

increase in the urine volume for the entire experimental time ranging from 3.1 per cent. for 7 days after $4\frac{1}{2}$ hours anesthesia to 20.7 per cent. for 7 days after 2 hours anesthesia. In one experiment narcosis for 1 hour caused a diuresis which was persistent throughout the remaining 10 days of the experiment during which time the urine output was increased a total of 710 c.c. or 18.4 per cent.

Anesthesia caused the animals to lose body weight, the percentage loss during the 24 hours following anesthesia varying from 1 per cent. to 3 per cent. The loss of weight following the anesthesia of a dog for periods of 1, 2 and 3 hours on three successive days was 6.5 per cent.

In all except two experiments the reaction of the fractions of urine first voided after anesthesia was amphoteric, alkalinity generally predominating. In the two experiments noted the urine was acid both before and after anesthesia. The specific gravity of the first urine passed after ether narcosis generally ranged from 1024 to 1042 as compared with a normal specific gravity ranging from 1015 to 1019.

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The relative value of antitoxin and other curative substances in antidiphtheric serum.

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Cruveilhier, in a paper in the *Annales de l'Institut Pasteur* (XVIII, p. 249), quotes Roux, Marfan, Martin and Momont as finding that the dose of antidiphtheric serum which is most efficacious is not always the one that contains the greatest number of antitoxic units. They assert that in the serum, there are, besides antitoxin, other substances whose therapeutic value is ignored in the present measurement of antitoxic units.

Cruveilhier carried out a series of experiments, in animals infected with diphtheria bacilli, and compared sera of different antitoxic strengths from several horses as to their value preventively and curatively. His results apparently showed that it was the

quantity of serum rather than the number of units of antitoxin which was efficacious. He drew the following conclusions :

The curative effect of the serum does not depend exclusively on the number of antitoxic units present.

The ordinary method of titrating antitoxin is not sufficient to determine the value of the serum.

We have investigated the same subject with results which do not agree with those of the above-named authors. In our experiments we infected the guinea pigs with three different strains of the diphtheria bacillus. We compared sera of the following unit contents : One of 200 units with one of 1000 units ; one of 600 units with one of 1300 units ; one of 600 units with one of 335 units, also with one of 200 units. The last three sera were obtained from the same horse during the course of immunization.

In both the preventive and curative experiments, we were unable to detect any protective substances which are not measured in the present method of standardizing antitoxin.

From the results obtained in the comparison of the antitoxic contents of sera we draw the following conclusions :

The therapeutic value of the serum depends upon the antitoxic content.

The present method of standardizing an antitoxic serum accurately measures its therapeutic value.