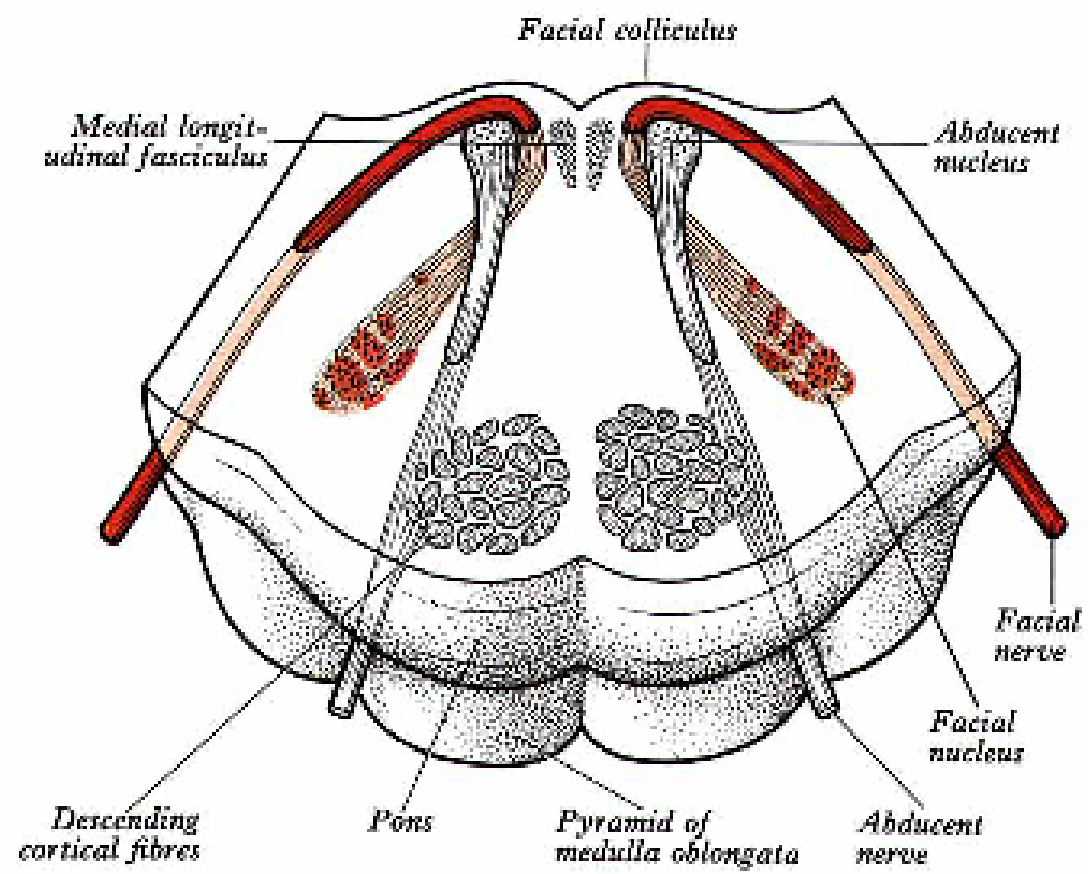
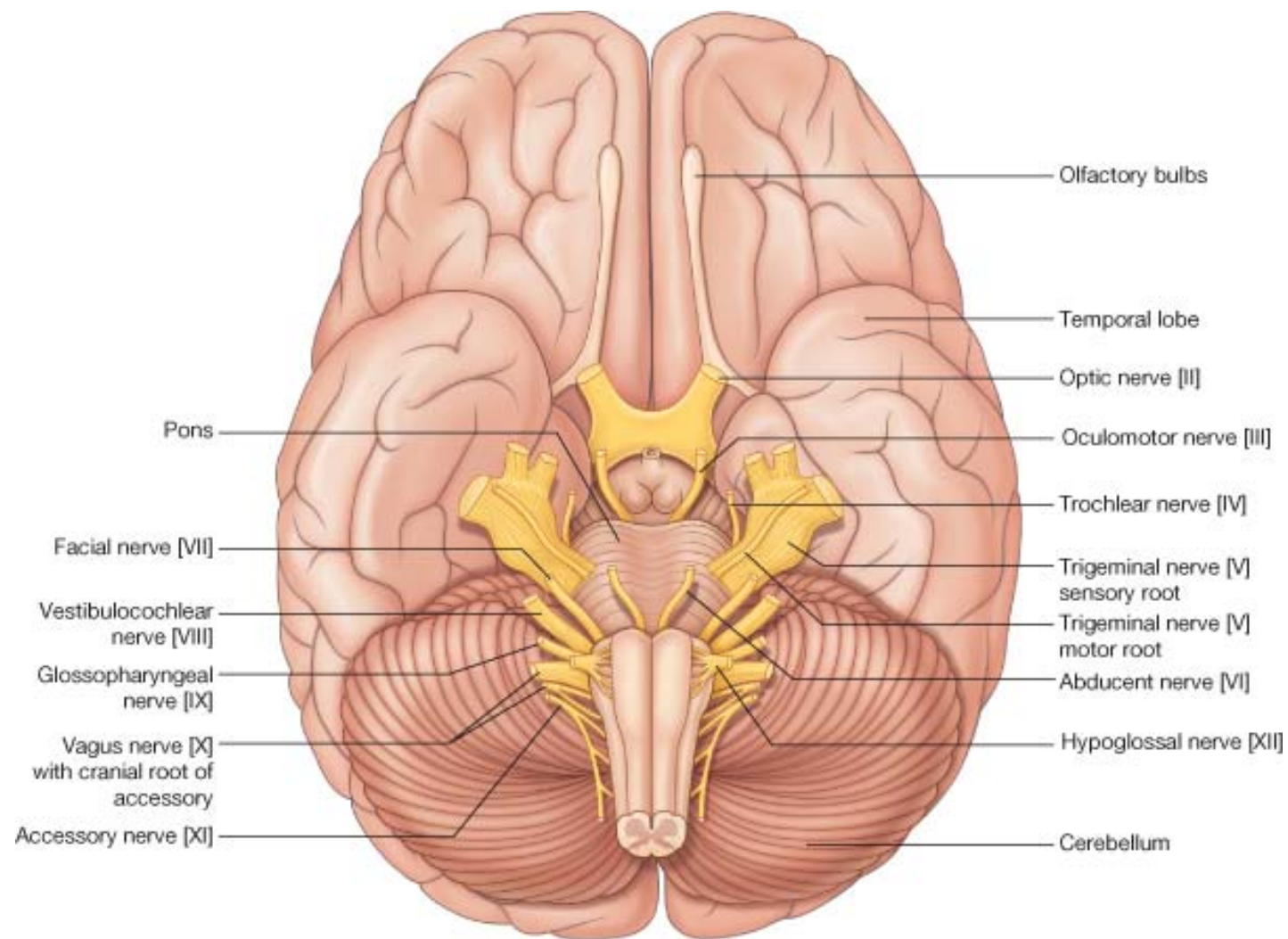
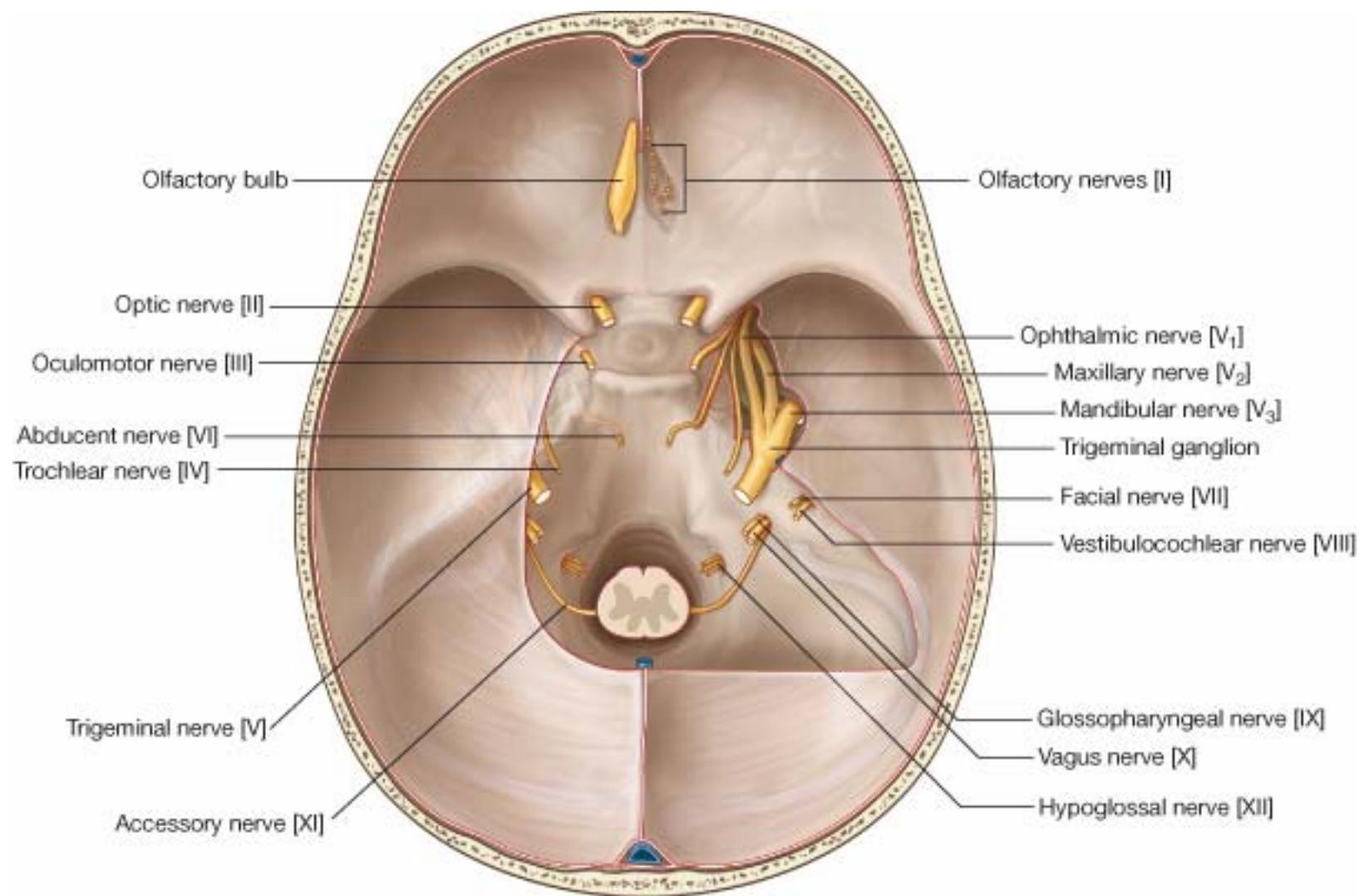


# Facial Nerve

- VII cranial nerve
- Emerges from Pons
- Two roots
- Functional components:
  1. GSA (general somatic afferent)
  2. SA (Somatic afferent)
  3. GVE (general visceral efferent)
  4. BE (Special visceral/branchial efferent)







# Functional components

1. GSA (general somatic afferent)  
General sensory fibres which bring sensation from part of external auditory meatus & back of the ear.
2. SA (Somatic afferent) Sensory fibres which bring taste sensation from anterior 2/3rd of tongue
3. GVE (general visceral efferent)  
Efferent parasympathetic fibres which supply:  
Submandibular and sublingual salivary glands.  
Lacrimal gland & mucus glands of mouth & nose
4. BE (Special visceral/branchial efferent): Motor fibres which supply the muscles of 2nd branchial arch.

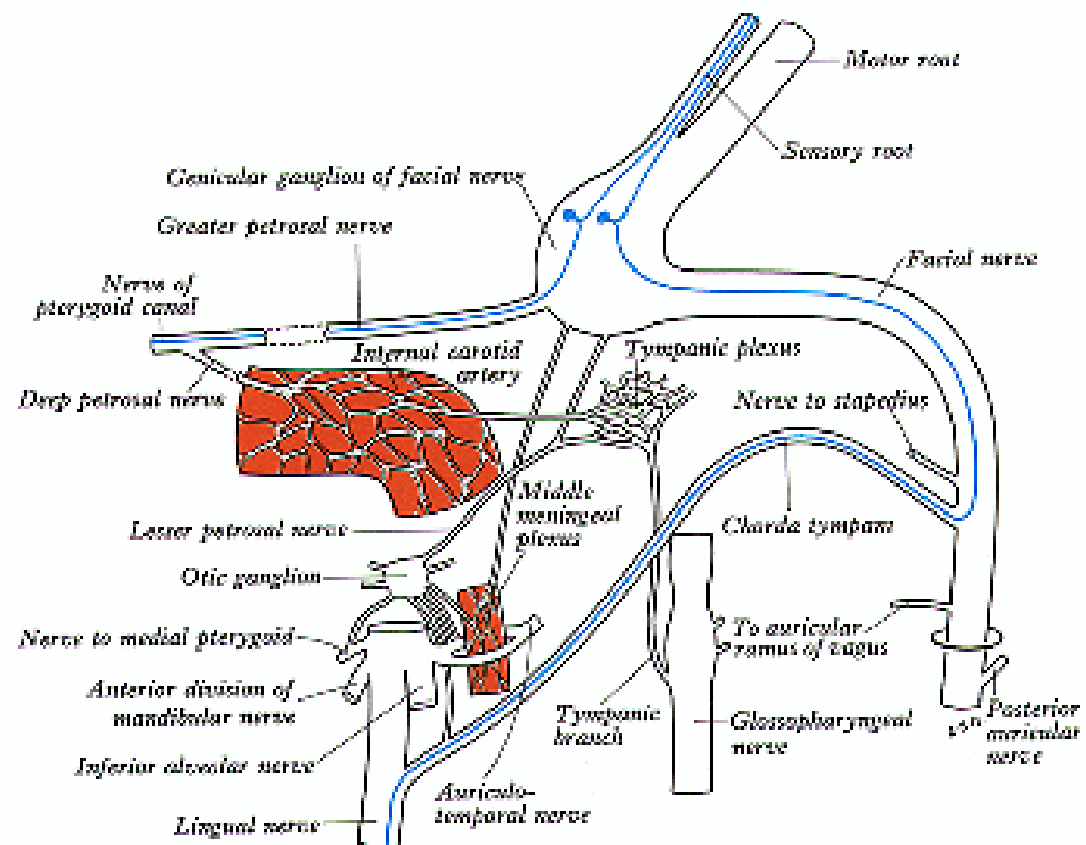
## **Origin:**

- 1. Motor fibres (BrE/SVE)** :main motor nucleus of the nerve (Pons). Facial colliculus.
- 2. Parasympathetic fibres (GVE):**
  - a) For the salivary glands arise from superior salivatory nucleus situated in the reticular formation close to the facial n. nucleus.
  - b) For the lacrimatory & other glands arise from an indistinct special lacrimatory nucleus situated close to the superior salivatory nucleus.
- 3. Taste (SVA) & general sensory (GVA)** fibres have their neurons situated in the geniculate ganglion.
  - a) Taste fibres end in nucleus of tractus solitarius.
  - b) General sensory fibres end in the nucleus of spinal tract of trigeminal nerve.

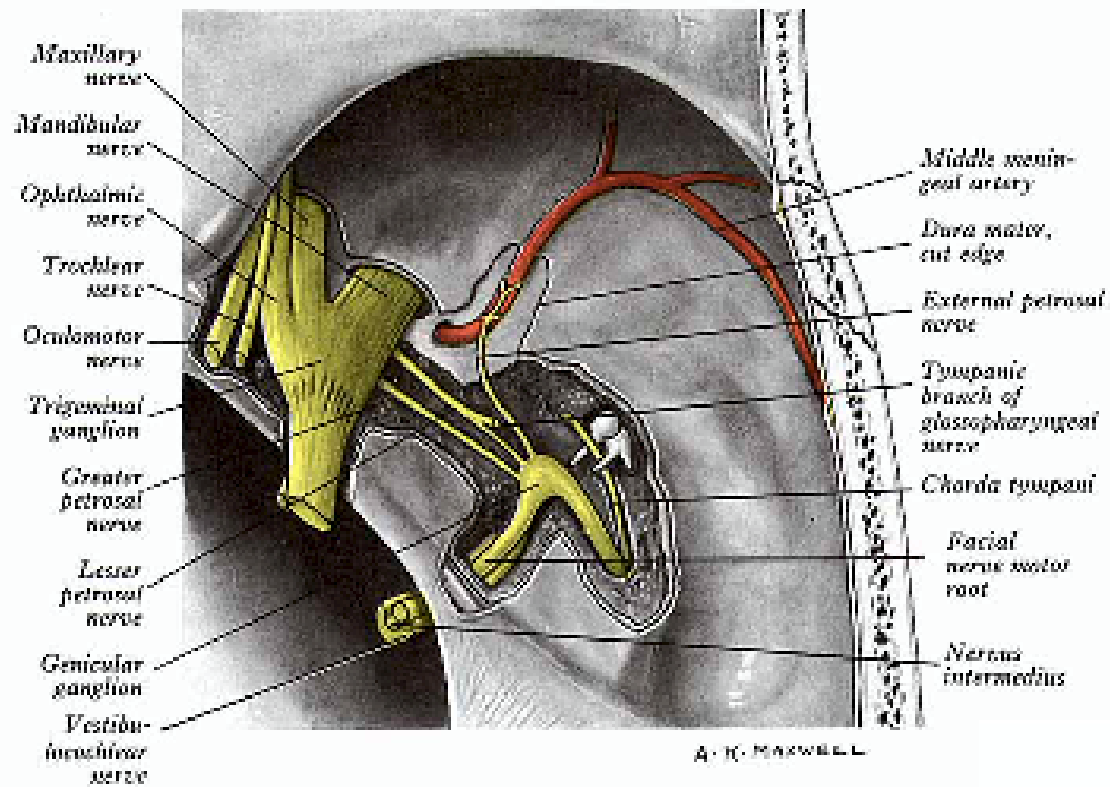
Both the roots of facial nerve emerge in the lateral part of the groove between pons & medulla.

Motor fibres are present in the motor root of the facial nerve. All the other fibres are present in nervus intermedius.

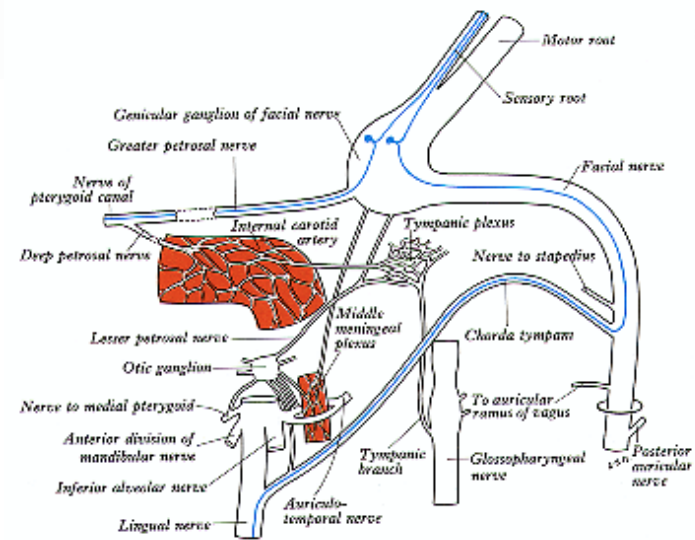
Nervus intermedius is present between the motor root and the 8<sup>th</sup> nerve.





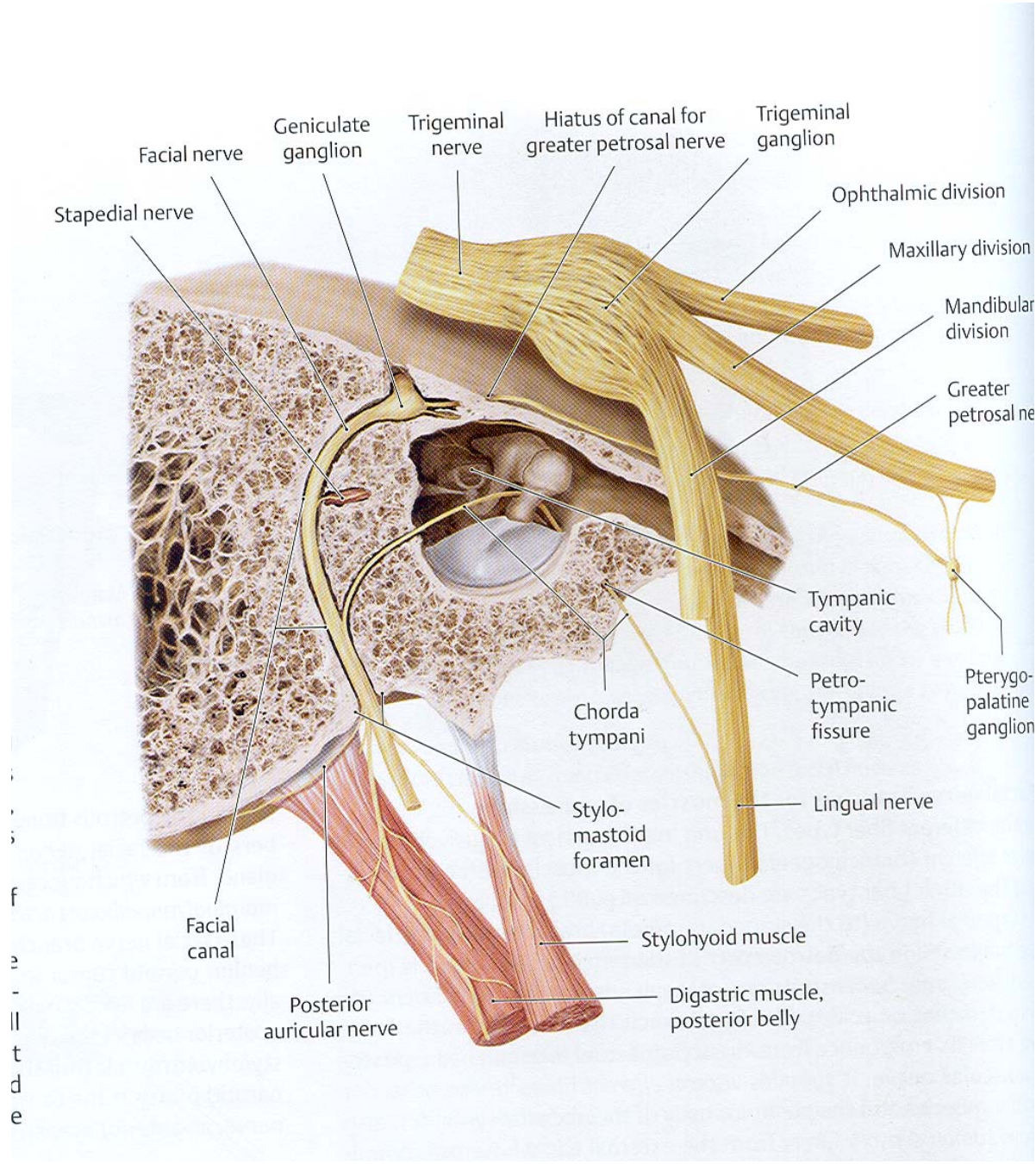


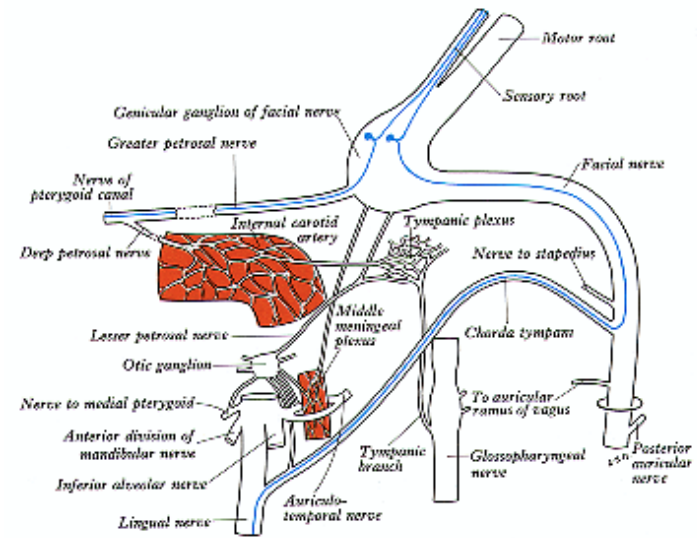
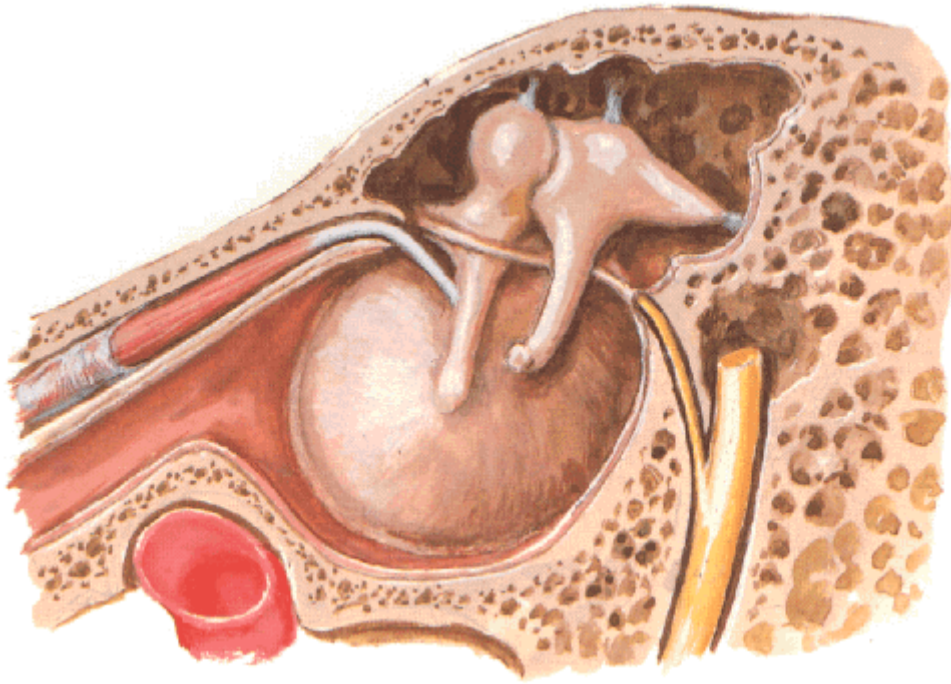
A. K. MAXWELL



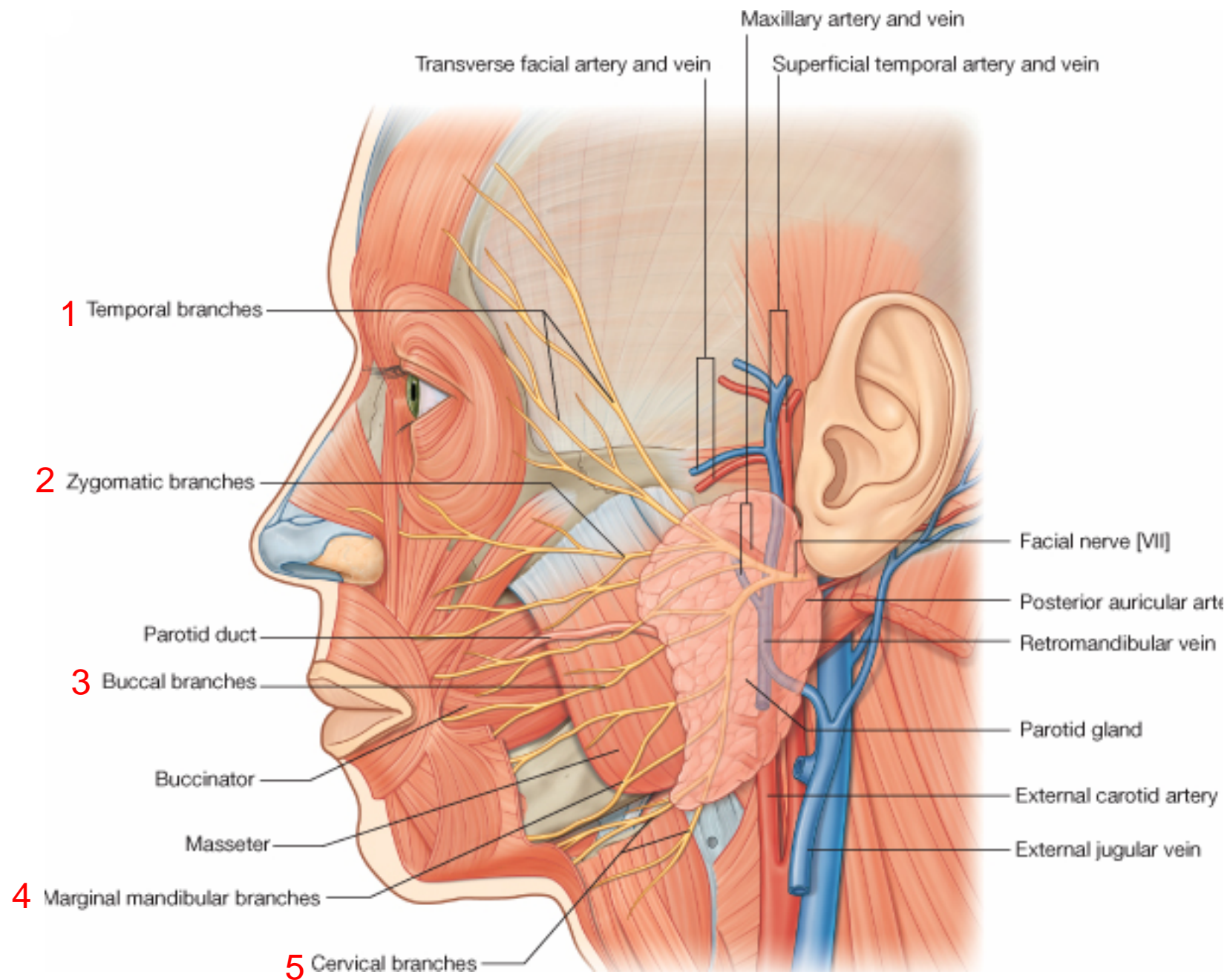
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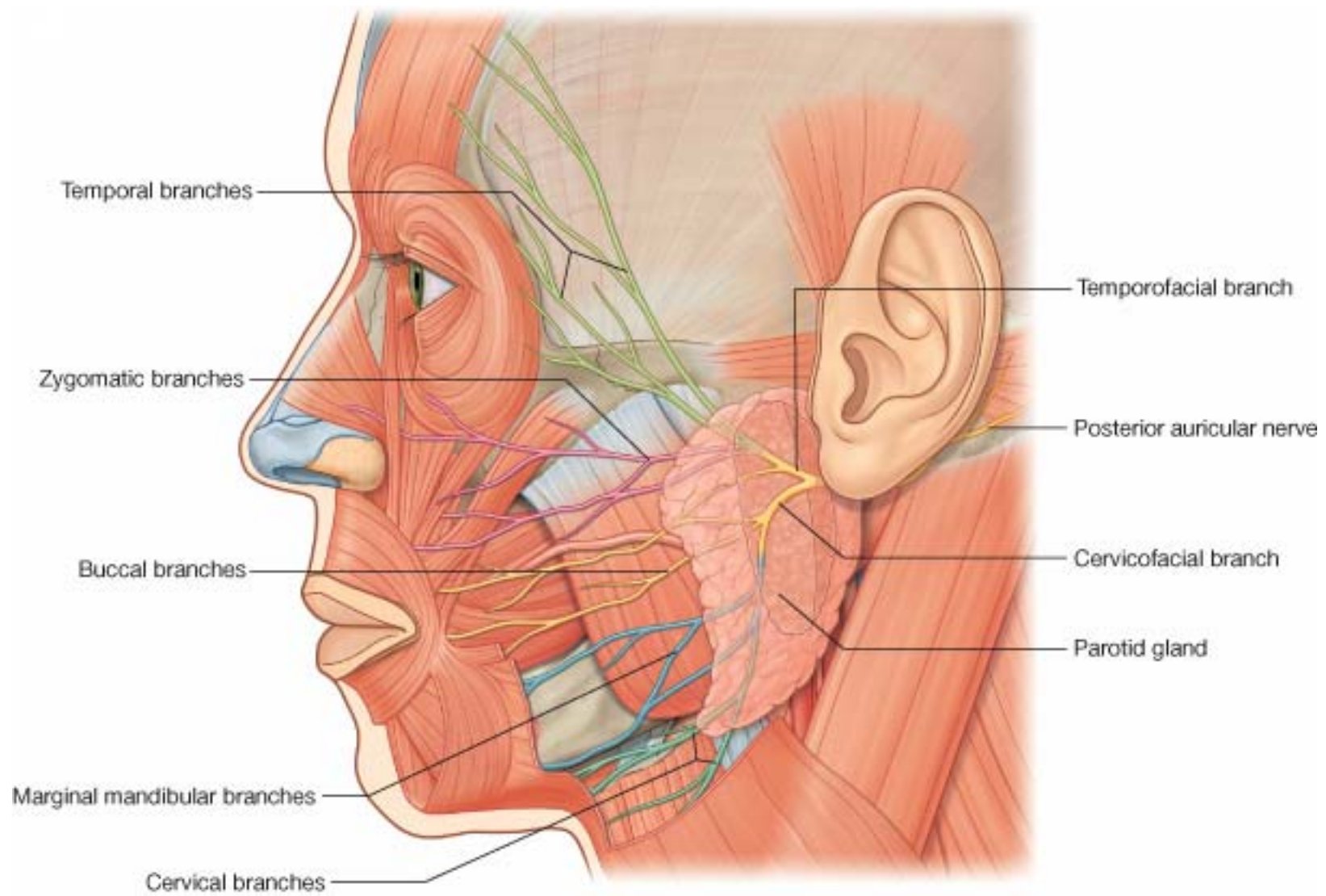
- Internal auditory meatus
- within the petrous temporal bone, the nerve bends ( $130^\circ$ ).
- geniculate ganglion.
- run vertically in the posterior wall of middle ear.
- emerges from the bone through the stylomastoid foramen.
- enters the parotid gland.
- Within the parotid gland, behind the neck of the mandible, it divides into its branches.
- The branches pierce the anteromedial surface of parotid close to the anterior margin and are distributed to the facial muscles.



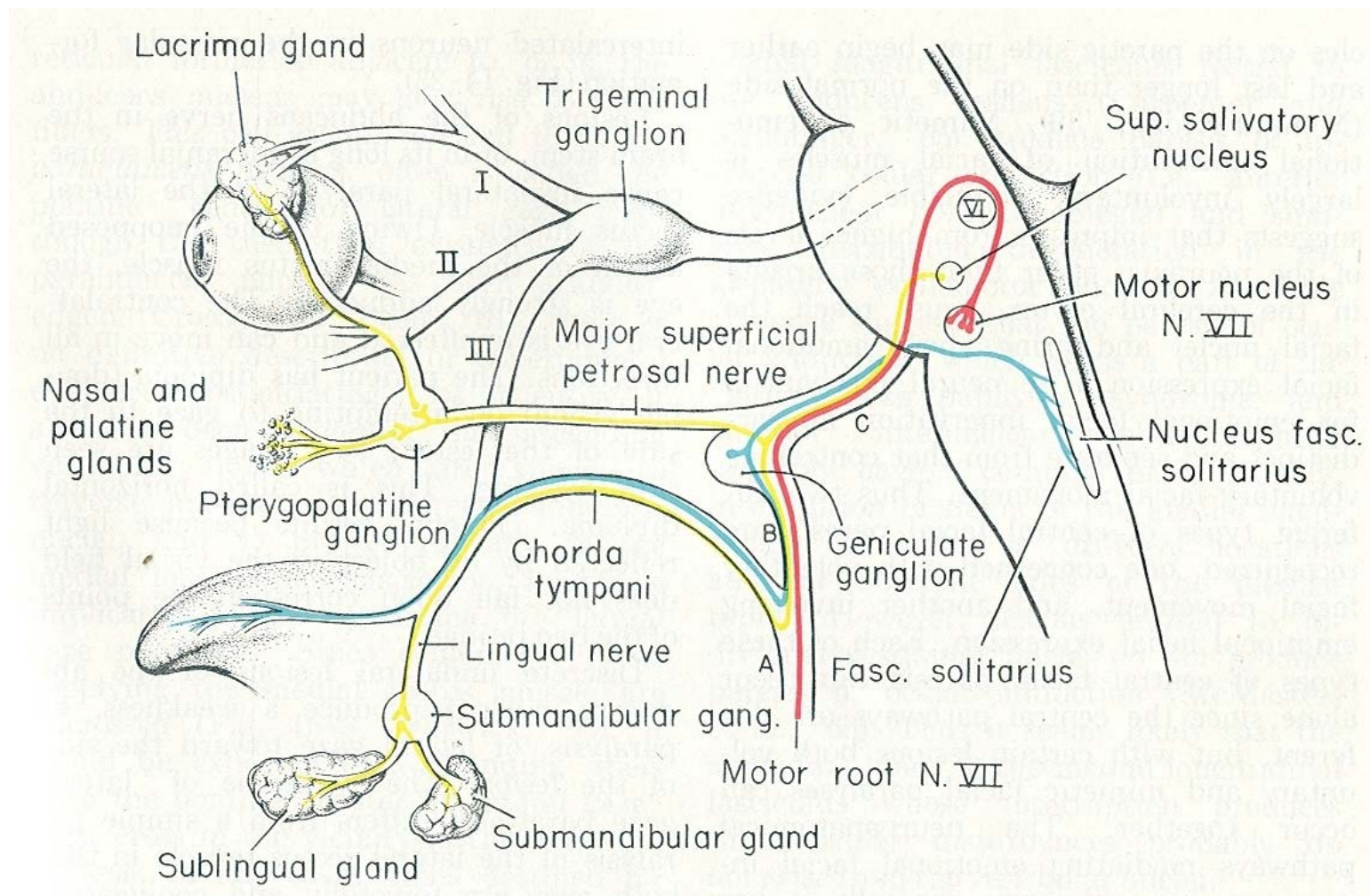


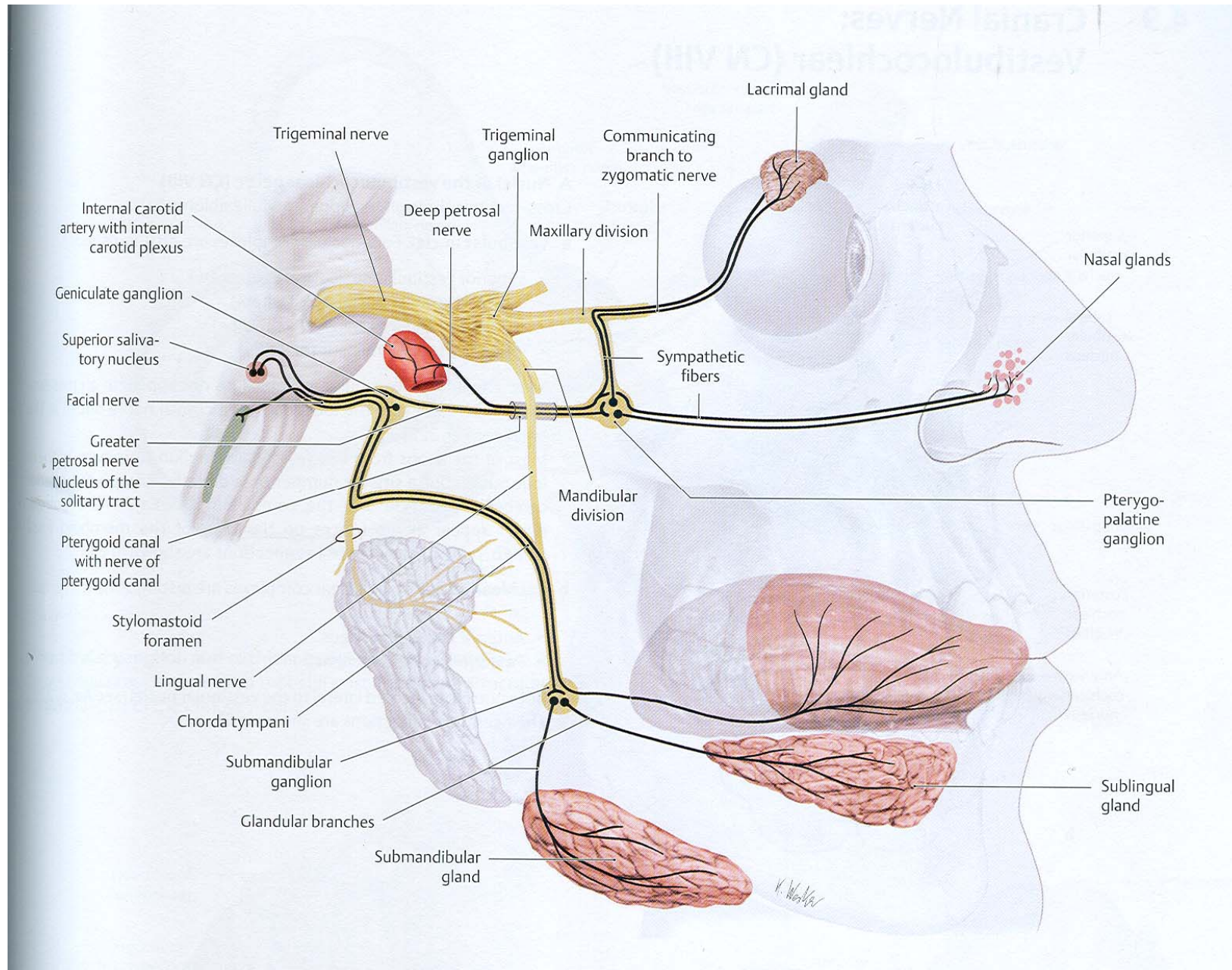














## **Branches:**

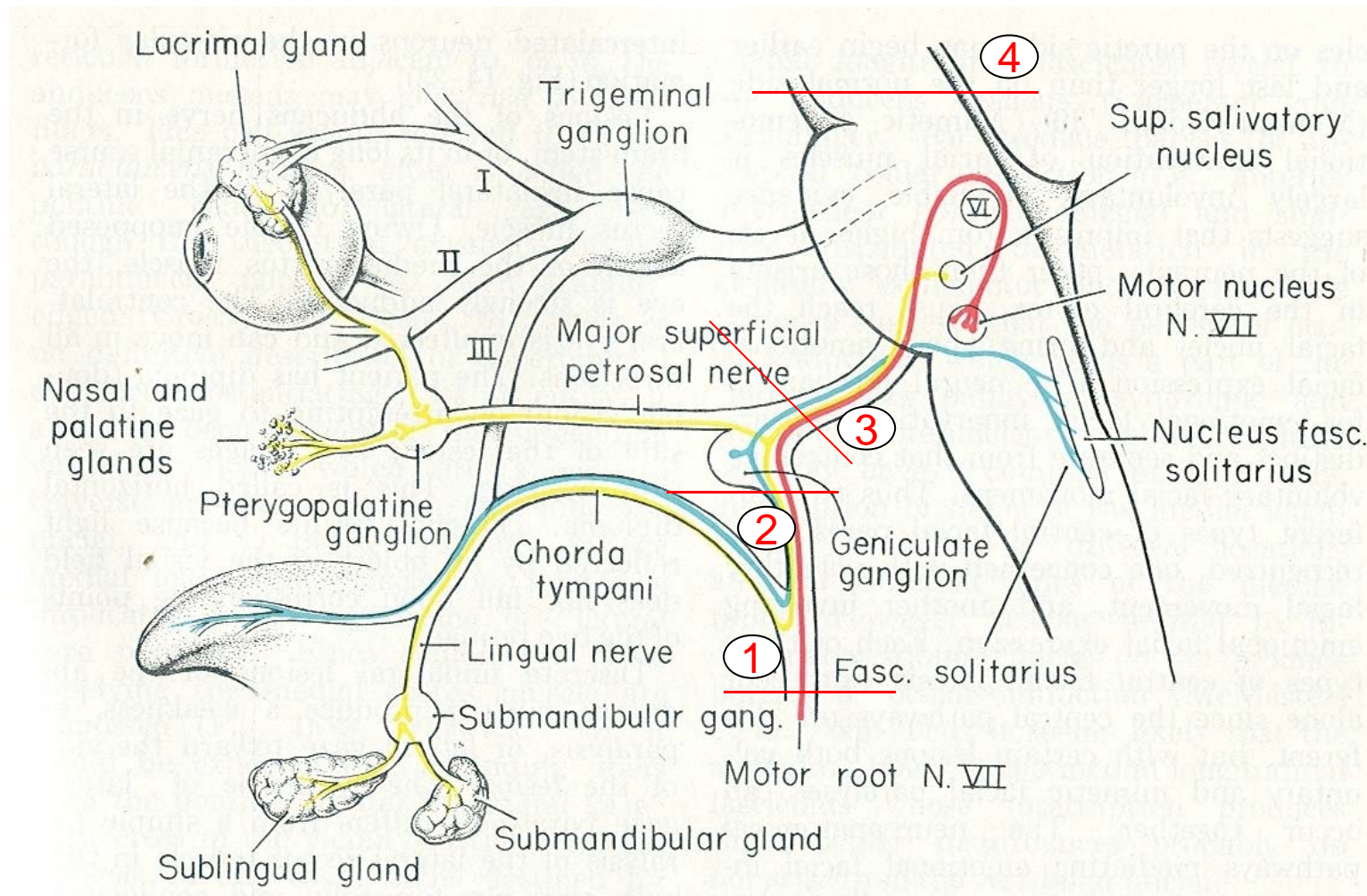
1. Greater superficial petrosal – arises from the geniculate ganglion.
2. Branches within the facial canal:
  - i) nerve to stapedius
  - ii) Chorda tympani
3. After exit from stylomastoid foramen:
  - i) Posterior auricular
  - ii) Nerve to posterior belly of digastric
  - iii) Nerve to stylohyoid.
4. On the face - Five major branches:
  - i) Temporal
  - ii) Zygomatic
  - iii) Buccal
  - iv) Marginal mandibular
  - v) Cervical

Communications:

With

Plexus around middle meningeal artery;

Vagus, glossopharyngeal, auriculotemporal, lesser occipital, branches of trigeminal nerve in face and transverse cervical nerves.



# Applied Anatomy

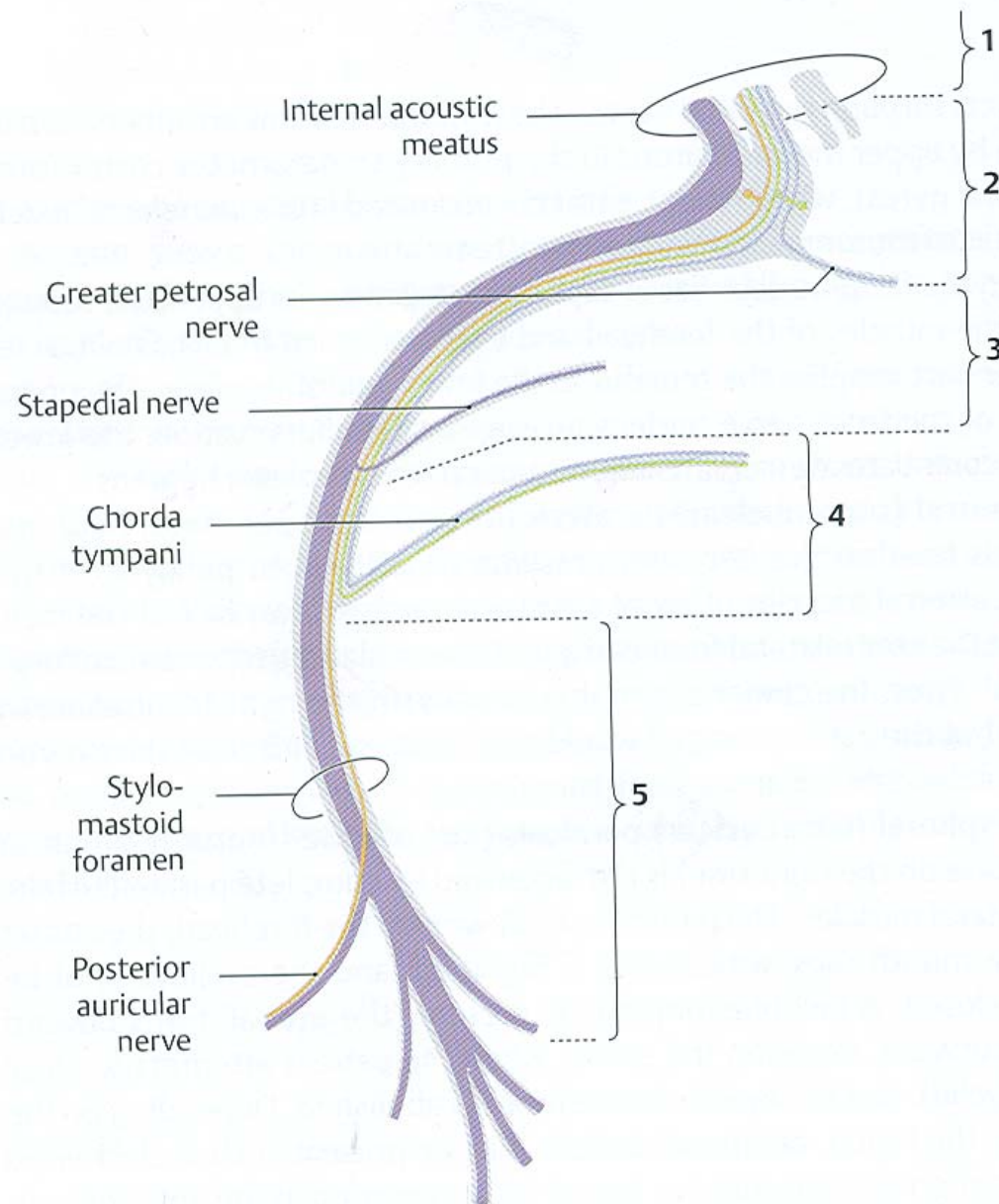
## Lesion

- Damage to the branches within the parotid gland
- Injury to temporal bone; viral inflammation of nerve
- Brainstem injury

## Clinical Findings

- Paralysis of facial muscles below the eye;
- Abnormal taste sensation from the anterior two-thirds of the tongue and dry conjunctivae
- Paralysis of contralateral facial muscles below the eye

lingual nerve.



## **Applied anatomy:**

Infra nuclear lesion of facial nerve is called Bell's Palsy.

1. Complete lesion of facial nerve as it emerges from stylomastoid foramen results in:
  - a) Complete paralysis of facial muscles of same side.
  - b) Drooping of angle of mouth.
  - c) Flat nasolabial fold.
  - d) Dribbling of saliva from same side.
  - e) Loss of corneal reflex.
2. Lesion distal to geniculate ganglion involves chorda tympani & nerve to stapedius also.

It causes all the lesions in 1 above plus

- a) loss of submandibular and sublingual salivary secretion
- b) hyperacusis
- c) loss of taste from anterior 2/3<sup>rd</sup> of tongue.

3. Lesion of facial nerve proximal to geniculate ganglion causes all the disturbances as in (1) & (2) above plus  
loss of lacrimal secretion.
4. Central type of facial lesion produces all the effects described above with the difference that the effects are seen on the opposite side. This is because of interruption of corticonuclear fibres from cerebral cortex to facial nerve nucleus. These are crossed fibres.

The neurons supplying the forehead muscles, however, receive bilateral impulses. Therefore, such lesions produce paralysis of lower facial muscles only and the upper facial muscles (of forehead) are intact.

Also emotional response is intact.

