

**Biology 300**  
**Invertebrates in Film**  
**Summer II – 2009**



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**Course Information**

**Stephen M. Shuster**  
**Professor of Invertebrate Zoology**

Office: BS 302

Office Hrs: Th 12:30-1:30

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[Stephen.shuster@nau.edu](mailto:Stephen.shuster@nau.edu)

<http://www4.nau.edu/~shuster/shuster.htm>

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**Course Website**

<http://www4.nau.edu/isopod>

**Courses at NAU -> Current Teaching**  
**->BIO 300**

All course information and updates will be  
posted there.

Lectures pdfs will be available there also,  
usually the day of the lecture.

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## Course Description

This course is a survey of films that use **invertebrate animals as central plot devices**, and in particular, that focus on invertebrate animals as **monsters**.

Lectures will concentrate on **organizing and interpreting information** about the animals featured in each film.

Laboratories held during class periods will feature **screenings** of selected examples of these films, followed by **group discussion** of lectures and of films.

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## Course Objectives

The **three primary objectives** of this course are to provide students with:

1. An understanding of the basic biology of arthropods, specifically insects.
2. The physical and evolutionary forces that appear to limit the form of invertebrate life on this planet.
3. An appreciation for the devices and themes that film makers have used to depict and exploit human attitudes, prejudices and fears regarding invertebrate animals.

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## Course Approach

Class meetings will consist of lectures and films presented by the instructor in LA 135, at 10:00-12:30 WTh, May 20-21 and TWThF, May 26-29.

The first class session (W) will consist of an introductory lecture on the biology of the animals featured in the films.

The next 4 sessions (ThTWTh) will consist of a film presentation, followed by a brief discussion.

The final session (F) will consist of a showing of any student produced U-tube videos and a final essay exam.

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## Course Evaluation

There is no textbook for this course (although *The Philosophy of Horror* is recommended).

This course will require a single, succinctly written essay worth 100 points **written during the class period** and due at 12:00 on the morning after the last day of class (29 May 2009).

This paper must be a well thought out essay with care given to the development and progression of your ideas, as well as to style and spelling. .

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## Course Grades

Grades will be assigned according to a straight scale: 90% -100% of the total points = A; 80%-89% = B; 70%-79% = C; 60%-69% = D; 59% or lower = F. The fraction of the class in each category will depend on the quality of the papers submitted.

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## Course Schedule

WK	Date	Lecture/Discussion Topic	Films of the Week
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- |   |      |   |                       |
|---|------|---|-----------------------|
| 1 | 5/20 | Introduction: Biology of the Hexapoda (Insecta) |                       |
|   | 5/21 | What generates fear?                            | <i>Them (1954)</i>    |
| 2 | 5/26 | What generates suspense?                        | <i>The Fly (1958)</i> |
|   | 5/27 | What generates revulsion?                       | <i>The Fly (1986)</i> |
|   | 5/28 | Biology of the Arachnida                        | <i>Mimic (1995)</i>   |
|   | 5/29 | U-tubes and Final Exam                          |                       |

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## Subphylum Hexapoda (Insecta)

### 1. Characteristics

- a. Six legs,
- b. Head, thorax abdomen
- c. Often with winged adults



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## Subphylum Hexapoda (Insecta)

### 2. Main Orders

- a. Odonata
- b. Orthoptera
- c. Isoptera
- d. Hemiptera
- e. Homoptera
- f. Phthiraptera
- g. Hymenoptera
- h. Coleoptera
- i. Diptera
- j. Lepidoptera



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## Odonata



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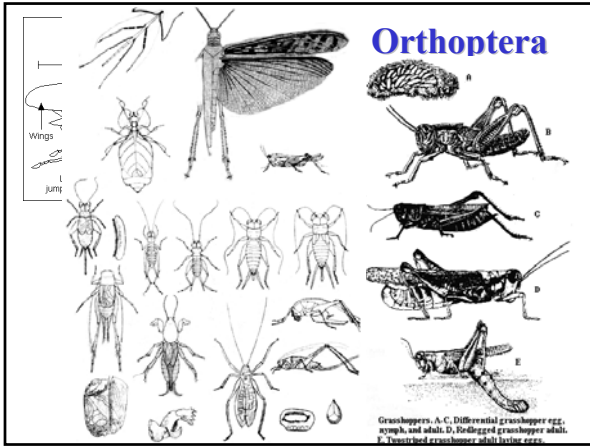
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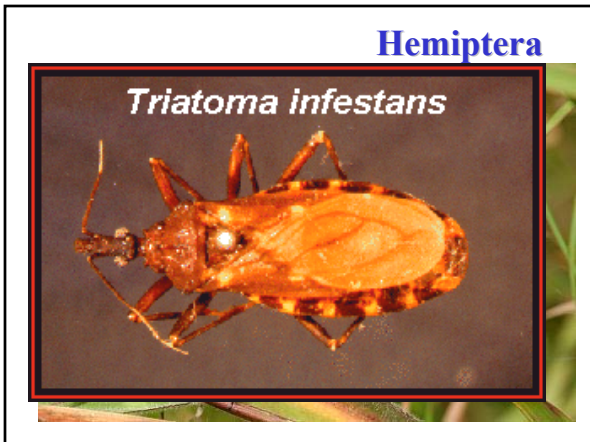
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## Habitat of *T. infestans*



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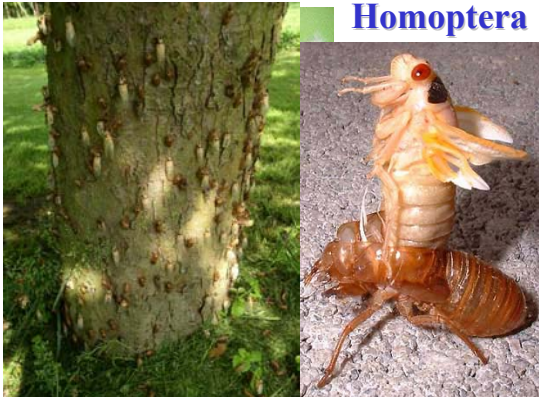
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## Homoptera



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## Phthiraptera



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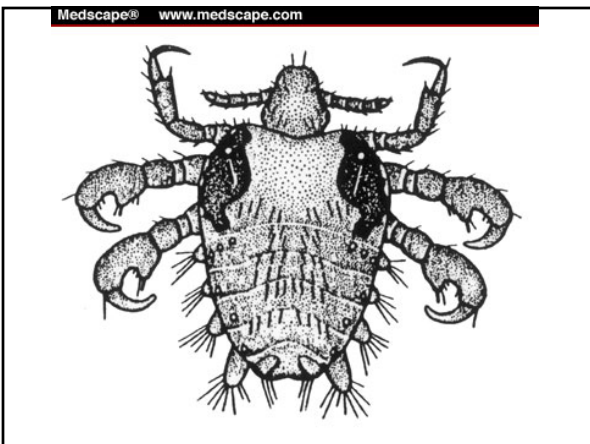
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## Hymenoptera

### a Exercise

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## Coleoptera

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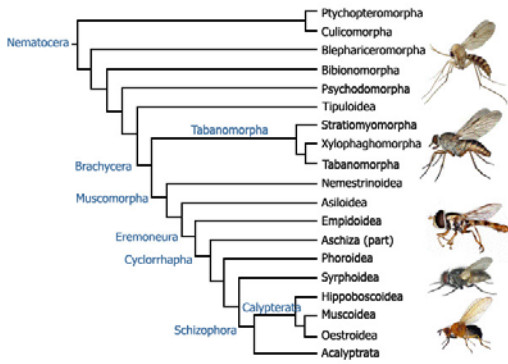
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## Diptera




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## Lepidoptera




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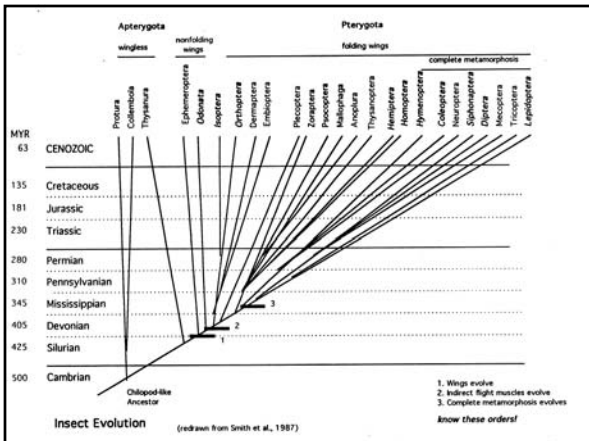
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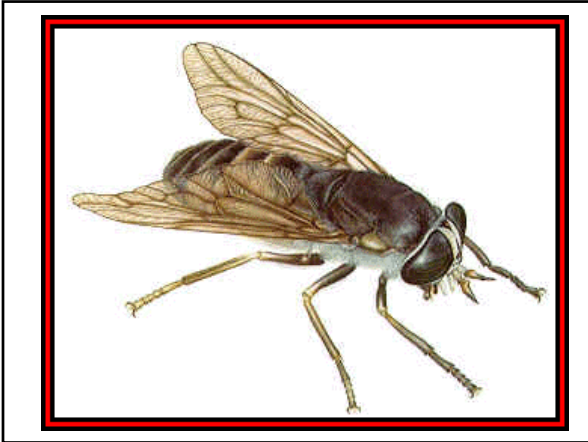
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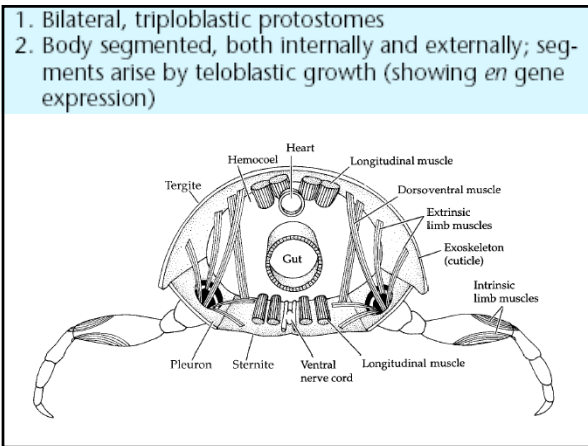
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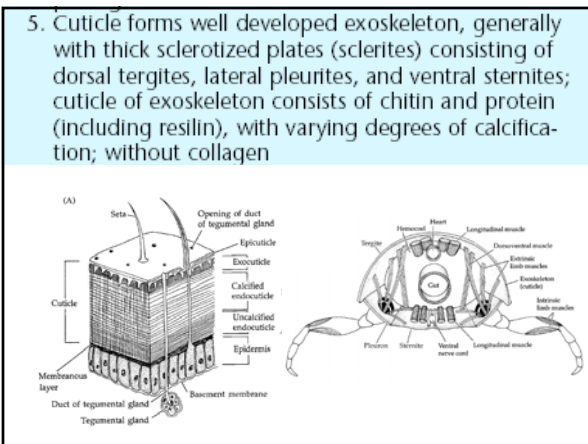
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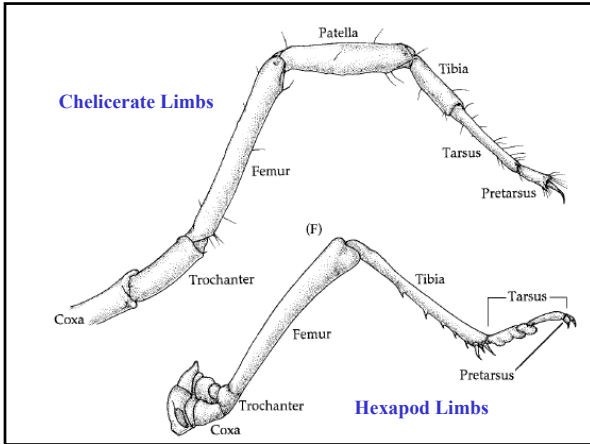
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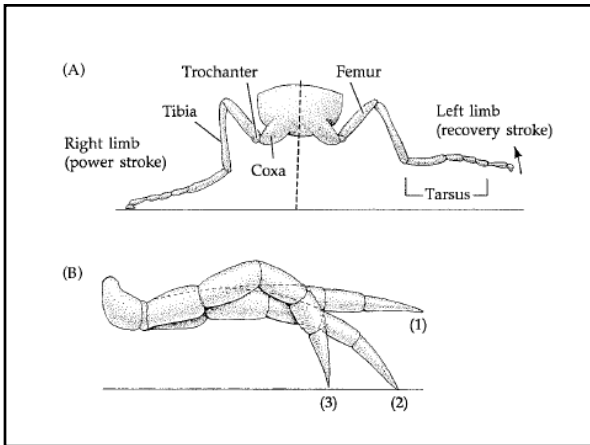
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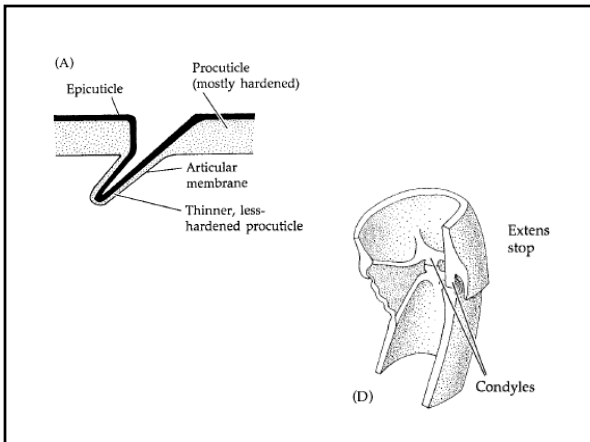
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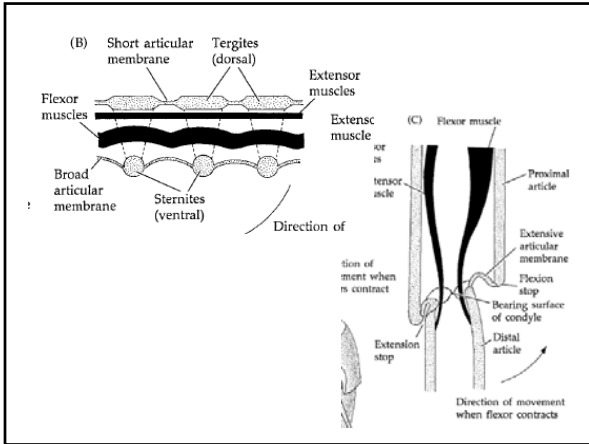
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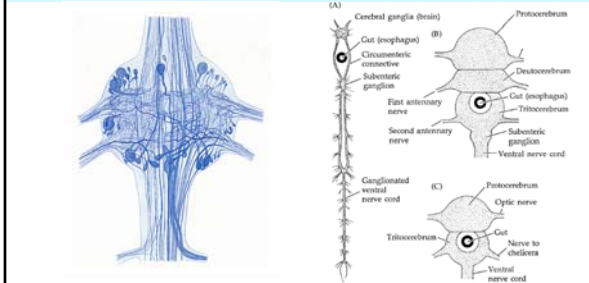
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11. Nervous system annelid-like, with dorsal (supraesophageal) ganglia (= cerebral ganglia), circumesophageal connectives, and paired, ganglionated ventral nerve cords, the latter often fused to some extent; protocerebrum forms ocular center; deutocerebrum forms antennal center




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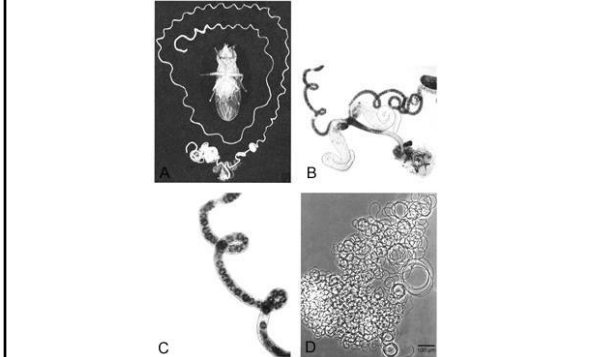
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12. Functional cilia suppressed, except in sperm of a few groups




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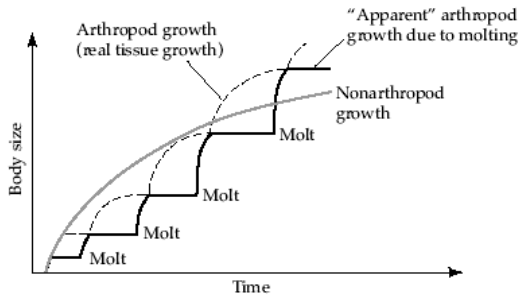
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### 13. Growth by ecdysone-mediated molting (ecdysis); with cephalic ecdysial glands




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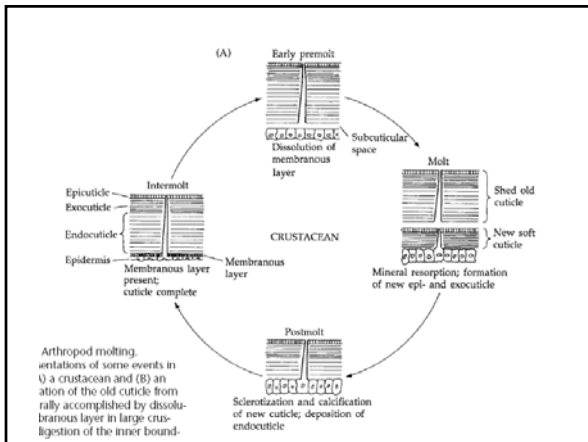
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### 14. Muscles metamerically arranged, striated, and grouped in isolated, intersegmental bands; dorsal and ventral longitudinal muscles present; intersegmental tendon system present; without circular somatic musculature

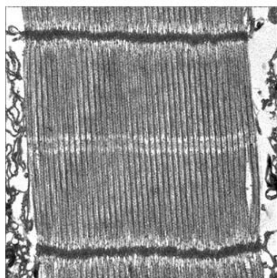


Image of an insect flight muscle recorded by the 795 MegaScan CCD camera at 100 kV, 2048 x 2048 pixels. Section courtesy of Dr. M. Reedy, Duke University.




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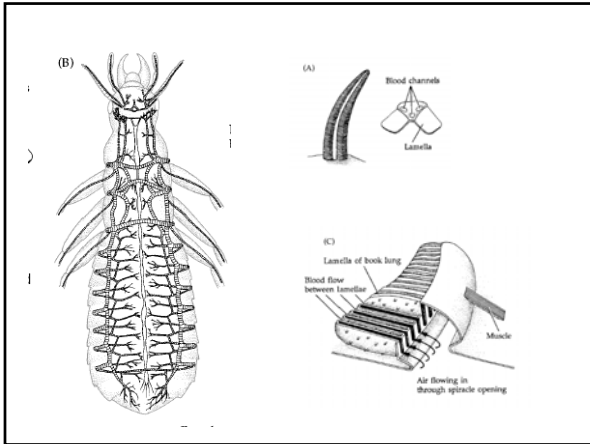
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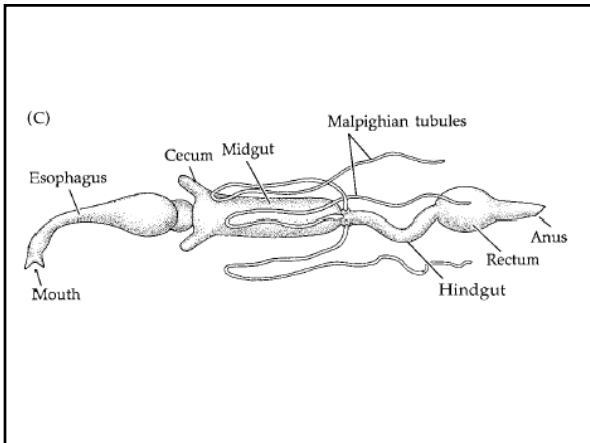
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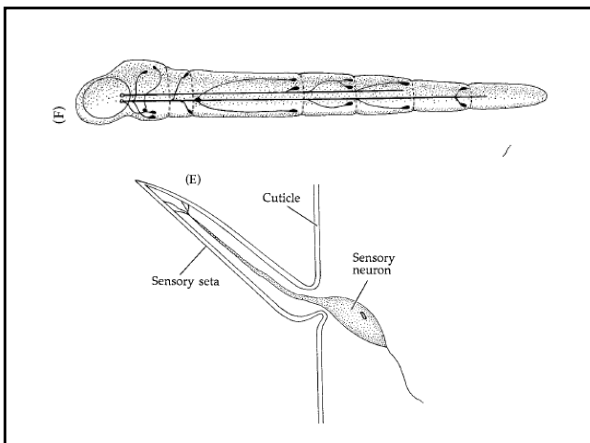
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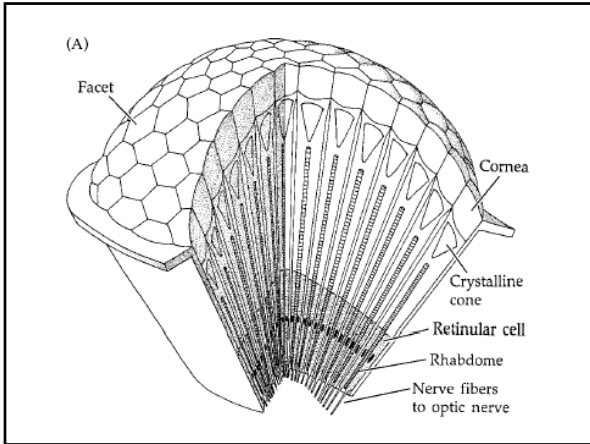
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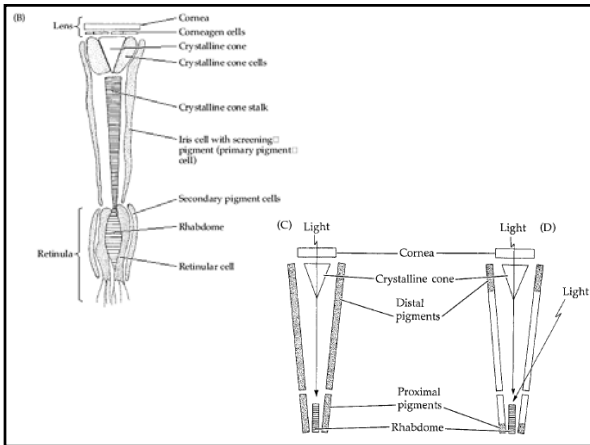
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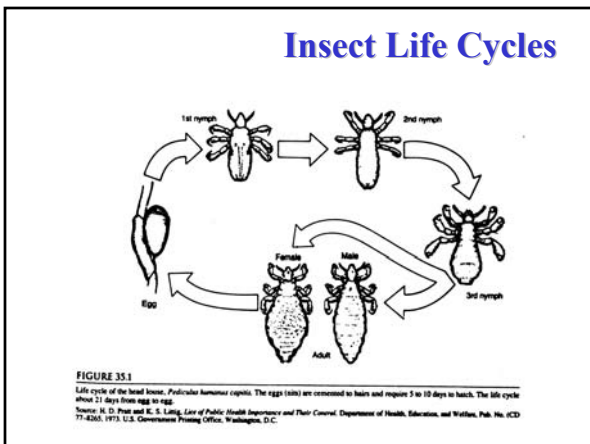
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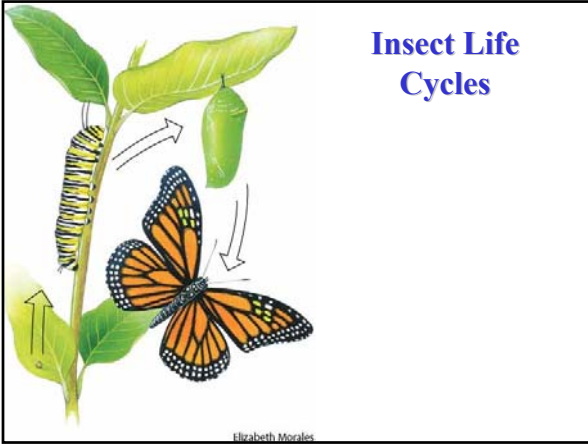
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