8. A toxic theory of essential hypertension would be more plausible if a substance were found which causes, in normal animals, persistent elevation of blood pressure above normal limits, without obvious signs of general intoxication.

[1] Major, R. H., and Stephenson, W., *Bull. Johns Hopkins Hospital*, 1924, xxxv, 186, 140.

[2] Dominguez, R., *J. Met. Res.*, 1924, vi, 123.

[3] Dominguez, R., *J. Exp. Med.*, 1927, xlvi, 443.

[4] De Waele, H., and Bulcke, G., *Arch. int. Physiol.*, 1925, xxv, 74.

[5] Alles, G. A., *J. Pharmacol. Exp. Therap.*, 1926, xxviii, 251.

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An Improved Arrangement for Bacteria-Retaining Filters.

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Attention has lately been redirected to the importance of *adsorption* in filtration through bacterial filters[1]; however, if filtration is prolonged, the adsorbing surface may become saturated and substances at first retained may appear in the filtrate. The range of particle size from the smaller filterable viruses to the ordinary bacteria, on the other hand, is a critical zone in which *mechanical retention* plays an increasingly important and finally a determinative rôle.[2] Certain ultramicroscopic viruses may pass the more porous filters in almost undiminished concentration, others in greatly reduced concentration. The visible microorganisms pass the filters only in sufficient numbers to inoculate the filtrate, and only pass at all when certain attributes of the microorganism (*e. g.*, small size, motility, flexibility), or the circumstances of the filtration are especially favorable.

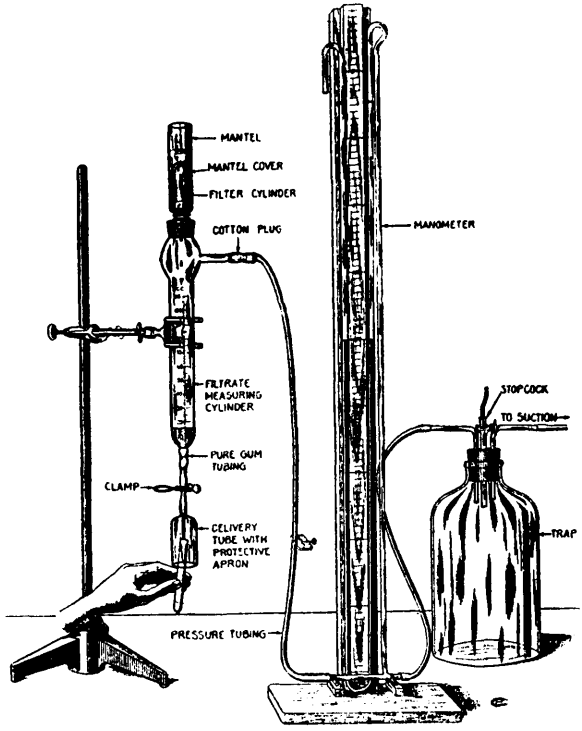
It does not suffice, then, to report that a certain virus is or is not filterable through certain filters.[3] The circumstances must also be known. Incomplete recording of the details of procedure, together with diversity of filtration methods and lack of exact experimental control of the filtration technique, have often introduced needless confusion into the literature on filterable viruses.

The arrangement shown in the accompanying figure offers advantages in point of control over the filtration process, as well as in convenience of operation. The reduced filtration pressure is shown by the manometer. The filtrate is received into a graduated vessel.

TABLE.

Suction approximate time On	Off	Manometer reading, approximate	Pressure, mm.Hg., approximate	Volume filtered	Tube inoculated	Inoculum	Results		
							After 18 hrs.	After 24 hrs.	After 5 days
3:58	3:59	480-265	215	18 cc.	No. 1	8 cc.	Clear	Clear	Clear
					No. 2	5 cc.	Clear	Clear	Clear
4:01	4:02	485-268	217	20 cc.	No. 3	5 cc.	Clear	Clear	Clear
						5 cc. discarded			
					No. 4	10 cc.	Clear	Slight clouding	Dense clouding
4:04	4:05	490-265	225	20 cc.	No. 5	5 cc.	Clear	Slight clouding	Dense clouding
						5 cc. discarded			
					No. 6	10 cc.	Clear	Dense clouding	Dense clouding
4:07	4:14	490-265	225	30 cc.	No. 7	7 cc.	Clouded	Dense clouding	Dense clouding
		465-300	165			10 cc. discarded			
					No. 8	10 cc.	Clouded	Dense clouding	Dense clouding
4:16	4:22	490-265	225	20 cc.	No. 9	5 cc.	Clouded	Dense clouding	Dense clouding
					No. 10	5 cc.	Clouded	Dense clouding	Dense clouding
					No. 11 (control)	5 cc. filtrate and loop-full of unfiltered suspension	Clouded	Dense clouding	Dense clouding

Filtration may be interrupted at any moment by stopping the suction pump and opening the stop-cock on the trap to equalize pressure. Measured volumes of filtrate are then inoculated sterilly into any desired number of culture tubes through the delivery tube with protective apron. The pinch-clamp is released, the stop-cock closed, and suction is continued until another volume of filtrate is collected, and so on indefinitely. A protocol will illustrate:



Filtration of *V. percolans*, 14 day culture in plain broth. Filter, Berkefeld V, 2½ x 5/8 in.; original air-test, 287 mm. Hg.; filter had been used once previously for bacterial filtration, washed from within out with tap-water and resterilized in autoclave. Culture diluted with Ringer-Locke solution and filtered through cotton, then through Berkefeld. Filtrate inoculated into tubes containing plain broth, I-VI-27. Results in table. Darkfield examination shows typical *V. percolans* in clouded tubes.

Thus the first volume of filtrate remained sterile, the succeeding portions showed inoculation in increasing amounts.

The basic arrangement of which this is a modification has been used for some years by J. D. Aronson for sterilizing and tubing immune sera. His small filtrate-receiving cylinders without calibra-

tion are less expensive. The so-called mantel cover, an inverted tube over the filter candle, enables all but the last traces of liquid to be filtered; this device was introduced years ago by M. P. Ravenel. Cylinders of both types, delivery tubes and mantle covers are stocked by Arthur H. Thomas Company of Philadelphia.

[1] Kramer, S. P., *Science, N. S.*, 1927, lxv, 45; *J. Infect. Dis.*, 1927, xl, 343.

[2] Mudd, S., in T. M. River's, Filterable Viruses, in press.

[3] *Cf.* Krock, F. H., and Holman, W. L., *J. Am. Med. Assn.*, 1923, lxxx, 1142.

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Vitamins A and B in the Chinese Litchi Nut.

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The Chinese hazel or litchi nut *(Litchi Chinensis)* has long been cultivated for medicinal and edible purposes in the Orient, and has attained a certain vogue in this country. A study of the therapeutic and food values of this fruit was made by Read, who describes the nut as "nearly globose with a dull brick-red pericarp which, when ruptured, exposes a sweet, brown, fleshy arillus surrounding a glossy chestnut-brown obicular seed . . . ."[1] If this fleshy edible part corresponds in nutritive value to most of the fruits used in the American dietary, it should constitute a source of certain of the accessory food factors. The present study deals with the assay for vitamins A and B in the litchi nut.

Young rats 25 to 30 days old, weighing 40 to 50 grams, were given the following diets:

Lacking vitamin A		*Lacking vitamin B*	
Extracted casein	18%	Extracted meat residue	18%
Raw corn starch	50	Raw corn starch	50
Crisco	28	Crisco	23
Salt mixture[2]	4	Cod liver oil	5
Dried yeast 200 to 400 milligrams daily		Salt mixture[2]	4

The growth of rats on the first ration was rather prolonged, lasting from 40 to 50 days before cessation. The diet was then irradiated with light from a quartz mercury vapor lamp, with the result that growth was immediately resumed for 10 to 14 days more. At that time definite ophthalmia had developed in all the animals,