treated paper can be used to locate colorless bands on the columns.

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THE ISOLATION OF A CONJUGATED UNSATURATED ACID FROM THE OIL FROM *XIMENIA CAFFRA* KERNELS

Sir:

We have examined kernel oils from *Ximenia caffra Sond.*, *X. caffra var. natalensis Sond.* and *X. americana var. microphylla Welw.* The absorption spectra all showed a well defined maximum at *ca.* 230 mμ, and subsidiary maxima at *ca.* 268 and 280 mμ. The specific extinction coefficients at 229 mμ for the three oils were, respectively, 15.4, 12.6 and 12.0. The oils thus appeared to contain a considerable proportion of a conjugated dienoic acid and a smaller amount of a conjugated trienoic acid. Previous workers[1,2] have not reported the presence of such acids.

The acids from *X. caffra oil* were subjected to low-temperature crystallization. The fraction soluble in ether at −40° and insoluble in acetone at −60° was esterified and fractionally distilled. Fractions, b. p. 157–168° (0.1 mm.), with specific extinction greater than 40, were resaponified and the acids recrystallized from acetone at −15°, yielding a white solid m. p. 35°; four recrystallizations from petroleum ether yielded white plates, m. p. 40–41°; specific extinction at 229 mμ, 58.3; neut. equiv. 281.2; iodine value (Woburn, one hour[3]), 142.9. *Anal.* Calcd. for $C_{18}H_{30}O_2$: C, 77.65; H, 10.86; neut. equiv. 278.4. Found: C, 77.68; H, 10.81. The *p*-phenylphenacyl ester had m. p. 61.5–62°. *Anal.* Calcd. for $C_{32}H_{40}O_3$: C, 81.31; H, 8.53. Found: C, 81.31; H, 8.66. In a catalytic hydrogenation, 3.07 moles of hydrogen were absorbed, two moles immediately and the third during two to three hours. The product was stearic acid.

From these chemical data and the relatively low specific extinction at 229 mμ ($\Delta^{10,11,12,13}$-octadecadienoic acid has a maximum at 234 mμ and a specific extinction coefficient of 119[4]), it is postulated that this acid is a C_{18} acid with a double and a triple bond either in conjugation with one another or with one of them in conjugation with the carboxyl group. To locate these bonds the acid (1.7 g.) was oxidized with potassium permanganate.[5] There were isolated *n*-heptoic acid (0.5 g.) and azelaic acid (1.01 g.); and oxalic acid (0.18 g.) was determined volumetrically. The unknown acid, for which the name Ximenynic acid is proposed, could thus have one of the following structures:

$CH_3(CH_2)_5CH{=}CHC{\equiv}C(CH_2)_7COOH$
$CH_3(CH_2)_5C{\equiv}CCH{=}CH(CH_2)_7COOH$
$CH_3(CH_2)_5CH{=}CH(CH_2)_7C{\equiv}CCOOH$
$CH_3(CH_2)_5C{\equiv}C(CH_2)_7CH{=}CHCOOH$

From the spectral data, it is present in the oils in a concentration of *ca.* 25%. Full studies of ximenynic acid, and the ximenia oils will be recorded later.

We thank the South African Council for Scientific and Industrial Research for permission to publish these data, and Mr. F. Schoening for carrying out the elementary analyses.

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NEW BOOKS

Boron Trifluoride and Its Derivatives. By Harold Simmons Booth, Hurlbut Professor of Chemistry, Western Reserve University, and Donald Ray Martin, Assistant Professor of Chemistry, University of Illinois. John Wiley and Sons, Inc., New York, N. Y., 1949. ix + 315 pp. 40 figs. 14 × 22 cm. Price, $5.00.

The principles of electron-donor-acceptor bonding, which are necessary to the understanding of many catalytic processes and unpredictable aspects of valence theory, are so well illustrated by the chemistry of boron trifluoride that the publication of a complete summary of this subject is an event of major interest. The new book by Booth and Martin thoroughly covers the literature (to January, 1948) of compounds containing the B–F bond, including substitution derivatives, addition compounds and complex ions. The first three chapters describe the early history, preparation and manufacture, and physical properties of boron trifluoride, with an introductory summary of its chemical properties. The reader thus is prepared for the longer chapter on the coördinating power of boron trifluoride, the full presentation of the fluoborates and their substitution derivatives, and the very useful summary of the applications of boron trifluoride as a catalyst. The remaining chapters, on analytical methods and practical techniques, should assist research workers in learning to work with such materials; in fact one finds throughout the book many practical aspects which now become available through the close contact of the authors with the fluorine industry.

The book is valuable chiefly as a source of facts and