with aqueous solvents seems to exclude the possibility of a colloidal suspension. Its electrophoretic movement suggests the anionic nature of the Pa(V) in solution. We hence propose that a protactinate ion has been prepared and that contrary to current belief Pa(V) has amphoteric properties. The failure of other workers to obtain a soluble protactinate may be due to the fact that most experiments were conducted with macro amounts of ^{231}Pa which perhaps is not very easily attacked.

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Detection of pyrimidine deoxyribosides and deoxyribotides on paper chromatograms

Because of the biological significance of pyrimidine deoxyribosides and deoxyribotides, their detection on paper chromatograms is important. This can be achieved by spraying with the cysteine–sulphuric acid reagent[1] or by microbiological methods[2]. In the former method the colour fades quickly, while the latter method is time-consuming. The diphenylamine spray[3], which is very useful for purine deoxyribosides and deoxyribotides, is not very suitable for the pyrimidine derivatives owing to the stability of the glycosidic bond. The sensitivity of the method is therefore much less in the case of pyrimidine derivatives than in that of purine derivatives. It is well known that bromination[4] of the pyrimidine ring in nucleosides and nucleotides renders the glycosidic bond acid-labile. We have found that the diphenylamine method can be used to detect the pyrimidine nucleosides and nucleotides after treatment of the chromatogram with bromine. The method is as follows: The dried chromatogram is put on a glass plate and dabbed carefully with a piece of cotton-wool soaked in a solution of bromine–water–acetic acid (1:50:10 v/v/v). To prevent the zones from becoming diffuse, the paper must not be too wet. The paper is placed between two glass plates at 100° for 5 minutes and is then treated with the diphenylamine–sulphuric acid reagent in the standard manner[3]. Thymidine, deoxycytidine, deoxyuridine, thymidylic acid and deoxycytidylic acid all give blue spots on paper when submitted to this procedure. The sensitivity of the method is recorded in Table I, and that of the diphenylamine–sulphuric acid spray without bromination, is given for comparison.

TABLE I

The amounts recorded are those that give a distinctly visible spot on a chromatogram

Substance	*Without bromination*		*With bromination*	
	μ moles	*μg (approx.)*	*μmoles*	*μg (approx.)*
Deoxycytidylic acid	1/4	72	1/16	18
Deoxycytidine	1/8	28	1/32	7
Thymidylic acid	1/4	80	1/16	20
Thymidine	1/4	60	1/16	15
Deoxyuridine	1/4	57	1/16	14

It can be seen from the table that bromination increases the sensitivity of the diphenylamine spray four times.

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