examiners and the National Board of Dental Examiners. Dr. Merchant is a Fellow of the American College of Dentists, a member of the American Denture Society, American Society of Dental History, Delta Sigma Delta and Omicron Kappa Upsilon. He is a Life Member and former president of the Woodbury Gold Foil Study Club and director of the Research Gold Foil Study Club of Nebraska. Dr. Merchant is a member of the Omaha Rotary Club, a Mason and a Shriner, and a member of the Reorganized Church of Jesus Christ of the Latter-day Saints.

great that we can rest on them. Rather it is only a challenge to reach beyond our present standard to new and greater achievements—which are inevitable if not totally visible—within the potential power of dedicated men such as now comprise the membership of the Academy and many others whom we should be seeking out in the interest of the ideals of this organization.

Members of the Academy can match the achievement of any group or specialty within the profession in skill and scientific research.

The Academy has chosen to deal with the training of "devotees" in the manipulation and use of the material known at present to be unequaled and unchallenged as the most permanent and most conservative of all filling materials.

What the future holds no one dares predict. Inseparably and concurrently with "Gold Foil" is the strict adherence to the use of the rubber dam and the best of skill in its application—thus for better achievement in any field of restorative dentistry and the blessing of mankind, our patients. Thanks to progress, not even the most fastidious, esthetic-minded, conscientious patient need be denied the use of gold foil as a restorative material—unexcelled and unequaled as a permanent filling material.

We can only justify our existence, and perhaps our sense of dignity, in proportion to our efforts, without compromise, toward greater use of the two materials heretofore mentioned. The American Academy of Gold Foil Operators is not merely an association of men, it is indeed an ideal.

The annual meeting in Birmingham, Alabama, was not as widely attended as some have been before, but those who came exhibited a spirit of devotion and, I feel sure, engendered new enthusiasm for the best in dentistry where it may not have existed before.

HENRY A. MERCHANT

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NOTICE

The Twelfth Annual Meeting of the American Academy of Gold Foil Operators will be held in Baltimore, Maryland on October 11 and 12. The scientific sessions will be conducted at the Baltimore College of Dental Surgery, Dental School, University of Maryland. Headquarters for the meeting will be the Lord Baltimore Hotel. Details regarding the program will be forthcoming in the next issue of the Journal.

President - Elect: Arne F. Romnes, D.D.S., M.S.D.

DR. ROMNES WAS BORN and raised in Stoughton, Wisconsin. He received his D.D.S. in 1931 from Northwestern University and his M.S.D. from the school in 1937. He has been associated with the faculty of the Northwestern University Dental School since 1931 and has been Chairman of the Department of Operative Dentistry since 1950.

Dr. Romnes has held a number of offices in professional associations and societies, some of which are: President of Northwestern University Dental School Alumni Association, General Chairman of the Centennial Celebration of Northwestern University in 1951; Program Chairman of the Illinois State Dental Society, and Chairman of the Operative section of the American Dental Association in 1955.

In addition to these offices, Dr. Romnes is a member of the American Academy of Restorative Dentistry, International Association of Dental Research, Federation Dentaire Internationale, the Chicago Dental Society, and a Fellow of the American Association for the Advancement of Science and of the American College of Dentists. He is also a member of Sigma Xi, the honorary scientific society.

Dr. Romnes has been an essayist or clinician before 76 local, state, national and Canadian dental associations and he has sixteen publications to his credit in the fields of preventive and operative dentistry and dental education.

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ELIGIBILITY FOR OPERATING KEY

Some confusion exists among the membership regarding the eligibility for the operating key.

Active members are privileged to purchase the key through the Executive Secretary's office after completing a gold foil at a sponsored Academy meeting. Any *Associate* member who has completed a gold foil at a sponsored meeting is eligible for key and certificate of membership upon election to Active membership.

Esthetic Restoration of Anterior Teeth with Emphasis on Rapid Fabrication of Fired Porcelain Units

BRUCE SMITH, D.D.S.*

Introduction: The use of porcelain in dentistry dates back to the early years of the profession in Europe. One of the earliest techniques described was that of cementing small sections of glass rods into prepared cavities. Some years later, in 1862, an American named B. Wood was reported to be cementing small sections of porcelain teeth into natural teeth. Naturally, the earliest uses of porcelain were artistic and commercial. Despite the fact that the skills employed in such uses were basically empiric and passed from father to son, a body of writing began to grow which described firing procedures and the coloring effects caused by various contaminants. As the years passed, earnest students of the subject were able to find volumes of detailed work listing numerous elements and minerals which cause color in porcelain. The basic shades and the staining agents used in modern dentistry are similar or in some cases identical to those described in the early literature. Some knowledge of the effects of chemical or physical contamination will be of great assistance to the present-day dental ceramist. Certainly such knowledge will serve to emphasize the cardinal rule of porcelain manipulation: that absolute cleanliness is essential. If we are alerted to avoid taking risks in our own dental laboratories, we may expect predictable results in our own porcelain work.

Advantages: The esthetic concern of patient and operator is appeased by the use of porcelain. Furthermore, the esthetic advantages of porcelain are enhanced by (1) low thermal conductivity, (2) high tissue tolerance to the glazed surface, (3) inertness—in contrast to resins it neither absorbs moisture nor stains, (4) low coefficient of thermal expansion which is near that of tooth structure; in contrast, resins have

*Presented at the 11th Annual Meeting, AAGFO in Birmingham, Alabama, October 26, 1962.

Dr. Bruce B. Smith was born and raised in Seattle, Washington. He attended the University of Washington and graduated from North Pacific College (Univ. of Ore.) Dental School in 1942. Dr. Smith has taught at the University of Washington since 1946 and is currently in the Department of Operative Dentistry there. He is also a member of several study clubs there, including the University Ferrier Gold Foil Study Club. Dr. Smith is co-founder and fornier president of AAGFO and has been affiliated with a number of professional dental groups, including the American College of Dentists.

a coefficient over eight times that of the tooth and (5) the glazed surface of porcelain and its cementing media retards caries in the area of the restoration.

Review of Techniques: Investigations in the past few years have shown several new, intriguing developments regarding the actions and behavior of dental porcelains. Perhaps it is well to start any paper concerning techniques with a brief resume of the more pertinent scientific findings to aid in the understanding and appraisal of these techniques as well as the actual firing procedures.

First, we must understand that all porcelains used by the dental ceramist differ in formula from the porcelains used in artificial teeth. Kaolin or clay is very seldom used in ceramic porcelains, and most popular porcelains with one outstanding exception are "fritted" porcelain powders.

Fired dental porcelains all seem to fall into the glass category, and thereby exhibit the properties of glass in their fluid and solid states. This in itself is a new concept to the dentist. One of the finest recent basic studies is that reported by Hodson[1] and should be considered required reading.

Lately the impetus toward porcelain work has been marked, primarily because of the "porcelain united to gold" procedures. These have included Pors-on, Permadent, Microbond, and Ceramco, to mention a few. The plastics have generally fallen sadly by the wayside because of their poor color holding characteristics and physical properties in general. Even the more highly advertised epoxys seem to have attraction for certain brands of lipstick, especially if small flaws or scratches are present on the surface. Toothpaste or powder will not remove this stain. The patient must resort to household cleaners or detergents.

There have been three generally accepted ways of making porcelain faced crowns. The first and most common method was simply to grind a facing or denture tooth until nothing remained except the labial plate of porcelain with enough extensions laterally and incisally to anchor the unit into a subsequently cast crown. This allowed the dentist with little ceramic experience, to wax up to the porcelain and gain his fit by casting procedures.

The second generally accepted method was to wax up and cast a gold crown in which a window was left for the porcelain. A platinum matrix was either swaged directly to the crown itself or to a duplication of it in the form of a die. The porcelain was fired in the platinum matrix. The method was on a little higher ceramic plane, and allowed the dentist to cut the porcelain window exactly as he wished. It was particularly useful on rotated teeth or on teeth where an irregular or custom formed section of porcelain was desired.

Hagen's method[2] was essentially a combination of the previous

two. He cut a window in the waxed up crown in the manner most suitable for the case. Then, by taking a flexible impression made a die and fired the porcelain face. This face was replaced in the waxed up crown and after final wax adaptation the crown was cast to fit the porcelain.

We have had a series of refractory investments over the years. McBean's was popular for a great while, and works well to stabilize platinum, although we have felt that it was a trifle too soft for constant handling. Since that time another class of refractory investments has appeared. These claim to have high enough accuracy to allow the porcelain to be fired directly within the investment. Some are: R & R "Idepor", Neo-Brillat, Myken, and followed lately by the new Loma Linda Surgident investment. The Whip-mix Company plans to have two products, one for porcelain veneer crowns and one for inlays. All of these products are used for direct firing of the porcelain powders within the investment. Some of the investments are difficult to produce commercially and have proved troublesome to manufacture in quantity. But by and large, they will produce good fitting inlays. However, the technique is rather difficult in some respects for average usage, for some of these investments are also soft and can be easily damaged in critical marginal areas; especially if the cavity in the investment is over-filled and the excess porcelain must be cleaned off. Another factor is the time involved for heating and cooling down the case. In either of these respects the rapid firing technique is superior, for in it time is almost a negative factor, and any excess of porcelain may be easily brushed off the platinum without subsequent damage. Further, a die is always present as an exact record of the preparation.

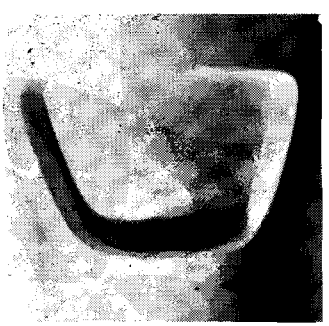

FIG. 1 Typical Class V porcelain inlay cavity preparation. Note that the occlusal wall is at right angles to the long axis of the tooth. All other walls are only very slightly vergent.

Fig. 2 Dentsply Build-up and its simplified shades.

This insures the dentist of an easy way to remake an inlay without seeing the patient again if some untoward accident should occur.

The rapid porcelain inlay technique is very simple and highly accurate. We have been using it now for over four years with increasing satisfaction. Courses have been presented in various parts of the country, and men with no porcelain experience were able to construct well-fitting porcelain inlays on their first attempt, and to do so rapidly. Only in an extremely rare case has an inlay failed to fit the prepared cavity with accuracy.

Present Technique: After the shade has been taken, the cavity is carefully prepared under the rubber dam. It should be deeper than is normal for amalgam or gold foil, should satisfy the principles of extension for prevention, have rounded angles in the outline form, and present absolutely no cavo-surface bevel. (Fig. 1)

The shade is easily selected. There are only four jar shades, L, Y, O, and P. Using these shades, all of the shades of the New Hue Guide can be matched except shade 87 and 78. These are matched by using S and K concentrates. Trial shade bakes should also be made, using the straight porcelain from each jar. Many times these shades will be suitable for the case. If a new jar is purchased a new trial shade record must be made to confirm the exact color. (Fig. 2)

The porcelain used in the rapid firing technique was selected carefully for the purpose. It is called Dentsply-Build-up porcelain*, and was specifically designed to build up bridge pontics. It has less shrinkage and greater strength than most other porcelains[1] as well as having a simplified shade system.

An impression is taken of the cavity preparation, using a good silicone or rubber base material. Kryptex die material is immediately flowed into the impression. When this is set, platinum foil .001 or .00075 is adapted to the Kryptex die. This may best be done quickly by first pressing a soft pine or balsa-wood stick into the die. This shapes the wood to match the cavity. After trimming the wood so it is slightly undersize, the platinum foil is first adapted to the wood. It is much easier to adapt foil to a convexity than to a depression. Then the wood and platinum are inserted into the die. A general relationship is secured, and the platinum is swaged. The margins are now burnished with special tiny burnishers, and a second swaging is done. The platinum may be removed from the die with sticky wax to insure accuracy. Then the wax is burned off and the matrix is filled half full of porcelain. This is condensed, vibrated, and dried. To serve as a shrinkage control during firing a cross is marked in the porcelain with a sharp, thin, gold knife (U of W Set B #52) or an opthalmic lancet. A 000 sable brush smooths the surface and the matrix is dried for a moment before the open furnace door.

*Dentist's Supply Co. of New York.

The furnace should be preheated to 2150° F. This temperature is left unchanged throughout the firings.

One of the most significant features of the rapid firing technique is the special tray which is used. This tray is constructed of two thicknesses of .001 platinum foil. These layers are soldered together with two or three tiny pellets of gold foil. A thin coating of refractory investment is painted on the top of the tray. This is made of 3 parts of 90 mesh crystalline alumina and 1 part of alundum cement RA 1576 (these may be obtained at a scientific supply house). The tray withdraws practically no heat from the furnace, and it heats almost instantly. This allows a twenty second firing period.

The interval must be timed accurately, as a few seconds either way will change the character of the bake. One should be able to judge the extent of the firing visually and recognize at a glance the stages to which the porcelain has matured. The first firing should be carried to a glaze. This precludes practically all subsequent shrinkage of our initial porcelain application. Individual furnaces may vary somewhat as well as the size of the different inlays; therefore, if a glaze is not present after the 20 or 25 second interval, the temperature may be a little low for the technique, and a slightly higher heat should be used. It is good practice, however, to test the accuracy of the pyrometer first by using a pure gold pellet which melts at 1945° F.

After the first firing the matrix is returned to the die, the margins burnished, and the last swaging done. Moldine or clay swagers are sometimes difficult to obtain from supply houses now, but can readily be ordered from a manufacturer in Portland, Oregon.**

The second porcelain application is made and scored in the direction of its longest dimension. This is fired for 20 seconds to a high biscuit. The matrix is removed from the furnace without annealing and the third application of porcelain is immediately applied. If the operator is skillful this may be the last firing. The final glaze should be gained by a few seconds extra exposure to the heat, and the inlay should have proper contour when held up to the eye and viewed from different directions. A *very* slight submarginal effect is to be desired rather than a completely filled matrix because the thickness of the cementing medium will raise the inlay a minute degree. The film thickness of Kryptex is a little greater than normal zinc phosphate cement.[3]

We have found that sharp, squared-off locking pliers are excellent to strip the matrix from the porcelain. The custom of placing the matrix in water when this is done seems to have no practical value. On the contrary, it hinders visibility to some extent, and thereby increases the chance of chipping off marginal areas. After the matrix has been removed, the inlay should be carefully examined. Should marginal fins be present these must be removed by careful use of a disc to avoid the

**Den-Tool Mfg. Co., 16237 S. E. Taggart St., Portland 36, Oregon.

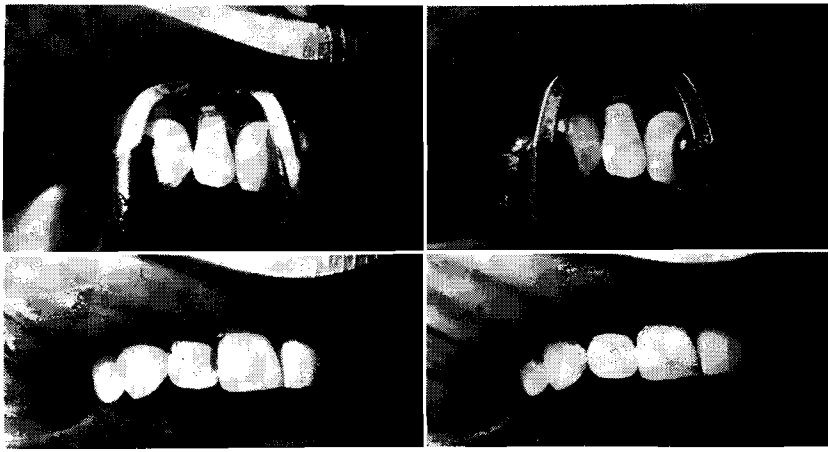

Fig. 3 A Class V preparation before cementation of the porcelain inlay.

Fig. 4 After cementation of the inlay.

Fig. 5 A Class III cavity preparation before cementation of the porcelain inlay.

Fig. 6 After cementing the inlay in the cavity preparation seen in Fig. 5.

possible occurrence of disc-shaped fractures when the inlay is seated. A lock should be carefully cut in both the cavity and the inlay before cementation. Normally, white Kryptex is very suitable for use as a cement. If there is any doubt as to the correct cement shade it is very simple to test it first by using a mix of the cement with equal parts of water and glycerin. This can be easily washed away after testing. The results obtained from proper shading are extremely gratifying. (Figs. 3, 4, 5, 6)

Porcelain Veneers: Recently many efforts have been made to avoid the dead, off-shade look which is so common in many of the new porcelain gold veneers. Reports from Australia, Texas, Oregon and Washington have all indicated the advisability of a pure gold plating or gold foil surface directly under the porcelain. This seems to give a much better appearance, and also avoids the dark black line at the perimeter which occurs when thin porcelain overlays dark metal. A product* called Culver guard has been extremely efficient in leaving a fine gold color over dark Ceramco gold, but it does not give as good a basic porcelain shade in the finished product as the technique developed by Dr. A. H. Wolson of Spokane, Washington, who uses Speyer's Porcelain gold over which a 50-gauge layer of pure gold foil is swaged.

Characterizing: Esthetically, the best finished results with the Ceramco type of veneers have been ultimately gained by stains and glazes. This

*Wilkinson Co., Box 333, Santa Monica, Calif.

is very simple yet very exacting work. It can give a great deal of pleasure to both the dentist and the patient because of the immediately apparent results. Hair line checks, old silicate fillings, mottled enamel and abraded-stained areas all can be duplicated so well as to defy detection from the distance of a few feet.

The procedure is as follows: before the final glaze is made on the crown, it is placed in the mouth and with the use of mineral stains and the stain liquid (a previously boiled solution of glycerin and water in equal parts) the necessary colors are brushed over the face of the porcelain. The appearance of these stains in their wet state will be the same as after they are fired. Though over-firing can burn out or lighten a stain that is too heavy, with the ceramic type porcelain an overglazing will result which is injurious to the bond and to the properties of the porcelain. Usually it will be found that the "dead-white" effect that is so often a problem can be beautifully controlled with an even wash of a slightly darker shade. A mistake can be ground off or removed with a disc very easily but as it can be seen just as well before firing, it is better to correct then.

Characterizing can be great fun but time does not permit a complete discussion of the many methods employed. A paper could be written on this subject alone. However, one point may be of interest. To duplicate a fine hair-line check formerly required quite a little skill; however, now by scoring the labial surface of the porcelain sharply with a diamond point, a straight groove is left which will collect the wet brown stain as it is brushed over the surface of the porcelain. This will simply and accurately give the required effect.

Sometimes it may be desirable to give added depth to the stains. In this event, a low fusing glaze may be fired over the stains. However, because the temperature involved is very close to the maturing point of the Ceramco porcelains, overfiring must be avoided. In addition to this, the glazes seem to expand and contract more than porcelains. This is true both with additions to bridge pontics and to Ceramco, necessitating careful annealing of the case after it is withdrawn from the porcelain furnace. If this is not done, crazing or checking may occur.

Conclusions: One of the main deterrents toward the routine use of porcelain by the average dentist has been the difficult, time consuming techniques involved. The use of a rapid, yet precise, method has been presented wherein firing periods of twenty seconds are employed. In addition, the present concept of porcelain is discussed and some characterization aids are mentioned. 1110 Cobb Building, Seattle 1, Wash.

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Gold Foil: A Re-appraisal of its Properties as a Restorative Material and its Use in General Practice *

TERENCE KNIGHT, L.D.S., R.C.S. (ENG.), D.D.S. (N.U.)

THE FIRST RECORD of the use of gold leaf for the filling of cavities in teeth was made in 1480, by the Italian, Johannes Arculanus, of the University of Bologna, but gold leaf was almost certainly in use for several centuries prior to this date. Subsequently, various writers have referred to the use of gold foil as a dental filling material, but it was not till 1891 that G. V. Black furnished us with the first truly scientific description of the cutting of cavities and the placement of gold foil. He also gave us his rules for cavity preparation and listed the qualities most desired in a permanent filling material. These requirements have become accepted as an almost universal standard. It is interesting to note that, at the turn of the century, the dental profession had almost all the major present-day restorative materials. It had silver and copper amalgam, porcelain inlays and crowns, gold inlays and the zinc oxychloride cementing medium, though the first practical casting method was yet to come from Taggart in 1907. Silicate cements, discovered by Fletcher in 1871, were in use, as were also gutta percha and zinc oxide. So it can be seen that, with the exception of acrylic resin, introduced in 1937, all the filling materials now in use are at least 50 years old. Since Black's time there has been a steady improvement in the properties of most of the materials and a better understanding of the manipulation procedures required. During the past decade there have been further exciting new developments in dental materials and operative techniques.

How then does gold foil stand today? Have these improvements in materials and techniques displaced it as the most ideal filling material? Have recent researchers shown it to be less perfect than it was believed to be?

*Reprinted from the Journal of the Dental Association of South Africa, April 15, 1962, with permission of its editor.

Personal data concerning Dr. Knight is limited. He is a member of this Academy and has shown his enthusiasm for gold foil through his use of it in his practice, and in forming a study club of ten men in Johannesburg. Furthermore, he is giving a table clinic on gold foil at the Tenth Annual Congress this year. The Academy wishes Dr. Knight well in his efforts to extol the virtues of gold foil as a restorative material.

The re-assessment of gold foil in the light of present day developments, to be given in this paper, will show that it has maintained its supremacy. The simpler types of foil restorations that can readily be performed in everyday general practice will also be described.

First, let us run through briefly the desirable qualities of a filling material according to Black[1].

I. Indestructibility in the Fluids of the Mouth: Gold foil is indestructible, whereas amalgam oxidizes or sulphurets slightly. The inlays, gold and porcelain, are indestructible, but their cementing media are not. Silicate cement is the most easily destructible of our filling materials, and acrylic resin, though indestructible in mouth fluids, is sadly lacking in all the other primary desirable qualities.

II. Adaptability to the Walls of Cavities: The greatest intrinsic worth of gold foil is that it may be perfectly adapted to the cavity walls with considerable force[1]. Thus the necessity for malleting actually confers on it its greatest advantage. Furthermore, gold foil is the only material which utilizes the elasticity of dentine to retain the restoration and maintain the near perfect marginal seal, the finest obtainable in dentistry today. The isotopic technique, the most rigorous test of marginal adaptation, has been employed by various investigators with special reference to gold foil, and also to other filling materials. The work of Taylor *et al*[2] revealed that some micro-leakage occurred in nearly all fillings, though in the case of foil, penetration was limited to the foil itself, or the margin, with no penetration into the underlying dentine or pulp, and in the Class V fillings penetration was limited to the enamel. In a number of cases there was no demonstrable marginal leakage of the foil. Amalgam, by contrast, showed 100 per cent leakage, with penetration through enamel, dentine and pulp. Dute[3] and his coworkers, investigating the penetration of I^{131} into and around various filling materials, found the degree of penetration from the most prominent to the least, as follows: self-curing acrylics, zinc phosphate cements, silicate cements, silver amalgam, gold inlay, copper amalgam and last and least, gold foil.

Adaptation to cavity walls is enhanced by the full bevelling possible only with foil and the gold inlay. With the latter it is limited to the non-undercut areas; for example no bevel is possible on the labial of a lingual lock Class III inlay. The bevel has a strong protective effect on the ends of the enamel rods at the cavo-surface margin. Stebner[4] also claims a sliding bevel effect at the gingival margin of gold foil restorations.

A better adaptation is also obtained, possibly by virtue of the fact that the gold foil worker invariably finishes the margins with hard instruments. The work of Hampel[5] using Ca^{45} studying the adaptation of amalgam to cavity walls, indicated that the most desirable surface

was produced by a chisel with a diamond instrument, cross-cut steel bur, medium garnet disc and cross-cut carbide fissure bur giving progressively less desirable surfaces.

Finally, the better adaptation due to dentine elasticity is well illustrated in the gingival third cavities in mandibular incisors. Here the lingual component of masticatory force may cause a small degree of bending of the teeth and an opening up of the gingival and occlusal margins, and consequent failure of all restorations except for the gold foil[6].

III. Freedom from Shrinkage or Expansion: The question of setting shrinkage or expansion, as with amalgam, and setting shrinkage of silicate or acrylic resin restorations, does not arise with foil or the inlays.

However, dimensional changes, due to thermal variations, do occur in all restorations except, possibly, the porcelain inlay. Nelson, Wolcott and Paffenbarger[7], investigating the clinical aspects of this question, found that seepage occurred at the margins of all types of fillings placed in extracted teeth, but not when the fillings had been in place in the mouth for some time. This is probably due to the choking of marginal deficiencies with an organic, and even a bacteriostatic plug which impedes a possible carious process. The bacteriostatic properties of the silicate cements is well known, as is that of amalgam. Gold was generally believed to be inert in this respect[8], until Shay[9] and his coworkers found that cohesive foil had an antibacterial effect second only to that of copper amalgam. This surprising result is probably due to the liberation of ammonia ions from the cohesive foil; being stored in an atmosphere of ammonia prior to use, it is possible, that foil, like amalgam, forms a bacteriostatic plug at any marginal defect. The effect of cohesive foil *per se* on the dental pulp is at present under investigation by the writer.

IV. Resistance to Attrition: Correctly condensed gold foil is highly satisfactory in this respect as it has a density similar to that of the 22 carat alloy casting[10, 11, 12], and its rate of wear has been found clinically to be very nearly the same as enamel.

The long protective bevels, possible only with foil, are burnished in areas of masticatory stress, too a continuing close adaptation to the enamel, whereas an inlay margin, in a similar position, may not have the same ductility, and there will be a tendency to ditching, especially if considerable finishing has been required. A perfect inlay can be worn through at the margin to expose the luting material which, of course, cannot occur with the gold foil.

The resistance to attrition of amalgam, silicate and acrylic resin is inferior to that of the foil restoration.

V. Sustaining Power against Force of Mastication: The tensile strength[11] (36,000 lb. per sq. in.) is a little higher than that of the 22 carat gold

casting and considerably higher than that of the other materials. Its compressive strength is better than that of amalgam and much superior to that of porcelain silicate and acrylic resin. Its impact strength is fully adequate, as is its edge strength, and in these two respects is again superior to all the other materials.

Consequent on these superior physical properties, gold foil restorations require less bulk and are, therefore, more conservative of tooth structure.

Clearly the gold foil is vastly superior as regards these five primary qualities, and it is only with secondary qualities of colour, thermal conductivity, and ease of manipulation that objections have been made to this material. The objections as to poor colour and difficulty of manipulation have been appreciably reduced in recent years, as will now be shown.

VI. Colour: By colour we mean aesthetics which, though important, should not supersede consideration of health or function. Aesthetics can be considered in terms of colour and form.

The colour of gold foil is influenced by the degree of condensation. A well condensed foil without pits and voids will have a light yellow surface, blending quite well with the colour of much tooth enamel. A mat finish, as produced by a fine cuttlefish abrasive, will more nearly resemble the enamel with its many minute unevenesses, and avoid an eye-catching flash of gold.

Form: It is with the quality of form that the greatest advances have been made and, in recent times, there has been much improvement in the outlines for Class III and V and to a lesser extent for Class IV cavities. The improvement of the Class III has been a gradual one with Black's circular labial outlines giving way to the more harmonious long axis outlines of Jones[13], Ferrier[14] and McGehee[15], which, in turn, have, to some extent, been replaced by the "invisible" lingual approach forms of True[16] and Jeffrey[17]. Thus the modern proximal foil restoration in the anterior part of the mouth displays little or no gold, especially when used in cases of early caries, and the objections to its use here, on aesthetic grounds, have been largely overcome.

The Class V outline has also been made less conspicuous, and here we see the older kidney-shaped outline of Black making way for the more aesthetic trapezoidal outlines, well described by Jones and others[13], [18], [19]. This trapezoidal form is particularly pleasing when the occlusal wall of the cavity is curved to follow the gingival contour, so that, at a glance, the restoration merely seems to be an extension of the soft tissue. This gratifying harmony of form has greatly improved the aesthetics of the gingival third foil restoration and considerably reduced objections to its use in the anterior part of the mouth. Stebner has given us a more pleasing Class IV outline, blending har-

moniously with the form of the tooth, both labially and lingually, with no sharp angles to attract the eye.

The Class I and II cavities, being in the posterior part of the mouth, offer no objections as regards colour, because gold is universally accepted as a restorative material in this situation. Even so foil restorations, being smaller in size, are less conspicuous than gold inlays, and the colour is superior to that of amalgam fillings.

VII. Thermal Conductivity: The thermal conductivity of gold foil is high, as are the other metallic restorations, but this does not provide a serious objection to its use as insulating materials may be employed. However, it has been found that linings, other than varnish, are seldom required, because (1) foil is generally used in the smaller, shallower cavities and (2) the preparations are usually made more carefully, using hand instruments to a large extent, with a reduction in the physical and thermal trauma imposed upon the tooth. Clinically there is scant evidence of pulpal irritation under these metal restorations, even when used without any linings whatsoever, which is in accordance with the findings of Langeland[20]. Generally, the use of cement bases under foil restorations is unsatisfactory as the early compressive strength attained by the zinc phosphate, viz. around 10,000 p.s.i., is too near to the force necessary for the proper condensation of gold foil—9,677 p.s.i. For this reason, amongst others, gold foil is not advocated for the filling of very deep cavities. The thermal non-conductors, silicate and arcylic resin, require insulation because of their chemically irritating properties and so are in no wise superior to the metal restoration where the question of thermal conductivity is considered.

VIII. Convenience of Manipulation: "Convenience of manipulation is obviously last as a material should be selected because of its other attributes. If a greater degree of skill is needed to place an especially efficient type of restoration, the student should endeavour to develop such skill; this is the fundamental obligation of the professional man to his patient." McGehee.

The successful use of gold foil *still* requires skill. However, there have been improvements in methods of condensation which make its manipulation easier and, therefore, place less stress on the patient and the operator.

The hand mallet gives excellent condensation, as will the spring mallet, but other methods of condensation have been developed, viz. the pneumatic mallet of Hollenback vibrating at 360 cycles per minute, and the electro mallet introduced by Koser and Ingraham[21] with a range of 200 to 3,600 vibrations per minute. These two new instruments with their contra angle points reaching hitherto inaccessible areas, save by back action condenser points, enable us to fill "invisible" type cavities with minimal sacrifice of tooth structure for access. These

high frequency condensers speed up the rate of condensation with no impairment of the final physical properties, in fact the condensed foil is harder, and there is considerably less stress on the patient. THIS reduction in stress may be likened to the difference between the air turbine and the conventional drill.

The recent work of Kramer[24], using the electro mallet at high frequency and low amplitude of blow is noteworthy. He found little or no injury was discernible histologically in the periodontal structures of dogs receiving gold foil restorations, and was also able to insert Class III foils into the permanent incisors of children as young as eight years of age, with no clinical evidence of traumatic injury to the periodontium. Subsequent radiographic examination disclosed normal completion of root formation.

Mat foil, an extremely pure, finely-divided, crystalline type of gold, has recently been used in conjunction with a cohesive foil veneer for the filling of Class V cavities[21], [22]. This recent innovation enables a more rapid foil placement to be made, again without any serious detriment to the physical properties of the restoration, and represents a notable advance in gold foil manipulative technique.

It can be seen that, as regards the secondary desirable properties of a filling material, there have been very considerable improvements made, and there can no longer be any valid objections to the use of gold foil, where indicated. Before concluding this part of the paper, I would like to refer to two further advantages of foil: (1) Its greater conservation of tooth material and (2) Its compatability with soft tissues.

(1) Conservation of tooth structure is just as essential as ever, though in these days of high-speed techniques with an undesirable swing to full coverage and a tendency of over-preparation of cavities, we are apt to overlook this important point. The Class II foil preparation requires less removal of tooth material than the inlay because there is no need to extend solely to obtain pattern withdrawal. Similarly in the Class III foil preparation we do not have to sacrifice our patients' limited dental resources by the cutting of a lingual lock. Therefore the foil restoration is superior to the inlay in both these situations.

(2) The high degree of gingival compatability of gold foil has been revealed by the recent work of Zander[23] and Waerhaug[25], in which they noted a cellular attachment of the soft tissues to gold foil. This compatability of foil has, of course, long been evident clinically in our Class V restorations extending beneath the gingival margin, where we see healthy normal soft tissue covering up to a third of our gold foil filling. The vast majority of our preparations require extension beneath the free margin of the gum and it is important that the material placed in contact with the soft tissues should be non-irritating.

Foil is superior to all other materials in this respect. The inlays with their cement margins, amalgam with its corrosion products, the rough silicate surface, and the open acrylic margin, are all more irritating.

The facts which have been enumerated above indicate the present-day status of gold foil. It is still the nearest to the ideal filling material, its properties have withstood the most rigorous investigations; improvement of existing materials, and new techniques have not provided any serious challenge, its aesthetics have been improved, its manipulation made easier, and the stress on the patient considerably reduced.

We must therefore accept the fact that gold foil is the best material available to us at the present time, and it is our professional obligation to utilize it whenever it is indicated. It is also encumbent upon us to develop those skills necessary for its successful manipulation so that we may give the highest type of service to our patients. The purpose of the latter portion of this paper is to indicate the wide range or usefulness that gold foil enjoys in general practice.

Gold foil is generally indicated in the anterior part of the mouth; but of course it still has its application in all classes of cavities, although the larger posterior restorations are better taken care of with gold castings. The most frequent indications for foil are the Class V, IV, III and I cavities, though, occasionally, we find Class II cavities suitable, and the zealot enjoys a Class IV. Ferrier summed up the situation with the words: "The smaller the cavity the greater the need for Gold Foil", and, in general practice today, with regular six-monthly check-ups, frequent radiographic examinations, and an increasing dental consciousness on the part of our patients, we are detecting carious lesions earlier than ever before, and so the occasions when we require the use of gold foil are therefore increasing.

There are, however, contra-indications for foil as for any other material. Briefly they are:

(1) Periodontally involved teeth.
(2) Very young teeth.
(3) Very extensive cavities, especially where the enamel is weak and friable.
(4) Patients in poor health, of low mentality, or with an aversion to the procedures involved.

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Interim Academy Meeting

THE 1963 INTERIM ACADEMY MEETING was held at Indiana University, School of Dentistry, in Indianapolis, on January 31. The morning session consisted of essays by Professor Ralph Phillips in "The Clinical Significance of Physical Property Tests of Restorative Materials"; Dr. Lloyd Baum "A Further Laboratory and Clinical Report on the Use of Powdered Gold in Operative Dentistry"; and by Dr. Paul T. Dawson on "The Indications and Technic for the Labial and Lingual Approach in Class Three Gold Foil Restorations."

The afternoon session was devoted to Chair Clinics on Class II, III, IV and V restorations by the following members:

Dr. Donald K. Phillips, *Nebraska City, Nebraska*
Dr. Gerald D. Stibbs, *Seattle, Washington*
Dr. Michael J. Murray, *Omaha, Nebraska*
Dr. Charles M. Stebner, *Laramie, Wyoming*
Dr. Harold E. Schnepper, *Rialto, California*
Dr. Paul T. Dawson, *Chicago, Illinois*
Dr. Donald E. Lindsay, *Toronto, Canada*
Dr. Ralph J. Werner, *Menomonie, Wisconsin*
Dr. Louis B. Schoel, *Portland, Oregon*
Dr. Stephen F. Dale, *Tulsa, Oklahoma*
Dr. A. E. Bocock, *Monte Vista, Colorado*
Dr. John H. Nolen, *Muskegon, Michigan*
Dr. Frederick A. Hohlt, *Indianapolis, Indiana*
Dr. James P. Vernetti, *Coronado, California*
Dr. William Walla, *Fremont, Nebraska*
Dr. William K. Najjar, *Grand Rapids, Michigan*
Dr. G. Ron Heath, *Lansing, Michigan*
Dr. Irwin B. Golden, *Ontario, California*
Dr. Marion Bowen, *Tulsa, Oklahoma*
Dr. Jan Diepenheim, *Seattle, Washington*
Dr. Richard N. Lamermayer, *Kenilworth, Illinois*

A Table Clinic on 'Powdered Gold: Physical Properties and Technical Aspects" was presented by Dr. Lloyd Baum.

* * * * *

MEMBER DONATES AWARD

Dr. Len Portnoy of Los Angeles has presented a gift of $300.00 to the School of Dentistry, University of Manitoba. The gift specifies that it shall be used to provide keys to students who have excelled in gold foil procedures during their undergraduate training. The Executive Council has recognized this generous and purposeful act and has expressed to Dr. Portnoy the appreciation of the Academy.

Scenes from the Interim Meeting

UNIVERSITY OF INDIANA

Indianapolis, Indiana

February 1, 1963

Upper Left: EXECUTIVE COUNCIL: Around table left to right: Paul Moore, Capt., (DC) U.S. Navy, William Walla, Sr., D.D.S., George Brass, D.D.S., Henry Merchant, D.D.S., Mrs. Vonne Wolfe, Executive Secretary, Arne Romnes, D.D.S.

Upper Right: William Gilmore, D.D.S., Charles, Stebner, D.D.S., George M. Hollenback, D.D.S.

Proceedings of the Eleventh Annual Meeting

THE ELEVENTH ANNUAL MEETING of the Academy of Gold Foil Operators was held on October 26, 1962 in Birmingham, Alabama. The scientific program was presented at the University of Alabama, School of Dentistry, and the business meetings were conducted at "The Guest House."

The scientific program was called to order by Dr. George A. Ellsperman, President of the Academy; the invocation was delivered by Dr. Ralph Boelsche; and Dr. Stanley E. Keller extended to the Academy the greetings from the University. The President introduced Dr. Henry A. Merchant who presided over the scientific sessions as Program Chairman.

Attendance: The programs presented were attended by a total of 82 members and guests. They represented twenty-two states: Alabama, California, Colorado, Florida, Illinois, Louisiana, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Carolina, New Hampshire, New York, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Washington, Wisconsin and Wyoming. In addition, Canada and San Salvador were represented.

Didactic Program: The morning session was of considerable interest to the audience due to timely presentations by three outstanding Academy members. These were: "Esthetic Restorations of Anterior Teeth with Emphasis on Rapid Fabrication of Fired Porcelain Units" by Dr. Bruce Smith; "The Use of Powdered Gold in Restorative Dentistry" by Dr. Lloyd Baum; and "The Elimination of Thermal Sensitivity Postoperative to Gold Foil Restorations" by Dr. John A. Mosteller.

Clinical Program: The operative clinics were performed for the edification of fellow members and guests during the afternoon. Class II, III and V restorations of gold foil were demonstrated and technics for cavity preparation, instrumentation, manipulation and condensation of gold were ably shown by the clinicians. These demonstrations were presented by:

Dr. Donald Phillips, *Nebraska City, Nebraska*
Dr. Kenneth C. Washburn, *Chicago, Illinois*
Dr. Lionel U. Bergeron, *Somersworth, New Hampshire*
Dr. Ralph A. Boelsche, *Houston, Texas*
Dr. Alvin L. Goding, *Alliance, Nebraska*
Dr. Victor Lofgreen, *Lincoln, Nebraska*
Dr. Lyle W. Furst, *York, Nebraska*
Dr. Olin M. Loomis, *Seattle, Washington*
Dr. D. E. Lindsay, *Ontario, Canada*
Dr. William J. Brennan, *Omaha, Nebraska*
Dr. Wilburn H. Wilson, *Tulsa, Oklahoma*

Dr. Ray Shaddy, *Omaha, Nebraska*
Dr. Raymond L. Nelson, *Grand Rapids, Michigan*
Dr. Clifford H. Miller, *Chicago, Illinois*
Dr. Peter J. Cavallo, *Forest Hill, Tennessee*
Dr. Kenneth Ray, *Ashville, North Carolina*
Dr. Donald Stenberg, *Minneapolis, Minnesota*
Dr. Joseph B. Lenzner, *New York, New York*
Dr. Michael A. Kondracki, *Braddock, Pennsylvania*
Dr. Jose Amaya y de Vicente, *San Salvador, El Salvador*
Dr. William Walla, *Fremont, Nebraska*
Dr. Herbert J. Underhill, *E. Greenwich, Rhode Island*
Dr. Emory LaPorte, *Omaha, Nebraska*

An interesting table clinic was conducted in conjunction with the chair demonstrations by Dr. Lloyd Baum on the "Microscopic and Clinical Evaluation of Powdered Gold."

Business Meeting: The noon meeting was called to order by President George A. Ellsperman in the banquet room at "The Guest House." Forty-four members and guests were present. The President spoke briefly about the continuous growth of the Academy and the hard work of the various committees. He expressed his gratitude to the officers and committee members for their splendid help and efforts in the performance of their Academy duties.

TREASURER'S REPORT:

Balance on Hand, August 31, 1961	$ 7,403.03
Total Receipts, September 1, 1961 to August 31, 1962	$ 7,330.89
Total	$14,733.92
Disbursements, September 1, 1961 to August 31, 1962	$ 7,276.48
Balance on Hand, August 31, 1962	$ 7,457.44
(Checking Account: $1,835.15)	
(Savings Account: $5,622.29)	

NECROLOGY COMMITTEE REPORT: Dr. Paul Dawson, Committee Chairman, read excerpts from the May, 1962 issue of the Academy's Journal, which eulogized Dr. Charles C. Latham, who passed away only a few weeks after the last Annual Meeting of the Academy. A moment of silence was observed.

RUBBER DAM COMMITTEE REPORT: Dr. Paul A. Moore, Committee Chairman, reviewed the past efforts of the Committee. The Committee proposed to survey, by IBM card questionnaire, recent graduates of dental schools for difficulties encountered in rubber dam procedures. The Committee requested $500.00 to carry out this program. The Executive Council approved the Committee's request for $500.00 to support this survey.

MEMBERSHIP COMMITTEE REPORT: The Committee Chairman, Dr. Wilburn Wilson, was requested to present a summation of the Membership Committee's activities. He spoke briefly of the problems en-

countered in processing new applications and asked specifically that sponsors of applicants for membership endorse only men who were of known ability and possessed sincere interest in Academy efforts. It was pointed out that the Academy was established on the basis of the highest concepts of good operative procedures. A member who sponsors an applicant should consider the importance of his action. He should be certain of the sincerity and integrity of the applicant, and then give him his fullest support.

Problems encountered by the Membership Committee include:

1. Many applicants have not been in practice for a sufficiently long period of time to be adequately evaluated for their qualifications. Members are asked to delay in processing applicants until they can be certain of the qualification, but at the same time should encourage the young practitioner and praise him for his interest in the Academy's program.
2. Some applicants do not give priority to gold foil, yet would like to have the Academy's certificate and prestige of membership.
3. Some applications are so poorly written they can not be read. New application forms will require that they be completed in typewritten form.
4. Some claims of applicants appear unrealistic: 95% of operative work being done in gold foil; 100% of all restorations performed under the rubber dam.

The following names of applicants were elected to membership during the Eleventh Annual Meeting:

ACTIVE MEMBERSHIP

Dr. T. C. Ahnger, *Spring Valley, Illinois*
Dr. John R. Bartholomew, *Atlanta, Georgia*
Dr. Max E. Cory, *Lincoln, Nebraska*
Dr. Jan Diepenheim, *Seattle, Washington*
Dr. William S. Frank, *Los Angeles, California*
Dr. William H. Gilmore, *Indianapolis, Indiana*
Dr. David Louis Greene, *Jeannette, Pennsylvania*
Dr. A. S. Harper, *Iowa Falls, Iowa*
Dr. Richard A. Helffrich, *Pasadena, California*
Dr. Loren V. Hickey (LCDR, DC, USN), *Great Lakes, Illinois*
Dr. William H. Johnson, *Anaheim, California*
Dr. Wallace W. Lamphere, *Lincoln, Nebraska*
Dr. Victor E. Lofgreen, *Lincoln, Nebraska*
Dr. Harry E. McGee, Jr., *Omaha, Nebraska*
Dr. Norman H. Olsen, *Evanston, Illinois*
Dr. W. J. Peterson, *Bellingham, Washington*
Dr. Len Portnoy, *Los Angeles, California*
Dr. Carl W. Rasmussen, *Los Angeles, California*
Dr. John Rerucha, *Omaha, Nebraska*
Dr. Harry L. Scheffel, *Oakland, Nebraska*
Dr. Walter Schwartz, *Roselle Park, New Jersey*
Dr. Raymond W. Shaddy, *Omaha, Nebraska*
Dr. James J. Smith, Jr., *West Point, Nebraska*
Dr. David E. Snyder, *San Diego, California*
Dr. Albert Solnit, *Los Angeles, California*

Dr. Ralph A. Struzziero, *Randolph, Massachusetts*
Dr. Charles M. Sturgeon, *Canoga Park, California*
Dr. John G. Sundbye II, *San Marino, California*
Dr. Robert T. Trippy, *Columbus, Ohio*
Dr. William M. Walla, Jr., *Fremont, Nebraska*
Dr. Victor A. Westin, *Swissvale, Pittsburgh 18, Pa.*
Dr. Richard C. Wieland, *Lincoln, Nebraska*
Dr. Michael Zustiak, (CDR, DC, USN), *Santa Ana, California*

Associate Membership

Dr. Alman E. Bocock, *Del Norte, Colorado*
Dr. Hunter A. Brinker, *Orlando, Florida*
Dr. Lee E. Cummins, *Los Angeles, California*
Dr. Frederick L. Hancock (Lt, DC, USN), F.P.O., *San Francisco, Calif.*
Dr. Terence J. N. Knight, *Johannesburg, So. Africa*
Dr. Roberto M. A. Lima, *Sao Paulo, Brazil*
Dr. Lawrence R. Ludwigsen, Jr., *San Francisco, California*
Dr. Harold E. Maude, *Lincoln, Nebraska*
Dr. Chauncey W. Patterson, *Greeley, Colorado*
Dr. Kenneth M. Ray, *Asheville, North Carolina*
Dr. Paul P. Rutsky, *Cleveland, Ohio*
Dr. Andre D. Ven Tresca, *Lorain, Ohio*

Associate To Active Status

Dr. Blanchard K. Braum, *Edina, Minnesota*
Dr. Robert C. Brockley, *Lincoln, Nebraska*
Dr. E. Carl Miller, *Shaker Heights, Ohio*

Included in the report were the following statistics:

1. New applications for active membership	38
Approved for active membership	33
Approved for associate membership	5
2. Transfer of associate to active status	3
3. New applications for associate membership	7
Approved for associate membership	7
4. Transfer of active to associate membership	1
5. Total active members	407
6. Total associate members	87
7. Honorary	4
8. Resignations	2
9. Deceased	1

Constitution and Bylaws Committee Report: The Committee Chairman, Dr. John Bartels, presented changes to Article III, Section 2 of the Bylaws which were adopted by the Academy to read as follows:

> "(b) Associate Members. A person who is seriously interested in and supports the objectives of this Academy, is an ethical practicing dentist, yet does not fulfill the qualifications for active membership, may be considered for associate membership."

STATE BOARD COMMITTEE REPORT: The Chairman, Dr. Lionel Bergeron, summarized his Committee's efforts by pointing out that the State of Massachusetts had recently added gold foil to its examination. This addition shows that 36 states have gold foil as a requirement; 14 states do not.

All State Examining Boards were informed that the examiners would be welcome guests at meetings of the American Academy of Gold Foil Operators to observe and participate in both the clinic and essay programs.

SCHOOL COMMITTEE REPORT: Committee Chairman Michael Del Balso asked that dentistry give a new approach to the appraisal of gold foil as a restorative treatment procedure. It was felt that foil should not be considered a State Board challenge of dramatic placement by a student, but that it should be considered a part of the overall treatment program available to patients. It should be eulogized for its "everlasting and continuing contribution to the individual patient's dental health."

VISUAL EDUCATION COMMITTEE: Dr. Norwood E. Lyons, Committee Chairman, reported that the motion picture on the "Class V Gold Foil Restoration" by Dr. Stibbs of the University of Washington, and produced by the Morgan Hastings Company, has been highly accepted and widely praised by various gold foil study clubs and dental schools where it has been shown. This film has been distributed widely by this Committee to numerous institutions and clubs. Comments received about the film have been extremely favorable. The Committee extended its praise to Drs. Ingraham and Koser for their outstanding contribution to dentistry, the "Atlas on Rubber Dam and Gold Foil."

LITERATURE AND PUBLICITY COMMITTEE: An excellent report by Chairman Stibbs reviewed the contributions by many Academy members and colleagues. A generous number of articles were to be found in publications other than in the Academy Journal. Special note was made of foreign showings of the film "Class V Gold Foil Restorations" and of the First Prize which it won in a film competition in Paris.

BUSINESS MANAGER OF JOURNAL: Dr. Ralph Boelsche, Business Manager, reported that ten dental companies placed advertisements in our Journal during the past year. The following financial statement was given.

October 7, 1961	Cash on Hand	648.61
	Receipts	2,292.25
	Total	2,940.86
	Disbursements	1,507.26
October 20, 1962	Cash on Hand	1,433.60

RESEARCH COMMITTEE REPORT: This Committee's report, presented by Dr. Baum, Chairman, stated that the objective of the Committee has been to simplify and to improve methods of fabricating gold foil restorations and thus make its use more attractive to the general pro-

fession. The report contained data on the results of several projects which are in progress at various dental research laboratories and clinics.

PROGRAM COMMITTEE: The printed program was presented by Chairman Merchant. The efforts by the Committee in arranging for an excellent program and accommodations were acknowledged with compliments. Dr. John Mosteller, in charge of local arrangements, was thanked for his extensive efforts.

ADJOURNMENT: The meeting was adjourned at 1:00 p.m.

Banquet: The social hour and banquet held at the "Guest House" was attended by 52 members and guests. By unanimous approval, the gratitude of the Academy was extended to Dr. Joseph Volker, Vice-President of the University of Alabama and Director of the Medical Center, and to Dr. Stanley E. Keller, Chairman of the Division of Restorative Dentistry for their fine hospitality and cooperation. Dr. Volker replied and spoke entertainingly to those assembled.

PRESENTATION OF AWARDS: Appropriately inscribed, framed certificates were presented to the following essayists, with praise for their contributions to the success of the meeting:

Dr. Lloyd Baum
Dr. Bruce Smith
Dr. John Mosteller

Dr. Ralph Boelsche presented the Academy's certificate of recognition to Dr. José E. Medina, Editor of the Journal since its inception in 1958, and expressed the gratitude of the Academy for his devoted work.

SLATE OF THE NOMINATING COMMITTEE: The slate of the Nominating Committee was presented by Dr. Mosteller, in the absence of the Committee Chairman.

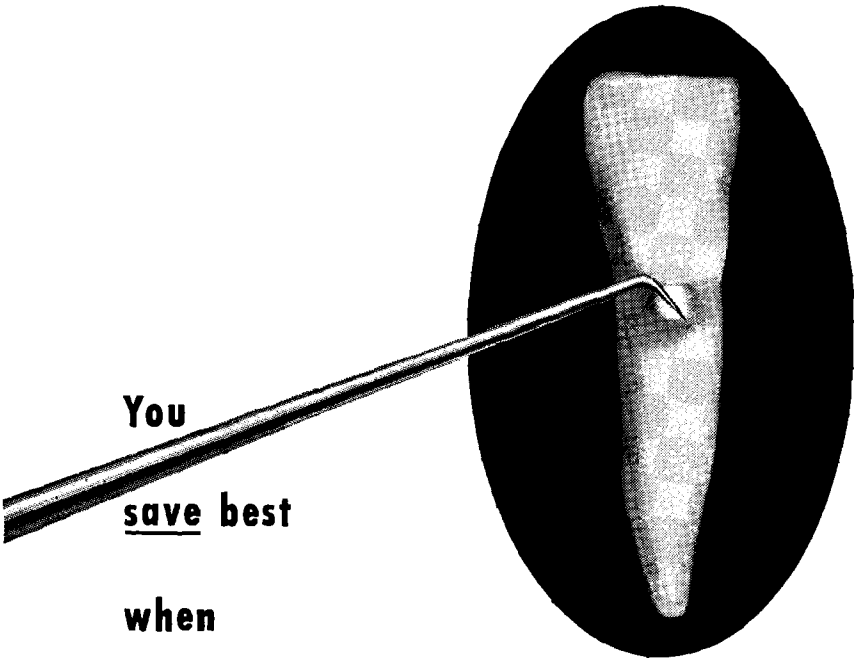
Dr. Arne F. Romnes.....President-Elect
Capt. Paul A. Moore, DC, USN.....Councilman (1965)
Dr. Lawrence R. Ludwigsen.....Councilman (1964)

The Academy unanimously elected these members to their respective offices.

INSTALLATION OF OFFICERS: Dr. Arne Romnes was introduced, accepted the honor of his office and spoke briefly to the assembled group.

President Ellsperman then introduced Dr. Merchant as the incoming President of the Academy and expressed his genuine appreciation for having had the opportunity to serve the Academy. The office was turned over to Dr. Merchant who conveyed his appreciation for the honor bestowed upon him. All were given a resounding applause.

The meeting was adjourned at 8:45 p.m.



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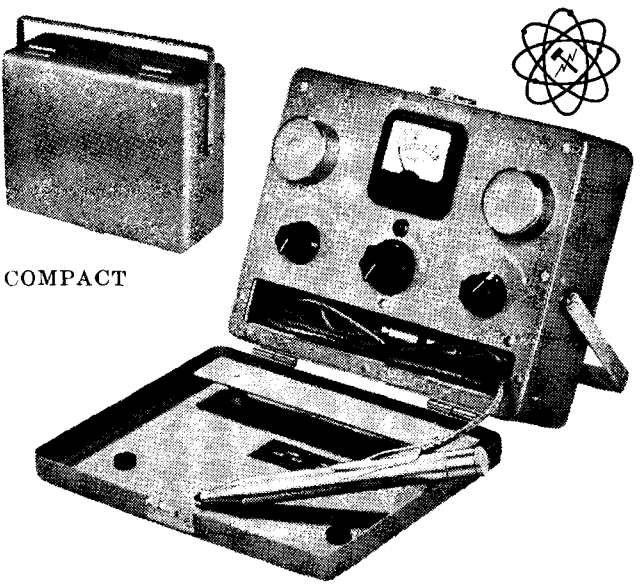

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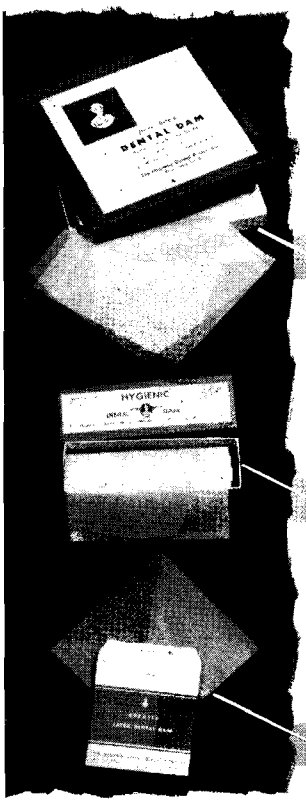

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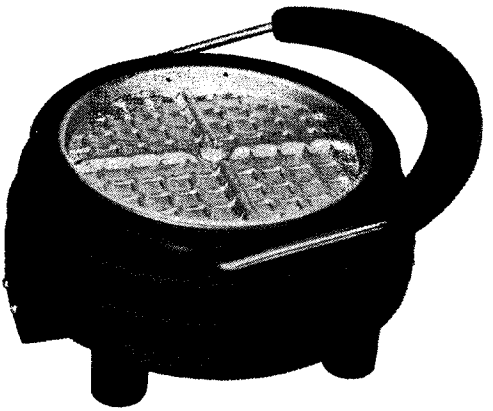

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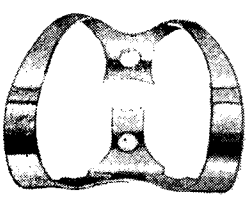

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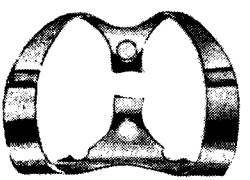

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