tains fragments of charcoal and salt. The liver of the goose is by this process increased in weight up to one to two pounds."

In the case of the French process for fattening chickens, the food given is *ground* meal, etc., mixed with the right proportion of milk and water, so as to facilitate digestion. In consequence of which, the chickens increase nearly forty per cent. in weight, the fat and meat being uniformly distributed over the body, and the liver not being enlarged *at all* as in the case of the goose.

SOME LECTURE EXPERIMENTS.

By A. A. Breneman.

1. The dissociation of soap by water.

A well filtered alcoholic solution of soap containing a little phenolphthalein is poured carefully into a glass cylinder half filled with distilled water, which also contains phenolphthalein. The line of contact of the liquid is colored bright red, and, on carefully stirring with a long rod, a pink flush is diffused through the mixed liquids. As both are free from color before contact the liberation of alkali by the water is plainly shown, and the theory of the action of soap is thus illustrated. The alcohol may be of fifty to eighty per cent., and should contain a large quantity of soap in solution. The cylinder is tilted at forty-five degrees in pouring in the soap solution so that the layers of liquid may be distinct.

2. Dissociation of ammonium chloride by heat.

The following experiment is easily performed and requires much less apparatus than such as require the separation of the dissociated constituents by diffusion through a porous cylinder. It depends simply upon the greater solubility of ammonia gas in water as compared with gaseous hydrochloric acid.

Into a long necked, round bottomed Bohemian flask is put three to five grms. solid NH_4Cl, and the flask is heated over a gas lamp (best a triple burner), until the solid has nearly disappeared and the bulb of the flask is filled with transparent gas.

A glass rod having a strip of moistened red litmus paper wound spirally around it for four inches of its length is then introduced as far as the bulb. On withdrawing it after ten seconds the paper will be entirely blue and, if still moist, will then turn red on quickly exposing it to the fumes issuing from the mouth of the flask.

After cooling, the residual NH_4 Cl may be dissolved in water and tested with litmus to show its faintly acid reaction. Ordinary sublimed NH_4 Cl is faintly acid, but a sample purified by solution and recrystallization will be so nearly neutral that the greater acidity of the sample from the flask will be quite apparent. If, during the heating of the flask, a thick dry rod, previously cooled by ice or ether, be inserted into the transparent gases of the heated flask, heavy clouds of NH Cl are produced.

3. Opaque soap bubbles for many forms of gas experiment.

Two flasks, arranged like gas-washing bottles and tied together so as to be handled as one, are filled to the depth of 1.5 c. c. with strong NH_3 and HNO_3 respectively. The long tube of each bottle reaches to within one cm. of the surface of the liquid but does not touch it ; the short tube ends just below the stopper in each bottle. On forcing any gas first through the long tube into the bottle containg HNO_3 and from that through the connecting tube against the surface of the NH_3 solution in the other flask, dense, white fumes of NH_4 NO_3 are produced and bubbles may be blown with the gas from the second bottle. Nitric acid is preferable to H Cl as fumes of NH_4 Cl soon choke the exit tube, while NH_4 NO_3 is deliquescent in presence of moist NH_3 gas. Also, the gas must pass *last* through the NH_3 bottle as otherwise nitric acid fumes will be in excess in the mixture, and the soap will be decomposed, preventing formation of bubbles. Such bubbles are more readily visible by daylight or gaslight and much more satisfactory for use before large audiences. The quantity of vapor added is too trifling to affect the density of the gas, and the properties of weight, combustibility, etc., may be illustrated as usual. With CO_2, however, the rapid formation of ammonium carbonate in the second bottle necessitates a little practice in manipulating the apparatus.