

SCIENCE DEPARTMENT.

[A series of Examination Questions upon Botany and Human Anatomy and Physiology, prepared for THE MONTHLY by Henry Montgomery, M.A., B.Sc., Lecturer on Zoology and Botany in Toronto School of Medicine.]

BOTANY.

1. How may plants be distinguished from minerals and animals?
2. What are the properties of protoplasm or bioplasm?
3. Name the chief albuminoids that occur in the vegetable kingdom.
4. Name the most important vegetable alkaloids?
5. State clearly the difference between sugar and starch.
6. What kinds of sugar are found in plants?
7. Enumerate the chief mineral substances occurring in the vegetable kingdom.
8. Distinguish a vessel from a cell.
9. Explain the botanical meaning of *primordial utricle*.
10. What is the nucleus? Give tests for its presence.
11. What is the composition of the vegetable cell-wall?
12. How could you distinguish starch from cellulose?
13. Write the chemical formula for starch.
14. Compare the following different kinds of cells:—scalariform, annular, dotted (or pitted), spiral, and reticulated.
15. Name and describe four modes of cytogenesis (cell-reproduction).
16. Write notes on chlorophyll, parenchyma, and laticiferous vessels.
17. Describe *punctated tissue*, and name plants in which it is found.
18. Mention six of the forces employed in the circulation of fluids through a plant.
19. What is the chemical composition of the various crystals found in plants?
20. What are *raphides*?
21. From what sources do plants obtain nitrogen and carbon respectively?

22. Of what use is iron to vegetable life?
23. Mention plants from which malic acid may be obtained.
24. Name the organs of vegetation in a plant.
25. What is understood by the term *Root* in Botany?
26. What are adventitious roots? Give examples.
27. Give an explanation of the botanical term *pileorhiza*.
28. Compare, as to shape, the roots of the carrot, the radish and wheat.
29. In the embryo, what names are respectively applied to the root portion and the stem portion.
30. Shew by diagram the structure of an exogenous stem.
31. Describe a single bundle of vessels taken from an endogenous stem.

PHYSIOLOGY AND ANATOMY.

1. CLASSIFY the various kinds of foods necessary for the support of the human body.
2. Name the principal and accessory organs of digestion.
3. Give an outline of the structure and chemical composition of a human tooth.
4. How many temporary teeth are there? and how many permanent?
5. Give a classification of the permanent teeth; and also represent that classification by means of a dental formula.
6. By what other names is the temporary set of teeth known?
7. Give the names of the principal salivary glands, their position, and the names of their respective ducts.