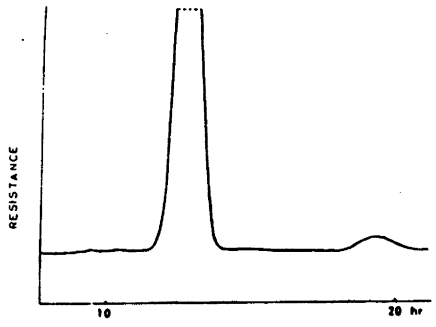

Fig. 1. A conductivity curve from the hydrolysate of 4 g pepsin run through a Dowex 50 column. Elutrient: 0.01 N hydrochloric acid. Column dimensions: 1.03 × 39.5 cm. Flow rate: 6 ml/hr.

be phosphoserine by paper chromatography before and after hydrolysis, and by X-ray diffraction diagram (Fig. 2). It contained 14.8 % of the phosphorus. The lower peak contained after hydrolysis the amino acids serine, threonine and glutamic acid.

There is one phosphorus atom per molecule of pepsin, and Perlmann has shown by experiments with different phosphatases that the phosphorus is probably bound to two different amino acids [8]. The isolation of phosphoserine shows that the phosphorus is bound to serine as in all typical phosphoproteins. A more detailed report of these experiments will be given elsewhere.

This investigation was sponsored by grants from the *Medical Faculty, Uppsala* (for the casein project), and from the *Therèse and Johan Andersson Foundation, Stockholm* (for the pepsin project).

After this investigation was complete the author's attention was drawn to a note reporting the isolation of phosphoserine and threonylphosphoserylglutamic acid from pepsin [9].

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Fig. 2. X-ray powder diagram of phosphoserine from pepsin. Flat film, with a distance of 10.0 cm between specimen and film.

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Received August 28, 1954.

Viscosities of Dilute High Polymer Solutions

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During the years 1950—51 an apparatus for the very precise determination of relative viscosity [1] was built at this Institute. In the first measurements on high polymer solutions an effect was observed, in which the plot of η_{sp}/c *vs.* c was linear only down to the concentration 0.0001 g/ml, whereas at still lower concentrations the curve tended to bend downwards. A probable explanation was that the concentration, determined by weighing before the viscosity measurement, had changed in the viscometer due to adsorption of solute on its walls. The results of measurements of adsorption by Cutler and Kimball [2] indicated that this explanation is valid. It is of course very difficult to obtain a fairly good estimate of the magnitude of the adsorption effect at these very low concentrations.

It later seemed that the 'bending down' might partly be due to the fact that at these low concentrations the molecules are free from each other, which gives a lower hydrodynamic interaction, so that the viscosity diminishes more than corresponds to the decreasing concentration.

During the past year some measurements on polystyrene in toluene have been done in an attempt to verify this. In these experiments part of each solution was used in the viscometer, and after a measurement its concentration was checked turbi-

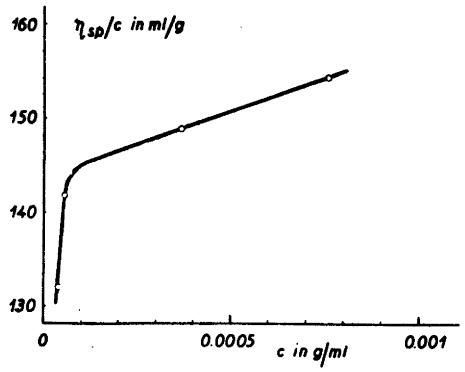

Fig. 1. Viscosity of polystyrene in toluene. $\eta_{sp}/c = f(c)$. $M \sim 500\,000$.

dimetrically against that of the remainder of the solution. It was evident that the bending down of the curve could not be explained as due to concentration change only. The adsorption was only about 3 % at the lowest concentration, whereas a linear relationship had demanded 14 %. Also upon critical examination the shape of the curve indicated that an adsorption of the size in question is unacceptable, as the 'bending down' would have a considerably flatter progress then.

Very recently some other measurements of viscosity of very dilute polymer solutions have been published, where the results have been quite different from those described here. For polystyrene in toluene, Streeter and Boyer [3] have found that the curve in question bends upwards and passes through a maximum. Possibly the different results are due to the different manipulation of the solution before the measurement, so that the higher viscosity from the measurements of these authors depends on the *very long* shakening of the solution during which a certain expansion of the molecules is possible. On the other hand the results they obtained upon concentrating the solutions indicate that it is not probable that the bending down of the curve found by the present author is due to some molecular breakdown.

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Received September 3, 1954.

A New Sarsasapogenin Glucoside from *Narthecium ossifragum* (L.) Huds.

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The occurrence of a saponin fraction from *Narthecium ossifragum* was reported in a recent communication [1]. The saponin was obtained by concentration of a diluted methanolic extract, which previously had been extracted with petroleum ether. Further work has led to the following observations. During evaporation under reduced pressure the main portion of the saponin precipitated in the form of minute white scales, which were filtered off. The mother liquor was successively extracted with ether, and small quantities of chloroform, which removed α-methoxy-$\Delta^{\alpha,\beta}$-butenolide [2]. By continued extraction with more chloroform a sticky, greenish extract was obtained, which was evaporated to dryness and dissolved in ethanol. On careful addition of water a second crop of saponin could be obtained.

After repeated recrystallisation from hot diluted ethanol the saponin formed glistening, white platelets, a small quantity of which was further purified by chromatography on wet silica gel [3]. The purified saponin, when heated appreciably above 200° C, gradually darkened and finally melted to a dark brown syrup. The highest m.p. obtained lay in the neighbourhood of 285°. The saponin had a hemolytic index of about 110 000.

The purified saponin was submitted to mild hydrolysis and samples were withdrawn from the hydrolysis mixture at intervals. Paper chromatography of the samples showed that the hydrolysis led to an almost immediate liberation of arabinose, more slowly followed by galactose. After complete hydrolysis also xylose and glucose could be spotted on the chromatograms.

The crude saponin, as could be shown by paper chromatography [4], yielded on hydrolysis one single sapogenin, which after repeated recrystallisation from methanol melted at 197—99°. $[\alpha]_D^{20} -72°$. (Found: C 75.0; H 10.70. Calc. for $C_{27}H_{44}O_3$ +

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