

Preclinical Dentistry

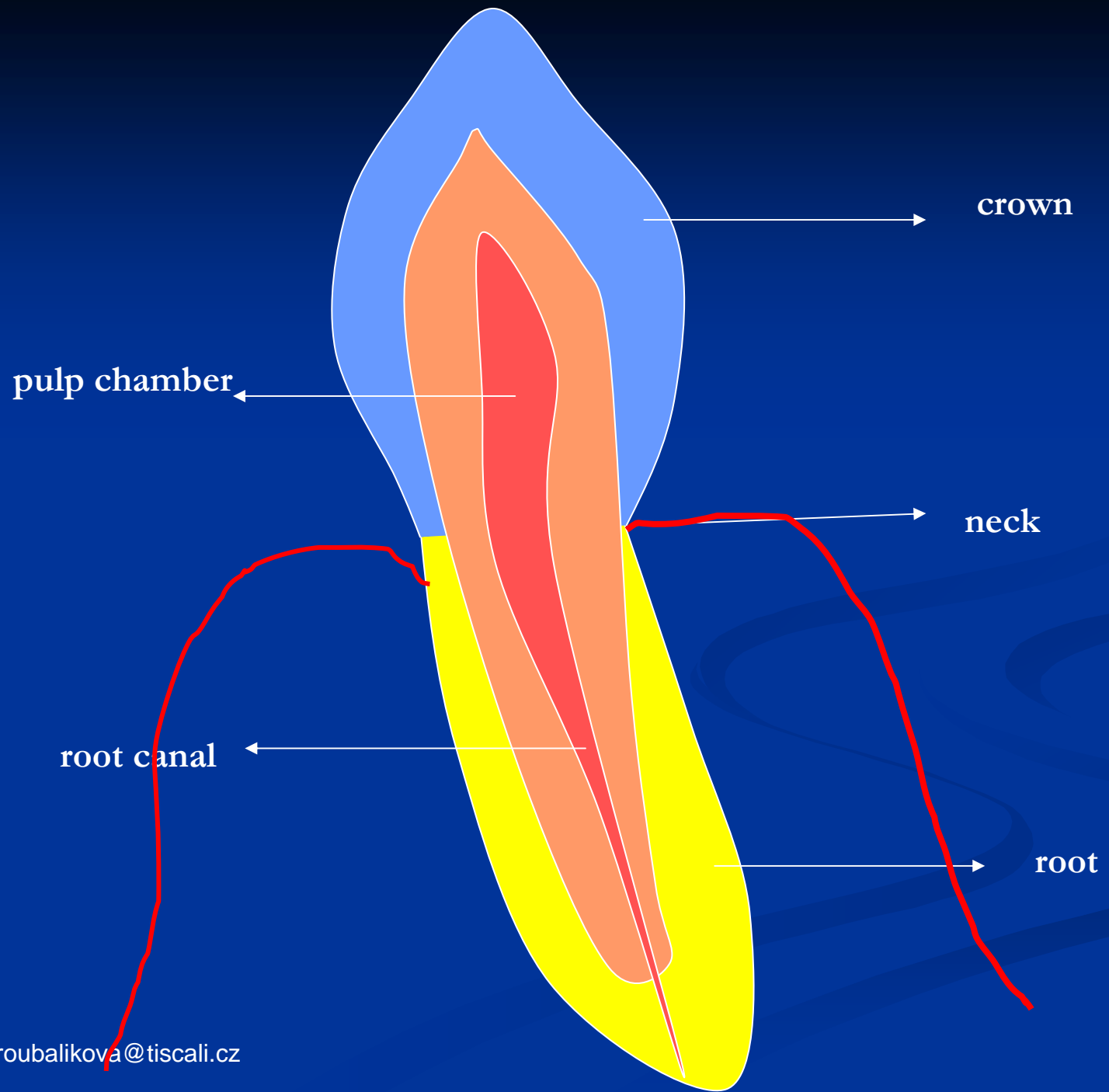
I.

Dental Caries

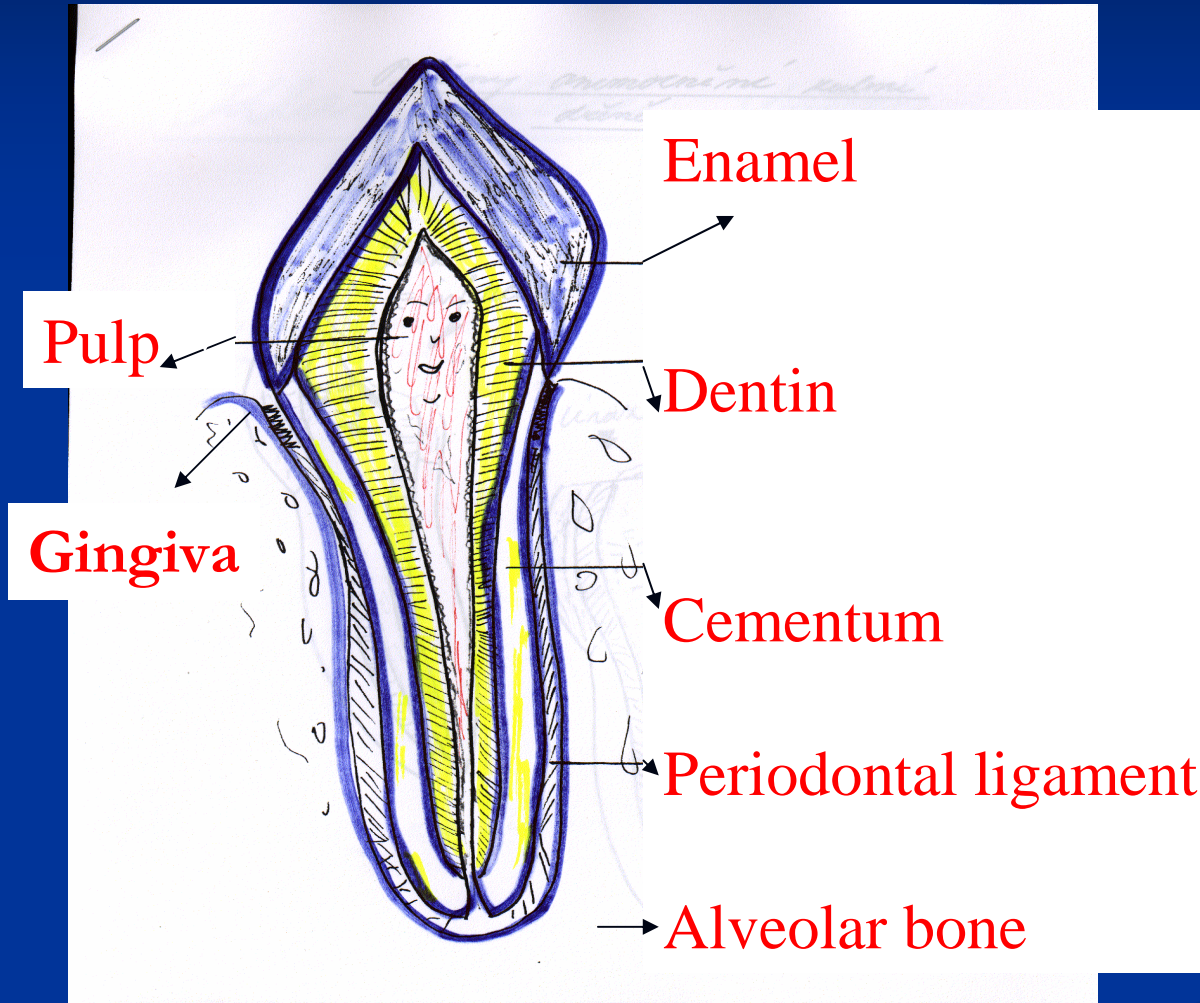
**Non carious lesions: trauma,
erosion. abrasion, wedge shaped
defects**

Lenka Roubalíková

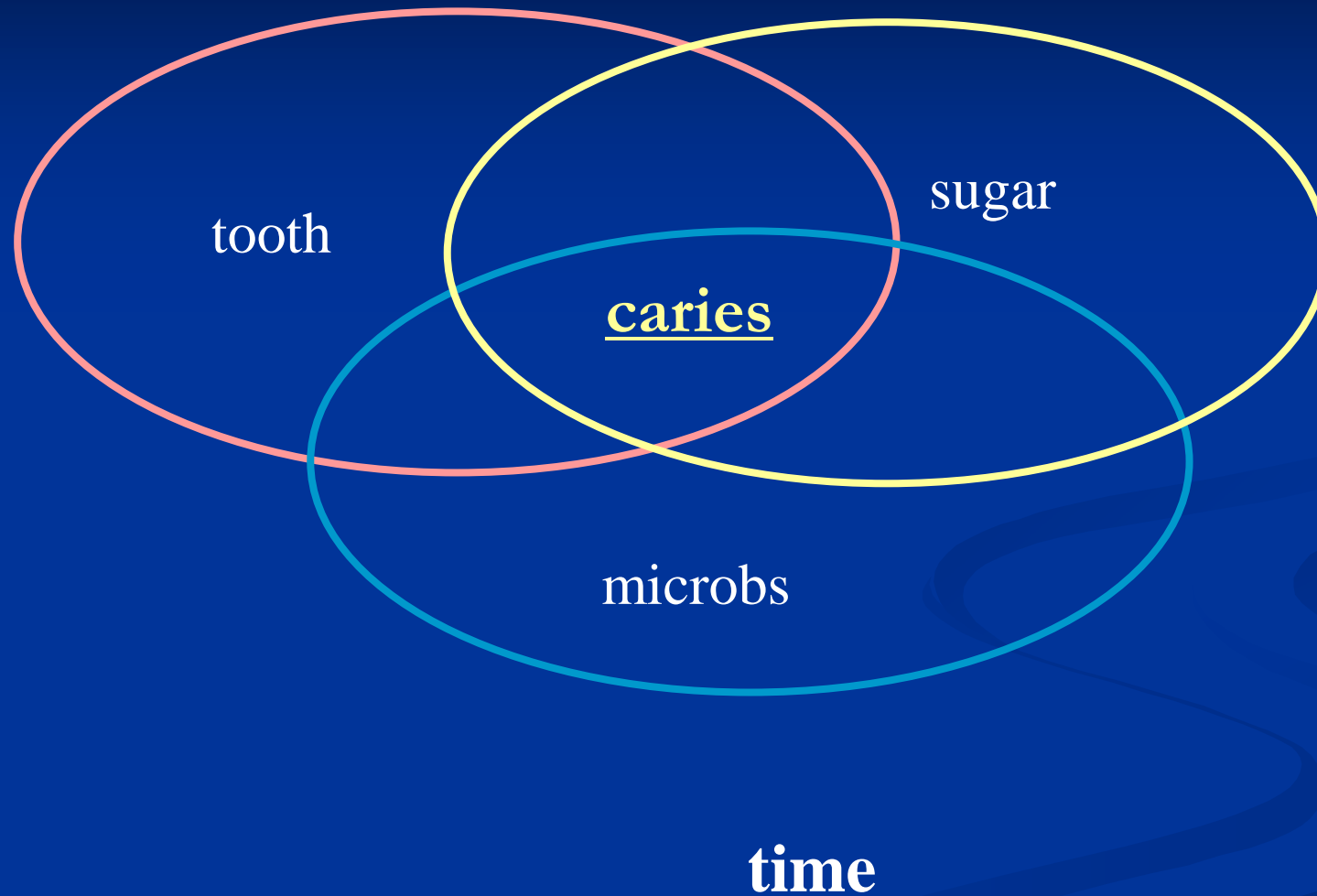
Understanding dental caries



Dental Tissues



Dental caries



Dental Caries

Infectious microbiological disease of the teeth that results in localized dissolution and destruction of the calcified tissues

Biofilm – Dental Plaque

Complex community



Simple circulation



Better conditions to survive

Dental Biofilm – Dental Plaque

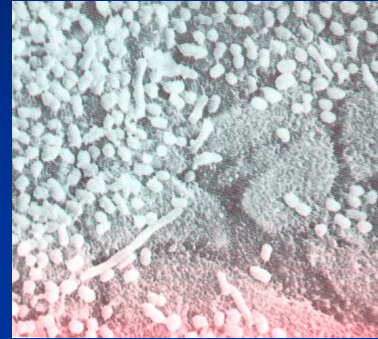
A gelatinous mass of bacteria adhering to the tooth surface.

No shedding

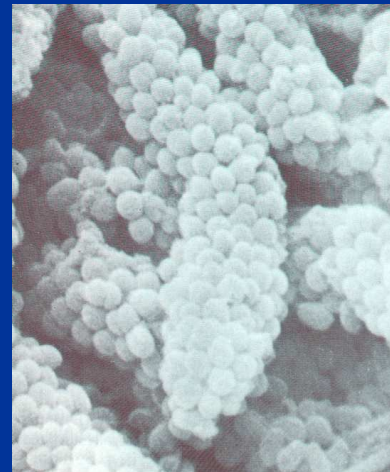


Dental biofilm

- Adhesion



- Colonisation



- Maturation



Sugar

Fermentable (mono-, di- tri- sacharides)



Sucrose, glucose, lactose

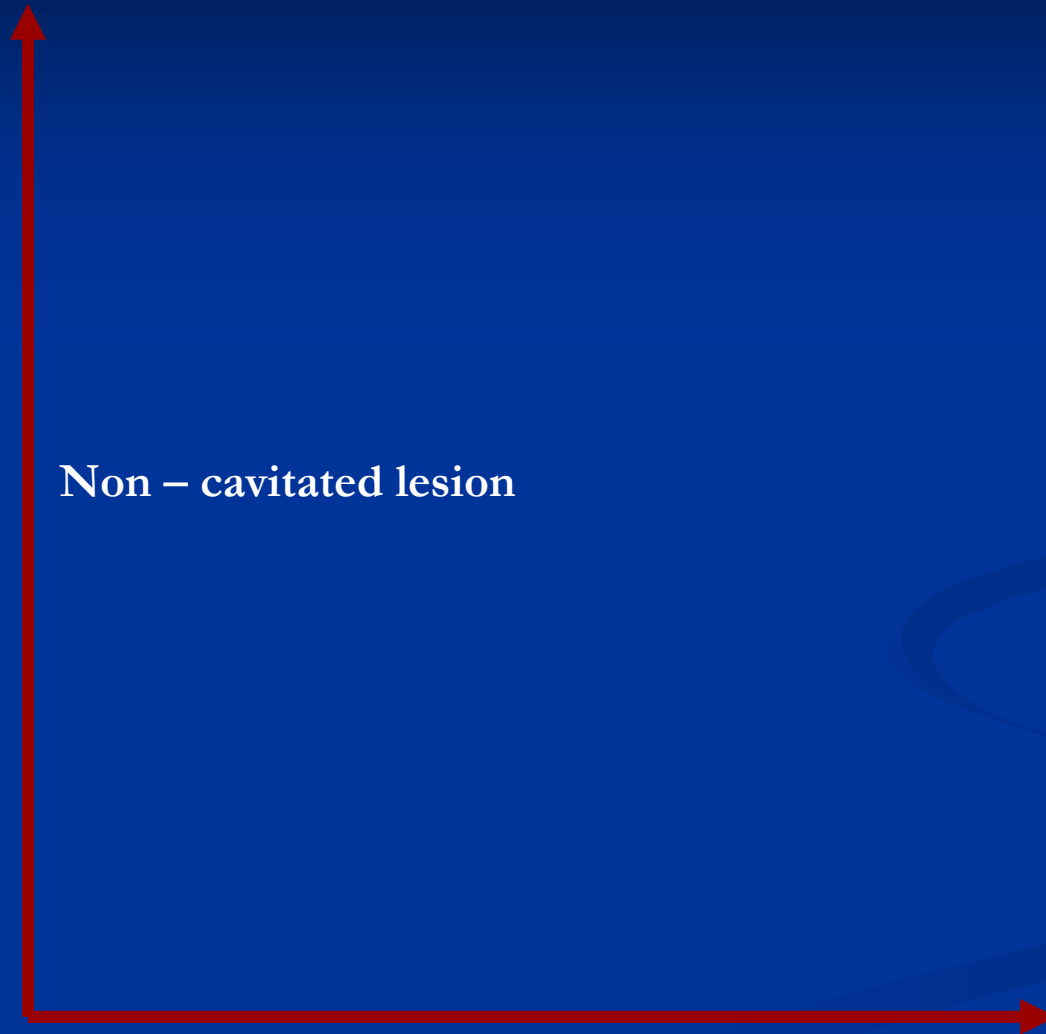


Acids



Demineralization

Dissolution – demineralization



Non – cavitated lesion

Cavitated lesion

Time

Saliva

- Plaque formation
- Microbial source
- Mineral source
- Microbial clearance
- Buffer capacity

Predictable dirty places

- Pits and fissures
- Proximal surfaces
- Cervical area

No self cleaning

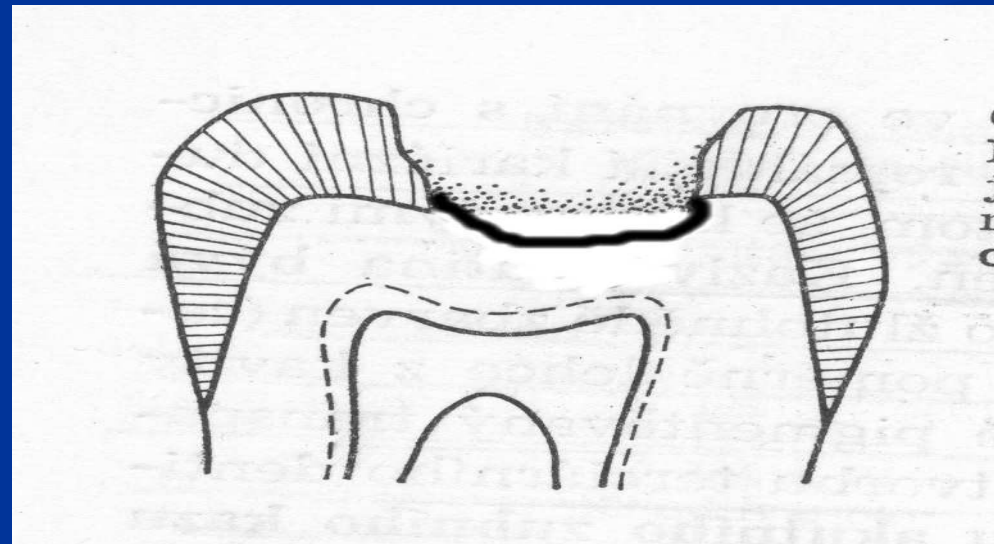
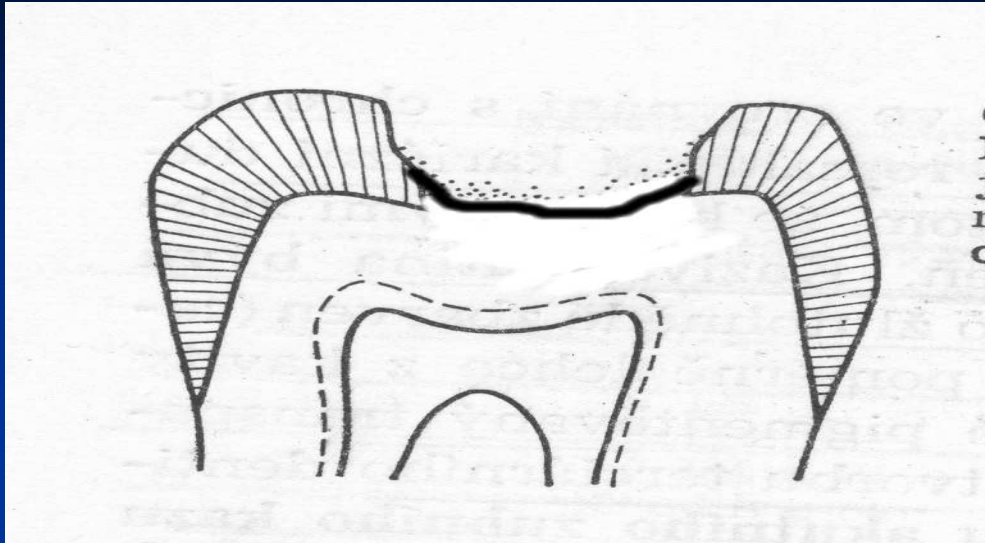
Predictable clean places

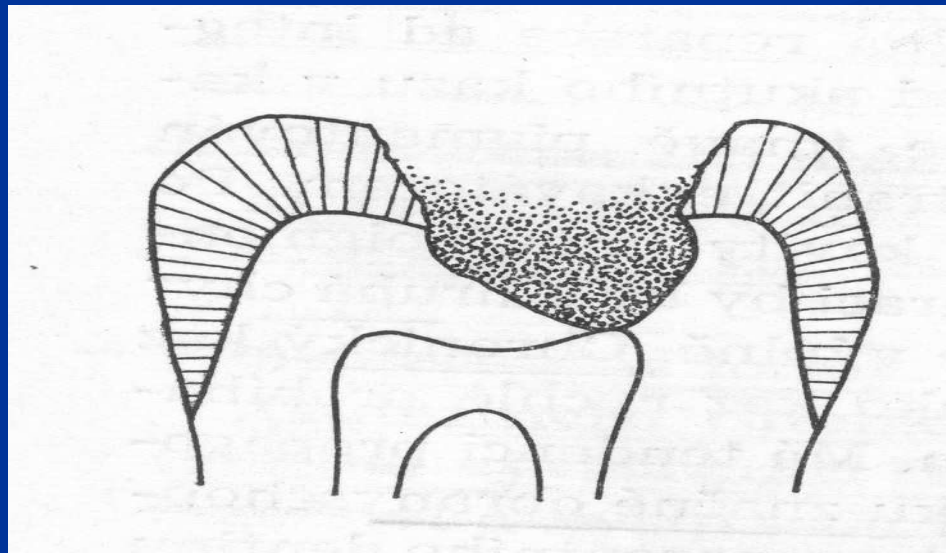
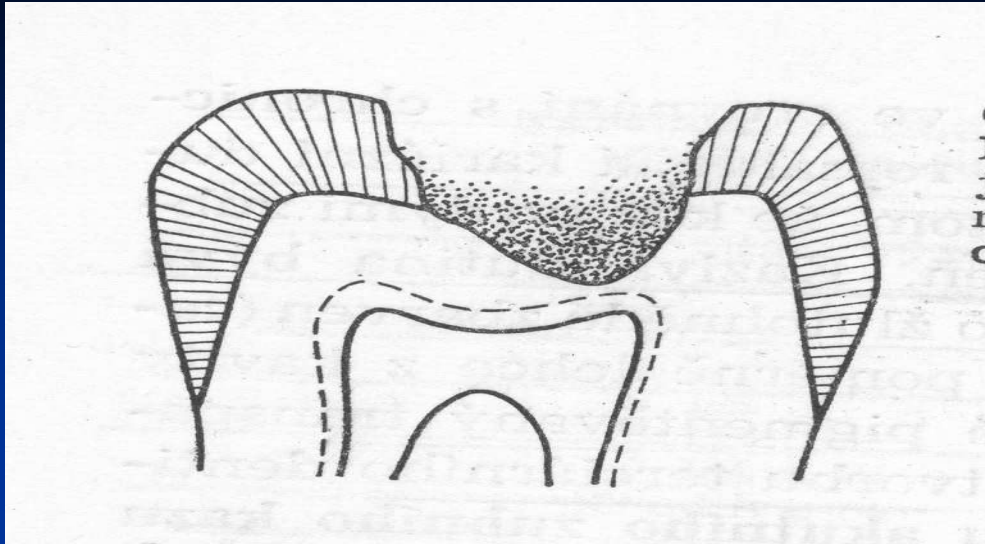
- Cusps
- Proximal ridge
- Incisal edge
- Buccal or oral surface upon the maximal convexity
- Proximal surface upon tje

Self cleaning

Caries - depth

- Surface caries (*caries superficialis*)
- Middle caries (*caries media*)
- Caries close to pulp (*caries pulpae proxima*)
- Caries penetrating into the pulp (*caries ad pulpam penetrans*)





Caries - Topography

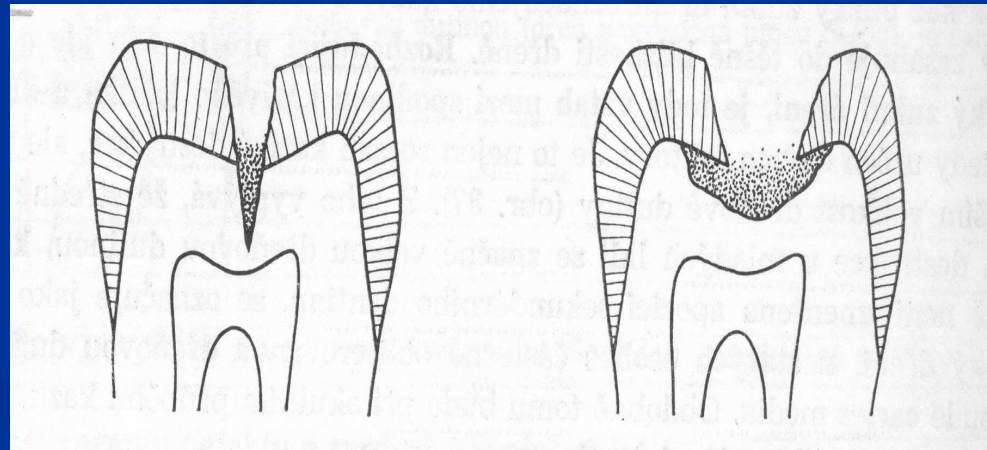
- Coronal caries
- Root surface caries

- Enamel caries
- Dentin caries
- Cementum caries

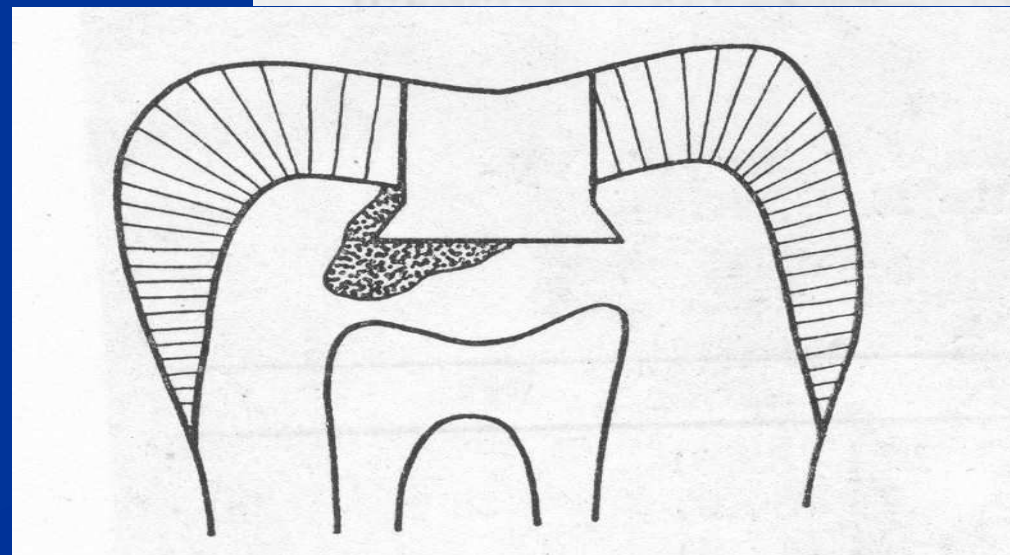
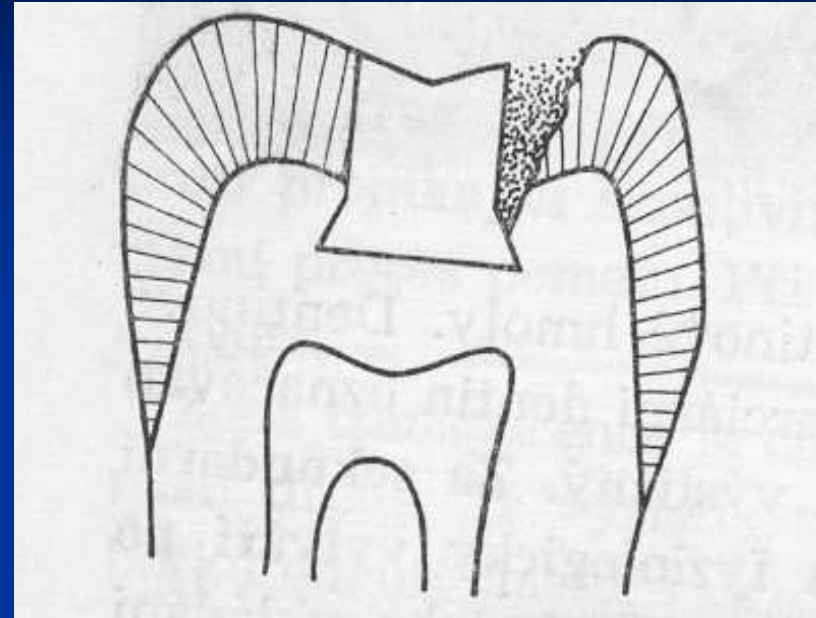
Caries

- Acute
 - Chronic
 - Arrested
- } Acc to its history

- Penetrating
- Undermining



Primary caries
Secondary caries
Recurrent caries



Patient assesment

Clinical examination
Diagnosis

Diagnosis of dental caries

Investigation

- **Mirror**
 - **Sharp Probe**
 - **Illimunation**
 - **Magnification**
- Dark spot, hole, defect
- **X- ray, other methods i.e. transillumination, infrared laser fluorecency**

Dental Caries - Treatment

■ Non cavitated lesion:

On molecular basis

- Dental hygiene
- Fluorides, Calcium, Phosphates
- Diet
- Antimicrobial agents

Dental Caries - Treatment

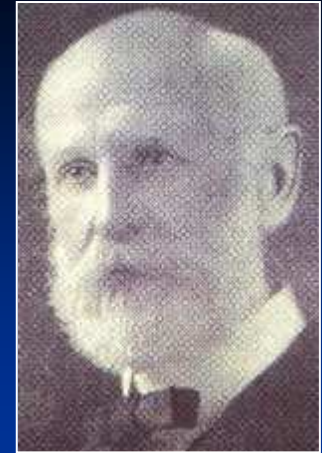
- Cavitated lesion:

Preparation

Filling

Drill and fill

Preparation



Instrumental treatment

Remove caries

Leave the rest of the dental tissues

- to be restored
- to be resistant against the bite forces
- to be prevented against the recurrent caries

(Black 1914)

Classification of cavities according to Black

Class I.

Caries in fissures and pits – occlusal surfaces of premolars and molars

Class II.

Proximal surfaces of molars and premolars

Class III.

Proximal surfaces of incisors and canines
without loss of the incisal edge

Class IV

Proximal surfaces of incisors and canines
with the loss of incisal edge

Class V.

Cervical area

Charting and records

the most important notation

- Caries /
- Filling P
- Tooth for extraction X
- Extracted tooth +
- Crown
- Pontic
- Tooth in removable denture 0

Instruments for investigation – investigative instruments

Explorer (probe):

Sharp, straight or bow shaped:

Caries detection – light motion without any pressure: dental surfaces, fillings.

Periodontal explorer (probe): not sharp, calibrated, investigation of periodontal pockets

Instruments for investigation – investigative instruments

- Mirror – flat or concave
- To see less available regions
- To illuminate
- To move off soft tissues (cheeks, tongue etc.)

Instruments for investigation – investigative instruments

Tweezer

To grip various instruments and supplies.

Instruments for cavity preparation

Hand instruments for cutting

Two main materials:

Stainless steel (loses keen edge)

Carbon steel (corrode)

Excavator

Chisel- cleaver

Instruments for cavity preparation

Power driven instruments for cutting

- Rotary instruments

Comon design characteristics



Shank

- The part that fits into the handpiece
- Accepts the rotary motion from the handpiece
- Provides a bearing surface to control the alignment and concentricity of the instrument

Straight handpiece shank

- Simple cylinder
- held in the handpiece in a metal chuck

Latch angle handpiece shank

- Shorter length – access to posterior regions

Handpiece – contra angle, metal bur tube.

The end of the instrument fits into D-shaped socket at the bottom of the bur tube. The *instrument* retained by a retaining latch that slides into the groove found at the shank end of the instruments.

Friction grip handpiece shank

Smaller design, simple cylinder.

Held in the handpiece by friction in plastic or metal chuck.

Neck design

Intermediate portion of an instrument that connects the head to the shank
Tapered, shorter or longer.

Head design

Burs – cut of steel or tungsten carbid

Diamond (diamond burs)– covered with the diamond bort

Head design

Burs classification systém

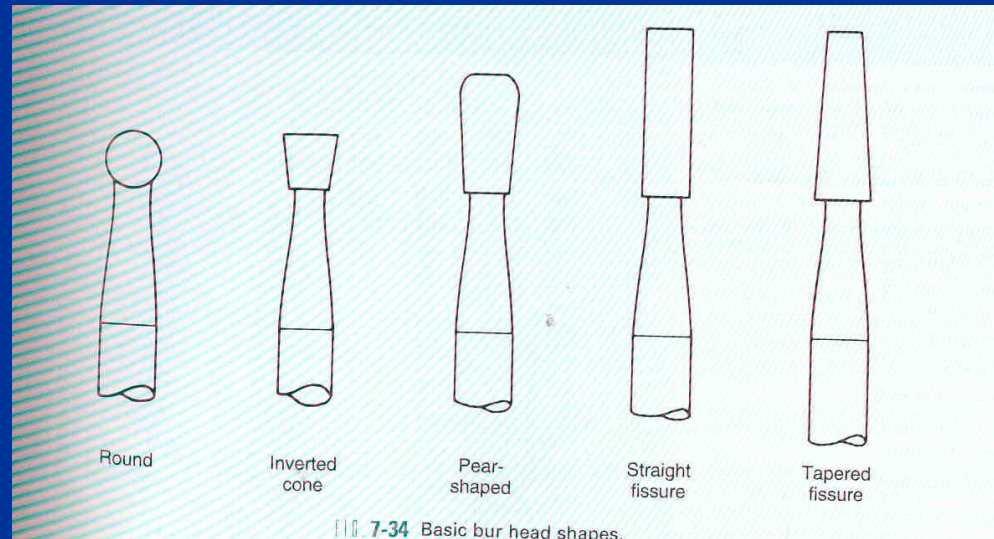
Round

Inverted cone

Pear shaped

Straight fissure

Tapered fissure



Bur blade design

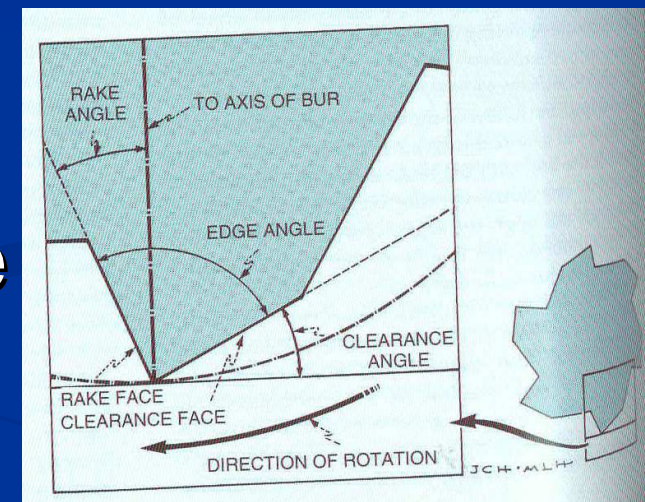
- Rake face (towards the direction of cutting)
- Clearance face

Rake angle – slightly negative

Edge angle – appr 90°

Clearance angle

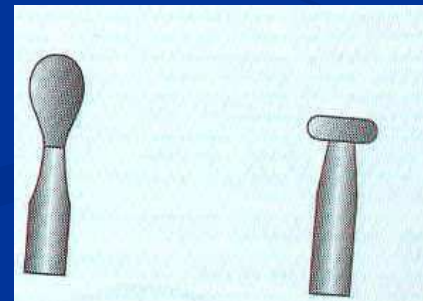
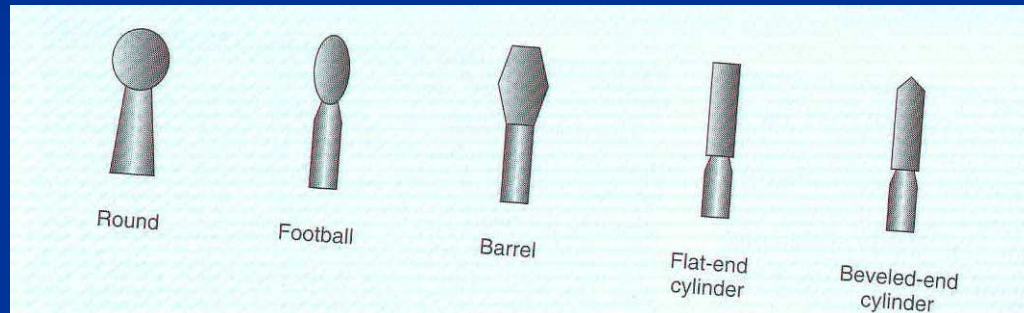
Clearance face rounded or two surfaces.



Head design

Diamond classification systém

Round
Inverted cone
Pear shaped
Cylinder
Taper
Lens
Needle etc.



Diamond abrasive instruments

Diamond bort – small sharp particles in softer matrix. Cutting occurs at a large number of points.

Metal blank

Diamond powder

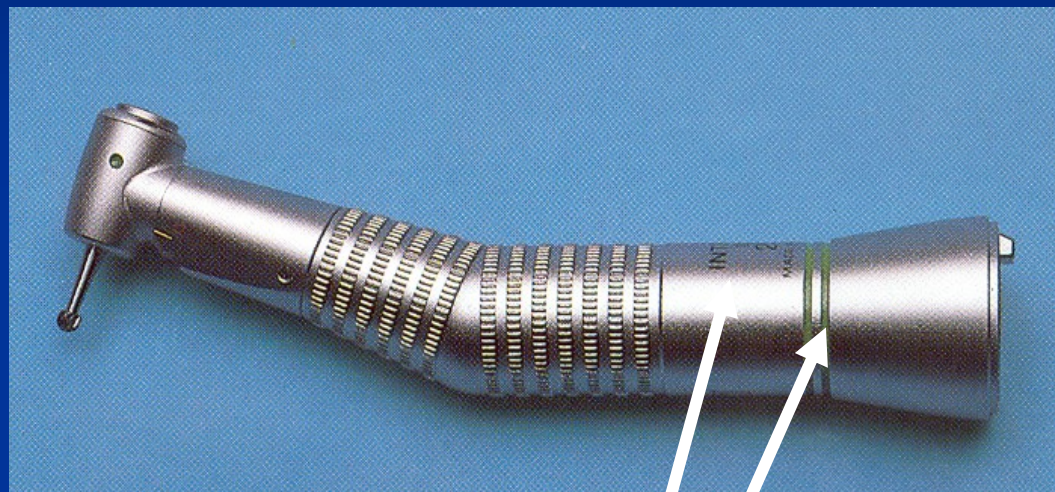
Metallic bonding material

Preparation speed

- Low (slow) speeds – below 12.000 rpm
- Medium or intermediate speeds 12.000 – 200.000 rpm
- High or ultrahigh speeds above 200.000 rpm

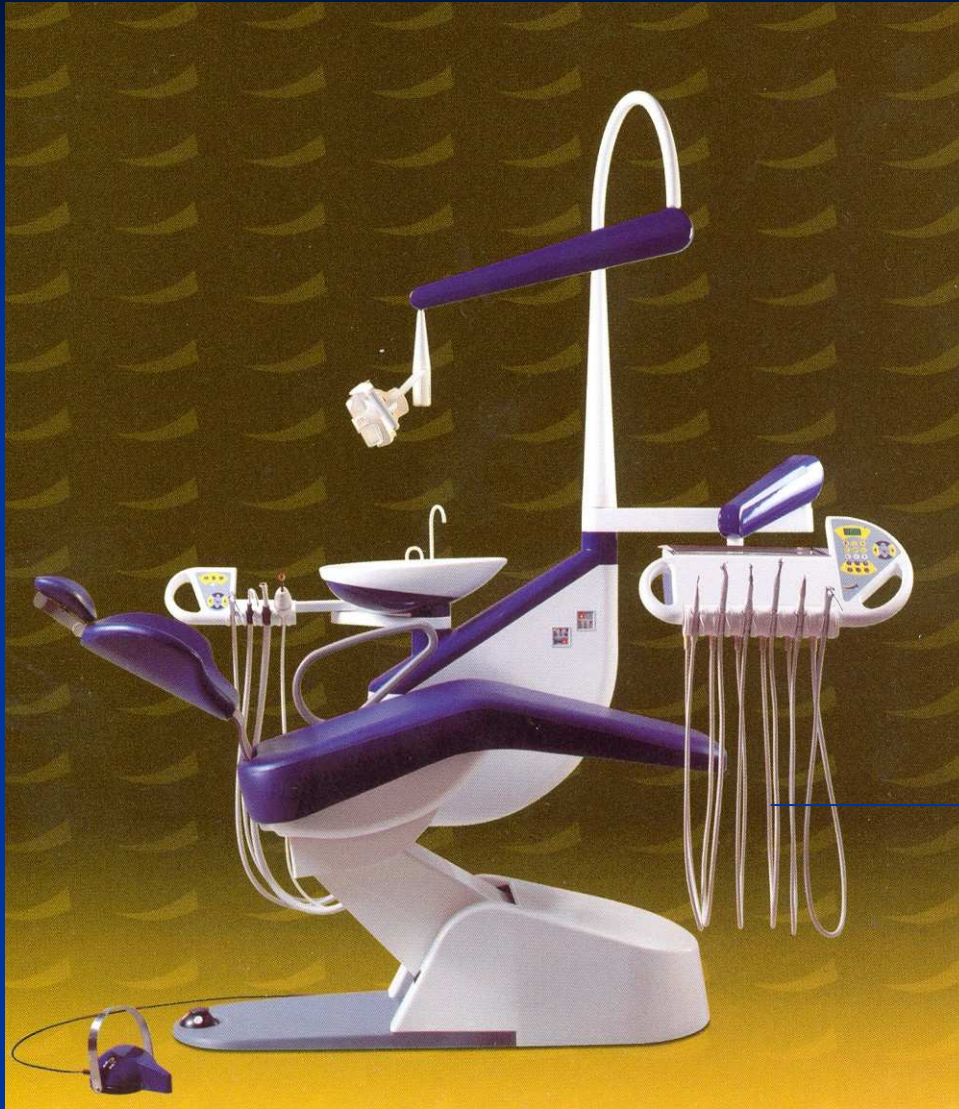








Spitting box
with amalgam
separator





Hoses – upper leading



Cavity preparation

- Power driven
- Hand



400.000 rpm

Electromotors – maximum 40.000/min



Airmotors – maximum 20.000/min

Gearing to fast speed



Gearing to slow speed



Oscillation





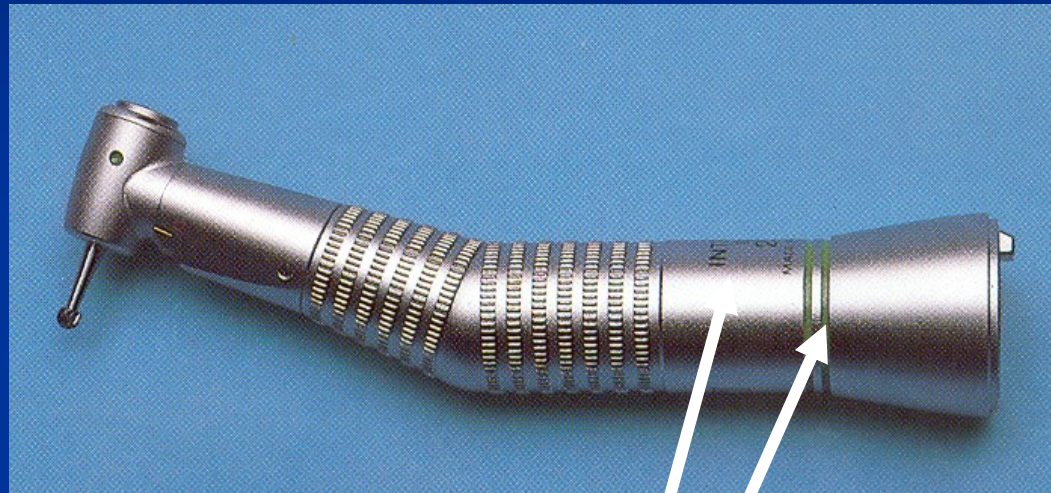
1 : 1 as far as 40.000 rpm

Red coded handpiece



1:4 až 1:5 as far as 160.000 – 200.000 rpm

Preparace strojová - pohony



2,7:1
7,4:1

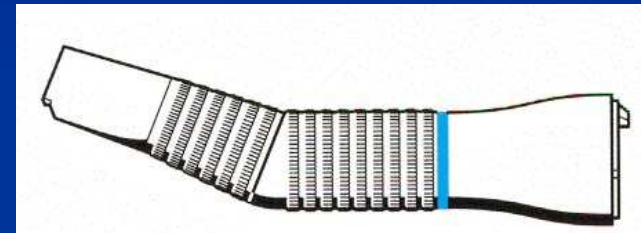
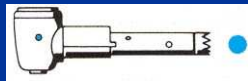
Blue and green coded handpiece



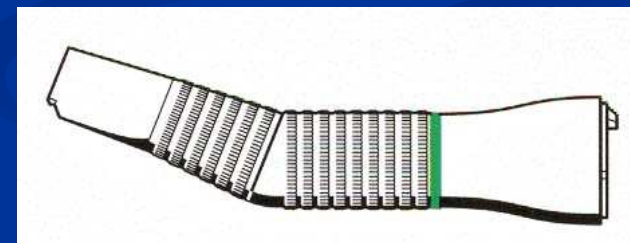
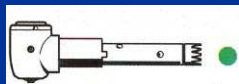
Hanpieces combined



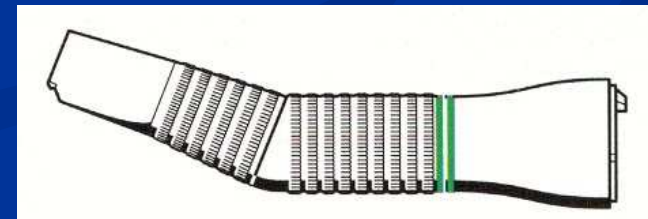
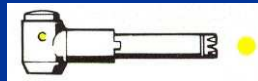
1:1



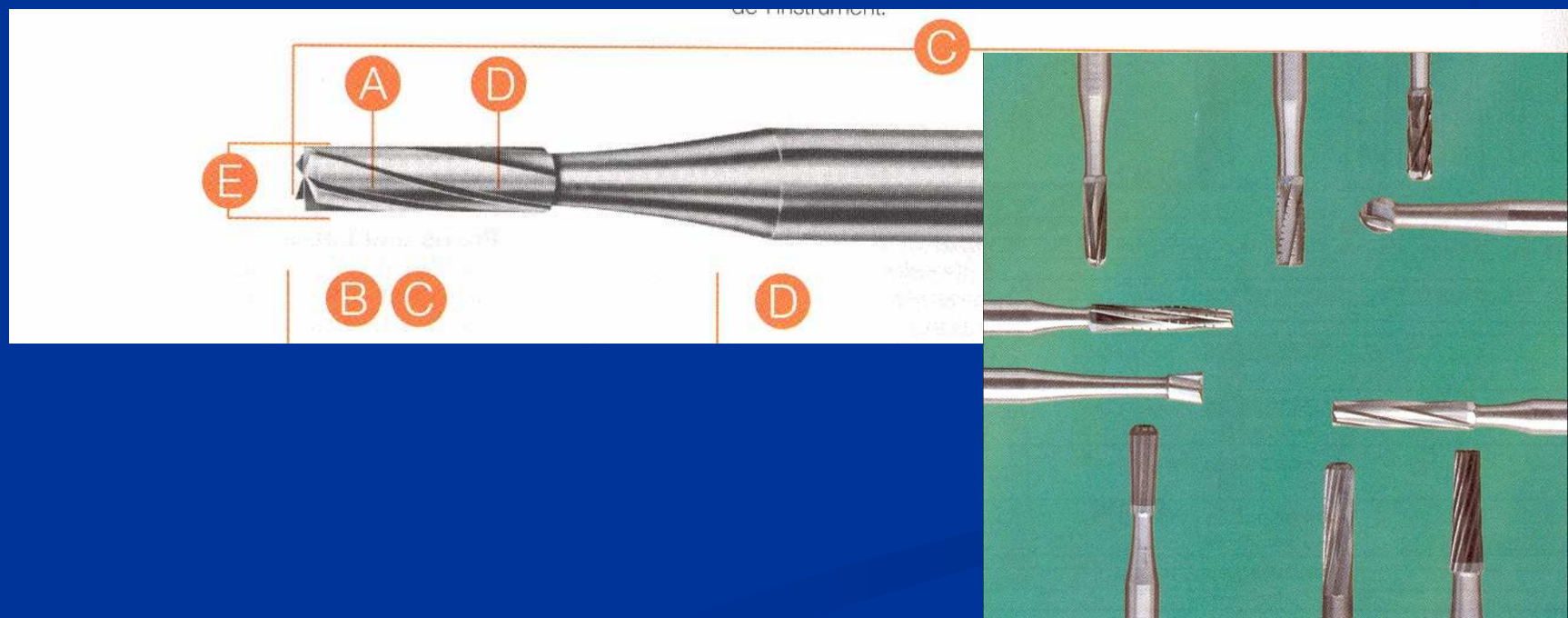
2:1

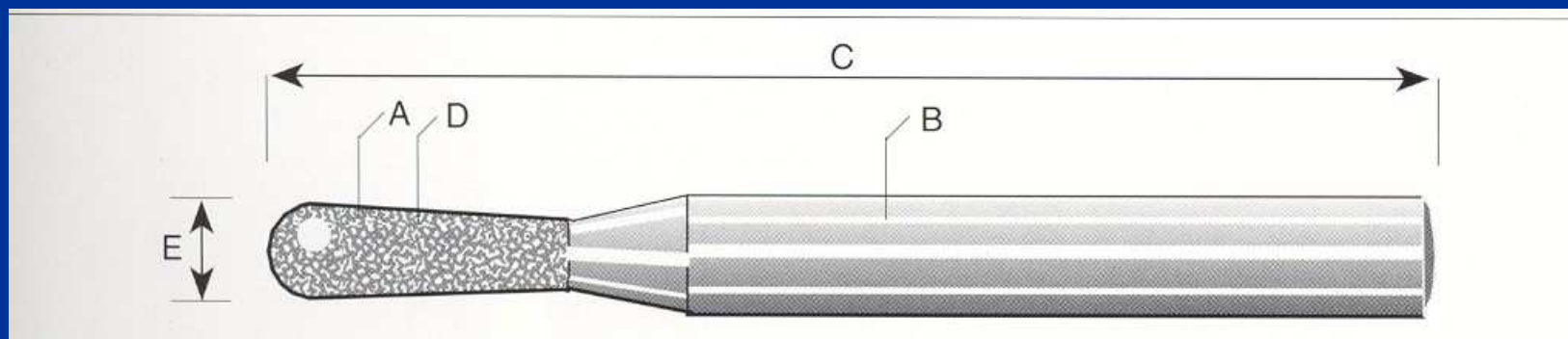


nerotuje



ISO 6360





Filling materials

Temporary

Zinkoxidsulphate cement

One component cements based on gypsum and organic lute

Zinoxidphosphate cement

Definitive

Amalgam

Composites

Filling materials

Amalgam:

Mercury

Powder – metal alloy:

Silver

Tin

Copper

Zinc

Chisel – for enamel Cleaver



Chisel for enamel



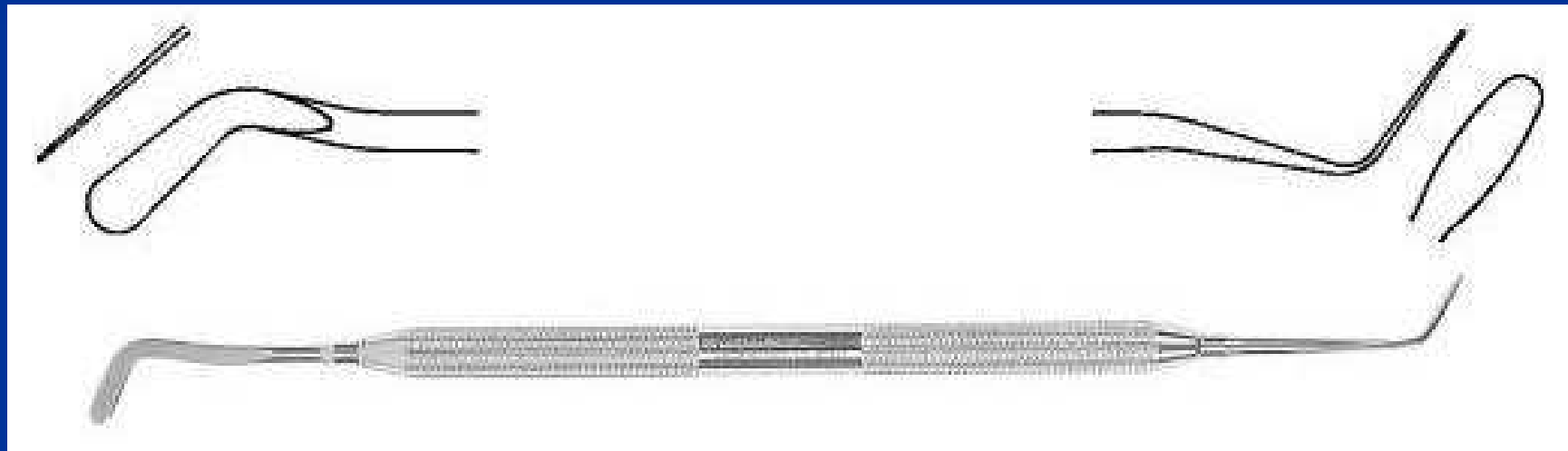
Excavator



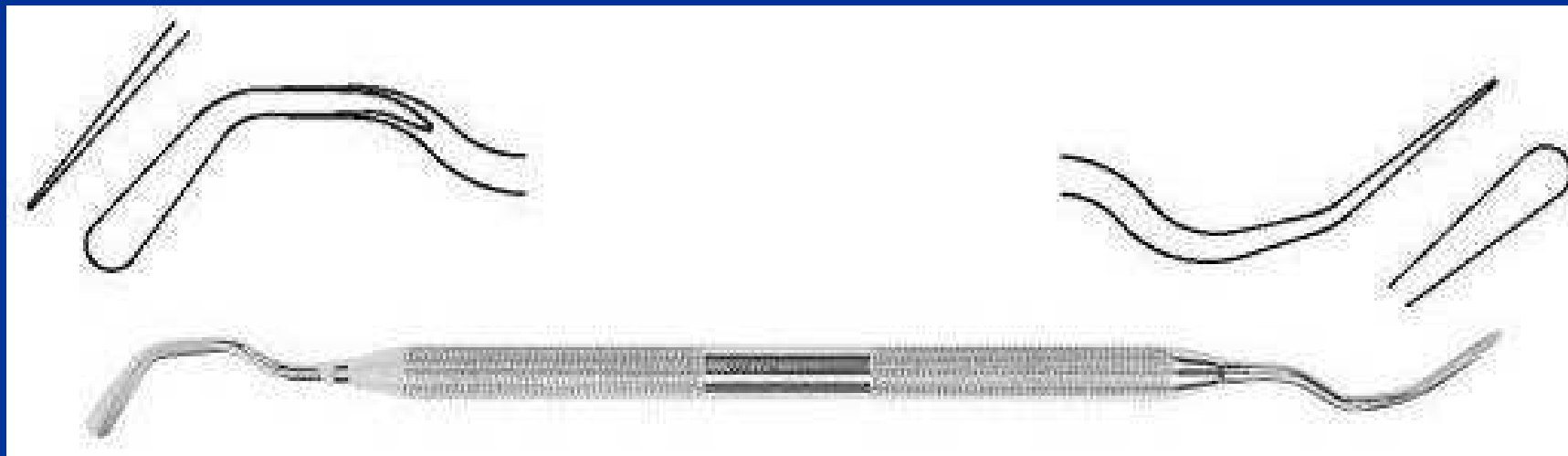
Filling instruments

Burnisher -plane

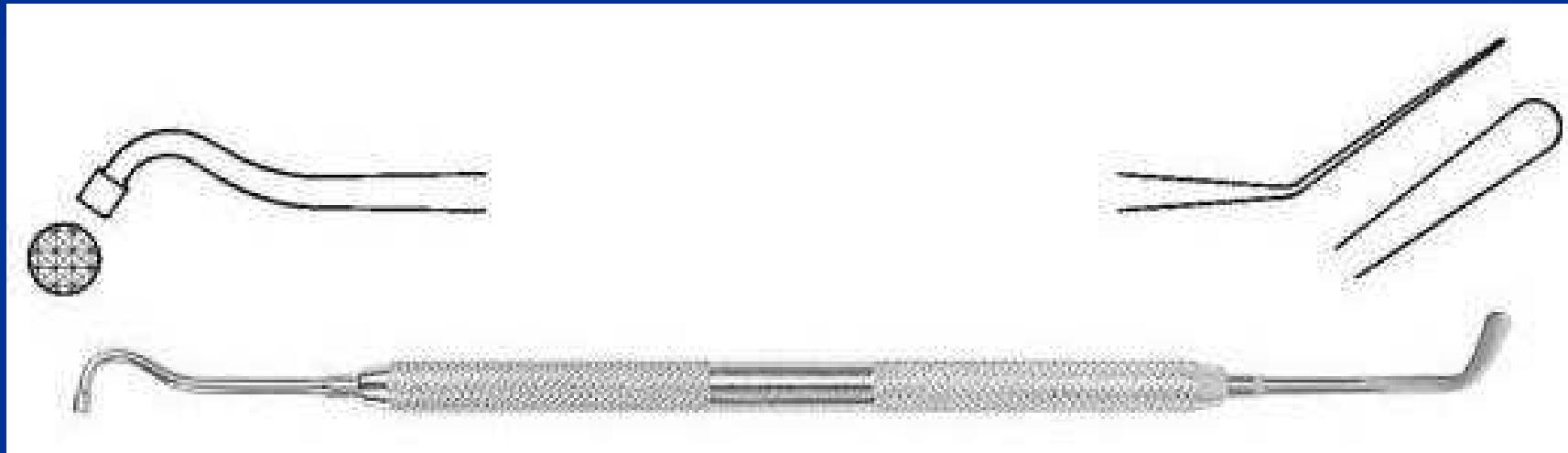
Angular- trough edge trough face



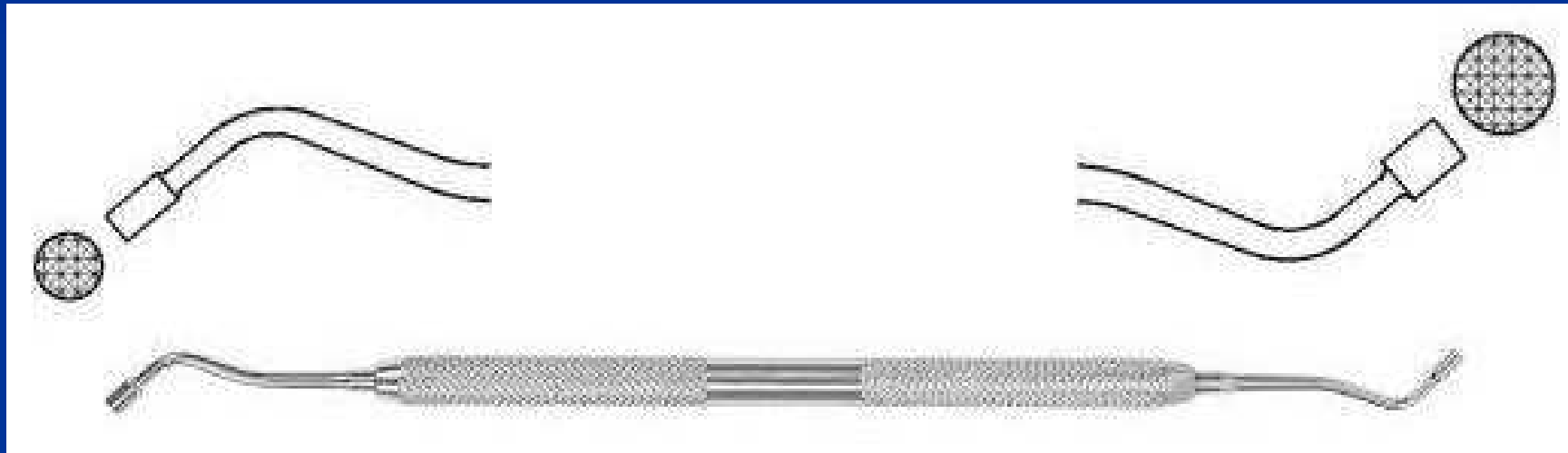
Burnisher – angular three face



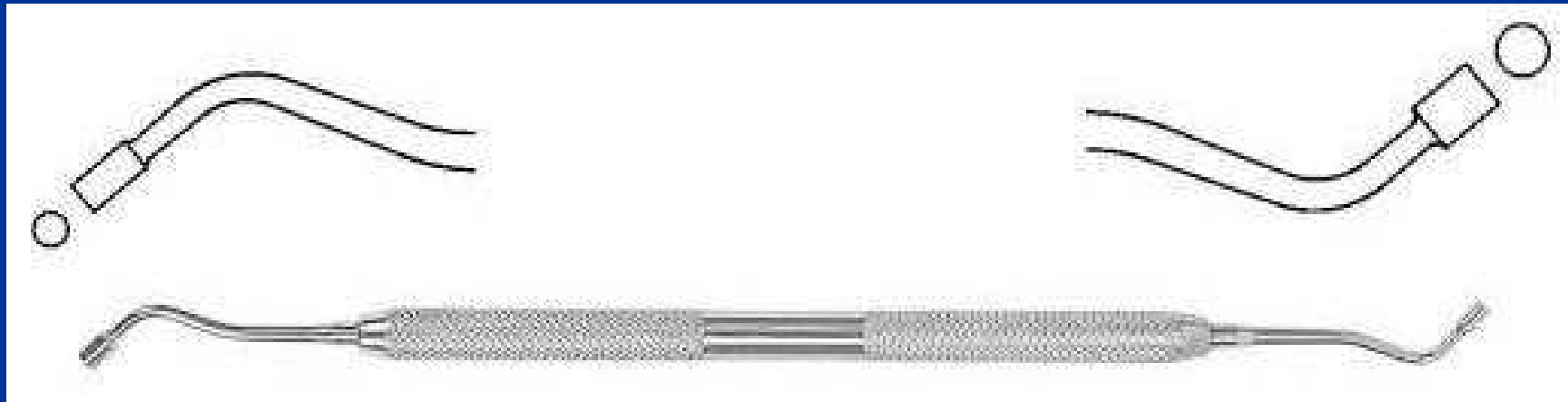
Condensor and burnisher combined



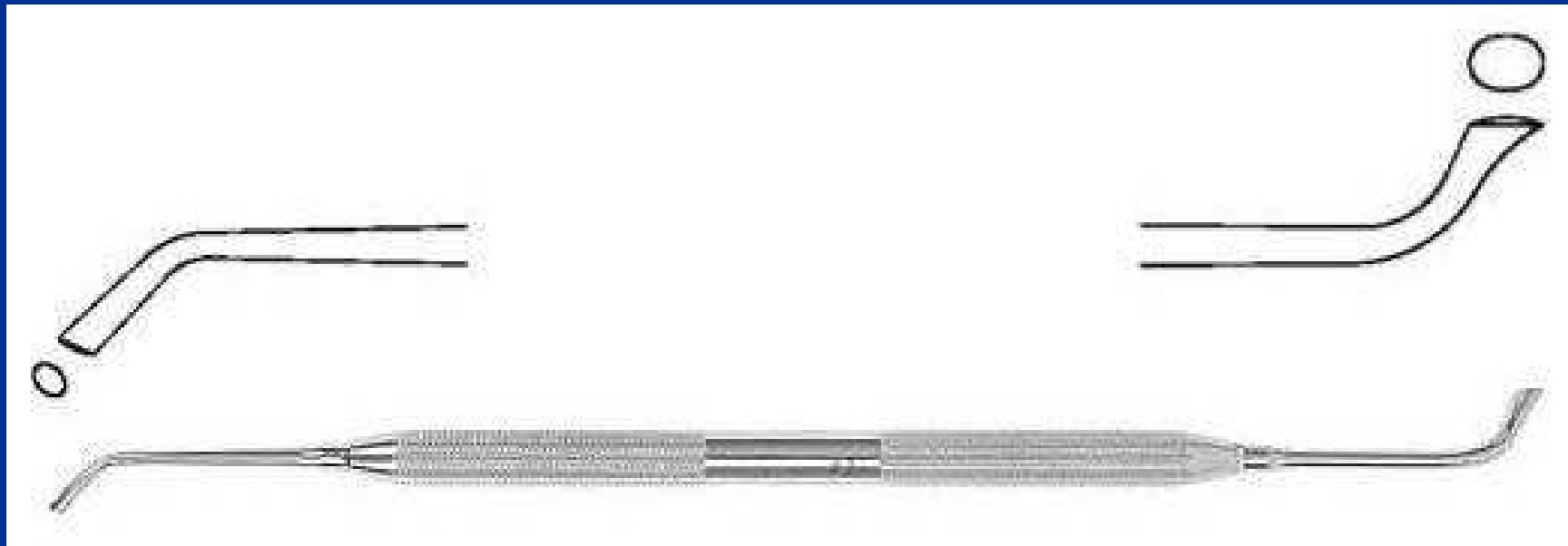
Amalgam carrier



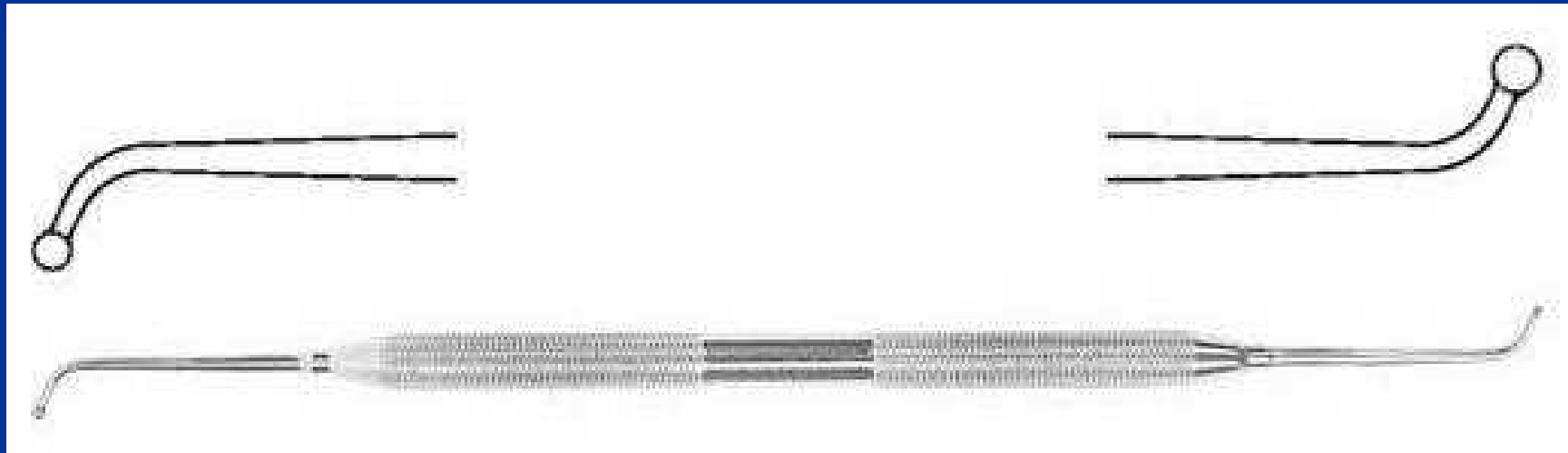
Condensor for amalgam



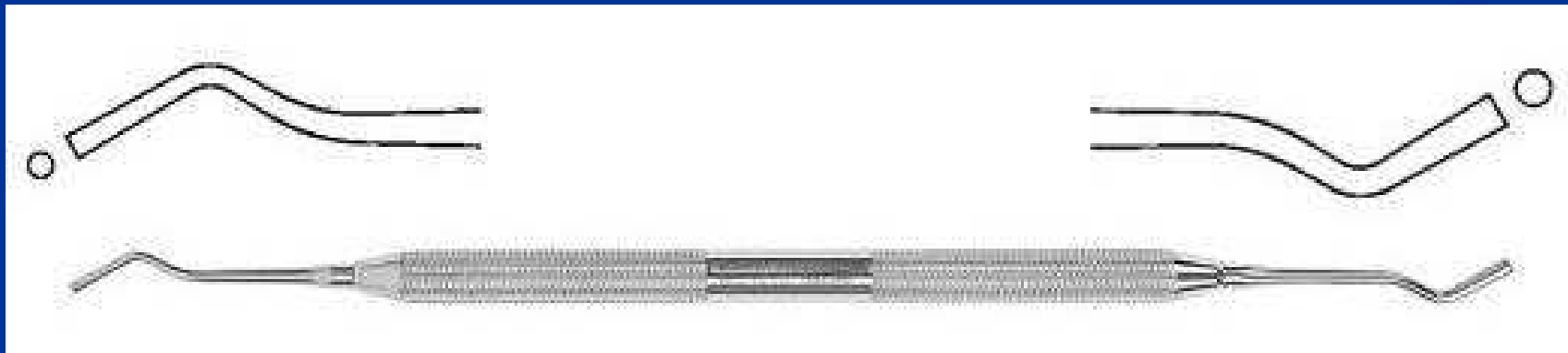
Condensor for guttapercha - hoof



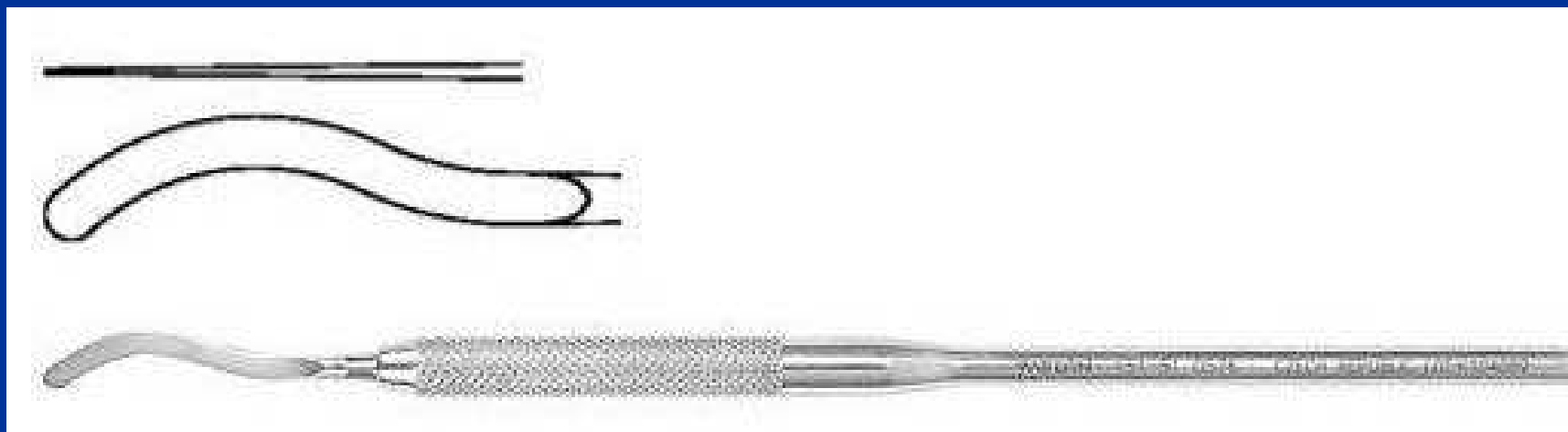
Ball condensor



Condensor –stamen



Fosterflagg



Frahm



Carver: Discoid - Cleoid

