mal Leghorn females. The effect on the comb is, therefore, apparently different from the effect of injecting Hebin which induces the development of a comb similar to that of the male.[8] It is also of interest to note that while No. 1 had the pale earlobe characteristic of birds of this age and breed, No. 2 had the large, enamel white earlobe characteristic of mature Leghorn females.

The results of these experiments show that pregnant mare's serum induces precocious sexual development up to a certain point. There is a marked increase in the size of the testes and a smaller, but definite increase in the size of the ovary. While the evidence is not complete there is some indication that neither spermatogenesis nor ovulation can be induced in immature birds by the injection of pregnant mare's serum. The oviduct in the female is much enlarged and the head furnishings approximate those of mature birds but are typical of the sex of the birds, whether male or female.

7990 P

Effects of Tartar Emetic on the Leukocyte Count.

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When tartar emetic is inoculated into rabbits it produces a leukopenia, without secondary leukocytosis, and without affecting the erythrocyte count.[1, 2] Because of this property it was considered advisable to study the possible action of this drug on various types of leukocytoses occurring in man. For this purpose a freshly prepared 1% solution of potassium antimonyl tartrate in sterile distilled water was administered intravenously, in progressively graded doses of 2, 3 and 5 cc. on alternate days.

Antimony is irritating when inoculated directly into tissue. When given intravenously, care must be exercised not to allow any of it to seep out of the veins. In certain cases it was noted that the patients complained of slight nausea during the inoculation; others experienced a sensation of warmth associated with blushing, particularly of the face.

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[8] Domm, L. V., *Anat. Rec.*, 1934, **60**, supplement p. 50.

[1] Lucia, S. P., and Brown, J. W., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 426.

[2] Lucia, S. P., and Brown, J. W., *J. Pharm. and Exp. Therap.*, 1934, **52**, 418.

Case I. Mr. R., aet 36. Chronic lymphatic leukemia. W.B.C. 300,000 per cu. mm. Five inoculations of 2, 3, 3, 5 and 5 cc. respectively were given over a period of 13 days. The leukocyte count after the course of treatment dropped to 75,000 per cu. mm. Lymphadenopathy and splenomegaly were not affected.

Case II. Mrs. T., aet 70. Hodgkin's disease. W.B.C. 25,950 per cu. mm. Three inoculations of 3 cc. were given on successive days. The leukocyte count following treatment was 15,950 per cu. mm. Shortly after each inoculation there was an abrupt drop in the cell count, followed by a gradual rise.

Case III. Mrs. C., aet 40. Eosinophilic leukocytosis. W.B.C. 34,650 per cu. mm., with 71% eosinophiles. Four inoculations of 3, 5, 5 and 5 cc. respectively were given over a period of 8 days. The leukocyte count following therapy was 10,800 per cu. mm., with 22% eosinophiles.

Case IV. Mr. C., aet 72. Chronic lymphatic leukemia. W.B.C. 150,000 per cu. mm. Five inoculations of 3, 5, 5, 5 and 5 cc. respectively were given over a period of 10 days. After the fourth inoculation the leukocyte count dropped to 75,000 per cu. mm. Lymphadenopathy and splenomegaly were not affected. At this point the course was complicated by a sterile abscess at the site of inoculation, followed by a local herpes. The leukocyte count rose to 120,000, and after the fifth inoculation antimony treatment was discontinued. Later the administration of Fowler's solution was likewise without effect.

Case V. Miss C., aet 36. Chronic myelogenous leukemia. W.B.C. 137,000 per cu. mm. Six inoculations of 3, 3, 5, 5, 5 and 5 cc. respectively were given over a period of 19 days. The leukocyte count following the course of therapy was 4,500 per cc. The spleen further increased in size and became tender after treatment. This patient died 5 weeks after the last inoculation.

Case VI. Miss A., aet 32. Chronic myelogenous leukemia. W.B.C. 40,000 per cu. mm., with 26% immature forms. Four inoculations of 2, 3, 5 and 5 cc. respectively were given over a period of 9 days. The leukocyte count after the course of therapy was 12,000 per cu. mm., with 7% immature forms.

Case VII. Mrs. M., aet 38. Chronic myelogenous leukemia. W.B.C. 257,000 per cu. mm. Seven inoculations of 3, 5, 5, 5, 5, 5 and 5 cc. respectively were given over a period of 16 days. The leukocyte count following the course of therapy was 202,000 per cu. mm., and the spleen was reduced 7 cm. in length and in breadth.

Case VIII. Mrs. S., aet 52. Advanced monocytic leukemia,

with massive skin infiltrations. This patient had failed to react to Fowler's solution. W.B.C. 96,000 per cu. mm. Five inoculations of 3, 5, 5, 5 and 6 cc. respectively were given over a period of 12 days. The leukocyte count after therapy was 192,000 per cu. mm. The patient died a few days after the last inoculation.

Case IX. Mr. C., aet 46. Chronic myeloid leukemia. W.B.C. 162,000 per cu. mm. Eleven inoculations of 5 cc. each were given over a period of 20 days. The leukocyte count following treatment was 47,000 per cu. mm. During the treatment the spleen decreased in size. The patient was then given Fowler's solution and the leukocyte count gradually increased. After it had reached 346,000 per cu. mm., 5 inoculations of tartar emetic were given and the count dropped to 210,000. This patient died 3 months later.

Conclusion. Following intravenous inoculation of one per cent solution of potassium antimonyl tartrate, the leukocyte count was reduced in 6 of 9 patients who exhibited leukocytoses of abnormal cells.

7991 P

Nature of Formalin Inactivation of Bacteriophage.

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Immunologists and students of the filtrable viruses are familiar with the fact that formalin possesses the unique property of converting toxins to toxoids and viruses to what may be called "virusoids" and of doing this without greatly impairing the antigenicity of these agents. While various physical and chemical agents readily inactivate toxins and viruses, such inactivation is generally associated with complete loss of antibody stimulating powers. The unique property which formalin possesses has interested us for some time. Schultz, Quigley and Bullock,[1] in discussing the antigenicity of formalin inactivated bacteriophage suspensions stated that "it is by no means clear that formalin actually kills or effaces the identity of the virus." We have felt for some time that the preservation of the antigenicity of formalin inactivated toxins, bacteriophage and of

[1] Schultz, E. W., Quigley, J. S., and Bullock, L. T., *J. Immunol.*, 1929, **17**, 245.