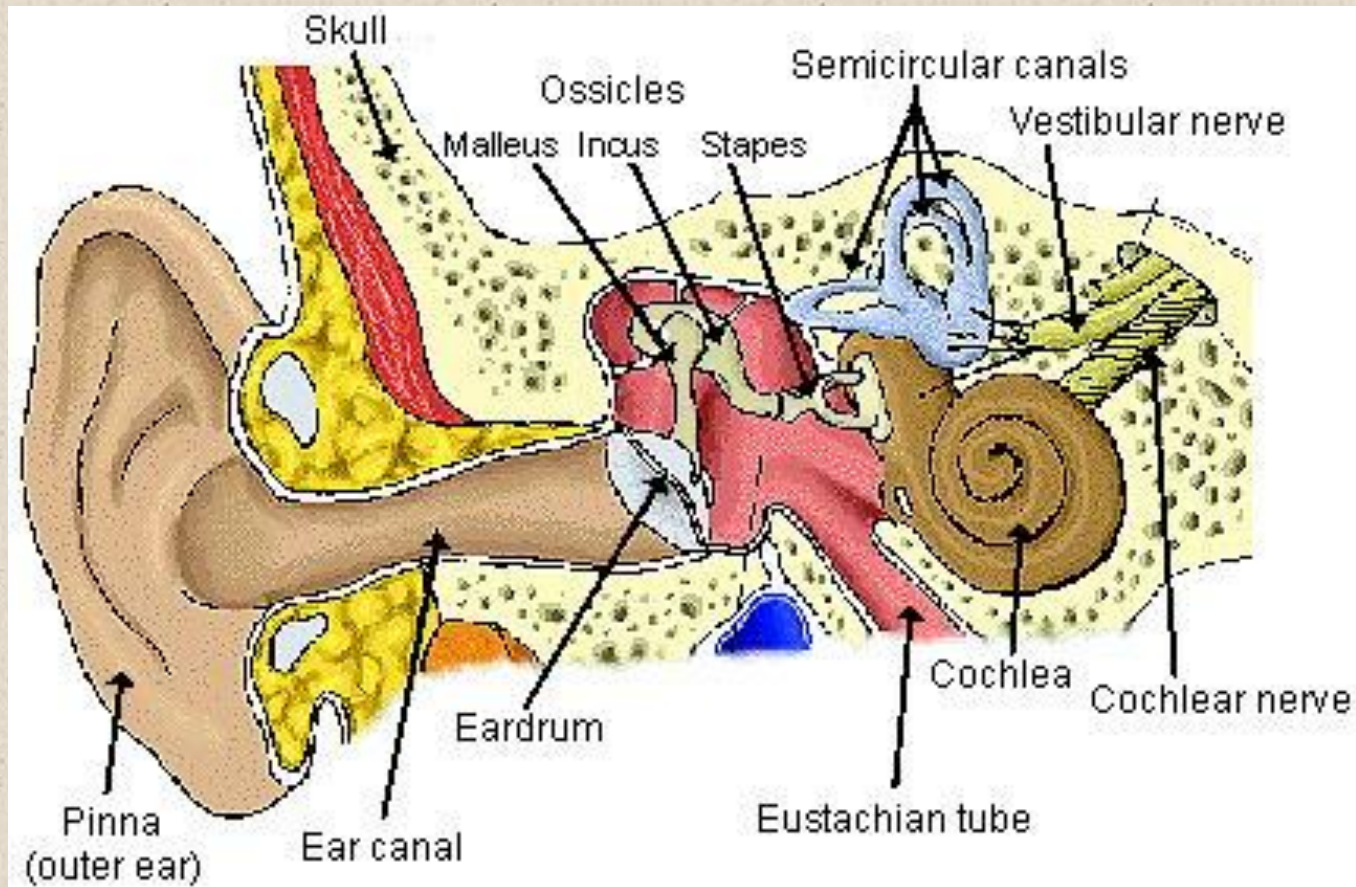


Diagnostic Hearing Testing

John Beck

Physics 107

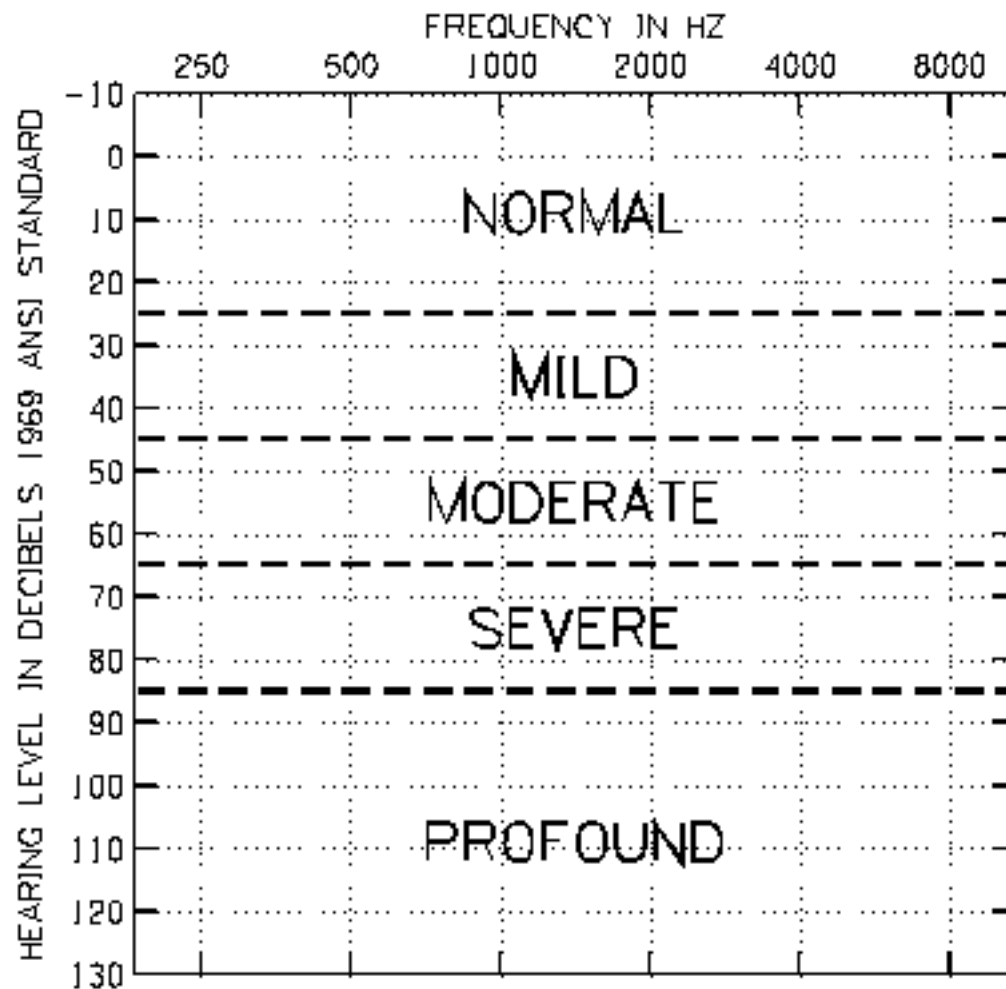
Before we begin



Audiometry

- Behavioral testing.
- Tests *Air Conduction*-
Sound passing through the outer ear and middle ear to the cochlea.
- Tests *Bone Conduction*-
Sound passing through the skull directly to the cochlea.





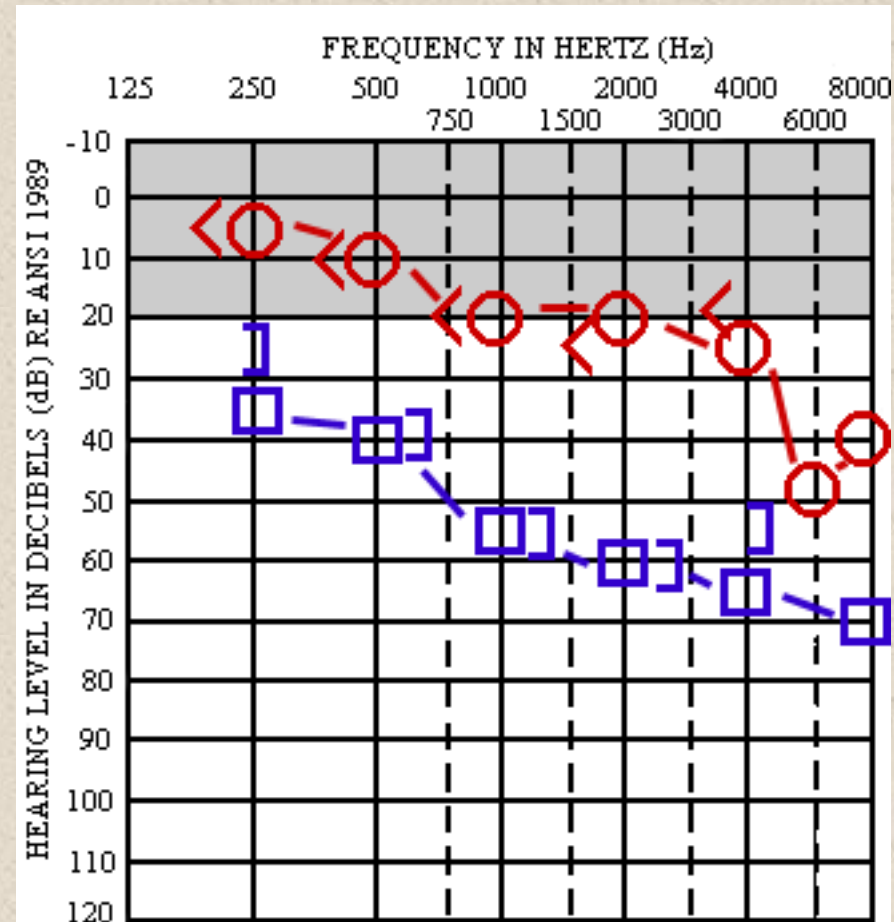
THE AUDIOGRAM DIVIDED ACCORDING TO DEGREE OF HEARING LOSS

Symbols Used in Audiograms.

Key to symbols on an audiogram:		
	Right	Left
Air unmasked	○	X
Air masked	△	□
Bone unmasked	<	>
Bone masked	[]
Sound field	S	S
Aided	A	A

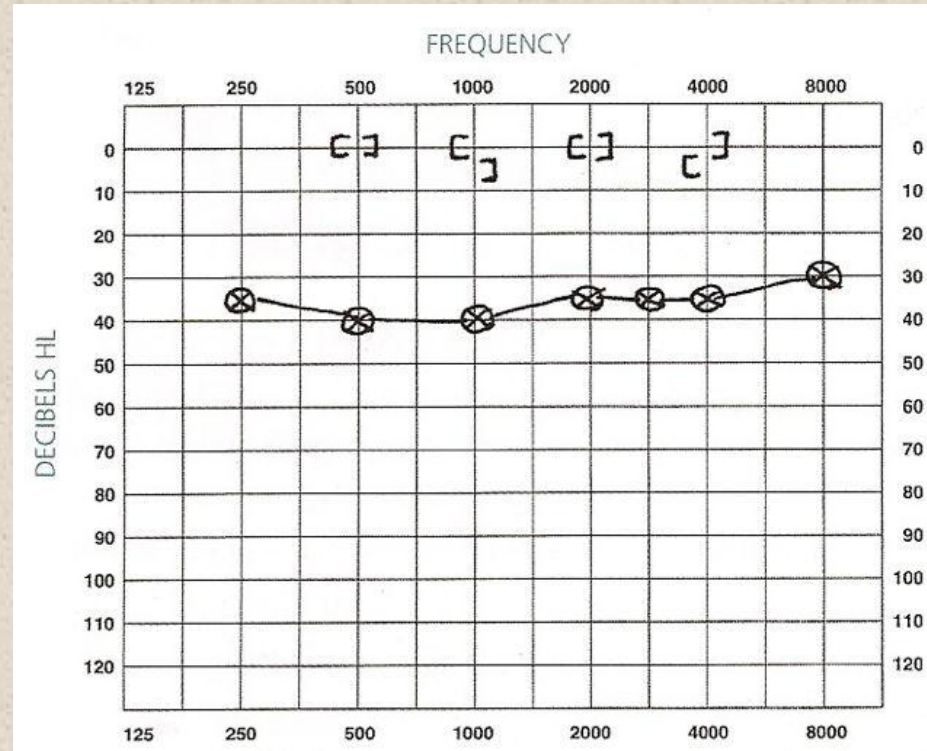
Sensorineural Hearing loss

- Normal hearing loss.
- Less than 10 dB. difference in Air-Bone gap.
- Hearing is gone for good.



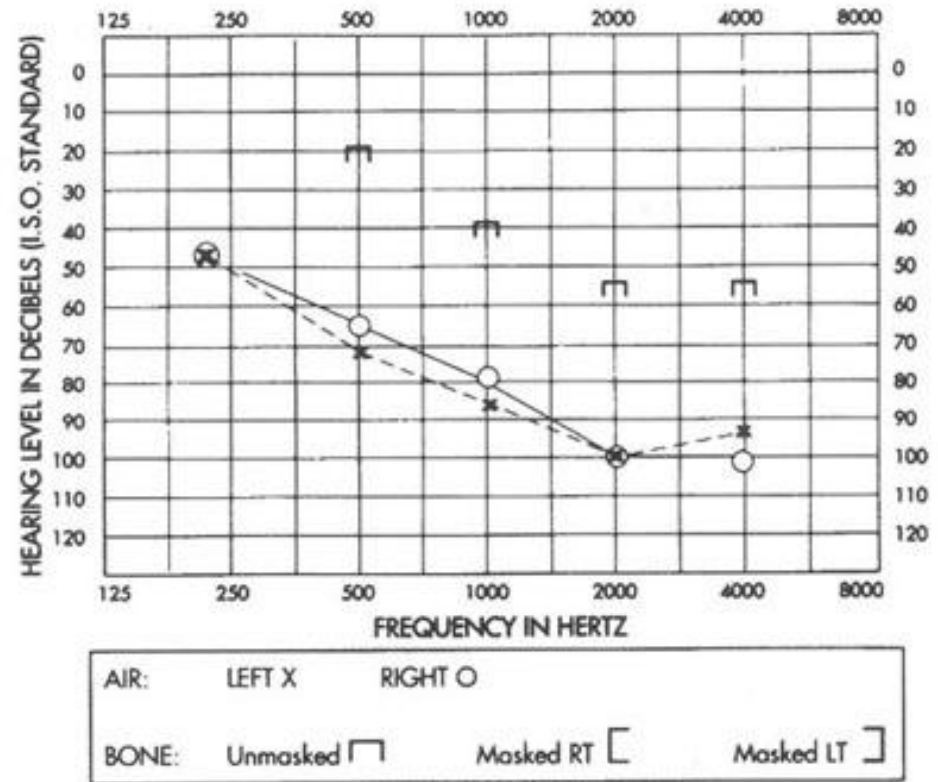
Conductive Hearing loss

- Air-Bone gap of 10 dB or more.
- Most likely caused by fluid in the ear or wax build up.
- Can be caused by pressure difference behind the Tympanic membrane



Mixed Hearing loss

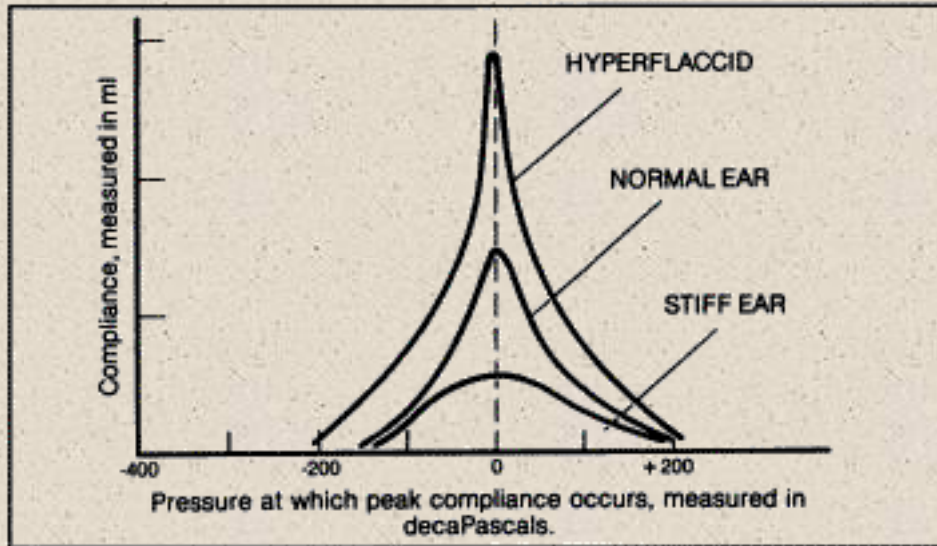
- Air-Bone Gap of 10 dB or more.
- Bone conduction is not in normal limits



An example of a moderate to profound mixed hearing loss.

Tympanography

- Sends a 226 Hz tone to measure acoustic reflex.
- Finds the volume of the ear.
- Shows how much the ear drum is moving



What it tells us.

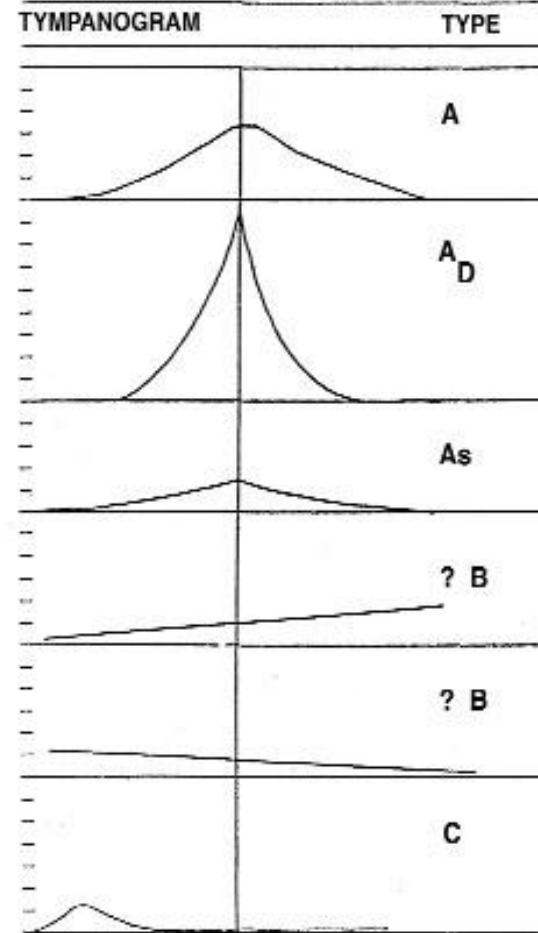


FIGURE 6. Five basic types of tympanograms (with two examples of Type B). Type A is characterized by a relatively sharp maximum around 0 mm H₂O and a compliance between the "normal" region of 0.3-1.6 cc; Type Ad has a much steeper maximum rising above the normal region (deep); and Type As has a maximum around 0° that falls below the normal region (shallow). Type B has little or no maximum where movement of the TM is severely impeded (typical of ears with otitis media); Type C has a maximum that is shifted to the left by 100 mm H₂O or more, indicating significant negative pressure.



OAE's

- Sound is sent into the ear to stimulate outer hair cells..
- Physiological testing does not require patient to be reliable.
- Non-invasive.
- Can't confirm hearing beyond cochlea.
- All newborns are required to have a hearing screening after birth and before initial discharge

