

No essential differences in absorption of amino nitrogen from the jejunum were noted between the normal, the ulcer bearing, the pernicious anemia and the resection subjects. The results are summarized by plotting the milligrams of nitrogen per cubic centimeter in samples withdrawn through the tube against the time of withdrawal of the respective specimens.

*Summary.* (1) By means of intestinal intubation in man the absorption rate of hydrolyzed and unhydrolyzed protein from the jejunum has been estimated. (2) Most of the nitrogen of a 4 to 5% solution of casein and gelatin is absorbed 40 to 50 minutes after its introduction directly into the small intestine. (3) The nitrogen of an amino acid mixture (hydrolyzed casein) of similar concentration is fairly completely absorbed 15 to 25 minutes after its administration in the same manner.

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#### Failure to Infect the Great Horned Owl with the Sporozoites of *Plasmodium cathemerium*.

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Several years ago Wolfson<sup>1</sup> reported the intramuscular injection of a great horned owl with about 200 mg of blood from a canary which had a heavy mixed infection of *P. praecox* and *P. cathemerium*. Eight weeks after the injection of the owl a canary was injected intramuscularly with some of its blood and showed parasites in the peripheral blood after a prepatent period of about a week. Ten weeks after the injection of the owl a second canary was injected with some of its blood and showed parasites in the peripheral blood after a prepatent period of about 9 days. The first canary infection was predominantly *P. praecox* and the second predominantly *P. cathemerium*. The owl died at the tenth week and had never shown any organisms in the peripheral blood at any time. We have had the following experience in attempting a similar infection with sporozoites.

On January 30, 1940, two great horned owls (*Bubo virginianus virginianus*) were brought to our laboratory through the kindness

<sup>1</sup> Wolfson, F., *Am. J. Hygiene*, 1937, **26**, 53.

of Dr. Malcolm Rogers of Milwaukee. One of the birds had been badly injured and we therefore made a smear of its peripheral blood at once and also withdrew some blood from the wing vein for injection into the canary, each of 6 canaries receiving intraperitoneally 0.25 cc of blood plus 0.05 cc of citrated saline solution. The owl died on the following day. The smears of its blood, Giemsa stained, were negative for plasmodia but positive for both *Haemoproteus* and *Leukocytozoon*. Five of the 6 canaries were examined on February 4th, 6th, 8th, 10th, 12th, 19th, 22nd, and 28th and did not show infection of any sort at any time; the sixth canary died on February 6th from causes unknown but had not shown any sign of infection up to that time.

The blood of the second of the horned owls contained no organism whatsoever on February 2nd at least so far as could be determined by thorough study of a Giemsa stained smear of its peripheral blood. On February 14th, at which time the blood was still negative, this bird was injected intramuscularly with a sporozoite mixture obtained by triturating the thoraces of 20 mosquitoes fed 10 days previously upon birds in the active stage of infection with *Plasmodium cathemerium*, in 0.4 cc saline solution and afterwards filtering over small glass beads. (The strain of *P. cathemerium* is a highly virulent one obtained from Dr. Clay G. Huff of the University of Chicago in February, 1937, and constantly passaged through *Culex pipiens* since that time; the method of sporozoite injection has yielded almost 100% of infections in our hands.) At the same time 2 clean canaries were also injected intramuscularly with a small amount of this sporozoite mixture.

The subsequent record is as follows. On February 22nd both of the canaries showed a high degree of infection with *P. cathemerium* and were subsequently used to infect clean mosquitoes. The peripheral blood of the owl was examined on February 19th, 23rd, 26th, March 1st, 5th, 9th, 14th, 19th, 25th, 28th, April 3rd, 6th, and 9th, the bird dying from an unknown cause on this day; none of these smears were positive, each being examined carefully for more than an hour. On each of the following days 2 birds were injected intraperitoneally with 0.15 cc of blood from the owl and 0.05 cc of citrated saline solution: February 14th (the day of the sporozoite injection), March 19th, March 27th, and April 3rd (7 weeks after the sporozoite injection); no positive blood smears were ever obtained from any of these birds and all of them have subsequently become infected by sporozoite injection in the routine manner. On the day of the owl's death groups of 2 canaries each were injected with saline triturations of bone marrow, spleen, brain, and liver respectively; none of these

birds became infected, though the spleen and liver injected birds died from shock too soon for the malarial infection to have developed.

*Summary.* We have reported here the failure to infect a great horned owl (*Bubo virginianus virginianus*) with the sporozoites of a strain of *Plasmodium cathemerium* of known infectivity and virulence.

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### Effect of Ascorbic Acid on Guinea Pig Colon.

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Prompted by clinical reports<sup>1-3</sup> that the administration of ascorbic acid occasionally gives rise to intestinal colic and to an increase in intestinal motility, we have observed the effect of this drug on the isolated guinea pig colon.

*Experimental.* The colon was removed, and kept in Locke's solution as modified by Sollmann and Rademaekers<sup>4</sup> except that the NaHCO<sub>3</sub> was 0.1% to 0.2%, depending upon the pH desired (*vide infra*).

The sections were about 2 cm long and were ligated at each end, with the two knots in line in relation to the circumference of the strip. Recordings were made after the so-called Magnus method in a bath of 50 cc, with the temperature constant at 38° C. Before filling the bath the stock Locke's solution was brought to 38° C, and bubbled with a gas mixture consisting of 95% O<sub>2</sub> and 5% CO<sub>2</sub> to the desired pH as determined with the glass electrode pH meter. The bath was then filled and thereafter bubbled at a constant rate with the gas mixture through a capillary tube. The electrodes were placed in the bath and pH readings were made at frequent intervals. This technic ensured thorough oxygenation, mixing, and a constant pH which could be read at any given moment. Washings from the bath were analyzed for potassium content. These showed no increase in potassium, demonstrating the absence of leakage from the calomel electrode.

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<sup>1</sup> Anderson, S., personal communication.

<sup>2</sup> Schade, H. A., *Klin. Wchnschr.*, 1935, **14**, 60.

<sup>3</sup> Widenbauer, F., *Klin. Wchnschr.*, 1936, **15**, 1158.

<sup>4</sup> Sollmann, T., and Rademaekers, A., *Arch. Internat. de Pharmacodyn. et de Therap.*, 1926, **31**, 39.