oxidized in air, turning black with a granular precipitate. The best means of preventing this was to draw off the blood at once into fine capillary tubes. When not exposed to the air, the blood retained, for several hours, its clear yellow appearance. The blood from the pupa was very much more rapidly oxidized than that from the larva. Tissues cut up in blood and mounted in the same were less satisfactory than those cut in salt solution. Ringer concentrated to 1.8 per cent NaCl, 2 per cent NaCl, and Locke-Lewis all gave good results. Agglutinated clumps of amoeboid cells appeared very early after making the preparation and from these grew out long fibers and cells, resembling macrophages of chick tissues. These long, slender, sometimes branched cells migrated over the whole slide. Their nuclei characteristically are extremely granular—fine, uniform granules which stain like chromatin after fixation. Varying amounts of fat droplets are found in the cytoplasm, as well as neutral red granules and chondriosomes. In blood from the pupa or badly oxidized blood from the larva, these cells become filled with brown granules similar to the precipitate in the medium. They often become so full of these as to have a brown color. Other "fibroblasts" appeared after several days from bits of ovariole, from fat masses and other tissues, growing out as delicate spears and finally detaching themselves from the explant. Many of these cells remained alive and active after sixteen days of cultivation. In fragments of testis, clumps of spermatocytes sometimes became disorganized and the cells of the protective wall of the cyst assumed an amoeboid shape and wandered off, leaving the germ cells. These wandering cells were always richly filled with fat droplets. The spermatocytes left behind had a tendency to spread out in a thin layer against the coverglass.

These observations on the cultivation of Lepidopteran tissues represent very preliminary results and continued experiment in this direction is planned. The fact that the wandering cells, "fibroblasts" or "macrophages," grow successfully indicates an appropriate osmotic concentration and an attempt will be made to produce a more extended growth of other types of cells by varying the medium.

ROLLER TUBE CULTURES OF RAT TUMOR CELLS AND SOME RESULTS

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During the summer an analysis was made on the data previously obtained on the cultivation of the various malignant cells in test-tubes. Pure colonies of such cells were obtained by this method from a number of different rat tumors (Crocker 10 and 92 and Walker 315, 319 and 338). The cells multiply in the test-tubes and form colonies that are characteristic for each tumor. By dividing and transferring colonies from tube to tube their number can be increased indefinitely. The malignant cells from the different tumors which composed the colonies differ from one another and from normal cells.

The malignant cells have been carried on for over a year. They retain their malignancy and produce tumors like the original when inoculated into rats.

The technic, still in the process of development, is relatively simple. The test-tube (16 x 150 mm.) is lined by a thin layer of a blood plasma mixture in which the colonies are planted. After the clot is firm a supernatant fluid of blood serum, embryonic juice and saline is added and the tube sealed. It is then put in a rotating rack, 6 to 10 revolutions per hour, in an incubator. The supernatant nutrient fluid thus washes over the colonies, diluting the waste products and supplying food. The nutrient fluid (about 1 c.c.) is changed every 4 to 5 days and the colonies are cut up and replanted in fresh tubes every one to four weeks. Colonies frequently attain diameters of 10 to 20 mm. and sometimes the cells spread out over most of the inner surface of the tube. One to 30 or more colonies can be carried in one tube.

THE EXCRETION OF INULIN BY THE DOGFISH, *SQUALUS ACANTHIAS*

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A study was made on the simultaneous rates of excretion of inulin, xylose and creatinine in the normal and phlorhizinized dogfish. It was found that in the normal animal the clearance of inulin exceeded that of xylose by a mean of 28 percent, and that this difference is abolished by phlorizin. In the normal fish at low concentrations of creatinine in the plasma its clearance is several times that of inulin, and, when the plasma creatinine is raised, its clearance falls absolutely and approaches the simultaneous clearance of inulin. Under the action of phlorizin the creatinine is lowered, but not to the extent of identity with the inulin clearance.

Because of certain considerations discussed in the paper it is suggested that in the phlorhizinized dogfish the clearances of inulin, xylose and glucose, which are identical with each other, are identical with the rate of glomerular filtration; and that in the normal fish this lies somewhere between the clearances of inulin and of creatinine at high plasma levels.

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COLLECTING AT THE MOUNT DESERT ISLAND BIOLOGICAL LABORATORY DURING THE SUMMER OF 1934

ULRIC DAHLGREN AND CORNELIUS KAYLOR

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The past summer was unusually fine for shore-collecting due to the absence from the island of many of the wharf- and shore-collectors. The most valuable find of the summer was an abundance of male