that a blood serum showing a positive direct Van den Bergh reaction will have a much higher viscosity than one showing only a positive indirect. Such we found to be the case.

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Relationship Between Vitamin C and Oestrus in the Guinea Pig and the Fertilizing Power of Sperm.*

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Papanicolaou and Stockard[1] have shown that dioestrus is prolonged when guinea pigs are underfed. The effect of vitamin C deprivation was studied by their method in the following way.

After their oestrus rhythm had been observed on a complete natural food diet, 3 guinea pigs were transferred to the Sherman scorbutic diet with a daily protective dose (3 cc.) of orange juice. The regular occurrence of oestrus was soon resumed and maintained for about 150 days, during which the orange juice was fed successively at the levels of 3 cc. ½ cc., and ¼ cc. daily for about 50 days on each level. Two of the pigs manifested oestrus after the level of orange juice had been reduced to ⅛ cc., just before the rapid decline in growth, due to scurvy, set in. Two of the pigs were autopsied within 20 days of the last cycle and showed large follicles as well as the marked symptoms of scurvy. The third pig was cured by the administration of 3 cc. of orange juice daily, and the ovulation rhythm was reestablished within 10 days of the rise in the growth curve.

Daily weighings indicated that during oestrus, the guinea pig lost from 30 to 40 gm. in weight and regained it shortly thereafter. There was no corresponding decrease in food consumption, such as Slonaker[2] has observed in the rat.

Lindsay and Medes[3] found that guinea pigs with mild chronic scurvy did not reproduce, and they described extensive histological

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[1] Papanicolaou, G. N., and Stockard, C. R., PROC. SOC. EXP. BIOL. AND MED., 1919, xvii, 143.

[2] Slonaker, J. R., *Am. J. Phys.*, 1924-1925, lxxi, 362.

[3] Lindsay, B., and Medes, G., *Am. J. Anat.*, 1926, xxxvii, 213.

changes in the testes. In the present experiments, however, motile sperm were found in the epididymis of males dying from scurvy. In order to acquire physiological proof of fertility, functional tests were initiated in which 6 adult males were gradually deprived of vitamin C and mated at intervals with normal females in oestrus. Only one attempted mating of 43 produced a litter and that one occurred while the male was receiving 3 cc. of orange juice a day. Artificial insemination was therefore resorted to. When sperm from a male, dying of prolonged scurvy, was injected into the uterine horns of a female in oestrus, a litter of normal young, which are now 6 months of age, was born.

Deprivation of vitamin C does not disturb the oestrus rhythm of the guinea pig until the animal begins losing in weight, nor does it interfere with the fertilizing power of sperm.

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Immunologically Symmetrical Proteolysis.

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If 0.1 cc. horse serum is added to 1.9 cc. canine leucocytic extract and the mixture is incubated over night, titration of the resulting lytic products by means of ice-chest ripened rabbit precipitin gives precipitin graphs[1] suggesting a 400% to 800% test-tube multiplication of horse proteins, without appreciable horse protein denaturization.

The simplest explanation of this apparent increase is to assume that under the influence of leucocytic proteolysin each horse protein molecule is hydrolysed into from 4 to 8 daughter protein molecules, each daughter molecule being of approximate horse protein specificity.

[1] For technic and typical graphs see PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 14.