

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.

(Continued from page 86.)

32. What kinds of stem, with regard to structure, do we find in the clover, pea, tulip, beech, fern, mushroom, scouring-rush, lichen, geranium, asparagus, apple and horse-chestnut?

33. Define rhizome (root-stock); tendril, runner, stolon, sucker, offset, tuber, corm, bulb, scape, calamus and culm.

34. Shew the differences between thorns and prickles, giving examples.

35. Write brief notes on cork, lenticels and cambium.

36. Under what circumstances may the rings of growth of an exogenous stem be depended upon as an indication of its age?

37. Give the minute anatomy of an ordinary foliaceous leaf.

38. Mention three important differences between the guard-cells and the remaining cells of the epidermis.

39. What are all the known functions of the stomata?

40. Give an account of *cotyledons* and *covering-leaves*.

41. Explain the signification of *leaf-cycle*, *distichous*, *quincuncial* and *phyllotaxis*.

42. What do the botanical terms *decussate*, *verticillate* and *opposite* denote?

43. Give some account of the *special* forms assumed by foliaceous leaves.

44. What are *trichomes*?

45. Distinguish cordate, obcordate, mucronate, acuminate, dentate, serrate, peltate, sagittate, hastate and auricled leaves.

46. What are *stipules*?

47. State the peculiarities of endogens with respect to the seed-lobe, stem and leaf.

48. Name and describe the different varieties of netted-veined (reticulated) leaves in accordance with the distribution of the vascular bundles. Give examples.

49. Make drawings to shew the external form of the leaf of the sugar maple, the leaf of the dandelion and that of the lilac.

50. Tell whether the stem is twining or climbing in each of the following:—Grapevine, morning glory, bean, and hop.

PHYSIOLOGY AND ANATOMY.

(Continued from page 87.)

19. Name some of the intestinal secretory glands, and tell the kinds of food affected by their secretions.

20. What are the lymphatics?

21. Give position and function of the thoracic duct.

22. If blood be drawn from the body and allowed to stand for a short time, a clot or coagulum will be formed in it. Explain this clotting or coagulation.

23. Enumerate the circumstances by which the clotting of blood may be (1) hastened, and (2) retarded.

24. Minutely describe a human red blood-corpuscle, and relate the principal points of distinction between it and the red blood-corpuscle of a bird.

25. What is meant by the *plasma*? What by the *serum*?

26. Distinguish between arterial and venous blood.

27. Define the terms *vein* and *artery*.

28. Which kind of blood (arterial or venous) is carried by the pulmonary artery?

29. Give the average specific gravity of the blood.