that the pupil can give a complete and accurate expression of his observations?

2. Your pupils have performed the experiment of a glass ball rolling down an inclined grooved plank, and have obtained suitable numerical results.

(*a*) Indicate by questions how you would draw from the pupils the inference that "a constant force acting on a constant mass produces a uniform acceleration."

(*b*) What previous knowledge is necessary on the part of the pupils?

(*c*) Write a sample page of pupil's note-book filled out to your satisfaction on the experiment outlined above.

(*d*) "The note-book is often used so as to stand in the way of good work." State clearly how a note-book should be used by a pupil.

3. A class is beginning the study of buds and bud-markings; each pupil is supplied with a horse-chestnut branch, and the teacher gives directions where to find the markings, and describes their peculiar shape and position. The pupils then make drawings of the branch. The bud is dissected by the pupils under the direction of the teacher, who tells the pupils what to look for, and gives the causes of the markings. The pupils are then asked to write out a full account of all they have seen.

Criticize the method outlined above.

4. (*a*) Teach a lesson on the classification of plants.

(*b*) At what stage of the course would you take up this topic? Give reasons.

(*c*) Sometimes pupils have difficulty in understanding the application of the term carpel, either confounding it with ovary or else failing to determine correctly the number of carpels in a pistil with a unilocular ovary as in the corn-cockle, or with a bilocular ovary as in the catnip.

Develop the subject in a way which would remove the difficulty.

THE HIGH SCHOOL AND UNIVERSITY ANNUAL EXAMINATIONS, 1898.

FORM II.—PHYSICS.

EXAMINERS: E. C. Jeffrey, B.A.; J. C. McLennan, B.A.; W. Nicol, M.A.

1. (*a*) Explain, with diagram, the principle of a screw wire gauge, or a pair of calipers with vernier attached.

(*b*) Explain how to fill a capillary tube, open at both ends, with mercury, and describe an exact method of finding the internal diameter of a capillary tube of uniform bore.

2. (*a*) Define *uniform acceleration.*

(*b*) Explain how you would apply your definition to determine experimentally whether two given quantities of matter are of equal mass or not.

3. State the *law of buoyancy.* How would you verify it experimentally for (*a*) liquids, (*b*) gases?

4. Describe three different experiments which illustrate the capillary action of liquids.

5. Describe two methods of finding the specific gravity of a sample of hydrochloric acid. Give a numerical example in each case.

6. A mass of water at 20°C. is placed in a glass flask surrounded by a mixture of ice and salt. Describe all the changes that may be observed in the temperature of the water and in its volume.

7. Describe a *calorimeter* and explain how you would use it to deter-