TABLE 1

SUMMARY OF MAXIMAL OYSTER GROWTH-RATE STUDIES APALACHICOLA BAY, FLORIDA

Experiment	Age, weeks	Date measured	Size, mm	Period in weeks	Increment	Weekly increment
Wire baskets planted May 26, 1949	1	6- 2-49	4.5	1	4.5	4.5
	2	6- 9-49	8.0	1	3.5	3.5
	3	6-16-49	11.7	1	3.7	3.7
	4	6-23-49	21.0	1	9.3	9.3
	5	6-30-49	29.9	1	8.9	8.9
	6	7- 7-49	34.1	1	4.2	4.2
Cultch planted June 6, 1949	11	8-21-49	47.1			
	15	9-18-49	62.4	4	15.3	3.8
	16	9-25-49	68.1	1	5.7	5.7
Gowth-rate trays*	16	7- 8-49	70.0			
	25	9- 9-49	88.0	9	18.0	2.0
	31	10-21-49	104.0	6	16.0	2.7

* Approximate age calculated from previous data.

placing them in trays. All readings were made upon well-rounded individuals. No crowded or elongated oysters were used. A summary of the maximum growth attained by the various age groups is given in Table 1.

It is shown in Table 1 that a length of 1 in. is achieved in Florida in 5 weeks. This is nearly a year's growth in northern waters. Moreover, a length of 4 in. is attained in Florida during 31 weeks of the warm season, whereas an equal growth in northern waters would require approximately 4 years.

During the period of this study, the salinity averaged 26.3 parts per thousand (range: 12.7–33.6). The mean temperature of the water was 28 °C (range: 26–30.5).

A more detailed account of these growth-rate studies will be published elsewhere.

References

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A Micromacerator

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This tissue macerator has proved itself very useful in the rapid reduction of embryonic or other tissues to a fine uniform emulsion prior to the preparation of tissue extracts. The particles so produced are small enough so that, when stained smears of the product are examined under the microscope, very few whole cells or nuclei can be found.

A 10-cc glass syringe is the main item required for the manufacture of this macerator. The cylinder, which is to act as the rotor, is set into a base receptacle cut to form from a No. 8 rubber stopper, as shown in cross section in Fig. 1. A hole 1/10 in. in diameter is drilled into the center of the stopper to a depth of ¾ in., and then enlarged to a depth of ¼ in., so that the base of the cylinder may be snugly fitted into it while the tip projects deeper into the smaller hole. It is preferable to use the smaller end of the stopper for this step. Another ¼-in. hole is drilled into the center on the other side to a depth of ¼ in.

[1] Acknowledgment is given to K. M. Richter, associate professor of histology and embryology, for his assistance and suggestions, and to the Department of Physiology for the use of equipment.

The stator is constructed from the piston portion of the syringe. By means of a glass-cutting saw or grinder, a shallow groove is cut around the outer circumference of the piston at a distance of about 2½ in. from the lower end. At two points in the groove, and located diametrically opposed one another, holes ⅛ in. in diameter are drilled through the wall and into the inner chamber of the hollow piston. Another hole, large enough to permit the entry of a No. 00 rubber stopper, is cut into the head end of the piston.

The receptacle for the head end of the stator is prepared as shown in Fig. 1. A hole is bored through the center of a No. 10 rubber stopper just large enough to hold the wide end of the No. 00 stopper. The hole at the narrow end of the No. 10 stopper is further enlarged to fit over the head end of the stator as illustrated. A piece of glass tubing, 2 in. long, is cemented into a hole bored through the No. 00 stopper.

To operate the instrument, about 2 cc of tissue is placed in the bottom of the cylinder, and the air is expelled by pushing down the plunger while the needle-holding tip is pointing upward. The tip and base are then firmly pushed into the rubber stopper receptacle, thus sealing off the tip. The glass tube is connected to a vacuum system by means of a rubber tube. The lower hole and the rubber base of the rotor are centered on the chuck plate of a medium-speed electric motor, in either vertical or horizontal position. The rubber headpiece of the stator is gripped in the hand and the motor is switched on. A gentle pressure is exerted on the stator

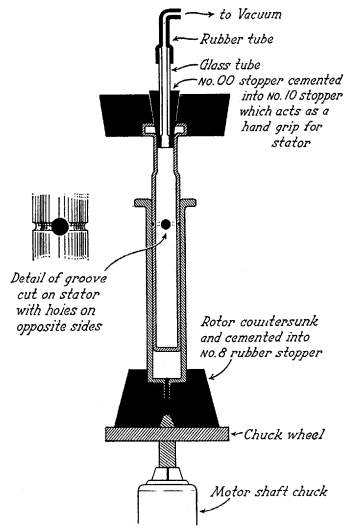

FIG. 1. Micromacerator.

so as to allow a period of about 1 min to elapse for the total displacement of the tissue by the descending piston.

The tissue is thus slowly forced between the two closely opposing ground glass surfaces of the stator and the rapidly rotating rotor. As it creeps up in this limited space, it becomes totally emulsified. When it reaches the groove cut on the surface of the stator, it is drawn through the holes and into the inner chamber by means of the applied vacuum. When all the tissue has been ground, the motor is stopped, the headpiece is removed from the stator, and the ground tissue is emptied into a centrifuge tube for separation or further treatment.

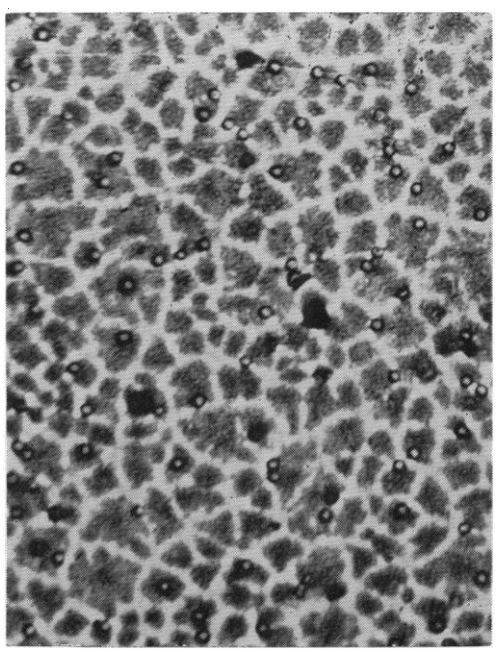

FIG. 2. Smear of macerated spleen stained with Wrights' stain. Suspension of red blood cells superimposed on preparation for comparison. ×315.

The macerator is easily cleaned and sterilized by autoclaving. No perceptible heat is produced by friction during the grinding process, and no instrument has broken during operation. Caution must be exercised to make certain that the base is well centered, and that it will rotate in line with the central axis of the motor shaft so that no eccentric motion occurs. This model may be constructed in any size, depending upon the volume of work that is required of it. For larger models employing this principle, however, it is preferable to machine the grinding surfaces from stainless steel.

Fig. 2 shows a stained smear of spleen tissue ground in this apparatus. The red blood corpuscles were added to the emulsion after grinding to help make a comparison of the size of the particles produced.

Relationship Between Glomerular Filtration Rate and Urine Flow in the Rabbit

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Administration of water to rabbits is followed by a marked increase in glomerular filtration rate (GFR) (*11*, *12*). Dicker and Heller (*7*), and Forster (*10*), have shown that this rise of GFR is accompanied by an increase in effective renal plasma flow (RPF). Such a participation of the glomeruli in the regulation of the urine volume of normal adult animals has so far not been found in any other mammalian species. It cannot be said to be characteristic for either rodents or herbivores, as neither adult rats (*7*) nor adult guinea pigs (*8*) show a correlation between GFR and urine flow. Such a relationship has, however, been found in amphibians (*9*, *13*), young and newborn rats (*5*, *6*), and newborn guinea pigs (*7*). It has also been claimed to occur in newborn infants (*1*, *4*), but see Barnett *et al.* (*2*).

The phenomenon has been interpreted (*14*) as a physiological response of glomerular function to an increased body-water load. However, this interpretation has recently been questioned by Brod and Sirota (*3*), who believe that "the parallel variation in urine flow and filtration rate . . . is attributable to a reduction in renal blood flow occasioned by the experimental procedures." They assume that injections and administration of water preceding clearance estimations in rabbits are stimuli sufficiently noxious to produce a decrease in urine flow, RPF, and GFR, so that the rising GFR values observed are due to recovery from the oliguric phase. Brod and Sirota's interpretation, if substantiated, would be of considerable interest. In our experiments on rabbits, however, the urine-collecting period started 3 hr after the injection of inulin and diodone and 1 hr after the last administration of water. It is difficult to believe that such harmless procedures would give rise to emotional disturbance in rabbits for any prolonged period. But, even on Brod and Sirota's assumption, disturbing effects of experimental procedures should have passed by