

OCCURRENCE OF ACETONE AND SYRINGIC ALDEHYDE AS DEGRADATION PRODUCTS OF LIGNIN SUBSTANCES

Sir:

We wish to report two degradation products obtained from lignin substances. The first, acetone, has been obtained by a stepwise oxidation as well as by ozonization of formic acid spruce lignin and identified as acetone superoxide, dibenzalacetone, and acetone 2,4-dinitrophenylhydrazone, melting points 132.5°, 112°, and 128°, respectively. No lowering of melting point was found after admixture with authentic synthetic samples. The second product, syringic aldehyde, was isolated by the alkaline scission of

sulfite liquor obtained from yellow birch wood and identified as follows. *Anal.* (1) Calcd. for $C_9H_{10}O_4$: C, 59.3; H, 5.5; OCH_3 , 34.1; mol. wt., 183. Found: C, 59.1; H, 5.6; OCH_3 , 33.8; mol. wt. (Rast method), 175.6. (2) M. p. 111.5–112° (corr.). (3) Semicarbazone, m. p. 185–186° (corr.). (4) Deep green coloration with ferric chloride. (5) Crystalline derivative with dimedone. All these properties are in entire agreement with those recorded by McCord, *THIS JOURNAL*, **53**, 4181 (1931).

DIVISION OF INDUSTRIAL AND
CELLULOSE CHEMISTRY
MCGILL UNIVERSITY
MONTREAL, CANADA

ALAN BELL
W. LINCOLN HAWKINS
GEORGE F. WRIGHT
HAROLD HIBBERT

RECEIVED FEBRUARY 25, 1937

NEW BOOKS

An Introduction to the Preparation and Identification of Organic Compounds. By ROBERT D. COGHILL, Assistant Professor of Chemistry, and JULIAN M. STURTEVANT, Instructor in Chemistry, Yale University. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York, N. Y., 1936. xiii + 226 pp. 14 × 21 cm. Price, \$1.75.

The use of typical preparations as a means of introducing students to the theory and practice of laboratory technique in elementary organic chemistry has been recognized as the most feasible approach for the past hundred years. The corresponding employment of systematic methods of organic qualitative analysis as a means of instruction is much more recent, and may perhaps be said to have been initiated about 1900 through the efforts of the late Professor Samuel P. Mulliken at the Massachusetts Institute of Technology. Since the publication of his monumental work, appreciation of the value of this aspect of the subject as a means of instruction has been growing, as evidenced by the appearance of elementary books such as those of Clarke, Kamm, Shriner and Fuson, and others. No institution of learning can claim a first rank course in elementary organic chemical laboratory unless adequate attention is given to the identification as well as to the preparation of simple organic compounds.

Despite the present recognition of the equal importance of the study of both the synthetic and analytical aspects of organic laboratory instruction, there has been a surprising delay in the appearance of a laboratory manual placing both on an equal footing in the same volume. The present book is intended to fill this recognized need.

Apart from the necessary indices, appendices, etc., the 207 actual text pages of the volume are divided among

three types of treatment: manipulative operations (both from synthetic and analytical viewpoint), 48 pages; synthetic preparations, 67 pages; and identification of organic compounds, 92 pages.

The synthetic section includes 42 experiments about equally divided between solids and liquids. In addition to many standard preparations included in all laboratory manuals several new selections are offered, including benzene from sodium benzoate, mandelic acid from benzaldehyde, *m*-chloronitrobenzene from *m*-nitroaniline, anthranilic acid from phthalimide, ethyl resorcinol from resorcinol via resacetophenone and subsequent Clemmensen reduction, *p*-nitrobenzoyl chloride from the acid and thionyl chloride, *p*-bromophenacyl bromide from bromobenzene via *p*-bromoacetophenone, and indigo from benzaldehyde via *o*-nitrobenzaldehyde. Each procedure is preceded by a short discussion and followed by questions. Both the manipulative and preparative sections are well written and fully illustrated with diagrams.

The analytical section is based upon a selected list of between three and four hundred of the most common and easily available organic compounds arranged to be identified by a set of tests according to a given key. After a short introductory chapter, the subject is discussed in three chapters entitled, respectively, analytical methods, 21 pages; classified list of compounds, 14 pages; and preparation of derivatives, 49 pages. In the list of compounds it is very unfortunate that the order and group headings reiterating the distinctive characteristics of each part were not carried along in the text, as the present arrangement requires an inconvenient amount of cross references to preceding pages for interpretation of the key. Selections of group tests are generally good, but the experienced analyst