Ten cc. of 1% solution of methylene blue were injected into the common carotid artery of 4 dogs under amytal anesthesia. Blood samples from the femoral artery and the superior longitudinal sinus were analyzed for CO_2 and O_2, pH and specific gravity. The respiration and rectal temperature of the dogs were recorded.

The arterial-venous differences of CO_2 and O_2 indicated that the R.Q. of the brain diminished after the injection of methylene blue. At the same time the rectal temperature of the animals rose. This is in agreement with the greater O_2 uptake noted previously.[1] The specific gravity of the blood increased as did the pulmonary ventilation, the latter producing a rise of the pH of the arterial blood. The results of a characteristic experiment are presented in tabular form.

6733

Studies on Bacterium Granulosis in Relation to Trachoma. (III-IV).*

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By repeated instillation of *freshly isolated* cultures of *Bacterium granulosis*, or by a single subconjunctival injection of this organism, granular conjunctivitis was produced in several rhesus monkeys. This confirms the work of Noguchi,[1] Olitsky, Knutti and Tyler,[2] and Thygeson.[3] It was observed, moreover, that by repeated irritation with powdered, dry, sterilized Portland cement (applied by means of a cotton swab), or by previous inoculation with a virulent hemoglobinophilic bacillus *(H. influenzae)*, the monkeys' conjunctivae were at times rendered more vulnerable to infection with *B. granulosis*. Best results were, however, obtained by the subconjunctival injection of freshly excised, macerated, infected monkey tissue (tarsus and conjunctival follicles) containing *B. granulosis*.

* For previous publications in this series, see Weiss, C., *J. Inf. Dis.*, 1930, **47**, 107, and PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 398.

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[1] Noguchi, H., *J. Exp. Med.*, 1928, **48**, Suppl. 2.

[2] Olitsky, P., Knutti, R., and Tyler, R., *J. Exp. Med.*, 1931, **54**, 31; and subsequent papers in the *J. Exp. Med.*

[3] Thygeson, P., *Am. J. Ophth.*, 1932, **15**, 293.

Clinically and histologically, the conjunctival lesions thus induced were similar to those produced by transfer of human tissue; that is, bits of conjunctiva, follicles, or secretions which had been *freshly removed* from patients with active trachoma, including pannus. Lesions produced by the latter method (which consisted of either subconjunctival injection or rubbing the material thoroughly into the conjunctiva with the aid of a cotton swab), were also transmissible in series from one rhesus monkey to another and developed more readily on a conjunctiva which had been repeatedly irritated by means of Portland cement powder.

In several monkeys which showed no gross evidence of follicles after inoculation with Noguchi's bacillus, or with tissue removed from monkeys which had developed lesions in response to infection with material taken directly from human trachomatous cases, it was demonstrated that microscopical evidence‡ of changes indicative of a chronic inflammation, or non-apparent infection,[4] were present. These changes consisted of lymphocytic and plasmo-cellular infiltration, edema of the conjunctiva with mucoid degeneration of the cylindrical cell epithelium, and congestion of the capillaries.

By employing the usual subconjunctival method of injection in rhesus monkeys, no evidence of a filtrable virus was found in tissues removed from monkeys whose conjunctivae had developed lesions in response to inoculation with human trachomatous material, or with virulent cultures of *B. granulosis*. No evidence of inclusion bodies was found upon serial passage of human trachomatous material from brain to brain, or from testis to brain of mice or rabbits. This evidence suggests that *B. granulosis*, and not a filterable virus, is concerned in the production of experimental trachoma in rhesus monkeys.

Clinical and experimental data, which will be published in detail,[5] indicate that spontaneous folliculosis of rhesus monkeys is a disease distinct from that which is produced by the inoculation of virulent cultures of *Bact. granulosis*.

‡ The writer is indebted to Dr. Harvey D. Lamb, Asst. Prof. of Ophthalmic Pathology in this university for these histological reports.

[4] Nicolle, C., *Arch. de l'Inst. Past. de Tunis*, 1925, **14**, 149; and 1928, **17**, 356.

[5] *J. Immunol.*, 1933, in press.