3. In what different ways can it be shown that the pitch of a musical note depends on the frequency of the vibrations which produce it?

How would you determine what number of vibrations in a second is required to produce a given note?

4. How would you show the conversion of electrical energy into heat, and of heat (*a*) into electricity, and (*b*) into mechanical motion?

5. How would you show the solar spectrum to a class?

How would you show that white light results from the combination of several different colours?

6. How would you show experimentally the attraction and repulsion of electrified and of magnetized bodies?

How would you make a dipping-needle?

7. Give directions for charging and for discharging a Leyden jar; for making an electro-magnet; and for proving a current from a battery.

8. Describe some experiments illustrative of chemical affinity, and of the displacement of one element in a chemical compound by another.

9. Describe some experiments illustrative of electro-chemical action.

What is the result of passing an electric current through water and sulphate of copper?

10. Give directions for making nitric, sulphuric, and hydrochloric acids, and describe an experiment you would make with each.

Elementary Science.—For Class E. Time allowed: 3 hours.

1. Explain what it is that makes a rocket go up. What do you know of the relation of the time taken by a rocket in ascending to the time taken by the stick in descending?

Why does a snowball gain speed in rolling down a hill?

2. Upon what does musical pitch depend?

Explain the action of a phonograph.

3. Describe a magic lantern.

Draw a diagram showing how an image is formed by means of a convex lens.

4. Describe various instruments for measuring temperature.

How is a thermometer graduated?

5. What is a magnet?

Draw a sketch of the arrangement assumed by iron filings when dusted on a card covering a horseshoe magnet.

6. Describe some simple experiments to show electrical attraction and repulsion.

State the chief differences between electricity and magnetism.

7. How would you make an electro-magnet?

How would you exemplify the action of electro-magnetic force?

8. Give directions for preparing oxygen and for preparing hydrogen.

Describe simple experiments that can be made with these gases.

9. Draw a diagram of the digestive system.

Describe the action of its several parts, distinguishing particularly between the respective functions of the stomach and of the intestines

10. What are the chief differences between plants and animals?

Explain the action of a "balanced" aquarium.

Domestic Economy and Laws of Health.—For Class E. Time allowed: 3 hours.

1. How far do you think bodily health is dependent on the state of the mind? What mental and emotional influences would you deem most conducive to good health?

2. What dress do you consider suitable to tennis, cycling, and gymnastics? Are there any present customs in dress that you think undesirable? If so, explain why you think them so.

3. Discuss the effect of trees about a house, contrasting deciduous and evergreen trees. How can such evergreen trees as pines and blue-gums be used so as to let sunlight fall on a house in winter and to shade it in summer?

4. Describe and explain all the ways you know of giving "lightness" to pastry, cakes, and bread. Why is oatmeal not used for bread? Compare oatmeal and flour as food.

5. How would you ventilate a schoolroom and a living-room respectively? Describe experiments to illustrate ventilation.

6. Give the general principles involved in grilling, frying, baking, and boiling. How should each of these things be done to insure the best results?

7. Give reasons for the necessity for cleanliness—(*a*) in person, (*b*) in the house, (*c*) in cooking, (*d*) in the sick-room.

8. Describe the nervous system, and make a sketch illustrating the structure of the eye.

9. Describe the kind of exercise you think most suitable to a teacher—(*a*) in robust health, (*b*) in delicate health.

10. Discuss the disadvantages of open and of closed drains, and show, by a diagram, how to connect a house with a drain.