

Philippine Birds for Boys and Girls: RICHARD C. MCGREGOR and ELIZABETH MARSHALL, Bureau of Printing, Manila.

Just as I finished the last line above, there came to my desk another charming book of nature study written for the children of the Philippines.

Mr. McGregor (by the way, a former student of Jenkins, Branner and myself) has been for years the ornithologist of the Bureau of Science in the islands and is author of a valuable "Manual of Philippine Birds." In this small book he gives simple, intelligible life histories, mostly accompanied by colored plates, of thirty of the most striking birds of the region. Among the most notable is the edible-nest swift (*Collocealia germani*) with its singular habit of locking the female in its nest of glue during incubation. When one nest is taken for "bird's nest soup," it cheerfully builds another, but, when in a hurry, it mixes sticks and moss with the glue. Most powerful of the birds of the islands is the monkey-eating eagle (*Pithecophaga jefferyi*), the chief enemy of the monkeys of the Philippine forests. "Handsome and cruel, it is large and strong and fearless. No other country in all the world has a monkey-eating eagle. It is our eagle. His picture would make a good symbol for a flag or a school banner. It would stand for strength, industry, courage."

For such a purpose it might serve even better than our own bald eagle, "the piratical parasite on the osprey, otherwise known as the emblem of the republic" (Elliott Coues).

DAVID STARR JORDAN

SPECIAL ARTICLES

THE CONTROL AND CURE OF PARATHYROID TETANY IN NORMAL AND PREGNANT ANIMALS

Normal Animals.—In our first communication on this subject¹ we stated that we could keep completely parathyroidectomized "dogs alive indefinitely (at least two months) even when fed daily on a diet consisting chiefly of meat" by means of the intravenous injection of Ringer's solution. We have confirmed and

extended this work as follows:

1. If this treatment is maintained for about forty days no further injections are necessary, especially if

2. The animals are given only a moderate amount of meat and care is taken that

3. The animals do not become constipated.

After *about* forty days the animals can be put on their usual diet containing great quantities of meat without inducing tetany. In one animal we could induce the severest form of tetany on the one hundred and twenty-first day (February 22, 1922) after parathyroidectomy by feeding an excessively large amount of meat mixed with barium sulphate as a constipating agent. In fact, if this animal became constipated spontaneously on its usual meat diet more or less severe parathyroid tetany attacks would occur.

The freedom from all signs of tetany on a normal meat diet after treating parathyroidectomized animals for about forty days might be due

a. To the hypertrophy under treatment of accessory parathyroid tissue;

b. To the compensatory activity of some other organ or organs;

c. To the increased tolerance of the poison or toxins responsible for the tetany.

d. To the return to functional activity of a deranged gastrointestinal tract as part of a general paresis of the sympathetic nervous system. We have some evidence on the latter possibility.

At any rate, it is clear that the cause of the tetany is an exogenous poison or poisons derived chiefly if not entirely from the proteins (more especially the meat) of the food.

Pregnant Animals.—Parathyroid tetany is notoriously severe and fatal in pregnant animals. Eight of Carlson's² fifteen dogs died in "acute tetany within twelve to twenty-four hours after parathyroidectomy." The average duration of life of ten pregnant animals operated on by Werelius³ was 1.98 days.

We used to date three pregnant animals: One early after conception; two just before

² Carlson: *Proc. Soc. Exp. Biol. and Med.*, 1913, Vol. X, pp. 183-184.

³ Werelius: *Surg., Gynec. and Obstetrics*, February, 1913, pp. 141-144.

¹ Luckhardt and Rosenbloom: *Proc. Soc. Exp. Biol. and Med.*, Vol. XIX, No. 3, 1921, p. 129.

term. The first of the series died on the fourteenth day after parathyroidectomy probably from a hemothorax. Three hundred and seventy-five cc of almost pure blood were found in the thoracic cavity of this animal at autopsy.

Of the remaining two pregnant animals one went into labor four days after parathyroidectomy and gave birth to seven young. This animal showed slight tetany symptoms twenty-four hours after operation and again violent tetany at the time of labor. Three days later the consumption of an unusually large meal of meat precipitated a tetanic convulsion involving the diaphragm. Artificial respiration had to be given. The tetany was soon controlled by enemata and intravenous injections of Ringer's solution. The animal was kept throughout the puerperium on a moderate meat and bone diet. Artificial feeding of the young was resorted to in part. The latter contracted distemper, the last two dying from the disease on the twenty-sixth and twenty-eighth days after birth. The mother is alive at the time of writing (ninety-eighth day after parathyroidectomy). She has received no injections since the fifty-first day.

The other pregnant animal went into labor on the day of the parathyroidectomy and within twenty-four hours gave birth to nine young. Her tetany attacks were unusually severe and difficult to control. Several of her young died. Others were given away. *Unaided she raised four of her young to the stage of weaning.* The last intravenous injection was given on the fifty-second day after parathyroidectomy. She is alive at the time of writing and in splendid physical condition (eighty-seven days after operation).

Our chief conclusions are as follows:

1. By means of the intravenous injection of Ringer's solution completely parathyroidectomized animals can not only be kept alive for a prolonged period of time but if this treatment is maintained for *about* forty days they are to all purposes cured of their tetany.

2. On the basis of further work we find that normal Ringer's solution is better than Ca free Ringer's solution in controlling parathyroid tetany.

3. The source of the poison responsible for the tetany is of exogenous origin (particularly

meat of the diet). One can precipitate an almost fatal attack of tetany thirty-three days after parathyroidectomy in two hours by feeding an animal one half pound of meat, especially if the latter is not fresh.

4. In addition to the intravenous injections of Ringer's solution it is important to avoid constipation by feeding bones and giving soap suds enemata.

5. Even pregnant dogs can be kept alive. Instead of dying in tetany within seventy-two hours after parathyroidectomy they can pass through pregnancy, labor, and raise their young. The control and cure of pregnant and lactating bitches is, however, much more difficult than in normal, non-pregnant animals.

6. None of the adult animals which have survived as long as seven months have shown any signs indicative of myxedema although both lobes of the thyroid gland were removed at the time of the parathyroidectomy. They are in excellent physical condition. The administration by mouth of dessicated thyroid gland in three gram doses every other day for more than one month did not have the slightest effect on their general condition and behavior.

7. The young animals born of and raised by parathyroidectomized mothers never showed any symptoms even suggestive of tetany.

ARNO B. LUCKHARDT

PHILIP J. ROSENBLUM

HULL PHYSIOLOGICAL LABORATORY,
THE UNIVERSITY OF CHICAGO

INFLUENCE OF H-ION ON GROWTH OF AZOTOBACTER¹

WHILE studying the influence of the reaction of the soil solution upon the Azotobacter flora of soils,² it seemed desirable to ascertain the influence of the reaction of culture media upon pure cultures of these organisms. Several strains of Azotobacter were isolated from different soils and grown in dextrose media of different hydrogen-ion concentrations. The maximum hydrogen-ion concentration permitting growth was found to be p_H 5.9-6.0 for all

¹ Contribution No. 49, Department of Bacteriology, Kansas Agricultural Experiment Station.

² P. L. Gainey: SCIENCE, N. S. Vol. 48, pp. 139-140.