

Series B. A Seitz filtrate of the New Jersey strain derived from guinea pig pad tissue, lethal in a dilution of 10^3 , was used. This has been carried through 12 generations to the present. Titration of the third generation was lethal in a dilution of 10^5 ; of the sixth 10^4 ; of the ninth 10^5 ; and of the twelfth 10^4 .

Series C. A Seitz filtrate of the New Jersey strain derived from guinea pig pad tissue, lethal in a dilution of 10^2 , was used. This has been carried through 15 generations to the present. Titration of the third generation was lethal in a dilution of 10^5 ; of the sixth 10^4 ; of the ninth 10^5 ; of the twelfth 10^5 ; and of the fifteenth 10^6 .

Series D. A Seitz filtrate of the Indiana strain derived from mouse brain tissue, lethal in a dilution of 10^3 , was used. This has been carried through 15 generations to the present. Titration of the third generation was lethal in a dilution of 10^6 ; of the sixth 10^6 ; of the ninth 10^5 ; of the twelfth 10^5 ; and of the fifteenth 10^5 .

Series E. A Seitz filtrate of the Indiana strain derived from guinea pig pad tissue, lethal in a dilution of 10^1 , was used. This was carried through 15 generations. Titration of the third generation was lethal in a dilution of 10^3 ; of the sixth 10^5 ; of the ninth 10^5 ; of the twelfth 10^6 ; and of the fifteenth 10^6 .

The final generation in each passage series gave rise to typical lesions in the pads of guinea pigs.

In conclusion, it appears that the virus of vesicular stomatitis is capable of multiplication *in vitro* by the simple method of cultivation described, and that the white mouse provides a satisfactory means of titration.

The close generic relationship of the virus of vesicular stomatitis to the incitant of foot-and-mouth disease suggests that the virus of foot-and-mouth disease may be cultivated with equal facility.

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Isolation of *Treponema Pallidum* from a Subcutaneous Sarcoid.

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Various hypotheses have been advanced in regard to the etiology of the several types of cutaneous and subcutaneous tumors passing under the name of sarcoids.^{1, 2, 3, 4} Upon the basis of histologic

structure it seems most likely that the cutaneous type as described by Boeck,⁵ and the subcutaneous type of Darier and Roussy⁶ belong to the general group of infectious granulomas. Although the common assumption favors their tuberculous origin, it has been only rarely that acid-fast bacilli have been demonstrated directly in stained tissue sections,^{7, 8} and animal inoculations, as a rule, have yielded only negative results.^{9, 10} Recently, however, acid-fast bacilli have been found in the tracheo-bronchial lymph nodes of guinea pigs, inoculated with tissue from sarcoid, in which no gross lesions of the viscera of the animals were detected.¹¹

Sarcoids are also known to occur infrequently in patients with frank syphilitic infection. In such cases the histologic appearance of the tumors is like that usually considered typical of sarcoid. No reference to the isolation of any bacterial organism from any of the syphilitic cases has been found although Stillians¹² searched for acid-fast bacilli and *Treponema pallidum* in stained tissue preparations from the patient he observed. The fact that sarcoids in patients with syphilis respond promptly and disappear under anti-syphilitic therapy has little, if any weight as an argument for their syphilitic nature. Similar lesions in patients presumably free of syphilis respond at times in an equally prompt manner.

Inoculation of animals susceptible to syphilis as well as those to tuberculosis offers a more hopeful method of study than has been heretofore pursued. This method was employed in studying a case of sarcoid in a syphilitic patient seen in the Peiping Union Medical College. *Treponema pallidum* was isolated from a rabbit inoculated with the sarcoid tissue, but no acid-fast bacilli were demonstrated in the tissues examined from 2 guinea pigs inoculated with the same material.

The patient was a Chinese man 42 years of age. For one year

¹ Pautrier, L. M., *Ann. de dermat. et syph.*, 1914, **5**, 344.

² Kuznitzky, E., and Bittorf, A., *München. med. Wochenschr.*, 1915, **62**, 1349.

³ Schaumann, J., *Acta derm-venereol.*, 1921, **2**, 409.

⁴ Motta, J., *Ann. de dermat. et syph.*, 1931, **2**, 1180.

⁵ Boeck, C., *J. Cutan. Dis.*, 1899, **17**, 543.

⁶ Darier, J., and Roussy, J., *Ann. de dermat. et syph.*, 1904, **5**, 144.

⁷ Kyrie, J., *Arch. f. Dermat. u. Syph.*, 1921, **131**, 33.

⁸ Dittrich, O., *Dermat. Z.*, 1931, **60**, 395.

⁹ Volk, R., *Wien. klin. Wochenschr.*, 1913, **26**, 1425.

¹⁰ Goeckerman, W. H., *Arch. Dermat. and Syph.*, 1928, **18**, 237.

¹¹ Ravaud, P., Valtis, J., and Nelis, P., *Compt. rend. Soc. de biol.*, 1929, **101**, 444.

¹² Stillians, A. W., *J. Am. Med. Assn.*, 1921, **77**, 1615.

there had been a slowly growing, painless tumor of the subcutaneous tissues of the forehead, about 2x4 cm. in size, slightly elevated above the skin and firmly indurated. Under the impression that the tumor was a fibrosarcoma, it was excised. A histological diagnosis of tuberculosis of muscular tissue was made. After a period of 2 years the patient was seen again with a recurrence of the tumor in and around the old scar, and also with a similar tumor of the right temporal region, which had been present for 8 months. This was indurated, about 3.5x4 cm. in size, and composed of 3 confluent plaque-like nodules apparently involving the deeper part of the skin, the subcutaneous tissues and muscle. The lungs were essentially normal on roentgenological examination. The tuberculin test was positive. The patient gave a history of venereal exposure and a genital chancre 8 years before admission; the blood Wassermann and Kahn reactions were positive. Part of the lesion of the right temporal region was excised for histological study and animal inoculation. Microscopically, the epidermis and upper corium were about normal. There was an increase in fibrous tissue in the deeper part of the corium, and the hypoderm had a lobulated appearance due to the presence of well-defined groups of epitheloid cells separated by rather dense fibrous tissue septa. At the periphery of the nests of epitheloid cells was a zone of round cell infiltration and fibroblasts. An occasional giant cell was found in these cellular areas. No acid-fast bacilli or spirochetes were seen in the stained tissue sections.

Under continuous treatment with neoarsphenamin and a bismuth salt there was complete involution of the remaining lesions. At the end of a 3-year period during which there had been no recurrence of the tumors, the serological tests for syphilis were negative.

A part of the sarcoid removed from the temporal region was finely emulsified in sterile normal salt solution. This suspension was used for inoculation; 0.5 cc. was injected into the left testis of 2 normal rabbits, and an equal quantity was injected into the peritoneal cavity of 2 normal guinea pigs. One rabbit developed an orchitis 51 days after inoculation, and the blood Wassermann and Kahn reactions became positive. *Treponema pallidum* was demonstrated in the material aspirated from the testicular lesion. No metastatic lesions were observed during the 4 months the animal was under observation. Spirochetes were not seen in the material aspirated from the testis of the second rabbit which developed an orchitis 16 days after inoculation. On 2 occasions during the period of orchitis the blood Wassermann and Kahn tests were negative.

During the 4 months the rabbit was observed no metastatic lesions were detected.

The 2 guinea pigs remained vigorous and healthy for 4½ months after inoculation. At the end of this time there was no evidence of disease in the viscera or serous membranes of the 2 animals. No acid-fast organisms were seen in stained tissue preparations from the lungs, spleen, liver and inguinal lymph node in one animal, and from the spleen in the other.

This single observation supports the opinion that sarcoids in syphilitic patients are syphilitic in origin. Although a blood-stream infection was not eliminated as a possible source of the organisms recovered from the animal developing syphilis, its occurrence in an infection of 8 years standing is unlikely. It seems reasonable to assume that although the tumors described by Boeck and by Darier and Roussy belong to a more or less distinct clinical group, they do not represent a common etiologic entity.

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Exophthalmos in Thyroidectomized Guinea Pigs by Thyrotropic Substance of Anterior Pituitary, and the Mechanism Involved.

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We pointed out¹ that chronic, progressive, bilateral exophthalmos, produced in immature (2-3 months old) rabbits, maintained on a diet of alfalfa hay and oats, by the daily intramuscular injection of 0.05-0.1 cc. methyl cyanide, occurs in association with thyroid insufficiency (that is, (a) marked hyperplasia of the thyroid or (b) thyroidectomy). It is obvious, therefore, that exophthalmos is not dependent upon either a normal or abnormal thyroid secretion. Neither do the medulla and cortex of the suprarenal gland have any specific or initial relation to exophthalmos.

To obtain further information on the nature of exophthalmos we have produced it in young normal and thyroidectomized guinea pigs by using acetic acid extracts of anterior pituitary powder (Ar-

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¹ Marine, D., Rosen, S. H., and Cipra, A., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 649.