its ability to concentrate chlorephenol red within the capillaries. The specific resistance was 100-200 ohm cm<sup>2</sup>, the short circuit current 1-3  $\mu$ amps. Addition of  $10^{-3}$  or  $10^{-4}$  molar ouabain or  $10^{-4}$  molar KCN to both sides caused a steady decrease so that the p.d. was less than 0.5 mv after 30 min. In contrast, the <u>in vivo</u> p.d. between VF and general extracellular space of the fish was 5-15 mv, VF negative. This p.d. was stable even after the fish was decapitated. In 4 experiments the thin neural tissue of the floor of the fourth ventricle was mounted in the Ussing chamber and for the first 15 min the p.d. was 1-2 mv, VF negative. In 3 of these preparations the p.d. reversed with time. These preliminary experiments suggest the possibility that the <u>in vivo</u> p.d. between VF and blood or EDF may, in some circumstances, be the sum of the p.d. across the CP and that generated by neural tissue.

## 1963 #27

EXPERIMENTS CONCERNING THE CLEAVAGE STIMULUS AND FURROW IN INVERTE-BRATE EGGS

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The geometrical relations of the cleavage stimulus in the egg of the sand dollar (Echinorachnius parma) were determined by constricting uncleaved eggs and changing the normally spherical form to that of a modified dumbbell before the position of the furrow was determined.

When the mitotic apparatus of such cells lay with an aster on either side of the constriction, the distance from aster to cell surface was virtually uniform throughout the cell. Since subsequent cleavage of such cells is temporally and morphologically normal, the position of the furrow cannot be determined by absence of stimulus occasioned by a greater distance from aster to presumptive furrow than from aster to polar region. The furrow appeared adjacent to the zone between the asters in all cases. A portion of the surface in intimate contact with an aster could produce a furrow a few minutes after relocation of the mitotic apparatus.

In cleaving eggs of <u>Echinorachnius</u>, <u>Cerebratulus fuscus</u> and <u>Hydractinia echinata</u> paraxially oriented needles were placed in the path of the deepening furrow on diametrically opposed sides of the cell. The furrow progressed until it contacted the needles at which time progress ceased. In no case did a furrow sever itself upon a needle.

## 1963 #28

EFFECT OF CARBACHOL AND THIOCYANATE ON POTENTIAL, RESISTANCE AND  $H^+$  SECRETION OF THE GASTRIC MUCOSA OF THE DOGFISH

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Experiments were performed at room temperature (17 to 24 C) with an <u>in vitro</u> method. The nutrient solution contained in mM: 252 Na<sup>+</sup>, 10 K<sup>+</sup>, 5 Ca<sup>++</sup>, 2 Mg<sup>++</sup>, 240 Cl<sup>-</sup>, 30 HCO<sub>3</sub>, 2 SO<sub>4</sub><sup>-</sup>, 1 P, 10 glucose (secretory solution same cation content but Cl<sup>-</sup> only anion). The H<sup>+</sup> rate was determined by the pH stat method and the electrical resistance as the change in PD per unit of applied current. Carbachol (10<sup>-6</sup> M) to the nutrient usually produced a marked increase in the H<sup>+</sup>