that no school board is justified in not demanding it of its teacher of hygiene.

When bacteriology finds its true place in the curriculum of the secondary school, the curves of death, of sickness and of suffering will show a downward tendency, unprecedented in the history of civilization.

INFLUENCE OF PRESSURE ON THE BOILING POINT.

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In addition to the two well-known methods which are recommended in text-books of elementary physics to show that the boiling point of water is dependent upon pressure, the following simple experiment, which I have devised, illustrates the principle very clearly and does away with the necessity of using the air pump.

The accompanying figure will explain the experiment. Two persons will be necessary to do the work properly. A flask, a bottle with a wide mouth (a quinine bottle does very well), a piece of glass tubing, a piece of rubber tubing, a clamp and a small dish to catch the surplus water are all that is necessary for this experiment.

Pass one end of the glass tube through the rubber stopper in the flask and the other end just through the double perforated rubber stopper in the bottle. It is best to have at least one joint in the glass tube (as at *A*) so as to prevent breaking when handling. Through the other perforation pass a glass tube which will reach to the bottom of the bottle and to the upper end attach a piece of rubber tubing with a clamp (*c*) quite near the stopper. Leave the clamp open and remove the stopper (with the tubing attached as in the figure) from the bottle. A piece of glass tubing connected with rubber tubing to the glass tube *B* would do, but it must be long enough to reach below the bottom of the bottle.

Boil the water in the flask. Hold the stopper of the bottle in the hand until the steam passes out vigorously. Then fill the bottle with water and put the stopper in tightly as shown in the figure. The steam will force water out through the tubing *B*. When water is forced out as far as the point *D*, close the clamp (*c*) and *at the same instant* withdraw the lamp from beneath the flask. The water in the flask must be kept boiling vigorously while forcing water out of the bottle so as not to allow air to pass back into the bottle through the tube *B*, as this will spoil the experiment.

After withdrawing the lamp, or gas jet, steam condenses and the water in the flask will continue to boil from three to five minutes. When it ceases to boil pour a tumbler of cold water over the flask, when the water in the flask will boil again. After it ceases pour more cold water over the flask and *the water remaining in the bottle will boil vigorously*. This is more remarkable as the water in the bottle has never been heated to the boiling point, but has become hot by the steam. The temperature of the water in the flask and bottle may then be determined, or to be more accurate, a chemical thermometer may be passed through a perforation in the stopper of the flask, or bottle, at the beginning of the experiment and the temperature obtained. If the experiment fails it may be repeated a number of times in a few minutes by filling the bottle with water.

I have repeated the experiment a number of times to discover the causes of failure and have found that: (1) The experimenter

must be absolutely certain that all air is driven out of the flask before it is connected with the bottle; (2) the bottle must be full of water; (3) if one gas jet does not give sufficient heat two must be used. I have found it better to use two in every case. If cold water is used in the bottle the steam condenses very rapidly and a short time elapses before the water is forced out. (4) The result is obtained more easily and more quickly by using hot water in the bottle. (5) The experiment may be varied by throwing cold water over the bottle after the water in the flask ceases to boil when it will boil again. (6) I have not found it any advantage to have the thermometer placed through the stopper when doing the experiment. The result obtained is much below the temperature obtained by the usual text-book methods.