permit a uniform routine for all types of tissues; they produce homogenous materials that insure adequate sampling, and they enable numbers of tissues to be taken from the same experimental animal and handled satisfactorily.

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Received October 15, 1956. P.S.E.B.M., 1956, v93.

The Breeding System in *Stylonychia putrina*. (22829)

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Mating types have been reported in *Paramecium aurelia*(1-4), *P. bursaria*(5-7), *P. caudatum*(9-12), *P. multimicronucleatum*(8, 9), *P. trichium*(13), *P. calkinsi*(14), *Euplotes patella*(15), *Tetrahymena pyriformis*(16-18), *Stylonychia putrina*(19), and *Oxytricha bifaria*(20). In several of these species a number of sexually isolated varieties have been discovered. In some, the number of mating types found in each variety was 2, but in *P. bursaria, P. multimicronucleatum, P. trichium, E. patella, T. pyriformis, S. putrina,* and *O. bifaria* multiple mating types have been found. In one variety of *P. bursaria* there were eight; in *E. patella,* 6; in a variety of *T. pyriformis,* 11; in *S. putrina,* 5; and in *O. bifaria,* 9. The present paper reports another variety and additional mating types in the first variety of *S. putrina* reported in 1952 (19).

Materials and methods. Cultures of the 5 mating types in the first variety reported in 1952 died out in the laboratory. Two clones of progeny from crosses that had been made between clones of some of these 5 mating types were left. In 1952, 1954, and 1955, 155 additional clones of *Stylonychia putrina* were collected in Southern California in 6 different sites, 3 in the mountains and 3 in the valleys. The food was a liquid culture of a species of *Chlamydomonas* to which a loop of *Aerobacter cloacae* was added. The animals were isolated and grown in depression plates and later transferred to vials. The clones were fed every day, often twice a day.

Results. Mating behavior. The mating behavior found was that described previously (19), except that some degree of mating activity was observed in practically all of the 155 clones reported here, while none was observed in more than a third of the 41 clones reported in 1952.

Varieties and mating types. The two clones of progeny mentioned above reacted with some of the clones of a group that is called Variety I in this report. The mating types of Variety I now in existence have not been correlated with those previously reported. In 1954, six mating types were found in this variety. Various crosses were made among clones of these 6 mating types and among the progeny raised were 5 clones belonging to 3 new mating types. Among clones collected in 1955, 6 additional mating types were found, making a total of at least 15 mating types in Variety I. Eleven mating types were found among the Variety II clones, giving a total of 26 mating types for the two varieties.

The situation in *E. patella*(15) differed from that in *Paramecium* in that selfing was common in *Euplotes* and it was shown that some of the pairs found in conjugating mixtures consisted of 2 animals from the same clone. Also, animal-free fluid from a culture of one mating type induced selfing among animals of other mating types. Because of these differences, Sonneborn(3) concluded that the conception of a mating type in *Euplotes* was different from that in *Paramecium*. Selfing was uncommon in the 155 clones reported in this paper, but no method was found to determine the clonal origins of the animals associated in pairs. It is, therefore, not possible to state which of the two concepts of mating type applies to *S. putrina*.

Summary. Two sexually isolated varieties were found among 155 clones of *Stylonychia putrina* collected in Southern California plus 5 clones produced in the laboratory. In Variety I, at least 15 mating types have been found; in Variety II, 11 mating types.

The writer wishes to thank Dr. T. T. Chen for his help and guidance in this work.

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Received October 19, 1956. P.S.E.B.M., 1956, v93.

Influence of Steroids on Carbohydrate Content of Rabbit Kidney: A Chromatographic Study.* (22830)

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Intraglomerular kidney lesions produced in rabbits by the short-term administration of cortisone(1), prednisone and prednisolone are stained by the periodic acid-Schiff (PAS) method, a reaction of carbohydrates possessing free 1,2-glycol and amino alcohol groups (2). In the course of a systematic investigation into the nature of these renal lesions, chromatographic studies were designed to demonstrate the effects of cortisone acetate,† prednisone,‡ and desoxycorticosterone acetate on concentrations of certain carbohydrates extractable from rabbit kidneys. The sugars studied, rhamnose, mannose, fucose, glucose and galactose, are known to stain with PAS (2).

* This work was supported by Public Health Grants and by grant from Canadian Life Insurance Officers' Assn.

† Cortisone acetate was supplied through the courtesy of Mr. H. K. McLaughlin of Upjohn Co. of Canada.

‡ Prednisone was supplied through the courtesy of Mr. J. W. Brisick, Schering Corp. Ltd. of Canada.