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)
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. Pluggets 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.
*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.
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. 33¼ or ½ round bur in a gingival axial direction. (into the bulk of the cingulum).
2. Bayonet angle former (No. 17)

E. Instrument wide open access to incisal retentive point with:

1. 33¼ or ½ 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 restora-
tions or decay, then smooth and plane labial margins so that it will be parallel with long axis of tooth.

See illustration 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 ⅜" & ⅝" garnet and cuttlefish 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.
ANNEALING GOLDET

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.
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.)


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.
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.

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 convexed-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 ¼” or ⅜” 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 ¼” or ⅜” 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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* 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, CA.

** ¼” 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.
Also Available in Left Hand Instruments

Cutting Instruments

Condensing Instruments

FIG. 1

Correct

Incorrect

FIG. 2

Overfilling for finishing

Correct contour

FIG. 3

FIG. 4

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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.
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.
Additional pellets are added one at a time alternately along the buccal and lingual walls. Each pellet, before condensation, is broken apart and the fragments pressed into the respective buccal or lingual cavo-surface line angles and the retentive grooves. The most important areas to be condensed are the four angles of the box (buccal and lingual cavo-surface angles and the buccal and lingual retentive grooves). Consequently, these must be thoroughly condensed well ahead of the central part of the box. The walls must be “banked” well ahead of the central portion of the cavity.

Using suitable condensers (Loma Linda G.F. No. 20, 21, 22) with a heavy hand pressure the cavity is filled to completion. The convex surface of the face of the condenser lends itself well to a “rocking” motion with the condenser. Hand pressure may be supplemented with malleting if so desired.

**FINISHING**

1. Occlusal portions of the restoration are finished with one or a combination of the following stones:
   a. Meisinger stones No. 69, 70 SHP (L.O. Sandin Dental Supply, Portland Medical Center, Portland, Oregon).
   b. Friction grip finishing stones No. 28, 34, 19 (Chayes Dental Instrument Corp.).
   c. Friction grip finishing burs No. 2, 4 (Premier Dental Products Co.).

2. Finishing stones and burs for the high-speed handpiece must be used with a stream of cool air. GOLDENT tends to heat rapidly during stoning and **MUST** be cooled during finishing. Moreover, the bur or stone must be true running inside a handpiece with a metal chuck.

3. Additional occlusal finishing may be done with sandpaper disks, pumice and other conventional polishing agents.

4. Proximal finishing must begin by burnishing the proximal margins with files No. 30, 31 and the discoid instruments No. 32. If the matrix band has been applied properly, Goldent, under pressure, will slightly “overfill” the proximal box, particularly at the margins. This will leave a slight excess of gold available for burnishing. Possible discrepancies will thereby be covered resulting in a tightly burnished seal at the marginal areas.
5. The gingival half of the proximal surface may be finished with fine extra narrow, MOYCO extra long finishing strips. (J. Bird Moyer Co.).

6. The buccal and lingual embrasures are contoured to shape by the use of the gold knives No. 34, 36 and instruments No. 33, 35.

7. Final finishing of the proximal can be accomplished with the fine, medium, and the extra fine, extra narrow MOYCO finishing strips.

8. Small disks (3/8” diameter) of fine garnet and cuttle fish are helpful in providing proper contour in the marginal ridge areas. (L. D. Mosher Co., 3349 Milwaukee Avenue, Chicago 41, Illinois.

* 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.
POWDERED GOLD (Goldent) FOR CROWN REPAIR

a. Repair of Perforation from Occlusal Wear.
b. Repair of hole from Endodontic Therapy
c. Repair of Marginal Fracture

A. PREPARATION:

1. Using a small bur of choice, margins are extended to gold of suitable thickness or to sound enamel.
2. Depth of cavity must be at least 1 mm.
3. Retention must be suitable but need not be excessive.
4. Burs of choice may be used but enamel edges should be planed smooth with an instrument.

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. A large pellet of Goldent is annealed and packed loosely into the cavity until it is engaged between opposing walls. If the floor is not covered or if there is any question whether the floor is covered, an additional pellet is added. Initial placement of gold must provide sufficient bulk and thickness to enable the operator to condense it without warping and working loose.

2. Condensation thrusts are first directed toward the corners and edges of the cavity. After the edges, the central portion of the cavity is condensed using a rocking motion of the condenser. Rather heavy forces (6-8 lbs. pressure) are used to achieve complete condensation.
3. When a thoroughly compacted surface layer is obtained, additional pellets of a smaller size are annealed and added to the cavity one at a time. Positioning of the gold and direction of force should be toward the corners rather than the center of the cavity. During condensation the internal contour should be “saucer-like” and the gold should not “hump-up” in the center.

4. Successive pellets are added and condensed until surface contour is flush with adjacent edges. Condensation is the “name of the game.” Porosity, leakage, pitting, and flaking are the results of careless condensation. All air must be squeezed out of the mass and solid metal must be the result.

5. Mechanical condensation with a malleting blow may be used but it is not necessary.

D. INDIRECT CONDENSATION (Finishing):

1. With heavy pressure, the edge of a discoid carver is pulled over the surface. An effort is made to mash and “iron out” the bumps and irregularities left by the serrations of the condenser.

2. A finishing bur or coarse grit finishing stone is also helpful in reducing lumps and gross surface irregularities.

3. Indirect pressure from the edge of the discoid carver as it is pulled over the surface imparts a hardening action to the surface gold so a dense crust is formed, the thickness of which is directly proportional to the pressure applied.

E. POLISHING (optional in many cases):

1. Sandpaper, garnet and cuttle disks can be used at will for producing a smooth surface. Although not necessary, pumice and precipitated chalk is useful in developing a polished glossy surface.

2. Disking should be accompanied by air to dissipate frictional heat. Extensive disking which might carry through the hardened surface “crust” should be avoided; If such does occur, re-use of the discoid carver can re-establish the crust and polishing may be continued.

3. Rubber impregnated wheels (burlew disks) should be avoided in the polishing process.
Available From: American Dental Mfg. Co., 1201 South Sixth Street, Missoula, Montana, or O. Sutter Dental Mfg. Co., P. O. Box 1329, Chico, California.

NO. 8 PEAR NO. 4 PEAR NO. 2 ROUND
FINISHING BURS

Available From: Premier Dental Products Co.

Condensation with 6-8 lbs. pressure
Ironing the surface with the Discoid Carver (heavy pressure)