

Are the ideas too difficult for this grade? If they are it is useless to take up this part of the subject at all. But I do not think they are. I tested the point with a boy who though he had just succeeded in passing his Grade IX examination had obtained only 44% in science. It will be two years before he goes in for the Grade XI examination. After I had conversed ten or fifteen minutes with him upon the general ideas of velocity and acceleration he could work the question quite readily and had even reached the idea that acceleration involves the element of time squared.

I experimented even with a couple of girls who had never studied physics at all and who started out with the idea that of course a body would stop if there were no force to keep it going. It did not take very long till they understood the question and could do similar questions. I do not mean that they had such a complete grasp of the subject that no more study of it was necessary; and teachers need not expect that in one lesson pupils will become entire master of any of the underlying principles of physics but a few hours spent upon the fundamental ideas, would make velocity, acceleration, force etc., fairly clear so that the pupil would have no difficulty with the simpler applications.

Nearly every pupil is familiar with the fact that a railway train takes time to get up speed and that the speed attained in a given time depends upon the force exerted by the engine and upon the weight of the train. This forms one of the best illustrations of acceleration. The acceleration of falling bodies is not a good example to begin with because the acceleration is the same whatever the mass of the body, and the idea that the force is proportional to the mass introduces a complication. Yet I found that many candidates thought there was no acceleration except that of falling bodies and many absurd formulas relating to falling bodies were introduced in the attempt to solve the problem.

So important is it that students should have right ideas from the start that I believe you would do good service by distinctly announcing that next year one or two questions will be asked in which at least one of the following will be involved—velocity, acceleration, force, work, power. The real meaning of gram, pound, dyne, poundal, foot pound, foot poundal, gram, centimeter, dyne centimeter, and erg should be carefully drilled into the pupils by their teachers. I do not think you would be giving too much information regarding the examination because any candidates who study these points well deserve some recognition by the examiner. Teachers should put far more stress upon the fundamental ideas than upon the formulae based upon them. When the fundamental ideas are understood, it will take very little time to learn and apply the formulae correctly.

I might have used some of the other questions in illustration. No. 5 was very poorly answered just because the meaning of pressure was not understood. I hope that next year and future years will show an improvement.

#### BULLETINS OF THE CONSERVATION COMMISSION.

##### *Spruce Bud Worm.*

No. 7 describes the damage done in Canada by the "Spruce Bud Worm." First reported two years ago from North Vancouver Island and Quebec. The caterpillar state of *Tortrix fumiferana* destroys the buds of the spruce and balsam fir, especially at the top of the trees. They also bite off the leaves, making the tree top reddish brown, as if killed by fire. The only means proposed to check it, is to aid the parasites which have already been found to be preying upon the pest.

##### *Our Vanishing Oyster Supply.*

Canada paid \$369,000 for foreign oysters last year—all of which she should have grown herself. In 1882 there were produced in the Atlantic provinces 64,646 barrels; in 1907 only 27,299. In the United States, \$10,000,000 worth of oysters out of \$18,000,000 annually harvested are from private culture. The Nova Scotian government for the last two years have been making a renewed effort to have the jurisdiction of oyster water lots determined, so that the industry may be not only saved, but largely developed.