Everted gutsacs were prepared from consecutive intestinal segments of the shorthorn sculpin and Fundulus. The sacs were incubated in small flasks containing modified Ringer's solution with glucose, fructose or mannose as substrates. Calcium 45 Chloride or Ferrous 59 Sulphate were added to the bathing medium in several experiments in addition to the "carrier" calcium or iron. The flasks were equilibrated with 100% oxygen and shaken for 1-4 hours at 18-26° C. Subsequently the sacs were removed, drained and the concentration of calcium or iron was determined in the medium bathing the mucosal and the serosal surfaces. No net transport to the serosal surface or concentration gradients serosal/mucosal could be demonstrated for calcium or iron in these experiments.

Electrolytes of Cerebrospinal Fluid and Aqueous Humor of S. Acanthias: Effect of Carbonic Anhydrase Inhibition

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This is a continuation of work done in the summers of 1957 (Maren and Frederick) and 1958 (Maren and Fischer); the present report is chiefly concerned with Na⁺ and K⁺ concentrations in these fluids. Cerebrospinal (ventricular) Fluid: The finding of a considerable Cl⁻ excess (9%) in C.S.F. over plasma was confirmed; this excess is abolished by carbonic anhydrase (C.A.) inhibition, produced by intravenous acetazolamide (30 mg/kg). Na⁺, however, which is in slight excess (6%) in C.S.F. is not changed by C.A. inhibition. K⁺ also has higher concentration in C.S.F. than in plasma; this is unlike the mammalian relationship. This is probably not changed by C.A. inhibition. C.S.F. has a 5% osmotic excess over plasma. Aqueous Humor: There does not appear to be any substantial Cl⁻ excess in aqueous, or change following C.A. inhibition. Na⁺ however, has a 9% excess over plasma, and this is abolished by C.A. inhibition. There is also K⁺ excess in aqueous, but this is unaffected by C.A. inhibition.

It seems clear from these and our earlier studies that although carbonic anhydrase is involved in the secretion of these two fluids, their electrolyte properties are quite different, and injection of acetazolamide produces different results. A publication containing details of the work done on this project in the summers of 1957-1959 is being prepared.

Electrolytes and Carbonic Anhydrase Content of Marshall's Gland in the Skate

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Thirty years ago H. W. Smith (J. Biol. Chem. 81, p 407, 1929) reported the electrolyte composition of fluid obtained from an appendage of