

NUCLEUS

ENGLISH FOR SCIENCE AND TECHNOLOGY

BIOLOGY

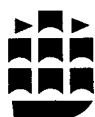
Donald Adamson
Martin Bates

Series Editors

Martin Bates and Tony Dudley-Evans

Science Adviser to the Series

Arthur Godman C. Chem., MRIC



Longman

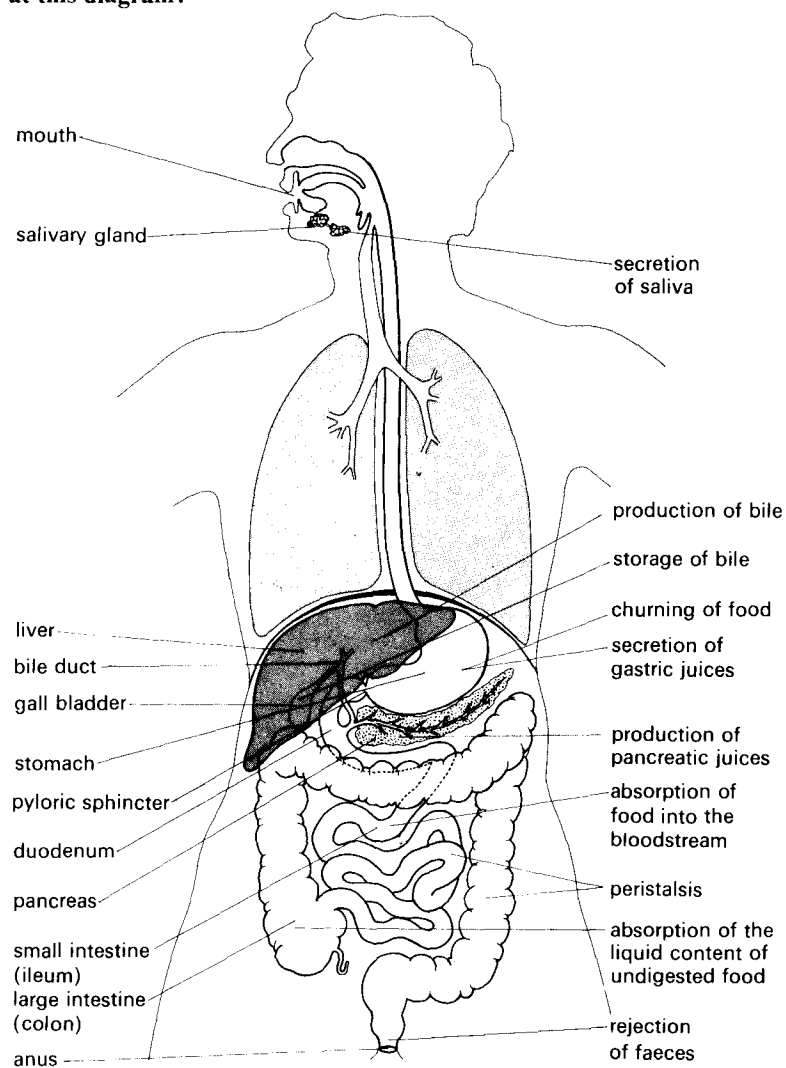
Contents

| | <i>page</i> |
|--|-------------|
| Unit 1 Properties and Shapes | 1 |
| Unit 2 Location | 7 |
| Unit 3 Structure | 15 |
| Unit A Revision | 22 |
| Unit 4 Measurement 1 | 26 |
| Unit 5 Process 1 Function and Ability | 34 |
| Unit 6 Process 2 Actions in Sequence | 39 |
| Unit B Revision | 47 |
| Unit 7 Measurement 2 Quantity | 51 |
| Unit 8 Process 3 Cause and Effect | 58 |
| Unit 9 Measurement 3 Proportion | 66 |
| Unit C Revision | 74 |
| Unit 10 Measurement 4 Frequency, Tendency, Probability | 79 |
| Unit 11 Process 4 Method | 87 |
| Unit 12 Consolidation | 93 |
| Glossary | 100 |

Unit 5 Process 1 Function and Ability

Section 1 Presentation

1. Look at this diagram:



The human digestive system and digestive processes

Now ask and answer questions like the following:

Example: Where does secretion of saliva *take place*?
Secretion of saliva takes place in the mouth.

2. Look at these examples:

The *function* of the salivary glands is *to* secrete saliva.
 The salivary glands *serve to* secrete saliva.

The anus $\left\{ \begin{array}{l} \text{acts} \\ \text{serves} \end{array} \right\}$ *as* a valve to control the excretion of faeces.

The digestive system *enables* the body *to* digest and absorb food.

Now say which parts of the digestive system are described by these sentences:

- This organ produces bile.
- The walls enable digested food to be absorbed into the blood-stream.
- This serves to conduct bile to the duodenum.
- Food is chewed and mixed with saliva in this part.
- This serves to store the bile.
- The function of this gland is to secrete an alkaline fluid which passes into the duodenum.
- The undigested waste (faeces) is rejected through this sphincter.
- This cannot absorb much digested food but its walls serve to absorb the liquid content of undigested food.
- The walls are lined with muscles whose action serves to churn the food and mix it with gastric juices.
- This acts as a valve to control the passage of food from the stomach.

Section 2 Development

3. Look at this table:

Digestive Action

| Digestive gland | Digestive juice produced | Digestive Action Enzymes in the juice | Class of food acted upon | Substances produced |
|------------------------------------|--------------------------|--|--------------------------|--------------------------|
| Salivary glands | Saliva | Salivary amylase | Starch | Maltose |
| Gastric glands (in stomach lining) | Gastric juice | Pepsin | Proteins | Peptides |
| Pancreas | Pancreatic juice | Trypsin | Proteins and peptides | Amino acids |
| | | Amylase | Starch | Maltose |
| | | Lipase | Fats | Fatty acids and glycerol |

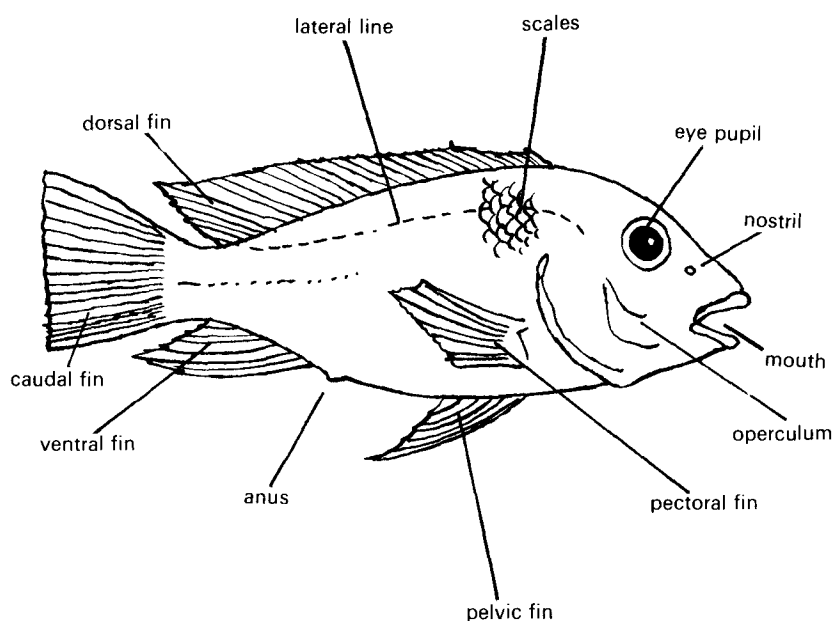
| | | | | |
|----------------------------|------------------|-----------|----------|--------------------------|
| Glands in the ileum lining | Succus entericus | Peptidase | Peptides | Amino acids |
| | | Lipase | Fats | Fatty acids and glycerol |
| | | Maltase | Maltose | Glucose |
| | | Sucrase | Sucrose | Glucose and fructose |
| | | Lactase | Lactose | Glucose and galactose |

Make sentences about the function of different digestive juices, like the following example:

{ The salivary glands serve
 { The function of the salivary glands is } to secrete saliva. This contains the enzyme amylase. It *acts upon* starch in the food *to* produce maltose.

Section 3 Reading

4. Look at this diagram and read the passage:



The external features of a fish and their functions

The nostrils of a fish do not open into the back of the mouth, so they are not used for breathing. They lead into organs of smell which are very sensitive. A fish can thus detect food at considerable distances.

The eyes of a fish have large round pupils which do not vary in size.

Hearing: fish have no external ears but they can hear by the transmission of vibrations through their bodies to the inner ear.

The mouth serves to take in food and water for breathing.

Say whether these statements are true or false. Correct the false statements.

- a) A fish breathes with its nostrils.
- b) The nostrils are connected to the back of the mouth.
- c) A fish is capable of smelling food at a considerable distance.
- d) The pupil of a fish's eye has not the capacity to change size.
- e) One function of the mouth is to take in air for breathing.
- f) The mouth is also used for taking in food.

5. Look again at the diagram of a fish and read this passage:

The scales overlap each other and serve as a protective covering.

The operculum is a bony structure which covers and protects the gills.

The gills are used for breathing. The walls of their filaments are very thin. This enables the oxygen in the water to be absorbed rapidly into the blood.

The lateral line is a fluid-filled tube just below the skin. Its function is to detect movements in the water. With the aid of the lateral line a fish can detect the direction and intensity of water movements.

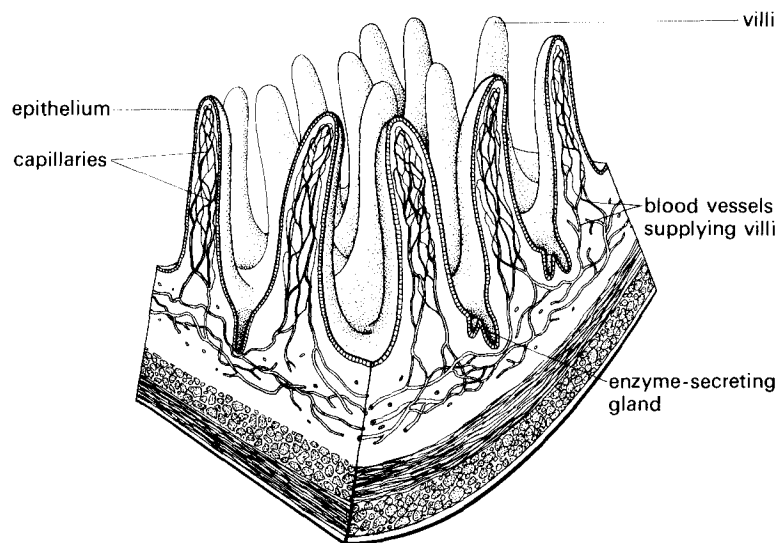
The fins give stability and control direction of movement during swimming. By means of its fins a fish can control the movements of its body. The fins also enable a fish to control its speed.

Now complete these sentences:

- a) The fins serve to control
- b) The fins are also used for
- c) The sensitive organs of smell enable
- d) The function of the operculum
- e) The scales act as
- f) By means of the inner ear
- g) The thin walls of the gill filaments
- h) The lateral line serves
- i) With the aid of its mouth
- j) The mouth also enables

Section 4. Listening

6. Look at this diagram:



Stereogram showing structure of ileum

Now listen to the passage and number the following in the order in which you hear them:

- the size of the ileum
- the shape of the villi
- the function of enzymes
- inside the villi
- the function of the alimentary canal
- properties of the epithelium
- the function of the ileum

7. Now listen to the passage again and complete these sentences:

- Digestion occurs with the aid of
- Most of the . . . of digested food takes place in the ileum.
- The walls of the ileum have special . . . by means of which it can absorb . . . food rapidly.
- The ileum has a large absorbing
- The villi on the . . . surface of the ileum are small . . . projections.
- The thin epithelium enables . . . food to pass rapidly . . . the walls.
- Each villus contains a dense network of blood
- The small molecules of digested food consist mainly of amino acids and