moister surface but there was no evidence of lysis. When transferred to new media the "Ra" colonies grew freely and continued to manifest the same type of colony structure and virulence for the guinea pig.

The same phenomena have been observed with several other "Ra" cultures that were obtained from biopsy and autopsy materials and from sputa. These results will be reported in a later and more detailed publication together with complete data regarding virulence, hypersensitivity and bacillary morphology.

The above observations on the tubercle bacillus parallel those of d'Herelle and Bordet on other bacteria. They demonstrated that the sensitive or "S" type gives rise to a resistive or "R" type which is refractory to the lytic principle.

8331 P

Motility and Fertilizing Capacities of Fowl Sperm in the Excretory Ducts.

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Young[1] showed clearly that spermatozoa of mammals require and undergo a "ripening" process after formation, while being transported through the seminiferous tubules and epididymis during which they acquire not only the power of movement but also the ability to fertilize eggs of their own species.

Certain fundamental differences exist between the anatomy and biology of the avian and mammalian testis which make pertinent the question of just how analogous are the processes underlying sperm physiology in the two classes.

Spermatozoa removed from the testes, epididymides and vas deferens of 30 males of the domestic fowl have been examined for motility when suspended in either Ringer's solution or the diluent recommended by Baker.[2] Using the motility classifications of Moore[3] the activity of sperm from the testis, epididymis and vas deferens was found to be x, xx or xxx and xxxx respectively. There was

1 Young, W. C., *Brit. J. Exp. Biol.*, 1931, **8**, 151.

2 Baker, J. R., *Quart. J. Exp. Phys.*, 1931, **21**, 139.

3 Moore, C. R., *J. Exp. Zool.*, 1928, **50**, 455.

practically no overlapping in motility between the 3 levels. Thus, in general, the attainment of the capacity for movement by the formed spermatozoa in the fowl parallels that demonstrated for mammals; capacity for movement is minimal or only indicated in the testis, increases somewhat in the small epididymis and reaches maximal only in the vas deferens.

When tested by artificial insemination using infertile females a differential fertilizing ability was demonstrated; the fertilizing ability being directly correlated with the power of movement. The data are summarized in Table I.

TABLE I.
Fertilizing Ability of Sperm from Different Levels of Male Tract.

	Hens					Eggs				
Location	No. of Hens	No. fertile	No. giving Chicks	% fertile	% fertile giving Chicks	No. of Eggs	No. fertile	No. hatch	% fertile	% hatch
				Data Secured in 1935.						
Testes	45	2	0	4.4	0	256	2	0	0.78	0
Epididymis	18	2	1	11.1	50.0	112	4	1	3.57	25.0
Vas	45	35	29	77.8	82.9	254	158	111	62.20	70.25
				Data Secured in 1934.						
Testes	14	0	*	0	*	57	0	*	0	*
Epididymis	11	0		0		46	0		0	
Vas	16	7		43.8		60	15		25.0	

*None of the eggs were incubated beyond 7 days in 1934 and hence no data on hatchability.

Spermatozoa were secured from the respective portions of the reproductive tract immediately after the males were killed, diluted with equal parts of Ringer's or Baker's solutions and introduced directly into the oviduct of the females. The distal end of the oviduct was exposed through the anus by pressure applied simultaneously with the open hand to the posterior and lateral abdominal walls. A glass tube with attached rubber bulb and containing ½ cc. of the sperm suspension was inserted a distance of 1½ to 2 inches into the oviduct. The abdominal pressure was then released, the female retracting the protruded oviduct and at the same time drawing the sperm into the reproductive tract with convulsive movements of the anus which probably involve the distal oviduct.

These results indicate that the sperm of the domestic fowl similar to that of the mammals undergo a process of maturation after formation during which the power of movement and of fertility is attained. Unlike the mammal, however, the sperm do not completely "ripen" in the epididymis, the process being continued during their passage through the vas. This might be expected in view of

the comparative anatomy of the reproductive tract; the epididymis of the fowl being an extremely small organ through which the sperm must pass quickly to the long coiled vas in which they spend the greater part of their time subsequent to morphological maturity and before ejaculation.

8332 C

Relationship of Precipitin Titers to Gonadotropic Inhibitory Action of Monkey Sera.

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Selye and Collip and their coworkers,[1-4] Twambly and Ferguson,[5] and Meyer and Gustus[6] have demonstrated that the sera of animals injected with gonadotropic hormone contain a substance or substances capable of inhibiting the action of the hormone in test animals. The conditions under which the gonadotropic-inhibitory substance appears in the blood of animals suggest that the mechanism of formation is similar to that involved in the production of antibodies. We have undertaken experiments to ascertain whether or not there is any correlation between the precipitin titer of the serum of monkeys repeatedly injected with the gonadotropic hormone prepared from the serum of pregnant mares and the presence of gonadotropic antagonistic substance.

For this purpose a highly purified preparation of pregnant mare's serum hormone, made by the method of Evans, Gustus and Simpson,[7] was available. Solutions containing 5 r.u.* per cc. of this

1 Selye, H., Collip, J. B., and Thomson, D. L., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 487.

2 Selye, H., Collip, J. B., and Thomson, D. L., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 566.

3 Selye, H., Bachman, C., Thomson, D. L., and Collip, J. B., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1113

4 Collip, J. B., *J. Mount Sinai Hosp.*, 1934, **32**, 28.

5 Twambly, G. H., and Ferguson, R. S., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 69.

6 Meyer, R. K., and Gustus, E. L., *Science*, 1935, **81**, 208.

7 Evans, H. M., Gustus, E. L., and Simpson, M. E., *J. Exp. Med.*, 1933, **58**, 569.

*A rat unit is that amount of hormone which when injected once daily for three consecutive days produces within 96 hours of the first injection a 5-fold increase in the weight of the ovaries of 21-23-day-old rats.