

diminished in the first tests (2 hours after administration), while the findings after four hours manifest an increase in the insulin action, usually observed at that period.

4. It has been demonstrated that (in more than 70 percent of the cases examined) the insulin effect is generally not eliminated by adrenalin, but is sometimes enlarged.

5. The reasons for these findings have hitherto not been discovered. They may be based upon an action of the involuntary nervous system.

## 75 (2598)

### Diluting lipid antigen with a constant dropping syphon.

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In order slowly and uniformly to dilute an alcoholic solution of tissue lipoids as required in such serologic methods as that of Meinicke,<sup>1</sup> an apparatus was desired that could easily and quickly be set to deliver water dropwise at a definite rate. Numerous trials by Kohler<sup>2</sup> indicated that the lipid extract should be diluted in such fashion that seven volumes of distilled water are dropped into one volume of lipid extract in twenty-eight minutes. A stable suspension of fine lipid particles is formed, which obviously should be prepared as often as desired under identical conditions. The syphon herein described is simpler than the floating syphon used by Dreyer and Ward.<sup>3</sup>

It delivers 49 cc. in exactly 28 minutes, but it can easily be set to deliver other amounts. From the figure the construction is almost self explanatory. The syphon itself is made by bending a piece of heavy wall soft glass tubing twice at right angles in the same plane. For convenience it is held in a rubber stopper perforated horizontally. Two capillary buret tips were attached to

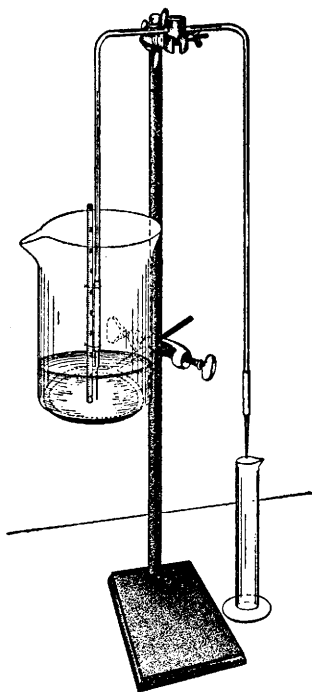
<sup>1</sup> Meinicke, E., *Berliner klinische Wochenschr.*, 1918, Jahrg. lv, pp. 83-96.

<sup>2</sup> Kohler, E., *Ztschr. f. Infektionskrankheiten d. Haustiere*, 1921, xxi, 288-314.

<sup>3</sup> Dreyer, G., and Ward, H. K., *Lancet*, 1921, cc, 956-961.

the limbs of the syphon with rubber tubing, glass ends in contact, so that the water flows through glass only. A broken thermometer stem was cut and attached to the short limb so that its lower end was a fraction of a millimeter below the capillary tip. By using detachable capillary tips, the limbs of the syphon may be cut if desired.

Assuming that the worker is to dilute 7 cc. of a lipoid extract with 49 cc. of distilled water, dropwise, in exactly 28 minutes, it is desired to set or calibrate the syphon so that dilutions may be made as desired without loss of time. The following steps were found useful:



1. Construct the apparatus approximately of the dimensions shown in the figure and given in the table below. The difference in total lengths of the limbs should be near 64 mm.

2. A 1.1 liter griffin form beaker, outer diameter 110 mm., was a convenient water container. Of course any container may be used, but the same one should be used throughout. The beaker is raised or the syphon lowered until the capillary tip and scale just touch bottom.

3. Pour distilled water into the beaker until the depth indicated on the scale is 20 mm.

4. Start the syphon by suction, attaching a rubber tube to the longer limb for this purpose. As soon as the syphon is working, detach the rubber tube, receive the drops in a cylinder and note the time.

5. Note the time required to deliver the desired volume.

If delivery is too rapid, the longer limb may be cut a few millimeters; if too slow, the initial depth of water in the beaker may be increased a few millimeters. After a few trials, quickly and easily made, the exact conditions can be determined. Following are some typical results obtained without any unusual precaution:

Syphon tube, outer diameter, 4.4-4.5 mm., bore, 1.2 mm. Glass beaker, 1.1 liter, outer diameter of base, 110 mm.

Total height of long limb	Total height of short limb	Difference	Initial depth of water	Volume dropped	Time	
					min.	sec.
mm.	mm.	mm.	mm.	cc.		
432	368	64	10	49	31	45
“	“	“	“	“	31	25
“	“	“	20	“	27	12
“	“	“	“	“	27	20

## 76 (2599)

The effects of varying internal and external pH of *Valonia* upon penetration of arsenic.

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A study was made of the penetration into *Valonia macrophysa* of trivalent and pentavalent inorganic arsenic by changing both the internal pH of *Valonia* and the external pH of the surrounding solution. The internal pH was decreased by subjecting the cells to NaHCO<sub>3</sub> solution, and increased by treatment with NH<sub>4</sub>Cl solution. The external pH was varied from pH 5.0 to 9.0 by adding arsenic adjusted to the desired pH (by adding