avoided. A white flocculent precipitate containing the active principle settles out when the extraction liquids are added to the ether. The acid-ether liquid is decanted, fresh acetone is added to the precipitate and the mixture allowed to stand for 45 to 60 minutes. After centrifuging the acetone is decanted and the precipitate placed in the desiccator. After it is dry it may be ground to a fine white powder. The yield is usually about 0.4 gm. or 10% of the original precipitate. In amounts tolerated, the glacial acetic acid insoluble fraction appears to be inactive.

The active extract gives a biuret test for protein. A total of 3 mg. administered to common pigeons weighing from 300 to 325 gm. over a period of 4 days in daily injections will cause the crop glands to increase from an average of 1.5 gm. to between 1.7 and 3.8 gm. (average 2.73 gm.) showing also very distinct evidence of the proliferation of the crop gland.

8216 P

Cytology of Psittacosis Virus in the Sparrow (Zonotrichia).

K. F. MEYER, B. EDDIE, AND L. FOSTER.

From the George Williams Hooper Foundation, University of California, San Francisco.

The great susceptibility of the representatives of the bird family Fringillidae for the psittacosis virus has previously[1] been emphasized. In the course of systematic studies relative to the various birds which might possibly serve as hosts for the virus, a series of white crowned *(Zonotrichia leucophrys gambeli)* and golden crowned sparrows *(Zonotrichia coronata)* were injected intraperitoneally with 0.3 to 0.5 cc. of a 10% organ suspension in broth of a mouse or Java bird—passage virus (mouse M.L.D. 10^{-8}). Many of the injected sparrows, which as a rule died in from 8 to 12 days, revealed at autopsy a diffuse plastic exudate teeming with free and intracellular Levinthal-Cole-Lillie bodies. The exudate covered both the pericardium and abdominal viscera. Victoria blue 4 R. was particularly useful to demonstrate the free elementary bodies. The liver necroses and the splenic tumor so commonly observed in the representatives of the Psittacidae and some of the Java birds in-

[1] Meyer, K. F., and Eddie, B., *Klin. Wchnschr.*, 1934, **13**, 865; *Berl. tierärztl. Wchnschr.*, 1934, **50**, 577; PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 917.

fected with the psittacosis virus were missing. The exudate proved highly infectious and served as a useful antigen for various serologic reactions. Moist and dry fixed impression preparations stained by the Giemsa method and differentiated with acetone or methyl alcohol disclosed the developmental stages of the virus. Bedson and Bland[2] have reported the virus cycles in a rodent (mouse) and Bland and Canti[3] have described the growth phases of the psittacosis infective agent in chick embryonic tissue cultures. But since thus far no detailed records are available concerning the behavior of the virus in birds, it seemed advisable to analyze the cytology of the sparrow infection.

The young birds injected intraperitoneally were sacrificed at different intervals of time following the inoculations. Quantitative virus tests on mice accompanied the cytological studies on stained and unstained impression preparations of the exudate. The correlated findings on 25 different sparrow infections are as follows:

Although a casual examination of the preparations leaves little doubt that the development of the various virus colonies is entirely an intracellular cytoplasmic process, one encounters difficulties in demonstrating the early stages. In the exudate of birds sacrificed on the 5th day, a large number of monocytes are vacuolated and contain light or deep purple staining oval, circular or comma shaped bodies of varying sizes; in some cells these elements are arranged in irregular aggregates which are perhaps the result of coalescence of the purple bodies and thus resemble the "plaques" of Bedson and Bland. They vary in diameter from 2 to 12μ and are frequently located at the margins of the monocytes. A homogeneous matrix surrounded by a membrane or capsule sharply distinguishes these bodies from the cytoplasm of the host cell. In the Giemsa preparations the matrix stained either lightly or deeply and of a greenish or turquoise blue shade retains a few or numerous large intensely colored particles. Some of these cells with large granules resemble the Koch's blue bodies of African East Coast fever. When the peritoneal exudate is profuse and the infection of the mesothelial cells is heavy, the cytoplasm is quite often inhabited by multiple colonies in continuous stages of development. The membrane encapsulating these colonies may not be very distinct and quite often they fuse irregularly. Within the matrix, the large and small particles retain the dye with variegated degrees of intensity. The final

[2] Bedson and Bland, *Brit. J. Exp. Path.*, 1932, **13**, 461; 1933, **14**, 267; 1934, **15**, 243.

[3] Bland and Canti, *J. Path. and Bact.*, 1935, **38**, 233.

evolution of these colonies to an aggregation of elementary bodies is particularly clearly demonstrable in moist fixed preparations (Schaudinn). Since the monocytes with the virus colonies exhibit changes due to injury, it is reasonable to understand that the disintegration or rupture liberates the elementary bodies which may appear as clusters or clumps or as free particles of relatively uniform size in enormous numbers throughout the exudate. In very resistant cells the colonies of elementary bodies may assume enormous size and fill the entire cytoplasm. Finally it is noteworthy that both free elementary bodies and their progenitors—the cytoplasmic colonies with the large particles—are observed at the time of death in the preparations made from the peritoneal exudate of the infected sparrows.

8217 P

Some Observations Upon Blood Glucose in Epilepsy.

VICTOR G. HAURY AND ARTHUR D. HIRSCHFELDER.*

From the Department of Pharmacology, University of Minnesota.

Pigott[1] has recently reported low blood sugar in epileptic convulsions and regards hypoglycemia as a possible etiological factor. In our series of 25 cases in which 3 or more determinations have been made in each case we do not confirm this view. The blood glucose was determined by the method of Gibson.[2] Determinations were made before, during and after seizures and in each case the blood glucose was within normal limits (90 to 110 mg. per 100 cc. blood) before convulsions, and rose during the convulsions. The rise of blood sugar was roughly proportional to the severity of the seizure, and after termination of the convulsion the blood sugar returned to normal in two to four hours.

In 4 cases of *status epilepticus* the blood sugar value before seizure

* Supported by a research grant from the Eli Lilly Co.

This investigation was conducted at the Minnesota Colony for Epileptics, whose clinical material and laboratory facilities were placed at our disposal by the Minnesota State Board of Control. To them, to Dr. D. E. McBroom, Superintendent of the Minnesota Colony for Epileptics, and to Dr. R. W. Brown we desire to express our thanks for their valuable cooperation.

1 Pigott, A. W., Read before the Amer. Psychiatric Assoc., Washington, May 14, 1935.

2 Gibson, R. B., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 480.