

quantity was taken in each experiment at regular intervals, varying from fifteen minutes to two hours until death ensued. In one experiment a continuous fatal hemorrhage was effected and the blood analyzed in portions. Thus far twenty experiments have been carried out. In some of them the serum was also analyzed.

The following conclusions were reported: Hemorrhage causes increase of water and decrease of solids in the remaining blood. *Hemorrhages of about 0.6 % of body-weight, cause little or no change in general composition of the blood until after 2.5 % has been taken.* Under the conditions of these experiments it was generally found that the longer the intervals between withdrawals the less the maximal differences between composition of the first and last fractions. Short intervals between bleedings, all other conditions being equal, favored the largest total withdrawals before death ensued.

The differences in the serum ran parallel with those in the blood, but were less marked. The ash did not vary materially in either the blood or serum, no matter how much blood was taken. The blood ash and that from the serum were practically the same in relative amount, though different in composition.

When *small* quantities of blood, *equal to about 0.2 % of body-weight,* were removed at intervals of about a half-hour, little change was noted in either blood or serum until after 3 % had been taken. After this quantity had been lost the changes following further hemorrhage were such as usually occur.

The maximum differences between the percentage composition of the first and last fractions varied somewhat. The differences in the amounts of solids, for example, ranged from 1.5 % to 3.5 %. In *fasting animals* the influence of hemorrhage on chemical change in the remaining blood was somewhat more marked than in well nourished ones. The effect on the serum was about the same.

Other influences in the experiments were carefully controlled. The observed effects were due only in *slight* degree to the narcotics and the conditions attending the operations.

#### **44. " Demonstration of a new portable sphygmomanometer " :**

**THEODORE C. JANEWAY.**

The author's instrument was designed with the object of securing a thoroughly portable clinical sphygmomanometer, in which nothing essential to accuracy should be sacrificed. It em-

loys the method of circular compression of Riva-Rocci, and Hill, with the 12 cm. width of armlet proved necessary by von Recklinghausen. The special construction of the cuff allows of adaptation to arms from 15 cm. to 34 cm. in circumference. The original feature of the instrument is the folding U tube manometer. This is a jointed U tube manometer (copied from Cook), fastened to the under surface of the box-lid, so arranged that, when closed for carrying, it measures  $10\frac{1}{4} \times 4\frac{5}{8} \times 1\frac{7}{8}$  ins., and, with armlet and inflator, weighs  $2\frac{1}{2}$  lbs. The manometer is perfectly secure when closed and stands firmly when open. The tube caliber is 3 mm. The sliding scale is empirically graduated for each instrument, to compensate for variations in the glass tubing, and is accurate. All connections are of heavy pressure tubing. For inflation a Politzer bag is used, as by Erlanger, except that one with valve is necessary to fill the large armlet. The gradual release of pressure is provided for by a stopcock, with needle-valve of special construction, the work of Mr. Charles E. Dressler, who is making the sphygmomanometer for sale.

The method of use, as of the other modern sphygmomanometers, is based on the criterion of the return of the pulse after obliteration (Vierordt), for systolic pressure, and is similar to the Riva-Rocci and its modifications. A fair approximation of diastolic pressure may also be obtained in most cases, using the criterion of maximum pulsation (Marey, Mosso). This is especially useful in cases of aortic insufficiency, or marked hypertension. For experimental work upon the systolic and diastolic pressures, it cannot compare with Erlanger's more elaborate and costly instrument, but aims to serve the clinician by providing him with an accurate, yet not bulky or costly instrument, for general use. Stanton's sphygmomanometer, which appeared after this one had been begun, answers the same purposes. The only criticism to be made of it is, that 8 cm. width of armpiece does not afford a guarantee of complete accuracy on large arms.

#### **45. "Demonstration of cytological preparations": NAOHIDÉ YATSU.**

The author exhibited seven preparations demonstrating important cytological structures found both in eggs normally fertilized, and in some treated chemically. He spoke on the achro-