ingly, upon the basis of carbohydrate fermentation all cultures were considered typical of *B. diphtheriae.*

Virulence was determined by intracutaneous inoculation of guinea pigs. Electrophoretic mobilities were determined by the use of a Falk micro-electrophoresis apparatus and velocities of migration calculated as micra per second per volt.

The data indicate that virulence or lack of virulence of these organisms for the guinea pig is not correlated with the observed velocity of electrophoretic migration, since 27 virulent cultures exhibited widely divergent mobility rates. P. D. varying from 0.260 to 0.750 and similarly in 7 avirulent cultures P. D. varied from 0.340 to 0.737 $\mu$/sec./volt.

From several virulent cultures, aberrant avirulent types were developed through forced dissociation and in these latter lack of virulence was not correlated with any significant change in the rate of electrophoretic migration.

Agglutinability of cultures with high and with low P. D. in the presence of salts, such as calcium chloride and copper acetate, was determined. In general, cultures having low P. D. as indicated by low velocity of electrophoretic migration, were agglutinated by a lesser concentration of electrolyte than were the cultures having higher P. D. values. However, as noted in the electrophoresis observations agglutinability in salt solution did not bear significant relationship to the virulence of the culture

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### Further Experiments on Artificial Immunity to a Larval Cestode.*

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Certain aspects of the general problem of the immunity of the albino rat to *Cysticercus fasciolaris,* begun in 1929,[1] have been investigated. In one set of experiments rats were given series of immunizing injections of: (a) a 1% suspension of powdered worm material *(Taenia taeniaeformis,* the adult stage of *C. fasciolaris)* in

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[1] Miller, H. M., Jr., PROC. SOC. EXP. BIOL. AND MED., 1930, **27**, 926; *ibid.*, 1931, **28**, 467.

physiological saline solution; (b) an 0.84% suspension of powdered worms which had been subjected to prolonged extraction with ether in a Soxhlet or Pickel extraction apparatus; (c) a 1% suspension of finely ground worms which had been quickly frozen while alive with carbon dioxide snow and stored in evacuated glass ampoules for 3 months at —10°C.; (d) a 1% suspension of powdered worm material of *Taenia pisiformis,* a closely related species from the intestine of the dog. All rats, with litter mate controls, were fed with equal portions of a uniform suspension of onchospheres. At autopsy 35 days later normal sized cysts (4-5 mm. diameter) were present in the livers of control animals; while development of the larvae had been completely, or almost completely inhibited in the rats of groups a, b, and c. In these the larvae were represented for the most part by minute spots. In the livers of those animals injected with powdered *T. pisiformis* material (group d) the cysts developed as well as in the control rats, so that it has been demonstrated that no non-specific immunity developed from the injection of this closely-related worm material.

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## Effect of Theelin upon the Developing Ovary of the Rat.

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This report is the first of a series based upon the studies of the effect of theelin, a female sex hormone isolated by one of us from the urine of pregnant human females, upon the genital tract of the female white rat. This report is confined to the histological study of the effect of subcutaneous injections of solutions of this substance upon the ovaries of immature female rats.

A group of 14 controls, usually taken from the same litters as the experimental animals, was killed at different age periods to establish normal developmental changes. One group of 11 animals was injected daily with 3 rat units of theelin for varying periods of time, beginning all animals on the twenty-first day and killing each animal on the last day of theelin administration. A second group of 9 animals was given a single massive dose of 20 rat units on the first day of the experiment, the twenty-first day of life, and then were allowed to recover for varying periods of time.