

butyl chlorosulfite. After treating the reaction mixture with water, extraction with ether, and vacuum distillation, there was obtained 17.2 g. of dibutyl sulfite, b. p. 107-109° at 12 mm.,  $n_D^{20}$  1.4308.<sup>7</sup> On saponification the butyl alcohol was identified as the normal isomer by conversion to the crystalline 3,5-dinitrobenzoate, m. p. and mixed m. p. 62.5-63.5°.

### Summary

A new method for the conversion of an acid into

(7) Vogel and Cowan, *J. Chem. Soc.*, 22 (1943), give b. p. 90-95 at 5 mm., and  $n_D^{20}$  1.43098.

its *n*-butyl ester is described. The method involves formation of the sodium salt, reaction of the sodium salt with butyl chlorosulfite, and pyrolysis of the intermediate thus obtained to yield the desired ester. This method appears to be general for primary alkyl chlorosulfites and applicable to aliphatic, aromatic and certain sterically hindered acids.

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## The Nomenclature of Certain Sugar Derivatives

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The present nomenclature used for certain classes of compounds in the sugar group is based on their sources of preparation rather than on their actual structures. When such nomenclature is applied to substances possessing fewer asymmetric centers than the parent compounds for which they are named, it may be found that more than one name can be correctly applied to a single chemical substance. At present, this is true of the sugar osazones, osones, osotriazoles, the non-terminal desoxy sugars, the glycals and glycoseens. It is proposed that a single, systematic name can be devised readily to describe accurately any single substance in these classes of sugar derivatives.

The phenylosazone that arises in common from D-glucose, D-fructose and D-mannose is usually called D-glucose phenylosazone, but D-fructose phenylosazone and D-mannose phenylosazone must be accepted as alternate names under the present system of nomenclature. A faulty implication contained in any of these three names is that the phenylosazone has the configuration of the particular sugar from which it arose, whereas only the *D-arabo* fragment of the configuration of the three parent hexoses is retained. It is proposed that this osazone is fully and accurately described by the single name *D-arabo*-hexose phenylosazone.<sup>1</sup>

The osone resulting from the hydrolysis of this

(1) A similar name, "*D*-mannoheptosazone," was used by E. Fischer and Tassmore, *Ber.*, **23**, 2226 (1890), for the phenylosazone common to the two *D*-mannoheptoses. Only one of these two heptoses was known at the time and it had been named simply "*D*-mannoheptose," a name now regarded as incomplete for the single, epimeric sugar. Thus, it is probably coincidental that the name *D*-mannoheptosazone, which conforms with the presently proposed nomenclature, was employed.

phenylosazone would then be named *D-arabo*-hexosone.

The proposed nomenclature can also be applied to the osotriazoles. These substances are closely related to and easily prepared from the osazones.<sup>2</sup> Thus, the phenylosotriazole derived from L-sorbose<sup>2</sup> would also arise from L-gulose and L-idose and would be named *L-xylo*-hexose phenylosotriazole.

The first synthetic 2-desoxyhexose was prepared from D-glucose and was named 2-desoxy-D-glucose.<sup>3</sup> This substance could also be prepared from D-mannose by the same series of reactions used in preparing it from D-glucose and, thus, 2-desoxy-D-mannose is an alternate name. Recently<sup>4</sup> this same desoxyhexose has been prepared starting from D-arabinose and without using either D-glucose or D-mannose as intermediates. The name proposed for this sugar derivative is *D-arabo*-2-desoxyhexose. As other examples, the natural desoxy sugar thymine would be named *D-erythro*-2-desoxypentose, while the naturally occurring digitoxose would be *D-ribo*-2,6-didesoxyhexose.

In extending the proposed nomenclature to the unsaturated sugar derivatives, "*D*-glucal" ("*D*-mannal") would be named *D-arabo*-hexal. Similarly, "*5,6-D*-glucoseen" ("*5,6-L*-idoseen") would become *D-xylo*-5,6-hexoseen.

A similar type of nomenclature to that proposed here has recently been advanced by Wolfrom, Thompson and Evans<sup>5</sup> to replace the present trivial or non-systematic names for the ketose sugars.

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(2) Hadd and Hudson, *THIS JOURNAL*, **66**, 735 (1944).

(3) Fischer, Bergmann and Schotte, *Ber.*, **55**, 509 (1920).

(4) Sowden and Fischer, *THIS JOURNAL*, **69**, 1048 (1947).

(5) Wolfrom, Thompson and Evans, *ibid.*, **67**, 1793 (1945).