intraperitoneal route to be a more sensitive test than injection by the intracerebral route for the recognition of protective antibody in the serum-virus mixture. This "selective protection" is another possible explanation for the difference in the resistance shown by both actively and passively immunized young mice to virus inoculated intraperitoneally as compared to that inoculated intracerebrally.

Conclusions. Placental transmission of specific immunity to the virus of St. Louis encephalitis has been demonstrated. Mice between 7 and 9 days of age and 13 to 14 days of age born of mothers immunized by the subcutaneous inoculation of active virus show no increased resistance to the virus of St. Louis encephalitis inoculated intracerebrally but are more resistant than control mice of the same age to virus inoculated intraperitoneally.

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Action of Certain Drugs on the Sea-Star, *Asterias forbesii.*

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Moore[1,2,3] has shown that strychnine causes reversal of reciprocal inhibition in the sea-star resulting in dorsiflexion of the rays. My own observations bear out his contentions, although it should be stated that lateral flexure of the rays occurs as well as dorsiflexure. The tube feet are rendered useless by immersion of the sea-star in sea water containing 1:10,000 parts of strychnine sulfate and when placed dorsal side down strychninized sea-stars are unable to right themselves due to the loss of reciprocal inhibition as well as loss of adhesion of the distal cups of the tube feet. The animals suffer no permanent effects of the strychnine even after remaining immersed for as long as 36 hr in .01% strychnine sulfate solution for they will recover normality when placed in running sea water for a few hours. Sea-stars placed in weak solutions of atropine sulfate (.01%) promptly show signs of irritability. The tube feet become greatly extended and the rays become curled in all directions though chiefly dorsally. If one observes sea-stars under the influence of atropine one soon realizes that no particular posture is characteristic of this drug. Recovery is complete after the animals are returned to fresh sea water.

Caffeine produces two types of effects, (1) an early period of excitement with extension of the tube feet and (2) a later effect of paresis of the tube feet musculature in which state the feet are slowly retracted and remain entirely motionless in rigor. Recovery is complete in animals previously immersed in solutions of caffeine when washed with running salt water. If however, sea-stars paralyzed in rigor with caffeine are placed in a solution of .02% picrotoxin the rigor is promptly abolished with the tube feet becoming extended and very active. Thus picrotoxin abolishes (reverses) caffeine rigor.

Sea-stars placed in a .02% solution of picrotoxin show prompt extension of the tube feet with intense waving motion. No dorsiflexion results but locomotion is greatly accelerated, becoming many times faster than normal. When inverted the animal promptly rights itself indicating that nervous coordination has not been diminished. Recovery from picrotoxin is complete if the animals are placed in running sea water. If picrotoxinized sea-stars are placed in a solution of .02% caffeine the motion of the tube feet

[1] Moore, A. R., *J. Pharmacol. Exp. Ther.*, 1916, **9**, 167.

[2] Moore, A. R., *J. Gen. Physiol.*, 1918, **1**, 97.

[3] Moore, A. R., *J. Gen. Physiol.*, 1920, **2**, 201.

disappears and the typical caffeine rigor results. Thus caffeine and picrotoxin are mutually antagonistic in the sea-star, either drug being capable of reversing the effect of the other. When one considers that both of these drugs act primarily on the anterior portion of the central neuraxis of vertebrates even as low as the amphibians their mutual antagonism in the sea-star is the more mysterious.

Moore[1] has stated that injection of 1% caffeine solution into starfish is without effect. Had he placed the animals in a solution of caffeine no doubt he would have observed the characteristic early excitement followed by rigor. He also found[3] that starfishes placed in nicotine (1:50,000) underwent a strong ventral flexure until the animals became compact masses. If then they were transferred to a strychnine solution he observed that the effect of nicotine was reversed resulting in dorsal flexure. However, if the procedure were reversed, *i.e.*, strychnine followed by nicotine, no ventral flexure occurred which he explained by a difference in the chemical constitution of the two sets of nervous elements supplying the antagonistic muscles. Since the nervous system of the sea-star lacks the typical synaptic junctions and in view of modern concepts of action of neurotaxic drugs the effects of the above drugs must be due to direct influence on the neuraxons, the receptor substance, or the effector end organs themselves. Thus it appears probable that the physiological properties of the nerves or their end organs are more responsible than their morphological architecture for the loss of reciprocal inhibition in the sea-star, *Asterias*.

Conclusions. 1. Atropine causes excitement in the sea-star resulting in protraction of the tube feet and flexure of the rays. 2. Caffeine produces two types of effects, an early excitement followed by muscular rigor. 3. Picrotoxin causes acceleration of locomotion accompanied by active waving of the tube feet. 4. Caffeine and picrotoxin are mutually antagonistic in the sea-star, either drug being capable of reversing the effects of the other. 5. The effects of atropine, caffeine, strychnine, and picrotoxin are reversible in the sea-star because the animals will readily return to a normal state when placed in running sea water, showing no apparent muscular damage resulting.

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A Comparison of the Incubation Period of Poliomyelitis in Mice of Different Strains.*

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A remarkable variation has been reported in the incubation time of the disease produced in white mice by the Lansing strain of the virus of poliomyelitis. According to Armstrong,[1] symptoms are usually apparent from 2 to 10 days following inoculation of the virus but intervals from 24 hr to 93 days have been observed. Harford and Bronfenbrenner[2] observed incubation periods ranging from 2 to 59 days in young Swiss mice all of exactly the same age. In our experience a similar wide variation in incubation time has occurred in a stock of Swiss mice obtained from one dealer. In addition, the susceptibility of these mice to the virus has not been entirely uniform. Hammon

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1 Armstrong, C., *Am. J. Pub. Health*, 1941, **31**, 228.

2 Harford, C. G., and Bronfenbrenner, J., PROC. SOC. EXP. BIOL. AND MED., 1941, **47**, 211.