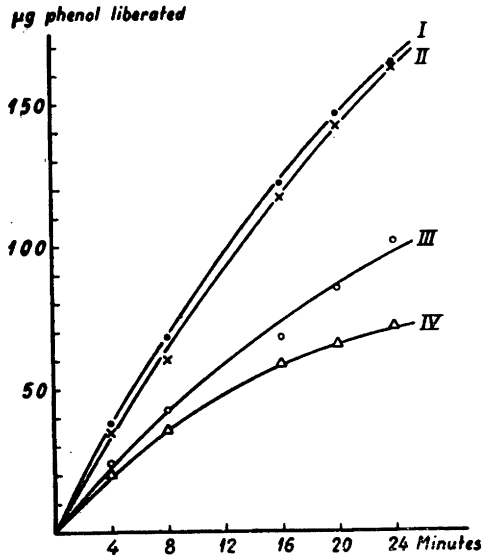

Fig. 1. Inhibition of alkaline kidney phosphatase by different phosphates of the estrogenic hormones.

I: without inhibitor
II: 8 · 10⁻⁵ M estradiol-17-phosphate
III: 8 · 10⁻⁵ M estrone-3-phosphate
IV: 8 · 10⁻⁵ M estradiol-3,17-diphosphate

niumchloride, so that the final reaction mixture contained 80 µg cetylpyridiniumchloride. At this concentration cetylpyridiniumchloride has no inhibitory action on the phosphatase activity.

Estrone-3-phosphate, estradiol-17-phosphate and estradiol-3,17-diphosphate were kindly supplied by Ing. B. Högberg, AB. Leo, Hälsingborg.

For the determination of the phosphatase activity the method of King and Armstrong [3] has been used, in the modification described by Buch and Buch [4]. The amount of phenol liberated was determined after 4, 8, 16 and 24 minutes.

Results. The results of the experiments with the kidney phosphatase are presented in Fig. 1. and Table 1.

Furthermore the inhibitory effect of $1.6 \cdot 10^{-4} M$ estradiol-3,17-diphosphate on alkaline liver phosphatase was investigated. After 4, 8, 16 and 24 minutes the inhibition was 46, 64, 68 and 69 per cent.

From the results presented above it is seen that among the compounds investigated, those phosphorylated in the 3-position have the strongest inhibitory effect on the phosphatase activity. Nothing is known at present about the occurrence of estrogenic hormones as phosphates in living organisms. A discussion of the significance of the present findings together with further experiments will be published later.

We wish to express our sincere thanks to AB. Leo, Hälsingborg, whose financial support has made possible this investigation.

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On the Structure of Salt Monohydrates

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The crystal chemistry of salt hydrates is a vast field in Inorganic Chemistry, which has not yet been definitely clarified. Recently, A. Tovborg Jensen [1] has written an excellent, critical review on these substances. He has also given some rules for the neighbourhood of the water molecules in crystals of this type.

Tovborg Jensen states that a water molecule has always negative neighbours

on one side, positive neighbours on the opposite side, and furthermore that a water molecule touchs one or two positive neighbours on one side and almost always two negative neighbours on the opposite side. As a conclusion of these rules he makes the statement that structural suggestions, where the surroundings of the water molecule do not show its positive and negative side, may be discarded as false. Structural suggestions, where the water molecule has more than two positive neighbours may be considered as very improbable. Suggestions which imply more than two negative neighbours must be very firmly founded in order to be accepted. One may expect, that hydrates with such a structure have rare properties, in which they depart from most salt hydrates.

A year ago the author published a crystal structure [2] determination of $(NH_4)_2FeCl_5H_2O$ *, which has not been considered by Tovborg Jensen. The lattice was found to be built up by NH_4^+ ions and distorted octahedral ions $[FeCl_5H_2O]^{2-}$. The complete structure does not indicate one positive and one negative side of the water molecule, which furthermore has more than two positive and two negative neighbours. The crystals give sharp X-ray reflections, a fact which has also been confirmed by Tovborg Jensen. This situation made it seem advisable to examine the structure once more. In view of this examination it does not appear that there is anything to be changed in the structure except possibly small variations of the parameter values, especially those of H_2O and NH_4^+. These cannot, however, remove the contradictions to the rules quoted. The formula of the salt also makes the obtained structure most probable.

* In this paper the cell dimensions were by mistake given in the first approximation from the rotation photographs The more accurate values obtained from powder photographs are $a = 13.68$ Å; $b = 9.88$ Å; $c = 7.02$ Å.

The conclusions drawn by Tovborg Jensen on the other hand are very well founded on the crystal structures of the salt hydrates considered. An examination of the list of these structures shows that there is not more than one salt of a trivalent positive ion among them, namely the hexahydrate $AlCl_3.6\ H_2O$. It seems probable that the contradictions mentioned above are due to too far reaching generalisations made by Tovborg Jensen. In a monohydrate of a salt with a trivalent positive ion, it seems as if the possibilities for the water molecule of getting its ideal surroundings are small compared with the tendency of Fe^{3+} to form the monohydrated octahedral ion. And every ion $[Me\ X_5\ H_2O]^{2-}$ in a crystal structure does of course disagree with the conditions stated by Tovborg Jensen. Although Tovborg Jensen's rules seem to be of a great importance in the salt hydrates which were studied by him, his conclusions seem to have been drawn too far. In any case, it remains for the theory to explain the structure of $(NH_4)_2FeCl_5 \cdot H_2O$, which now establishs the existence of monohydrated octahedral ions.

In order to obtain further confirmation of the proposed structure I intend to carry out a complete structure determination on $K_2FeCl_5\ H_2O$, which is isomorphous with $(NH_4)_2FeCl_5\ H_2O$. This may also lead to a more accurate determination of the parameter values.

According to a recent private communication by Mr. M. Atoji at the Osaka Imperial University $Cs_2(TlCl_5H_2O)$ seems to be isomorphous with $(NH_4)_2FeCl_5H_2O$ and then must give good possibilities to determine the parameter values of the monovalent positive ions.

Quite recently a structure determination of $(NH_4)_2InCl_5H_2O$, which is isomorphous with $(NH_4)_2FeCl_5H_2O$, is reported [3]. The parameter values obtained by Fourier methods agree very well with those obtained for $(NH_4)_2FeCl_5H_2O$.