Physics. — *The lyotropic series and the spreading of proteins.* By EVERT GORTER, M.D. (Leiden). (Communicated by Prof. J. VAN DER HOEVE).

(Communicated at the meeting of December 16, 1933.)

I have studied the effect of different ions on the spreading of proteins. As I have shown previously [1]) the effect of uni- bi- and trivalent ions has a very different effect, in so far as a much smaller amount of the ions of higher valency is sufficient to produce the same effect.

Now, I have been able to show that on the acid side (at pH 3) of the iso-electric point and using again pure ovalbumin as a protein, the effect of different univalent ions is different according to their place in the lyotropic series. The effect on the spreading of an univalent anion is higher the more to the right it is placed in the series (fig. 1):

Cl^-, Br^-, J^-, CNS^-.

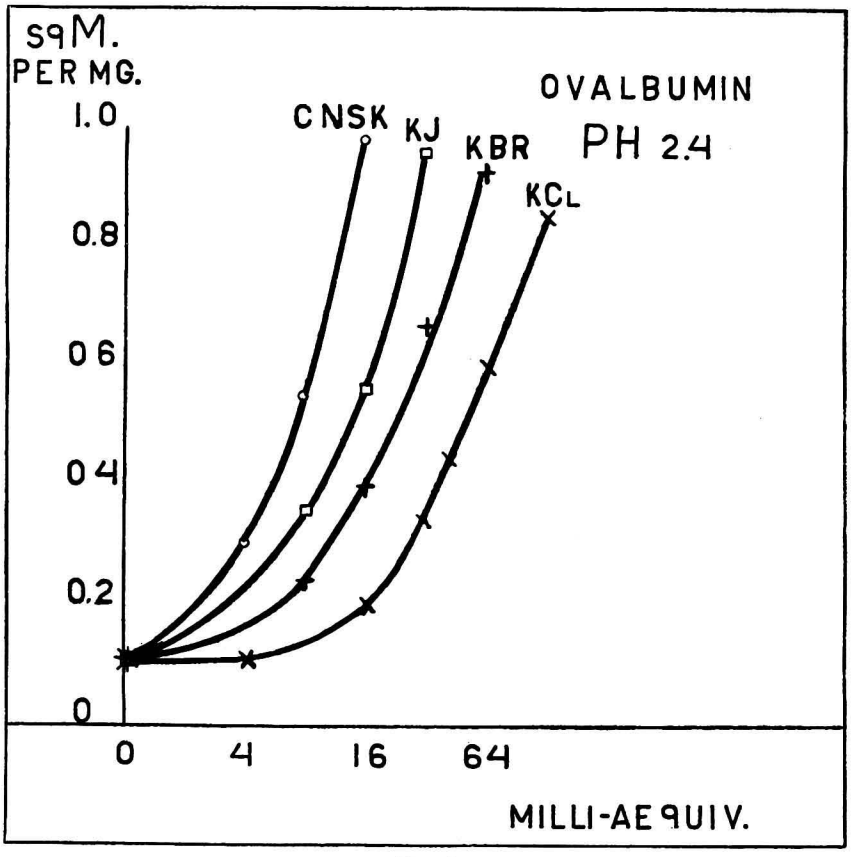

Fig. 1.

[1]) Proc. Kon. Ak. van. Wet. XXXV N°. 6, 1932.

The same observation can be made with regard to the effect of univalent kations on the spreading, on the alkaline side of the iso-electric point (pH 6) of a protein. Now it is easier to use pepsin, having an iso-electric point at pH 2.85.

Here again the spreading shows a minimum. The influence of a kation is stronger the further to the right it is placed in the series (fig. 2) :

NH_4^+, Li^+, K^+, Na^+.

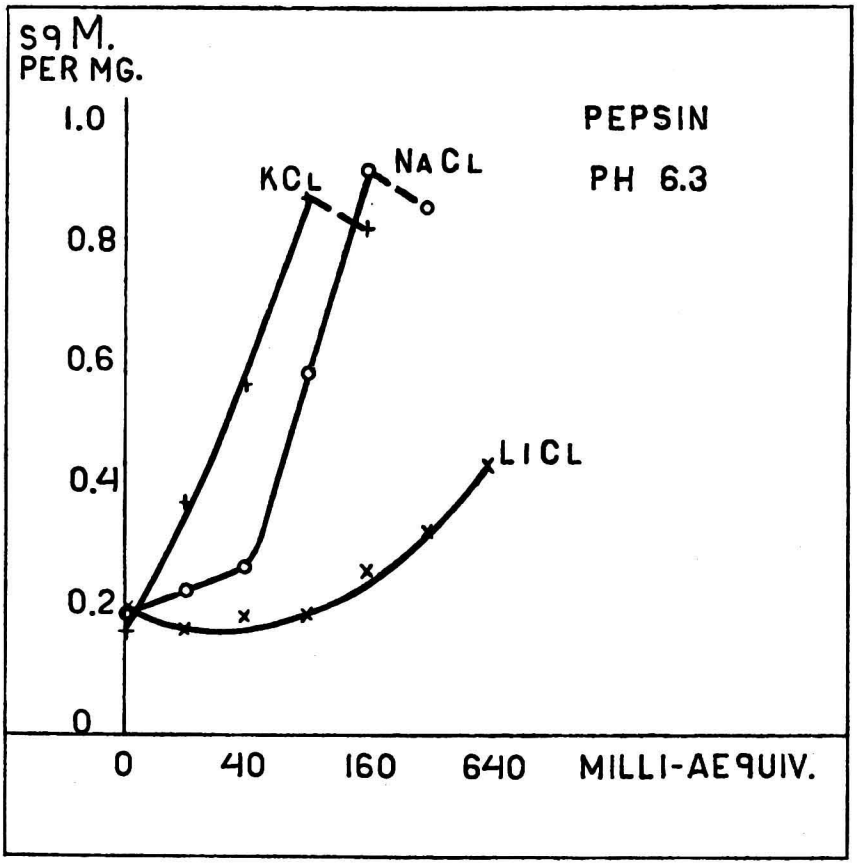

Fig. 2.

I have not succeeded to demonstrate a difference of the influence of different bi-valent kations.

Mg^{++}, Ca^{++}, Sr^{++}. Ba^{++} have the same influence on the spreading in an amount of some milli-equivalents only, but I was unable to find any difference between the members of this series (fig. 3).

The solution of pH 3 was a 0.001 molar hydrochloric acid in pure distilled water, the solution pH 6 was a mixture of 0.001 molar hydro-

chloric acid and 0.001 molar sodium hydroxyde. The use of strong buffer solutions is impossible because of the effect of ions on the spreading.

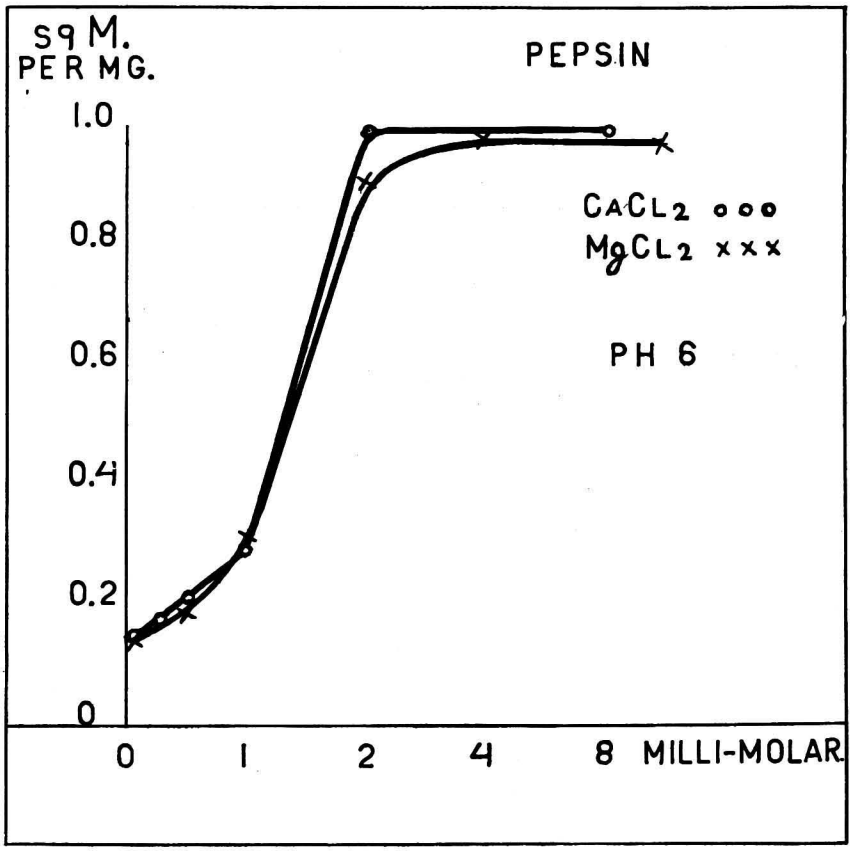

Fig. 3.

Bivalent ions have a strong influence and cannot be made use of for this reason even in high dilutions.

Geology. — *On the occurrence of Interglacial (Risz-Würm) Peat in Holland.* By G. G. LOUMAN. (Communicated by Prof. H. A. BROUWER).

(Communicated at the meeting of December 16, 1933.)

Hitherto nothing was known about the forest-development in the last interglacial period (Eemien) in Holland.

A pollenanalytic investigation of peat- and clay-samples from Baarn, the Wieringermeer and Amersfoort has enabled me to state in the first place their interglacial age, in the second place to give an idea of the