

CLASS D.—HEAT (Optional).

1. How is a thermometer made and graduated? Name six different modes of estimating temperature.
2. Describe experiments illustrating the expansion of solids, liquids, and gases.
3. How does heat diffuse itself?
4. Describe four ways in which clouds are formed.
5. What are the laws of ebullition? How would you make experiments to illustrate these laws?
6. How is specific heat determined? What are the laws of specific heat?
7. Describe as fully as you can all the phenomena that would ensue if water at the temperature of -20°C . were gradually heated until it dissociated into its elements.
8. A cannon-ball weighing 100lb. has a velocity of 1,000 feet a second: express the energy in heat-units.
9. In what several ways may radiant heat be disposed of when it falls upon a surface?
10. Classify the different kinds of energy, and give a general account of all the energy available to the earth.

CLASS D.—BOTANY (Optional).

1. What are leaf-buds? where do they occur? of what parts are they formed? and what is their use?
2. What are stomata? where are they found? and what is their function or use?
3. What is the difference between seed and fruit? Describe all the different parts of a hazel-nut, and state the parts they each formed in the flower.
4. Describe the differences between a mulberry and a raspberry, and explain the use of the fruit to a plant.
5. Describe, in as much detail as you can, the flower of the following plants:—Bean, wheat, geranium, hyacinth, primrose, dandelion.
6. What is starch? Of what use is it to the plant? In what parts is it found? Name some of the uses of starch to man.
7. Give an account of the movement of water in plants, and of the causes which may in part account for this movement.
8. By what means do plants absorb carbon, hydrogen, oxygen, and nitrogen?
9. Describe some instance of adaptation in a flower for fertilization by insects, and explain the object of this.
10. What are the different effects of insular and continental climates on plants? Explain as fully as you can.

CLASS D.—GEOLOGY (Optional).

1. Give the distinguishing characters of the following minerals:—Quartz, felspar, mica, hornblende, calcite, olivine.
2. Give an account of the origin (or formation) of slate and sandstone.
3. State your opinion as to the origin of ordinary compact limestone, and give reasons for it.
4. Describe the structure of a volcanic mountain.
5. Distinguish sedimentary (aqueous) from eruptive (igneous) rocks.
6. How do you distinguish contemporaneous from intrusive eruptive rocks?
7. Define what is meant by "a dyke," "a vein," "a concretion."
8. Prove the statement, "The land moves while the sea remains stationary."
9. What is meant by a fossil? How did fossils get into rocks?
10. How are lakes formed?

CLASS D.—FRENCH (Optional).

1. Give the feminine of the following words: *Inspecteur, jardinier, gardien, marquis, époux, chasseur, défendeur, radoteur, chanteur, majeur*.
2. Give the following collectives in French: A dozen, a score, a collection of fifty, a collection of one hundred, a collection of one thousand.
3. What are the two genitives of *qui*, and how do they differ in their use?
4. Give the pres. ind. of *se nuire* in full.
5. Give the first pers. sing. of the pres. ind. of—*Bouillir, vêtir, acquérir, cueillir, battre, conduire, naître, vaincre, rompre, mourir*.
6. Translate into English—*Bref, brièvement, du reste, de reste, toutefois, toutes les fois, de bonne heure, à la bonne heure, à midi, au midi de, de service, en service*.
7. What are the peculiarities of pronunciation in—*Faon* (a fawn), *œuf frais* (new-laid egg), *des os* (bones), *Jésus Christ*, *Bruxelles* (Brussels), *Août* (August), *faisant* (doing), *oignon* (onion), *lis* (a lily), *second* (second)?
8. Has *plusieurs* a singular, and has it a separate form for the feminine?
9. When are *on* and *quiconque* feminine?
10. Give the French for the following conjunctive locutions: Considering that, as well as, as soon as, rather than, as long as.
11. Translate into French—I am right; I am wrong; I am afraid; I am ashamed; I am in need of.
12. Translate into French (speaking of the weather)—It is fine; it is bad weather; it is hot; it is foggy; it is windy.