

Now drop the syringe, capped end downwards, into the liquid to be filtered, exhaust the air by sucking at the end of the rubber tube, but very cautiously for fear of rupturing the filtering paper, and the liquid will rise through the paper into the tube. The current being once established will continue until the contents of the bottle are exhausted, always provided that the end of the rubber tube is kept below the capped end of the syringe. It is probable that the inexperienced operator will rupture the paper on the first time of trial, but a little patience will soon remove that difficulty. The advantages of this plan are obvious on a little consideration. No retort stand is needed, for there is no funnel to support. The saving in the breakage of funnels will be something in the course of a year. A piece of filtering paper one inch and a half square does the work which before was done with a piece six to nine inches square. The process goes on without attention, it being unnecessary to fill up a funnel every few minutes. The filtration being upwards there is no accumulation of sediment in the pores of the paper, and, as a consequence, filtration proceeds as rapidly at the end as at the beginning of the process. There is very little loss by evaporation, for the half-ounce syringe is so small that it will go into the half gallon stock-bottle, whilst the end of the rubber tubing will go into the neck of the shelf-bottle from which sales are made. The tube is easily cleaned by running a plentiful supply of water through it. The only disadvantage under which the process labors, so far as I have yet discovered (and it must be confessed this is somewhat serious), consists in the slowness with which it proceeds, consequent, no doubt, on the extremely limited extent of filtering surface exposed to the liquid, a disc of paper half an inch in diameter doing all the work. I append some examples of the time required. One pint of Vin. Ipecac. occupied twelve hours; the same quantity of Spts. Lavand. Co., two and a half hours; of Tinct. Benz. Co., five hours; of Ess. Vanilla, one and a half hours. This difficulty can most likely be overcome by using a larger syringe, but even as the matter stands, we have the very great advantages of the absence of all cumbersome and expensive funnels and stands, no attention is needed, and no loss is sustained from evaporation. Application of this principle for hot filtration and for very volatile liquids also occur to me, but for the present I will not describe them. In order to ensure success it seems necessary that the filtering medium should be ca-