were recorded as early as 24 hours after inoculation. In 11 of these cases autopsies were performed immediately *post mortem,* while the animals were still warm. The autopsy findings are recorded in Table I.

The data demonstrate the preponderance of foci in the cecum, appendix and rectum. However, in 7 cases the organisms were found in the lower ileum; in 3 cases in the upper ileum, in one case in the jejunum, and twice in the duodenum. In the 2 instances in which colonies were found in the duodenum (in one case in and around the ampulla of Vater) we may conclude that the organisms migrated to this level against the peristaltic waves of the intestine, since only trophozoites were passed in the stools, thus eliminating the possibility of oral infection from ingestion of cysts.

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Effect of Carbon Dioxide on Ether Anesthesia.

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In anesthesia, more especially where there is any significant amount of rebreathing, it is evident that the patient is inhaling a gas mixture containing considerable amounts of CO_2. As was established long ago and as has again been shown by Leake and Waters,[1] 30 to 40% of CO_2 has distinct anesthetic properties. It, therefore, seems possible that in anesthesia where the patient is breathing fairly high percentages of CO_2, this gas may be acting synergistically or additively with the anesthetic given, and exerting an appreciable anesthetic action. It also seems reasonable that if such be the case, CO_2 might be administered simultaneously with other anesthetics with the object not only of stimulating the respiration but also to act as an adjuvant to them.

To test these views we have studied the effect of CO_2 on ether anesthesia in some 50 experiments on 11 full grown white rats with the following results:

Moderately deep anesthesia* almost invariably resulted from the

[1] Leake, C. D., and Waters, R. M., Anesthesia and Analgesia, Feb., 1929, **8**, 17.

* The criterion for depth of anesthesia was the response in the fore legs and the neck to stimulation of the hind legs by alternating current with secondary coil at different distances. Response to the stimulation by squealing was also used but found to be very irregular and consequently less reliable.

inhalation for 30 minutes of air containing 3.5 to 3.8% ether and CO_2 of from 1 to 2% (arising from the rat's metabolism). Less than 3.5% of ether with similar low percentages of CO_2 caused incomplete anesthesia, except that, in one experiment, fairly complete anesthesia was obtained with 3.32% ether with 1% CO_2. Attempts to obtain a like result with similar percentages in the same rat and in several others failed in any of 5 such experiments.

Inhalation for a similar period of from 2.2 to 2.8% ether and from 5.1 to 12% CO_2 resulted in 15 out of 21 experiments in an anesthesia equal in depth to that from the higher ether and low CO_2 concentration. In 3 of this series only a moderately deep anesthesia was obtained, the mixture inhaled being ether 2.45, 2.09 and 2.26%, with CO_2 9.4, 8.04, 7.08%. In 3 others with ether 2.1, 2.31, 2.12% and CO_2 9.92, 12.09, 6.4% a hardly appreciable degree of anesthesia resulted. In contrast to such incomplete anesthesia with the above concentrations there may be cited experiments in which good anesthesia was obtained with ether 2.02, 2.24, 2.36 and CO_2 8.25, 7.85, 7.75%. In no case did 2.5% or more of ether with CO_2 percentages ranging from 6 to 10% fail to induce anesthesia equal to that produced by 3.5 to 3.8% ether. With ether concentrations of less than 2% only a very moderate degree of anesthesia resulted even with as much as 12% of CO_2.

Observations made on 2 rabbits and one cat were in accord with Leake's findings as to the apparent harmlessness of the inhalation of such concentration of CO_2, as in these experiments a switch from ether about 3.7% to low ether and high CO_2 concentrations regularly resulted in a rise of blood pressure and apparent improvement in the circulation, especially if it had been impaired prior to this switch.

Conclusions. In white rats 60 to 80% of the anesthetic concentration of ether when inhaled with 16 to 40% of the anesthetic concentration of CO_2 can produce an anesthesia equal in depth to that resulting from the inhalation of ether in anesthetic concentration (3.5 to 3.8%).

A study of the effect of CO_2 on anesthesia with ethylene and nitrous oxide is in progress.