

were first isolated before chromatography and identical results were obtained. The faint band (R_f 0.72) seen just below the uridylic acid (R_f 0.84) on the ascending chromatogram was eluted and submitted to paper electrophoresis,^{4,5} which resolved it into two bands, 8 cm. and 4 cm. from the starting point respectively. The 8-cm. band contained most of the radioactivity and is identified as Substance X in the table. In those experiments in which liver slices were incubated under lowered oxygen tension (Exp. 2 and 4 in the table) the material in the 8-cm. band on electrophoresis had modified spectrophotometric characteristics and is therefore called X'. The 4-cm. band will be discussed separately in another communication. The results are shown in the table.

These experiments have been confirmed in both normal rat liver and sarcoma-37. If the nucleic acid is extracted from rat liver by the use of hot ten per cent. sodium chloride and subsequently carried through the same hydrolysis and chromatographic procedures, then less than 15% as much of the unknown ultraviolet absorbing material is obtained relative to the yield of uridylic acid. Since DNA is also present in the sodium chloride extracted nucleic acid, diphosphate forms of DNA pyrimidine nucleotides occur on the original chromato-

(4) R. Markham, and J. D. Smith, *J. Biochem.*, **52**, 552 (1952).

(5) L. L. Weed, and T. A. Courtenay, *J. Biol. Chem.*, **206**, 735 (1954).

gram in the region occupied by X. These were separated and quantified by Dowex-1 column studies.⁶

Substance X, obtained by the steps described above, was absorbed on a Dowex-1 resin column and was eluted in a single peak with 0.002 *N* HCl without significant alteration in the molecular extinction based on phosphorus analysis, or in the R_f values in the tertiary butyl alcohol-HCl solvent. Spectrophotometric curves on the material from the resin column were obtained, and at pH 2 and pH 12 the maximum absorptions were 262 and 265 $m\mu$, the minimum absorptions were at 232 and 248 $m\mu$, and the 280/260 $m\mu$ ratios were 0.44 and 0.72, respectively. These findings suggest that the substance is not similar to the nucleotide recently described by Davis and Allen.⁷ Whether materials X and X' are or are not orotidylic and dihydro-orotidylic acids, respectively, cannot be stated for certainty from the present data.

It should be noted in the table that lowered oxygen tension also affects the uridylic/cytidylic acid specific activity ratios.⁸

(6) L. L. Weed and D. W. Wilson, *ibid.*, **202**, 745 (1953).

(7) F. F. Davis and F. W. Allen, *ibid.*, **227**, 907 (1957).

(8) L. L. Weed, *Canc. Res.*, **11**, 470 (1951).

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BOOK REVIEWS

Structure Reports for 1940-1941. Volume 8. General Editor: A. J. C. WILSON, University of Wales, Cardiff, Great Britain. Section Editors: N. C. BAENZIGER (Metals), University of Iowa; J. M. BIJVOET (Inorganic Compounds), University of Utrecht, Holland; and J. MONTEATH ROBERTSON (Organic Compounds), University of Glasgow, Great Britain. N. V. A. Oosthoek's Uitgevers Mij., Domstraat 1-3, Utrecht, Holland. 1956. viii + 384 pp. 16.5 × 25 cm. Price, \$21.50.

With the appearance of this volume, the gap has been filled between the last issue of *Strukturberichte* (Vol. 7 for 1939 was prepared by K. Herrmann under the editorship of M. V. Laue, for the *Z. Krist.*) and the first issue of "Structure Reports" (Vol. 11, for 1947-1948). A complete summary of practically all the literature on crystal and molecular structures as derived from diffraction studies published through 1950 has thus become available. The price of the present volume had been set at a figure which should recover the cost of production, in contrast to volumes 10-13 which were distributed at a substantially lower price, made possible by subsidies from UNESCO and other organizations.

The editors undertook no extensive search of the literature for 1939 and for earlier years, but omissions noticed incidentally in the later issues of the *Strukturberichte* have been remedied in this volume. The arrangement of material is similar to that used for the volumes which have already appeared. Preceding the introduction by the editor, there appear a list of the symbols used, a statement

of the meaning of the specified limits of error, and a table for the transliteration of the Russian alphabet. The main body of the text is divided into three sections: metals (p. 3-115), inorganic compounds (p. 119-259), and organic compounds (p. 263-346). There follow six pages of abstracts of miscellaneous topics; the book is concluded by a list of journal abbreviations, a subject index, a formula index, an index of carbon compounds, an author index, and a page of additional corrections covering volumes 8 through 12. As a matter of policy, a certain amount of selectivity has been followed in the preparation of these volumes, in that information such as statements on texture, power data and electron diffraction data has been reported only for substances of structural interest. For an appreciable number of cases, interatomic distances have been computed by the abstractor. The typography is of the same high quality which has characterized the previous issues.

The General Editor, A. J. C. Wilson, the Section Editors, and the committee on "Structure Reports" should be commended for the fine job they have done in assembling the large amount of structural data which appeared during the interval 1939-1950. The value of these compilations to research workers and students has been stressed by reviewers of the previous volumes. We can only join the acclaim and express the hope that publication of "Structure Reports" will be continued on a regular basis.

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