

Week of April 6-10, 2020

High School Science

Debra Welch

Hello students! I hope all of you are staying healthy. I just want everyone to know that I am thinking you and miss having school as normal. Remember to keep your immune systems strong! Basic directions are: You need to complete one lesson a week for only the class you were currently enrolled in and choose from the 3 choices. Choices 1 & 2 are for review of material we have already covered this year. I will start at the beginning and go through the year's material. Choice #3 will always be new work using your textbook or other handouts I include. I will make every effort to keep your work simple to do, considering that we are not learning together in the classroom. Your work should be turned in as a hard (paper) copy to the office or through email in a word or google document. My email is: debra.welch@oakland5.org. Please be sure all work has your name! If you have not turned in the assignment by the following Monday, I will need to email your parents and/or place a phone call home. Please be diligent to turn work in on time. I suggest you set up a schedule just as if you were at school and allow for the normal time period. Most assignments I send you will take less time than our normal 40 minutes. Comments will be made on paper copies and returned to you. If you send in homework answers as an email I will reply to your email and give my comments/reflections of your work. I will be supplying you with the necessary notes or you will need to use your book to find the answers. If you have any questions feel free to email me and I will get back to you by email during my office hours. If you can't email feel free to call the office and leave me a message. Good Luck and stay healthy!

Anatomy: for those of you who wanted to continue learning throughout the body systems I will be including notes and sending you powerpoints to use with Choice #3. If you plan to go into a medical field I advise you to go ahead and complete the Enrichment on the body systems we could not study due to school closure.

Class	Choice 1	Choice 2	Choice 3 (Enrichment)
Biology	Lab-specimen identification: fill out the chart using the Key of Living Organisms.	Review of Classification (Ch17)- Do Act #6, 1-2. You will have notes in your binder .	Colorsheet: Intro to Viruses p31: read/color
Anatomy	Unit 3- Self Test over medical terms reviewed at beginning of year-use notes you have or look up online.	Vocabulary Exercise on Body Orientation Colorsheets: Movements Netter 1-3 Regions of Body p6	The Ear: Marieb packet p146-150 Colorsheet: Auditory & Vestibular System (I have included the Ear/Hearing Notes)

Biology I
Classification
Activity #5

Name _____
Date 4/6-12 Hour _____

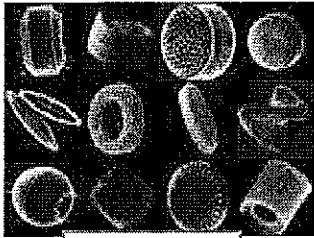
GENERALIZED KEY TO LIVING ORGANISMS ANSWER SHEET

Use the Key to Living Organisms Handout to complete the chart below for the organisms on display.
Don't write in shaded boxes.

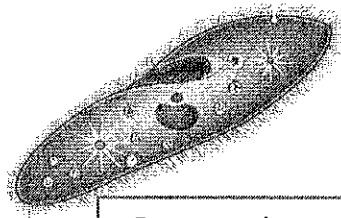
Letter	Kingdom	Phylum	Class
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			

4/6-10

D Welch Choice # - p1
Biology



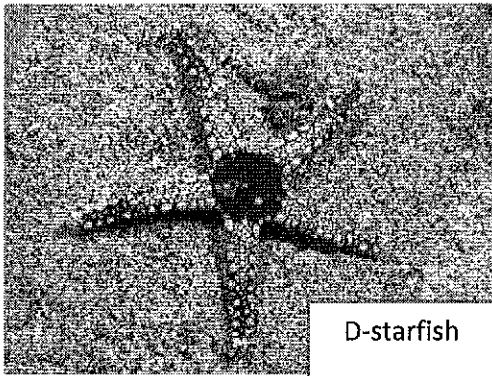
A-diatoms



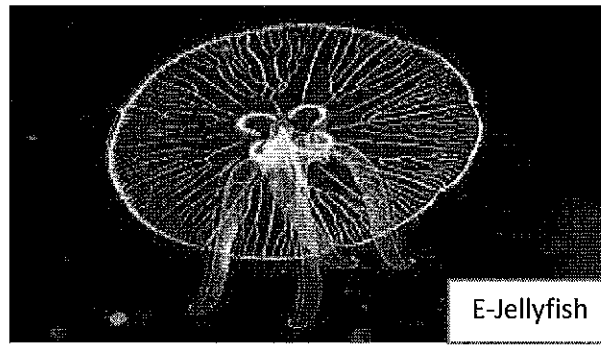
B-paramecium



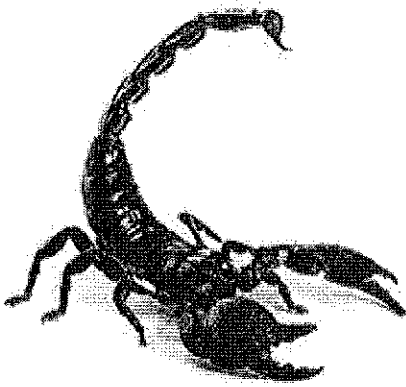
C-lactobacillus



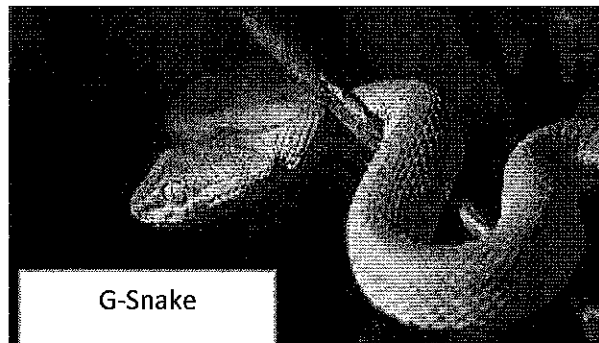
D-starfish



E-Jellyfish



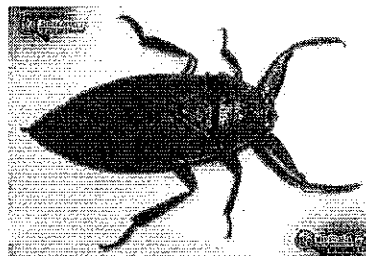
F-Scorpion



G-Snake



H-snail

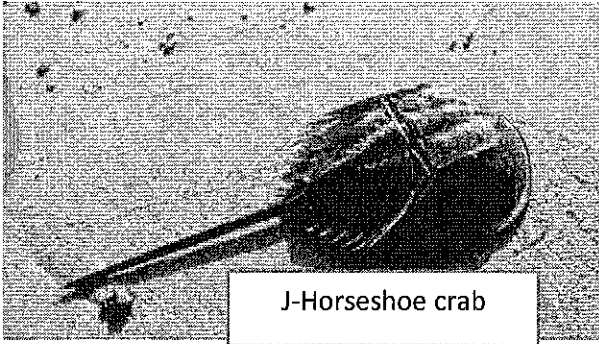


I-Giant waterbug

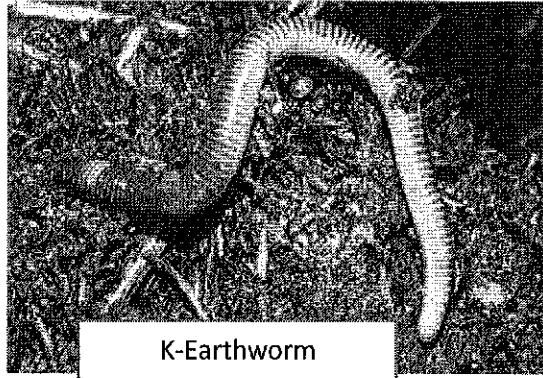
4/6-12

D. Welch

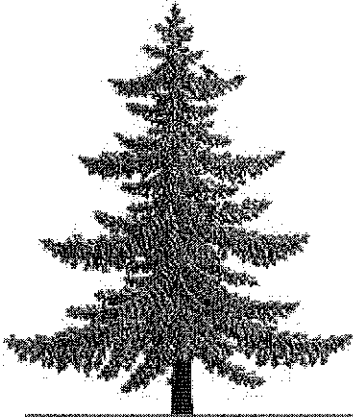
Chore 1 - p 2
Biology



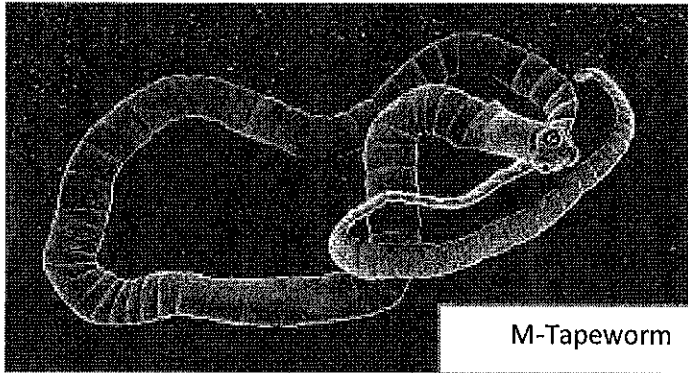
J-Horseshoe crab



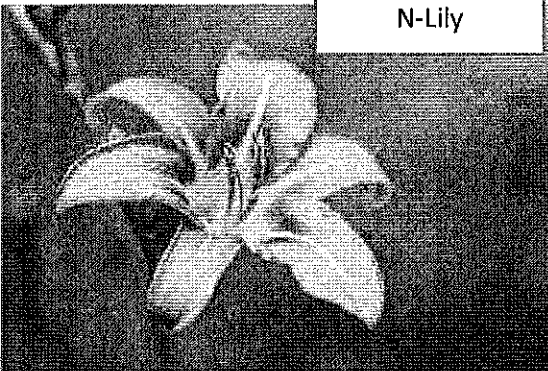
K-Earthworm



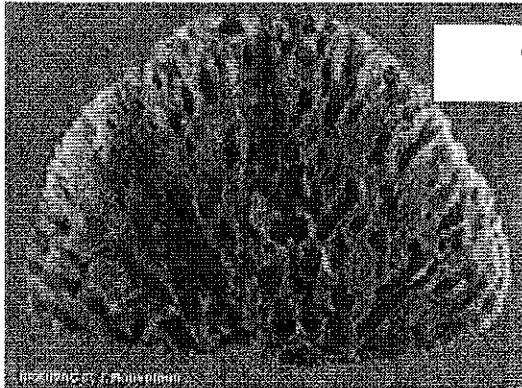
L-Pine Tree



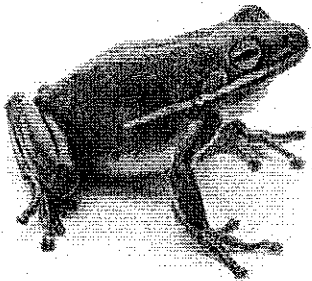
M-Tapeworm



N-Lily



O-Bath Sponge



P-Frog

Key to Living Organisms

Kingdoms

1. a. Single Celled..... go to #2
b. Multi celled..... go to #3
2. a. No nucleus..... Monera
b. Nucleus..... Protist
3. a. Green, food producer..... Plant
b. Not green, food consumer..... go to #4
4. a. Non movable..... Fungi
b. Movable..... Animals

Archaeobacteria / Eubacteria

1. a. Cells are round, spiral, or rod-shaped..... Phylum Bacteria
b. Greenish or blue-green..... Phylum Blue-green Bac.



Protist

1. a. Green with chloroplasts..... go to #5
b. No chloroplasts..... Phylum Protozoa- go to #2
2. a. Blob-like shape..... Class Sarcodines
b. Not blob-like..... go to #3
3. a. Covered with short hairs..... Class Ciliates
b. Not covered with short hairs..... go to #4
4. a. Has 1 or 2 whip-like tails..... Class Flagellates
b. Has no visible hairs or tails..... Class Sporozoans
5. a. Has 2 hard shells, box-like..... Phylum Diatoms
b. Has 2 whip-like tails..... Phylum Dinoflagellates
c. Has a reddish eyespots..... Phylum Euglena

Fungi

1. a. Fluffy, cotton-like body..... Phylum Phycomycetes
b. Body not cotton-like..... go to #2
2. a. Body sponge-like or cup-like..... Phylum Ascomycetes
b. Body not sponge-like or cup-like..... go to #3
3. a. Body like an umbrella..... Phylum Basidiomycetes
b. Body like oozing slime..... Phylum Myxomycetes

Plants

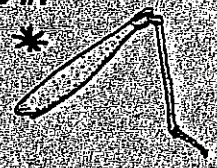
1. a. Leafy (leaves may be small)..... go to #2
b. Found in the water..... Phylum **Algae**
2. a. Plants are tiny Phylum **Bryophytes**
b. Plants are larger than 2 inches..... go to #3
3. a. Plants reproduce by spores..... Phylum **Ferns**
b. Plants reproduce by seeds..... go to #4
4. a. Seeds formed in cones..... Phylum **Gymnosperms**
b. Seeds formed in flowers..... Phylum **Angiosperms** go to #5
5. a. Leaves are long & narrow,
veins are parallel  Class **Monocots**
- b. Leaves are broader
veins are net-like  Class **Dicots**

Animals

1. a. Outer body is porous (full of holes);
lives in water..... Phylum **Porifera**
b. Outer body is not porous..... go to #2
2. a. Has stinging cells on tentacles; lives in water..... Phylum **Coelenterates**
b. No tentacles..... go to #3
3. a. Worm-like, no legs..... go to #4
b. Not worm-like..... go to #6
4. a. Body is flattened..... Phylum **Platyhelminthes**
b. Body is rounded..... go to #5
5. a. Body has ring-like segments..... Phylum **Annelida**
b. Body is smooth..... Phylum **Nematoda**



- 6. a. **Limbs are jointed externally**.....Phylum **Arthropod** go to #7
b. **Limbs (if present) are not jointed externally**..... go to #11
- 7. a. **Usually has 6 legs**.....Class **Insects**
b. **More than 6 legs**..... go to #8
- 8. a. **Usually has 8 legs**.....Class **Arachnids**
b. **More than 8 legs**..... go to #9
- 9. a. **Usually has 10 legs**.....Class **Crustaceans**
b. **More than 10 legs**..... go to #10
- 10. a. **One pair of legs per body segment**.....Class **Chilopoda**
b. **Two pair of legs per body segment**.....Class **Diplopoda**
- 11. a. **Body usually has 1 or 2 shells -- if shells are not visible then it has 8 - 10 tentacles**.....Phylum **Mollusk**-go to 12
b. **Body usually has no shells or tentacles --if shell is present, then it will have legs**..... go to #14
- 12. a. **Shells not visible with 8 to 10 tentacles**.....Class **Cephalopod**
b. **Shells visible**..... Go to #13
- 13. a. **Has a one-piece shell**.....Class **Gastropod**
b. **Has a two-piece shell**.....Class **Pelecypod**
- 14. a. **Radial body plan (center body with limbs growing in all directions) like a wheel**.....Phylum **Echinoderm**
b. **Bilateral body plan (body is divided into right and left sides)**..... Phylum **Chordate**- go to 15
- 15. a. **Covered by feathers**.....Class **Aves**
b. **Not covered by feathers**..... go to #16



16. a. **Fur or hair, young are nursed
with milk glands.....Class Mammals**
b. **No fur or milk glands..... go to #17**
17. a. **Has fins.....go to #18**
b. **No fins.....go to #20**
18. a. **Bony skeleton & body covered
with scales.....Class Osteichthyes**
b. **Cartilage skeleton, scales not seen..... go to #19**
19. a. **Jaws; body fish-like or flat.....Class Chondrichthyes**
b. **No jaws; body is snake-like..... Class Agnatha**
20. a. **Covered by scales; dry to touch..... Class Reptile**
b. **No scales; moist to touch..... Class Amphibia**

CLASSIFICATION REVIEW

PART I: Using a Classification Key

Use the key below to identify the following frogs.

KEY TO SOME FROGS FROM THE NORTH CENTRAL U.S.

- 1. a. Small in size.....goto 2
- b. Large in size.....goto 4

- 2. a. Two lines extending the length of the body.....goto 3
- b. Irregular shaped markings on back.....Hyla crucifer

- 3. a. Many black markings on back.....Rana clamitans
- b. Few black markings on back.....Rana sylvatica

- 4. a. Hind feet webbed.....Acris crepians
- b. Hind feet only slightly webbed.....Bufo americanus



1. _____
2. _____
3. _____

4. _____
5. _____

6. List the genus names used in the key on page 1.

7. How many different species are represented in the key? _____

8. Which two frogs are the most closely related? Give the scientific names of the frogs.

9. To which genus would each of the frogs pictured below belong?



Genus: _____

Genus: _____

PART II: The Classification System

10. Listed below are the scientific names of some of the fish found in the north central U.S.

Nostropis amnis

Dionda nubila

Hybognathus hankinsoni

Hybognathus placita

Pimemphales notatus

Pimemphales promelas

a. How many different species are listed above? _____

b. How many different genera are listed? _____

What are the genus names used above? _____

c. Which fish are closely related?

d. How do you know these fish are closely related? _____

31 INTRODUCTION TO VIRUSES

The virus is among the smallest and simplest agents of disease. Viruses are so tiny that they cannot be seen with a light microscope and researchers must use the electron microscope to view them. Viruses have a unique chemical structure and a parasitic dependence on other organisms associated with an unusual method of reproduction. Viruses cause such well-known diseases as chicken pox, influenza, hepatitis, and infectious mononucleosis.

During the early 1900s, medical scientists observed that carefully filtered fluids of diseased tissues (disrupted, devitalized tissue caused by the growth and toxins of microorganisms) were capable of inducing disease. They reasoned that tiny microorganisms (viruses) in the diseased fluid passed through the smallest filters, and when this filtered fluid was injected into a living, healthy host, the viruses present induced disease processes to occur.

Color the subheading **Size and the titles and viruses (a) through (f)** in the upper half of the plate. Note the 300 nm ruler at right. Use light colors for the larger structures; beware of colors that obscure the detail of the illustration.

Viral dimensions are measured and viral structural characteristics are observed with the aid of the electron microscope. Most viruses are substantially smaller than bacteria, but some viruses approximate the sizes of very small bacteria. The average *Escherichia coli* bacterium, used here as a reference bacterium, is about 3000 nm (2000 - 6000 nm) in length (Plate 8). The bacterium *Chlamydia* is about 250 nm long and is tiny in comparison with *E. coli*, but it is about the same size as the smallpox virus (a; about 300 nm long).

Most viruses are about the same size or smaller than the smallpox virus. The tobacco mosaic virus (b), a parasite of tobacco plants, is a mid-size virus with a length of about 300 nm. Note the bacteriophage (c) is only about 300 nm in length, considerably smaller than the *E. coli* bacterium. The rabies virus (d), well known for its catastrophic effect in humans after bites from infected animals, is about 200 nm long. The smaller adenovirus, agents of a number of human miseries, including pneumonia and conjunctivitis, measure about 75 nm in length. One of the smallest of this group of microorganisms

is the polio virus (f) with an average diameter of 25 nm. Polio viruses affect the central nervous system of humans, destroying the motor neurons that supply the skeletal muscles of the body.

Color the subheading **Shape, titles (g) and (h), and the related shapes in the boxed area. Then color the subheading Structure, and the related titles and structures (i) through (l)** at the lower part of the plate.

Electron microscopy has revealed that viruses generally have one of two shapes. One is the icosahedron (g), a geometric figure characterized by 20 triangular "faces." Icosahedral-shaped viruses include bacteriophages, chicken pox, genital herpes, mononucleosis, and polio. The second shape is that of a helix or tightly wound coil (h), somewhat resembling a corkscrew. Helical viruses include those that cause rabies and tobacco mosaic disease.

Viruses consist of two main components: the outer capsid (i) and the inner genome (j). The capsid is the outer coat, and gives shape to the virus, either icosahedral or helical. In most viruses the capsid is composed of multiple protein subunits called capsomeres (i'), the number of which varies among viruses. The genome is found in the core of the virus. It consists of a single or double strand of nucleic acid which is either DNA or RNA, but not both. In some viruses the strand is unbroken; in others it is divided into segments. In icosahedral viruses, the genome is commonly a closed loop folded over itself (not shown); in helical viruses, the genome is coiled in the shape of a helix.

The outermost membrane of some viruses is the flexible, lipoprotein envelope (k) around the capsid. It is usually derived from the host cell during replication. Many envelopes have an array of spikes (l) that contain enzymes that assist in cell penetration. The influenza and human immunodeficiency virus are notable for the presence of spikes coded for by viral genes.

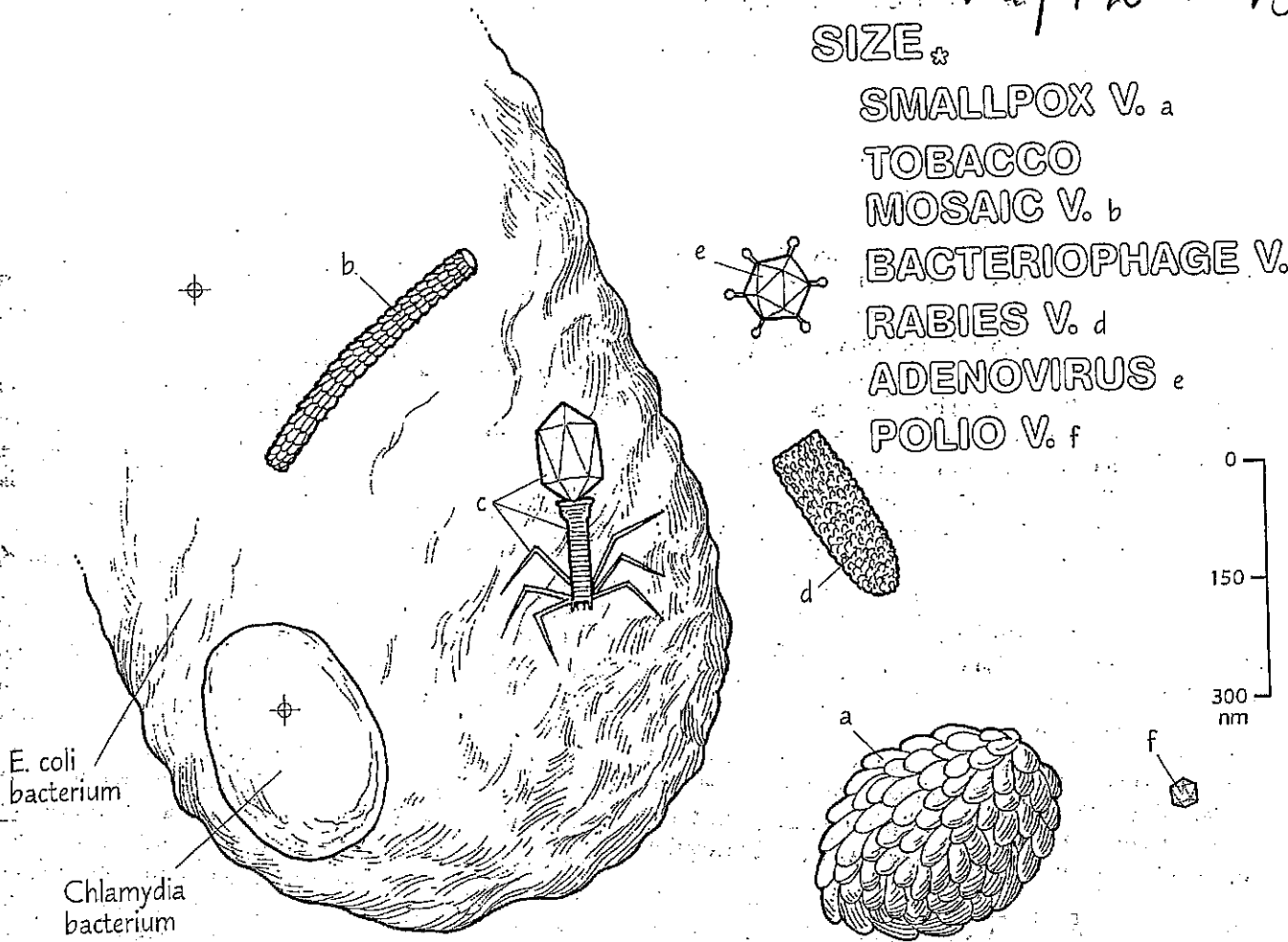
No cytoplasm or organelle has been identified in viruses. The virus is dependent upon a host for metabolic machinery and for reproduction. An apparent inert particle in isolation, it swiftly replicates in the appropriate host, even to the extent of killing the very living entity upon which it depends.

INTRODUCTION TO VIRUSES

Choice 3-D Welch
 Biology 31
 4-4/4-10 INTRODUCTION TO VIRUSES pg 2

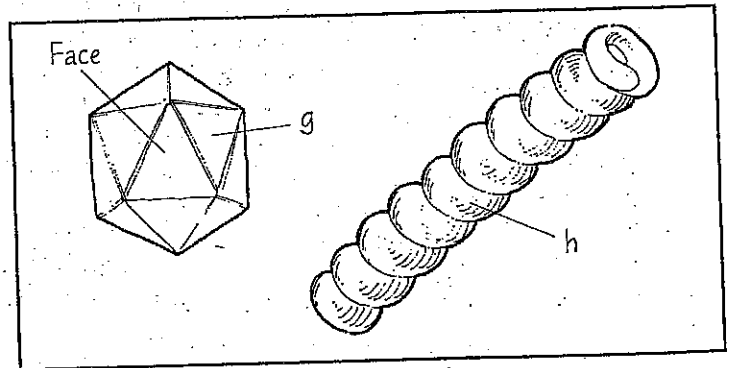
SIZE *

- SMALLPOX V. a
- TOBACCO MOSAIC V. b
- BACTERIOPHAGE V. c
- RABIES V. d
- ADENOVIRUS e
- POLIO V. f



SHAPE *

- ICOSAHEDRON g
- HELIX h



STRUCTURE *

- CAPSID i
- CAPSOMERE j
- GENOME k
- ENVELOPE l
- SPIKE m

