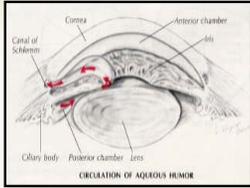




## Anatomy continued



- Internal structures
  - Ciliary body
  - Lens
  - Anterior chamber
  - Posterior chamber
  - Retina; retinal vessels
  - Extra ocular muscles
  - Optic disc; optic nerve

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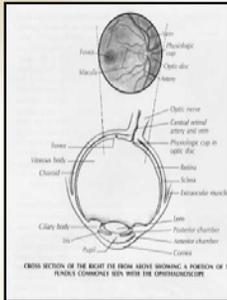
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## Fundus



- Fundus :
- A collective term:
    - Retina
    - Fovea
    - Optic disc
    - Macula

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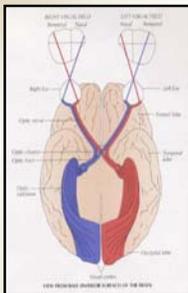
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## Visual Pathways

(note that here Bates is showing the *inferior* view of brain)



- Pathway starts with the visual field [follow the colors]
- Observation made by the patient's eye.
  - "picture" is cast onto retina
    - Onto opposite side of the eye from the direction of image
      - Onto nasal portion of one eye and
      - Onto the lateral (temporal) portion of the other eye

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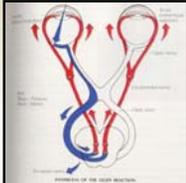
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## Pupils


- Light reaction
  - Light sensed by the retina
  - information is passed to the mid brain
  - and from the mid brain back to both eyes causing ciliary muscle constriction and pupil contraction
- Near vision
  - Focal point has to change
  - By means of :
    - Eyes crossing (converging)
    - Pupils constricting (accommodation )

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## EOM

Extraocular movements require intact

- Extraocular muscles
- Nerves that innervate them

These muscles and nerves move the eye in horizontal, vertical, and oblique directions.

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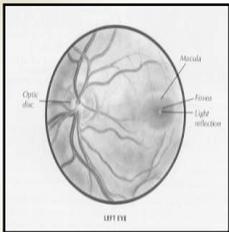
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## Optic disc

- Area of fundus through which
  - Optic nerve leaves the retina
  - Optic vein leaves the retina and
  - Optic artery enters retina
  - See illustration of appearance of optic disc, retinal vessels, macula, fovea.

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## Visual Pathways

1. Optic nerve passes from the optic disc
2. To the mid brain (the optic chiasma), and then
3. Travels along the optic track
4. To posterior aspect of the brain (the occipital visual cortex)

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## Examination Techniques

- PERRLA
- EOMI
- Fundus
- Visual fields

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## Pupils

- Constricted (miosis)
  - P arasympatheic; Pons
  - I nsecticide OD
  - N arcotic OD
- Unequal
  - Head trauma
  - Stroke
  - Anisocoria (20%)
- Unresponsive
  - Coma
  - Glaucoma
- Dilated (mydriasis)
  - S troke
  - T CA/ tetanus
  - R abies/ botulism/ GB
  - O xygen deficit
  - K ocaine
  - E xcitation (amphetamines, adrenaline, atropine)

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## EOM

- Trauma
  - Doll’s eye maneuver is absolutely contraindicated
- Non–trauma

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## Fundiscopic

Disc blurring indicates increased intracranial pressure.

- Head trauma (late)
- Reye’s syndrome
- Hypertensive emergency [encephalopathy]
- Severe preeclampsia
- Meningitis / encephalitis

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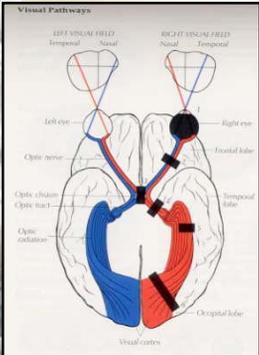
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## Visual Fields and Defects



The diagram illustrates the visual pathways from the eyes to the occipital lobes. It shows the optic nerves, optic chiasm, optic tracts, optic radiations, and occipital lobes. The left and right visual fields are also depicted. A note indicates that Bates is showing the inferior view of the brain.

(note that Bates is showing the *inferior* view of brain)

- Horizontal (of one eye)
  - Bloody hyphema
- Blind eye
  - Eye; frontal lobe stroke
- Right field blackout
  - Left optic tract lesion
- Left sided blackout
  - Right-sided stroke
- Tunnel / Pipe vision
  - Chiasm tumor (pituitary tumor)

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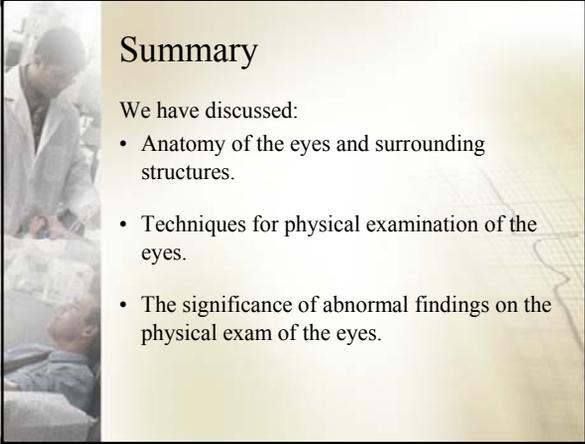
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## Summary

We have discussed:

- Anatomy of the eyes and surrounding structures.
- Techniques for physical examination of the eyes.
- The significance of abnormal findings on the physical exam of the eyes.

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