

upon as leading to a lessened coagulability which in analogy with Vitamin K phenomena could be held to be a factor in the hemorrhage described.

Summary. Keeping rats for longer periods of time on low calcium diets accentuates the ulcerative as well as the hyperplastic and

hemorrhagic character of the antrum lesions as against the conditions produced in 4 weeks. It also brings out a generalized tendency to bleeding. No perceptible change, however, is produced with regard to penetration, the lesions remaining superficial.

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Tumor-bearing Chicks Hatched from Eggs Inoculated with Mouse Carcinoma.*

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Taylor, McAfee, and Taylor¹ state that chicks may hatch from eggs inoculated into the yolk with mouse mammary carcinoma.

Using a slightly modified Taylor technic,^{2,3} fertile eggs were inoculated on the 5th day of incubation with minced, or pressed mammary carcinoma of strain A mice. All materials used came from tumors arising originally in this strain and having a variable number of transfers in the strain. Mouse transfers were done using sterile technic.

Tumor-bearing mice were killed with ether and the skin sterilized with iodine. Separate instruments were used for skin dissection and manipulation of the tumor. Pressed tumors were forced through muslin supported by a drilled, brass plate. Minced tumors were cut with very sharp fine scissors without addition of fluid. In both cases Tyrode solution was then added to give a suspension of about the same density as that used by Taylor.

The shell over the air sac was wetted with 70% alcohol and after drying was cut through with a round dental burr, turned by a high

speed electric hand tool, care being used not to cut through the shell membrane. The membrane was wetted with alcohol and allowed to dry. The membrane was then burned through with a hot, tapering probe large enough to fit tightly into the hole in the shell, thus sterilizing the shell against which the needle subsequently touches.

The suspension was inoculated into the yolk using a tuberculin syringe and a No. 20 needle 1¼ inches in length. The amount of suspension injected varied from 0.1 to 0.6 cc.

All procedures were carried out aseptically. The hole in the shell was sealed with a vaseline-paraffin mixture. Eggs were incubated at 38°C.

We have had some early embryo deaths not due to contamination. Whether these are due to mechanical causes or some effect of the inoculum is not clear at this time.

The tumors available to us have not thus far produced as high percentage of "takes" as originally reported by Taylor.²

The ultimate embryo mortality is high. The causes will be considered in a separate report.

The embryos which die are small for their age.

The chicks which hatch do so late. They appear to be less vigorous than control chicks. The general tendency has been toward improvement after hatching. Some have appeared quite normal by the third day.

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¹ Taylor, D. R., McAfee, M., and Taylor, A., *Cancer Research*, 1943, **3**, 542.

² Taylor, A., Thacker, J., and Pennington, D., *Science*, 1942, **96**, 342.

³ Taylor, A., Hungate, R. E., and Taylor, D. R., *Cancer Research*, 1943, **3**, 537.

Nine chicks have hatched and lived; one died emerging from the shell. The living chicks were killed with ether and examined at 28, 48, or 72 hours after hatching.

The yolk sac is normally taken into the abdominal cavity prior to hatching where it occupies a large part of the cavity in the newly hatched chick and lies in intimate contact with the organs. It persists for more than 2 weeks. That part of the sac which enters the cavity last is normally slightly adherent to the body wall at the umbilical area.

The tumor-bearing yolk sac was found in the normal position. It was more than normally adherent to the umbilical area. Most of the tumors were found near the point of

contact with the umbilical area, bulging into the yolk sac. In 2 cases they were scattered generally over the inner surface. In size they varied from less than 1 mm to about 10 mm. Larger masses were lobulated. Adjacent membranes were thickened. The tumors were usually firm, fleshy masses. In one case a cystic tumor was found.

In general appearance the tumors did not differ from those which we have examined in the late stages before hatching.

Of 9 living chicks from inoculated eggs, 7 showed gross tumors and 7 were confirmed on section.

Microscopically a majority of the tumors show alterations which suggest damage by the host.

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The Anti-Spirochetal Activity of Penicillin in Experimental Infections.

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1. *Activity of penicillin in experimental rabbit syphilis.* Mahoney, Arnold, and Harris¹ have reported on the anti-spirochetal activity of penicillin in rabbit syphilis. Definite spirocheticidal activity of penicillin *in vitro* tests has been reported more recently by Dunham and associates,² and by Eagle and Musselman.³

These findings form the experimental basis of the clinical results obtained with penicillin in human syphilis, as recently described by Mahoney and co-workers,¹ and by Bloomfield, Rantz, and Kirby.⁴

The purpose of our investigation was to establish the minimal healing and sterilizing

doses for penicillin in experimental spirochetal infections. The results are presented in this report.

Experimental. The strain of rabbit syphilis used in our investigation was received from the Laboratories of the U. S. Public Health Service in 1940 and has since been transferred at 2-3-month intervals. Rabbits infected intratesticularly 8 weeks before treatment with this strain of *Treponema pallidum* showed orchitis of both testicles besides chancriform lesions containing large numbers of spirochetes. Treatment consisted of intravenous injections of a penicillin sodium salt produced in the Roche chemical research laboratories. Some material not suitable for clinical use was at our disposal. The potency of the different samples as determined in the cup test varied between 100 and 300 units/mg. The drug was administered from 4 to 6 times over a period of 48-72 hours. The first injection was usually given in the evening, the lesions were examined for spirochetes the next morning, and thereafter the injections were repeated in

¹ Mahoney, J. F., Arnold, R. C., and Harris, A., *Am. J. Public Health*, 1943, **33**, 1387.

² Dunham, W. B., Hamre, D. M., McKee, C. M., and Rake, G., *Proc. Soc. Exp. Biol. and Med.*, 1944, **55**, 158; see also *J. Bacteriol.*, 1944, **47**, 22.

³ Eagle, H., and Musselman, A. D., *J. Bacteriol.*, 1944, **47**, 22.

⁴ Bloomfield, A. L., Rantz, L. A., and Kirby, W. M. M., *J. Am. Med. Assn.*, 1944, **124**, 627.