

porarily outside the body in the dialyzing apparatus may be very high: for short periods a dog will tolerate a dialyzing apparatus holding as much as 40 cc. per kilogram of body weight while one holding 30 cc. may be used for many hours.

When the circulation in the apparatus is established there is a fall in the blood pressure which is greater or less according to the size of the apparatus in proportion to that of the animal, but there are no other immediate symptoms. Rapid and complete recovery after an experiment lasting many hours may be obtained by due regard to asepsis and care in the use of the anaesthetic. Serious loss of blood is avoided by driving the greater part back into the animal's body at the end of the experiment. This may be done either by blowing air, or better by introducing a saline solution from an elevated burette, into the arterial end of the apparatus after tying off the artery, while the venous cannula is still attached: or by a simpler and more rapid method, which returns about three-quarters of the blood, and which in an emergency can be used during the progress of the experiment to relieve the threatened collapse of an animal in an abnormally weak condition; this consists in applying hydrostatic pressure to the liquid outside the tubes (*viz.*, by blowing or forcing more liquid into the jacket which contains it) and thereby squeezing them flat. For purely chemical investigations the experiment is usually performed under complete chlorotone anaesthesia and allowed to run as long as the animal lives. Owing to the weakening effects of the operation, the anaesthetic, the constrained position and the loss of substances from the system, the length of dialysis obtained has not usually exceeded eight or ten hours with an apparatus measuring 30 cc. per kilogram of body weight, but in one case a dog survived for sixteen hours with one-third of its blood in the dialyzing apparatus.

III. THE APPARATUS: TYPES AND METHODS OF CONSTRUCTION

The dialyzing substance which appears best adapted to the purpose of the research, and the only one tried at present, is celloidin. The brand which we have used is "Anthony's Nega-