

Loma Linda Gold Foil Seminar

HAROLD E. SCHNEPPER, D. M. D., M. S., DIRECTOR

LOMA LINDA, CALIFORNIA

CLASS I FOR POWDERED GOLD (Goldent):

A. PREPARATION

1. With fissure bur (557, 558) extend outline form to include defective pits and grooves. Keep isthmus regions narrow.
2. Establish retention lightly with inverted cone bur (No. 35)
3. Base deep lesions with oxyphosphate of zinc cement.
4. Avoid sharp angles in cavity outline.

B. ANNEALING GOLDENT:

Annealing is done over an alcohol flame. Pure methyl or ethyl alcohol must be used lest a "dirty" flame be produced.

With a pointed smooth broach, a pellet is speared and introduced into the flame of the alcohol lamp. The organic waxy substance will burst into a yellow flame which will burn for 2 to 3 seconds. After the material is burned out of the pellet, it will instantly assume a dull red glow, at which time it is removed from the flame, and carried to the cavity.

C. PLACEMENT AND CONDENSATION

1. Initial Placement

(a) Select one large pellet (two or more if the cavity is large), anneal and pack loosely into the cavity until it is engaged between opposing walls.

(b) With heavy pressure (6-8 lbs.) condense the material into a solid mass. Pluggers with a small face presenting a convex surface are ideal. (See diagram)

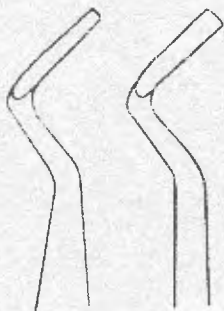
2. Building the Restoration

(a) Anneal additional pellets and add to build the contour.

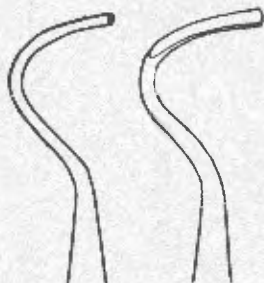
- (b) Selection of condenser is predicated upon cavity shape and freedom of access.
 - (c) Condensation force is directed toward pertinent cavity margins.
 - (d) Small inaccessible areas within the cavity require attention to detail. The pellet is broken apart and small portions of it are carefully condensed into the corners.
 - (e) Insofar as possible, edges and corners are banked well ahead of the central portions of the cavity.
 - (f) Condensation is facilitated by a "rocking" motion. (see diagram)
3. If "bridging" (a void between the condensed gold and the cavity wall) occurs, adjacent portions of the gold is drilled out to gain access for the plugger so it can be recondensed properly.
 4. Porosity and voids in the mass may be easily detected by probing with a stiff sharp explorer. Ends of grooves and areas along mesio-buccal walls are particularly susceptible to pits and voids.
 5. Ease of condensation may be accomplished by the use of the Hollenback Pneumatic Condenser or other mechanical condensers. Positioning the gold within the cavity by hand pressure, however, should precede mechanical condensation. A maximum impact blow is recommended when the force is directed apically.
 6. The restoration is built to harmonize with established occlusal anatomy. Overbuilding the restoration in groove and fossa areas is unnecessary.

D. FINISHING

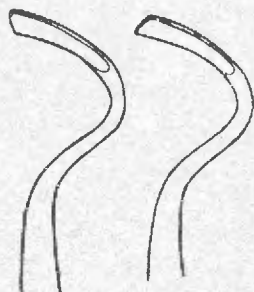
1. Air coolant to dissipate heat during stoning and finishing is mandatory.
2. Finishing burs (No. 2 round, No. 4 pear; Premier Dental Products Co.) and coarse grit finishing stones (No. 28, 34, 19; Chayes Dental Instrument Corp.) revolving at high speed with a wiping action are helpful in removing excess gold and providing a smooth surface.
3. True-running metal chucks for the super-speed handpiece are necessary to prevent gouging of the gold.
4. Optional: Final polish with pumice and amalgloss.



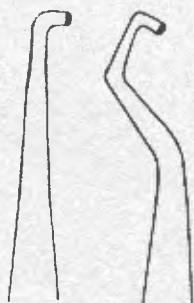
20*



21*



22*



23*



25*



Bayonet**



Round**



Parallelogram**



*HAND CONDENSERS: AVAILABLE FROM AMERICAN DENTAL MFG. CO., 1201 SOUTH SIXTH STREET, MISSOULA, MONTANA, OR O. SUTER DENTAL MFG. CO. P. O. BOX 1329, CHICO, CALIFORNIA

**MECHANICAL CONDENSERS: AVAILABLE FROM CLEV-DENT OR S.S.W. FOR THE STRAIGHT OR ANGLE HANDPIECE. ALSO AVAILABLE FROM AMERICAN DENTAL MFG OR O. SUTER DENTAL MFG. CO.

Loma Linda Gold Foil Seminar

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LINGUAL APPROACH CLASS III FOR POWDERED GOLD (Goldent):

PREPARATION:

- A. Enter with a 699 (A.H.P.) bur: remove bulk of material with bur, opening it well to the lingual and to the incisal. Provide good access. Establish inciso-gingival extension with this bur. Extend labial proximal to the labial just far enough to break contact with approximating tooth.

NOTE: Gingival floor is perpendicular to long axis of tooth.

See illustration No. 1

- B. Complete extension and marginal finish with:
1. small wedelstadt chisel (No. 10)
 2. Gingival margin trimmers, (No. 11, 12)
 3. Lingual Angle Formers, (No. 13, 14, 15). Axial wall is flat and parallel to long axis of tooth.
- C. Instrument labial gingival retention with:
1. (No. 13, 14, 15)
 2. Small gingival margin trimmers (No. 11, 12) & enamel hatchet (No. 16)
- D. Place lingual gingival retention with:
1. $3\frac{3}{4}$ or $\frac{1}{2}$ round bur in a gingival axial direction. (into the bulk of the cingulam).
 2. Bayonet angle former (No. 17)
- E. Instrument wide open access to incisal retentive point with:
1. $3\frac{3}{4}$ or $\frac{1}{2}$ round bur (A.H.P.)
 2. Incisal Hatchets (No. 18)
 3. 3 - 2 - 28

See illustration No. 2

NOTE: Retentive direction is axial labial incisal.

F. Define the labial axial line angle.

1. Gingival margin trimmers, (No. 11, 12)
2. (No. 13, 14, 15)

G. Join the labial gingival retention with the lingual gingival retention.

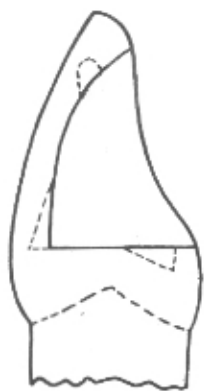
1. Offset bayonet angle former (No. 17)

H. Plane all enamel margins; do not flare the labial or gingival margins.

1. Small wedelstadt chisel (No. 10)
2. (No. 13, 15)

If the labial wall and outline is over extended due to previous restorations or decay, then smooth and plane labial margins so that it will be parallel with long axis of tooth.

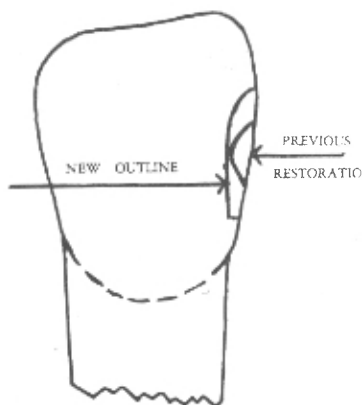
See illustration No. 3



NO 1



NO 2



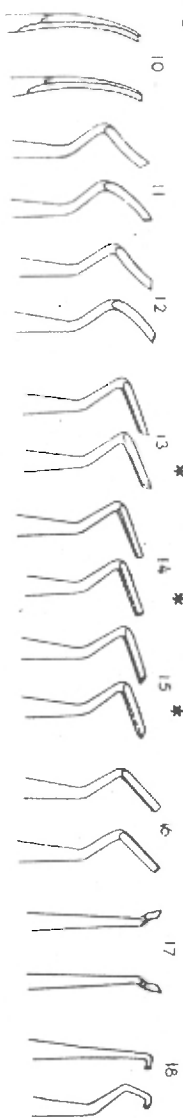
NO 3

LINGUAL APPROACH CLASS III FOR POWDERED GOLD: FINISHING

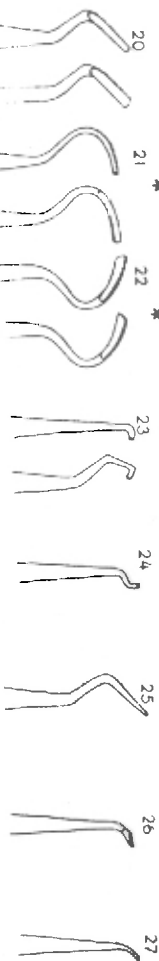
- A. Burnish labial gold with burnishers No. 32. Use a "Wiping or burnishing" action over labial margin if at all possible.
- B. Remove bulk of gold from lingual surface with files.
- C. Remove excess gold interproximally from gingival margin to contact point with a gold knife (No. 34) so a separator may be applied.
- D. Apply separator: Stabilize with compound.
- E. Wedge contact point with Swager No. 35.
- F. Use extra long finishing strips with decreasing grit until final polish is obtained. (Fine medium, fine extra-narrow, extra-fine extra-narrow. J. Bird Moyer Co.)
- G. Use $\frac{3}{8}$ " & $\frac{1}{8}$ " garnet and cuttle fish disks (L. D. Mosher Co., 3349 Milwaukee Ave., Chicago 41, Illinois) Lubricate disk with cocoa butter.
- H. Flour pumice and "Amalgloss" may be used for final luster. (Optional)

*LOMA LINDA G.F. instruments are available as a complete set or by individual instrument number from: American Dental Mfg. Co., 1201 South Sixth Street, Missoula, Montana; and from O. Suter Dental Mfg. Co., P. O. Box 1329 Chico, California.

Cutting Instruments



Condensing Instruments



* Also available for left handed operators.

ANNEALING GOLD DENT

Annealing is done in an alcohol flame. Pure methyl or ethyl alcohol must be used to avoid a "dirty" flame.

With a pointed smooth broach, a pellet is speared and introduced into the flame of the alcohol lamp. The organic substance that is contained in each pellet will burst into a yellow flame which will burn for 2-3 seconds. After the material has burned out, the pellet will instantly assume a dull red glow, at which time the pellet is removed from the flame, allowed to cool and carried to the cavity.

If left in the flame too long the pellet develops a hard texture and resists condensation. If not left in the flame long enough the pellet remains "powdery."

CONDENSATION

- A. Spear first Goldent pellet with broach and anneal in an alcohol flame to a dull red color. (Be sure to read annealing instructions).
- B. Pellet should be placed into the labial gingival point angle and condensed well into place.
- C. Pellets No. 2 and 3 should be placed along the gingival floor building toward the lingual gingival point angle and condensed firmly in place with condensers No. 20, 24.

Direction of Force: Gingival

- D. Pellets No. 4 and 5 should be placed along labial wall and with strong heavy pressure condensed into place tying in gingival and incisal retentions. Make sure no bridging occurs along labial margin and over incisal retention. Use Condensers No. 21, 22, and 25. When condensing along labial margins use No. 22.

Direction of force: Labial-Incisal

- E. Pellet No. 6 is placed in incisal retentive area. Condense in place with Condenser No. 23.

Direction of force: Incisal-Axial

- F. Additional pellets are placed one at a time and condensed with appropriate condensers. Keep the walls and edges banked well ahead of the center portion.
- G. Pack gold at right angles to the margins. Avoid marginal pits and deficiencies by spreading pellets before applying strong condensing pressure.



36



35



34



33



32



31



30



30



30



30



30

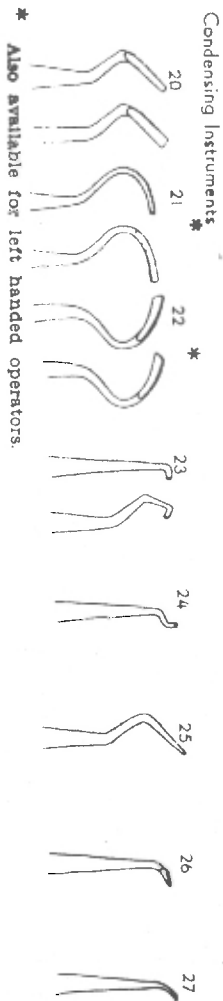
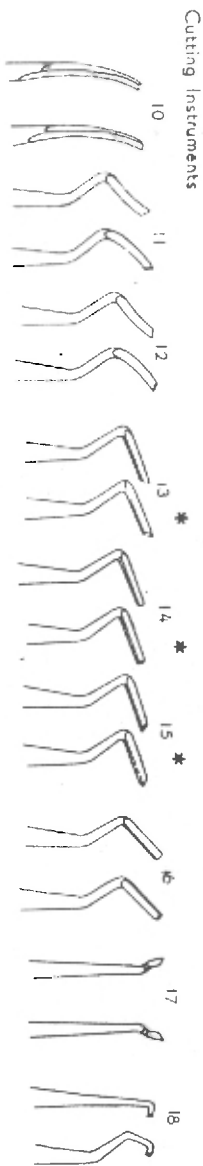
LOMA LINDA GOLD FOIL SEMINAR

Finishing Instruments

LINGUAL APPROACH CLASS III FOR POWDERED GOLD: FINISHING

- A. Burnish labial gold with burnishers No. 32. Use a "Wiping or burnishing" action over labial margin if at all possible.
- B. Remove bulk of gold from lingual surface with files.
- C. Remove excess gold interproximally from gingival margin to contact point with a gold knife (No. 34) so a separator may be applied.
- D. Apply separator: Stabilize with compound.
- E. Wedge contact point with Swager No. 35.
- F. Use extra long finishing strips with decreasing grit until final polish is obtained. (Fine medium, fine extra-narrow, extra-fine extra-narrow. J. Bird Moyer Co.)
- G. Use $\frac{3}{8}$ " & $\frac{1}{8}$ " garnet and cuttle fish disks (L. D. Mosher Co., 3349 Milwaukee Ave., Chicago 41, Illinois) Lubricate disk with cocoa butter.
- H. Flour pumice and "Amalgloss" may be used for final luster. (Optional)

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LOMA LINDA, CALIFORNIA

CLASS V FOR POWDERED GOLD (GOLDENT)

A. Preparation of Field

1. Apply the rubber dam.
2. Place #212 cervical clamp with facial beak extended well into the gingival sulcus below the area of the lesion.
3. Secure clamp with Red Stick Compound.

B. Preparation of Cavity

1. Outline form (Fig. 1) occlusal outline should parallel the occlusal plane and harmonize with the buccal height of contour of the tooth.
2. With a #35 inverted cone bur S.H.P. make gingival, mesial, distal, and occlusal extensions:
 - a. proximal and gingival margins are extended to where they will be subgingival in the completed restoration.
 - b. mesial and distal walls are slightly divergent from axial line angles to the labial surface to form a 90° cavo-surface margin. (Fig. 2)
 - c. mesio- and disto-occlusal corners and gingival walls are undercut for retention (Fig. 1).
 - d. depth of cavity: width of #35 bur.
3. Instrumentation
 - a. Wedelstaedt or binangle chisels are used to smooth all walls and margins.
 - b. angle formers and 10-4-8 hoe are used to provide sharp, definite internal line angles and place gingival retention.
 - c. 10-4-8 monangle hoe is used to smooth the axial wall.
 - d. sharp Wedelstaedt or binangle chisels are used to re-plane occlusal or incisal margins.

C. Annealing Goldent

Annealing is done in an alcohol flame. Pure methyl or ethyl alcohol must be used to avoid a "dirty" flame.

With a pointed smooth broach, a pellet is speared and introduced into the inner cone of the flame. The organic substance contained in each pellet will burst into a yellow flame which will burn for 2-3 seconds. After the material has burned out, the pellet will instantly assume a dull red glow, at which time the pellet is removed from the flame, allowed to cool and carried to the cavity.

If left in the flame too long, the pellet develops a hard texture and resists condensation. If not left in the flame long enough the pellet remains "powdery."

D. Initial Placement of Goldent

1. Anneal a medium to large pellet, depending upon the size of the cavity.
2. Place pellet in cavity. Break it up and spread it across the gingival retention, and up the mesial or distal line angle to the occlusal retentive point.
3. Place a second pellet into the remaining uncovered line angles. Gently pat the pellets inward with a large serrated condenser, engaging the mass firmly between opposing gingival and occlusal walls.
4. Use a small condenser (#25)* to completely condense gold into line angles and retentive areas.

E. Condensation

1. Additional pellets are annealed and placed within the cavity. With six to eight pounds pressure for hand condensation — gradually "step" the condenser over the axial wall.
2. The contour of the surface should be concave in nature, keeping the walls banked ahead of the central positions of the cavity. Care should be taken to avoid bridging at the walls and margins.
3. To insure proper condensation a systematic "stepping" procedure is required. One heavy thrust with the condenser is better than many light thrusts. A convex-faced condenser (#20) using a "rocking motion" insures more complete condensation.
4. If desired, hand condensation may be augmented by malleting and/or a mechanical condenser.
5. Condensers must not be used directly against a margin. An adequate amount of gold must cover the margins before a condenser is placed against them to avoid chipping.
6. Overbuild the contour to allow for finishing procedures. (Fig 3)

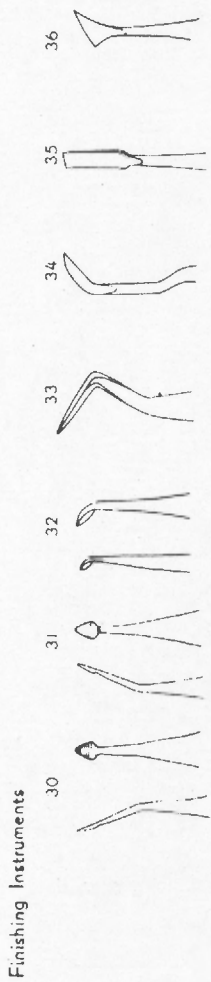
F. Finishing

1. The surface is burnished with heavy pressure using a suitable burnisher such as the #33 finishing instrument.
2. Inspect gingival and proximal areas carefully for excess gold which may extend past the margins. This is carefully removed with the files (#30, 31), the #33 finishing instrument or the gold knife #34. Special care should be exercised to avoid cutting or damaging the cementum.
3. Using $\frac{1}{4}$ " or $\frac{3}{8}$ " fine garnet discs**, on a small headed mandrel*** smooth and contour the surface of the gold. Avoid bulky contour. (Fig. 4)
4. Cuttle discs of $\frac{1}{4}$ " or $\frac{3}{8}$ " diameter may then be used to obtain a satin finish on the gold. A stream of air during the discing is mandatory, to prevent overheating.
5. Caution: Do not use rotating discs on gold margins adjacent to the cementum.
6. Use dry fine pumice or Silex to polish the gold. As above, avoid overheating and damage to the cementum. A very flexible rubber cup (Baby B S polisher) is mandatory.
7. Optional: Final shine is obtained with dry amalgloss (L.D. Caulk Co.) or tin oxide.

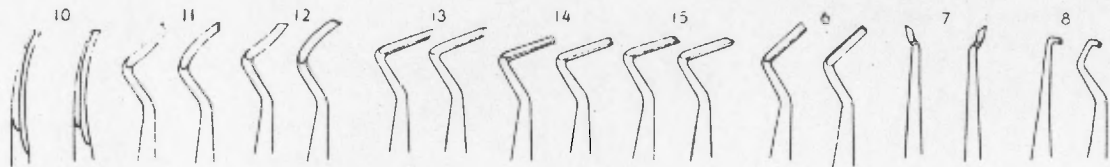
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** $\frac{1}{4}$ " discs are available from Moyco Industries, Incorporated, South East Corner 21 Street and Clearfield Street, Philadelphia, PA. 19132.

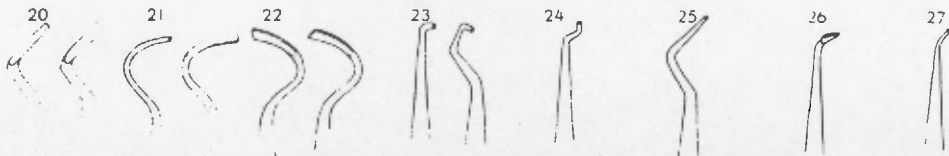
*** Small Headed Mandrels are available from Miltex Instrument Company, 300 Park Avenue South, New York, NY 10010.



Cutting Instruments



Condensing Instruments



ALSO AVAILABLE IN LEFT HAND INSTRUMENTS

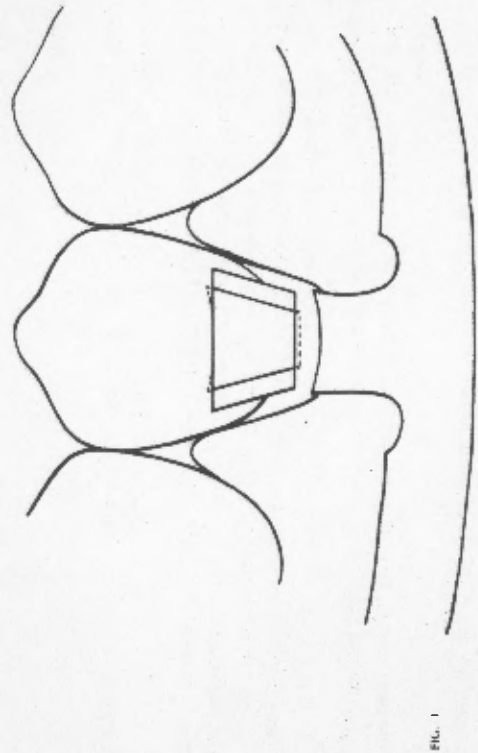
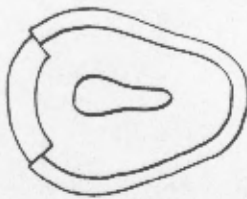
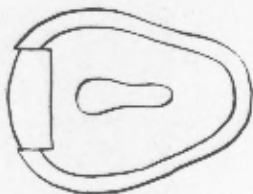


FIG. 1



CORRECT



INCORRECT

FIG. 2

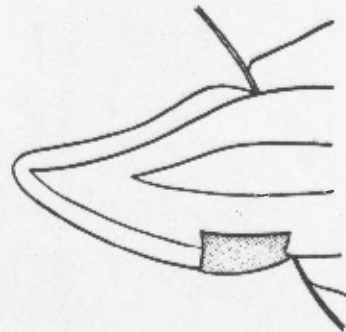


FIG. 3 Overfilling for finishing

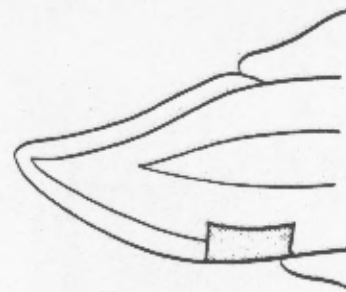


FIG. 4 Correct contour

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CLASS II FOR POWDERED GOLD (Goldent):

PREPARATION

1. Apply Rubber Dam.
2. Using burs (35, 700) prepare the occlusal and proximal portion of the cavity. A clean-cut outline with conservative extension is desirable.
3. With sharp hand instruments (bin angle chisels, enamel hatchets and Wedelstadt chisels) plane the enamel margins to form a 90 cavo-surface angle. All margins should be smooth and terminate in sound enamel. Outlines should be manifested by definite curves or straight lines. All jagged or irregular margins should be planed smooth by hand instruments.
4. Gingival bevel: Only a minimal bevel sufficient to remove loose enamel rods and friable gingival enamel is desired. Long or steep bevels are contra-indicated.
5. Retention.
 - a. Occlusal: parallelism obtained between clean-cut opposing buccal and lingual walls is adequate for occlusal retention (burs 700, 557, 35).
 - b. Proximal: clean-cut buccal and lingual proximal retentive grooves inside the dentin is necessary (burs 700, 699).
 - c. If desired, proximal retention may be made angular instead of round. Angle formers and gingival margin trimmers are utilized for this purpose.

MATRIX APPLICATION

1. A circumferential matrix band of soft metallic brass responds best to powdered gold condensation procedures, ("T" bands; P. N. Condit Co.).
2. The gingival is securely wedged with a carefully trimmed hard wooden wedge.
3. Quick-curing acrylic ("Dura-lay, Reliance Dental Mfg. Co.) is mixed to the "doughy" stage. It is pressed well into the buccal, and lingual embrasures and united as a bulky acrylic staple across the occlusal portion of the adjacent tooth, (see illustration). Before the acrylic hardens, the band is pressed away from the tooth in the marginal area, thereby stretching the metal to provide a slight space along all margins. After setting, the acrylic forms a rigid non-yielding matrix for all parts of the proximal box.

ANNEALING GOLDENT

Annealing is done in an alcohol flame. Pure methyl or ethyl alcohol must be used to avoid a "dirty" flame.

With a pointed smooth broach, a pellet is speared and introduced into the flame of the alcohol lamp. The organic substance that is contained in each pellet will burst into a yellow flame which will burn for 2-3 seconds. After the material has burned out the pellet will instantly assume a dull red glow, at which time the pellet is removed from the flame, allowed to cool and carried to the cavity.

If left in the flame too long the pellet develops a hard texture and resists condensation. If not left in the flame long enough the pellet remains "powdery."

CONDENSATION

1. Two or three annealed powdered gold pellets are broken up and maneuvered into place to form an even layer over the gingival floor. The gold is then thoroughly pressed to place causing it to condense into a solid mass. Particular emphasis is directed toward thorough condensation at the gingival cavo-surface angle.