lymph. The thoracic lymph was in one case of the same, in the other case, of a higher osmotic pressure than the serum. It is therefore probable that the osmotic pressure of the thoracic lymph is usually greater than that of the neck lymph.

8. Under the conditions of our experiments — ether or chloroform anesthesia for from two to four hours — the osmotic pressure of the serum at the end of the experiment was in many cases greater than at the beginning of the experiment. The same difference is sometimes exhibited by the lymph collected from the same lymphatic but at different periods of the experiment. The mechanism of this change is being investigated.

94 (237)

On the dissociation in solutions of the neutral caseinates of sodium and ammonium.

By **T. BRAILSFORD ROBERTSON.**

[*From the Rudolph Spreckels Physiological Laboratory of the University of California.*]

From the dilution law, or from the equations for the equilibrium of an amphoteric electrolyte in the presence of non-amphoteric electrolytes, it can be shown that in the case of a protein in which the acid function considerably exceeds the basic function (as, for example, in the case of casein), an equation can be obtained connecting the observed conductivity of a neutral solution of the protein compound of a base with the dilution of the solution. This equation involves two constants, the one being the dissociation-constant of the protein salt of the base and the other the sum of the specific velocities of the anions and cations present.

If a solution of a hydroxide of an alkali or alkaline earth or ammonia be shaken up with casein until no more casein goes into solution, the solution (as I have previously shown) is, after filtration, neutral in reaction and is a solution of the neutral caseinate of the base, containing an amount of the base equivalent to 2.4 per cent. CaO.

Since these solutions are neutral, if no complex ions are formed, the conductivity will be entirely due to the cations of the base employed and to the casein anions. The sum of the ionic velocities obtained from the above-mentioned equation will therefore be greater than the specific velocity of the cation of the base by the specific velocity of the casein anion. In the case of the neutral caseinate of sodium the sum of the ionic velocities was found to be slightly greater than the velocity of the Na ion, indicating a specific velocity of 2.6×10^{-5} cm. per sec. for the casein anion at 25°. In the case of ammonium caseinate, however, the sum of the ionic velocities was found to be considerably *less* than the specific velocity of the ammonium ion. This can only be interpreted, I think, as indicating the presence in this solution of complex cations containing ammonium. Other considerations show that the effect is not due to viscosity. If casein be regarded as an ampholyte of the type HXOH, the sodium salt would be of the type $Na^+ + XOH^-$; it is possible that the ammonium salt in solution forms ions of the type $NH_4X^+ + OH^-$ or $NH_4X^+ + XOH^-$.

So far as I am aware, this constitutes the first direct experimental indication of the actual existence, in vitro, of the compounds of protein and alkalies and alkaline earths in which the non-protein ion is not dissociable as such, the existence of which, in living tissues, has been pointed out by Loeb.

95 (238)

The Altmann's granules in kidney and liver and their relation to granular and fatty degeneration.

By **WILLIAM OPHÜLS.**

[*From the Pathologic Laboratory of Cooper Medical College, San Francisco, Cal.*]

In the kidneys of dogs, rabbits and guinea pigs we find the following arrangement of the Altmann's granules: In the connecting, the convoluted tubules and in the descending parts of the loops of Henle, the granules are rather coarse, very definitely rodshaped and arranged in radial rows in the basilar two thirds of the cells, often so closely set end to end that it is difficult to make out the dividing lines between them. In the part of the cells directly adjoining the lumen there are few scattered short