The chloroacetyl-*l*-methionine was converted into glycyl-*l*-methionine by dissolving 5 g. of the compound in 20 ml. of 25% ammonium hydroxide. The solution, in a pressure flask, was heated for one hour in a water-bath maintained at 70°. The solution was then treated with silver carbonate or silver sulfate to remove the ammonium chloride. The resulting solution, after the removal of silver with hydrogen sulfide, was gently boiled with 100 mg. of Norit A and the slightly yellow filtrate was placed in a vacuum desiccator over sulfuric acid until sirupy. The glycyl-*l*-methionine was obtained as a white solid by rubbing the gummy residue with absolute alcohol. In several preparations the yield varied from 2.6 g. to 2.9 g. (57–64% yield based on the chloroacetyl-*l*-methionine used) and the melting point was 140–145°.

Anal. Calcd. for $C_7H_{14}N_2O_3S$: S, 15.54. Found: S, 15.52.

CHEMO-MEDICAL RESEARCH INSTITUTE
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RECEIVED DECEMBER 20, 1940

14-Bromo-2,6,10-trimethylpentadecane

6,10,14-Trimethyl-2-pentadecanone[1] was prepared by ozonizing phytol. Reduction of this ketone was accomplished by dissolving 11.1 g. (0.0414 mole) of it in 100 ml. of anhydrous isopropyl alcohol and adding 6.9 g. (0.30 equiv.) of sodium, in small pieces, to the boiling mixture over a two-hour period. After the reaction mixture had been neutralized, it was extracted with ether and this extract was washed and dried. On distillation, the fraction which boiled at 146–148° at 1 mm. was collected. The yield of 6,10,14-trimethyl-2-pentadecanol, a colorless, practically odorless, mobile liquid, was 9.2 g. (82%). Although this alcohol is a new compound, it was not further characterized, but was converted directly into its bromide.

By the ordinary phosphorus tribromide method, 9.2 g. (0.0341 mole) of the above alcohol, dissolved in 80 ml. of anhydrous petroleum ether, was treated with 3.5 g. (0.0129 mole) of the reagent which converted it to the bromide. Upon distillation of the reaction products, two fractions were obtained neither of which was analytically pure. The more promising fraction which weighed 3.2 g., and which represented approximately 50% of the total distillate, was dissolved in petroleum ether, extracted with concentrated sulfuric acid and redistilled. This acid treatment should have been employed before the first distillation. The 14-bromo-2,6,10-trimethylpentadecane boiled at 138–140° at 1 mm. The yield of 2.8 g. (25%) which was obtained could no doubt be substantially improved. The bromide is a bright, colorless, odorless, mobile liquid; n^{20} 1.4614; d^{20}_{20} 0.9726. *Anal.* Calcd. for $C_{18}H_{37}Br$: Br, 23.97. Found: Br, 23.75.

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RECEIVED JANUARY 20, 1941

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[1] Fischer and Löwenberg, *Ann.*, **464**, 69 (1928).

2-Methyl-1,4-naphthohydroquinone Hydrogen Succinate

Incidental to some other work, 2-methyl-1,4-naphthohydroquinone hydrogen succinate was prepared, by heating 2-methyl-1,4-naphthohydroquinone with 4 moles of succinic anhydride in a bomb tube (nitrogen atmosphere) for six hours at 140°. The acidic product was then isolated via the sodium salt. Recrystallized from benzene, then from aqueous alcohol, the compound forms faintly tan-colored small prisms, melting at 176–178°. It is readily soluble in sodium bicarbonate solution.

Anal. Calcd. for $C_{15}H_{14}O_5$: C, 65.66; H, 5.15. Found: C, 65.91; H, 5.45.

The compound showed, in 2 γ doses, a clotting time of two minutes, five hours after injection (chicks on Ansbacher diet, with a clotting time of more than sixty minutes). The same result was obtained with 1 γ doses of 2-methyl-1,4-naphthoquinone.

THE BURROUGHS WELLCOME & CO. U. S. A.
EXPERIMENTAL RESEARCH LABORATORIES
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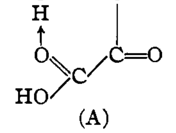
RECEIVED JANUARY 8, 1941

COMMUNICATIONS TO THE EDITOR

HYDROGEN BRIDGES AND ISOMERISM

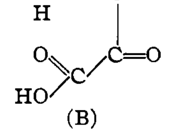
Sir:

In recent issues of THIS JOURNAL there have appeared two articles [Reimer and Tobin, THIS JOURNAL, **62**, 2515 (1940); Reimer and Morrison, *ibid.*, **63**, 236 (1941)] in which a new type of isomerism is postulated in order to account for the existence of certain pairs of separable isomers. Although the two isomers differ markedly in their physical and chemical properties, the only difference in the structures of the two forms is stated to be the presence of a hydrogen bridge in the one (A) and its absence in the other (B).



(A)

and



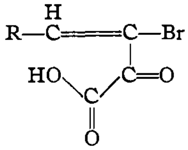
(B)

[R = *p*-BrC_6H_4—, *p*-$C_2H_5OC_6H_4$—]

The separation and independent existence of isomers at ordinary temperatures implies an energy barrier amounting to at least 20 kcal.

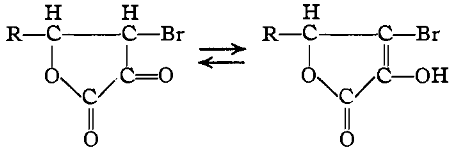
between the two forms—it seems highly improbable that so great a barrier could be involved in the mere formation or breaking of a bond as weak as that of a hydrogen bridge. At any rate, it appears undesirable to resort to such a novel explanation for the isomers in question until all other interpretations more in harmony with the classical theories of organic chemistry have been examined and excluded.

The authors of the above-mentioned papers have considered and rejected one other possible explanation, *cis* and *trans* isomerism. However, they do not mention a third interpretation which appears more probable than either of the two they discuss, namely, structural isomerism involving lactone formation. This may be illustrated as follows



and

(B)



(C)

This interpretation furnishes a logical explanation of the experimental facts: (1) the yellow compound (B) is moderately soluble in water, but only slightly soluble in benzene; on the other hand, the white compound (C) is insoluble in water and is soluble in benzene. (2) The yellow isomer is rapidly esterified in the cold by methyl alcohol and hydrogen chloride to form a yellow ester; the white compound does not react with this reagent, but may be "esterified" by treatment with diazomethane to yield a white methyl derivative (the enol group is probably methylated) isomeric with that obtained from the yellow acid. (3) Treatment of the yellow isomer with dilute alkali forms a yellow salt which is soluble in water and insoluble in alcohol and from which the original acid may be regenerated by acidification; the white isomer forms a white salt (probably involving the enol group) which is soluble in alcohol but insoluble in water. (4) Extended treatment of this white salt with alkali transforms it into the yellow salt; treatment of the yellow acid with dilute hydrochloric acid for extended periods of time, as well as keeping it at its melting point for a short time, transforms it into the white derivative.

Regardless of how further study may deal with this interpretation, it appears to be fairly certain that the type of isomerism which has been proposed, based upon the formation of hydrogen bridges, cannot be accepted without more conclusive evidence.

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RECEIVED JANUARY 20, 1941

ELECTROPHILES AND ELECTRODOTES

Sir:

The term *electrodomic* by which it is proposed[1] to describe molecules (bases and reductants) which share their electron pairs with acids (in G. N. Lewis' sense) or yield electrons to oxidants, seems ill-chosen. English offers few adjectives derived from διδωμι to serve as guides, but such a form as *electrodotic* (or electrodotal (*cf.* anecdotic, anecdotal, epidotic) is surely preferable. The "m" is merely personal in function and the combination "dom" by its suggestion of *domicile* or *dominance* makes an impression quite contrary to that intended.

Professor Luder has expressed agreement with this suggestion.

Since the idea expressed by this word is likely to grow in importance, a stitch of pedantry now may save nine later.

[1] W. F. Luder, *Chem. Rev.*, **27**, 579 (1940).

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF WISCONSIN
MADISON, WIS.
NORRIS F. HALL

RECEIVED JANUARY 23, 1941

A NEW SPONGE STEROL

Sir:

During the chemical investigation of a series of rudimentary organisms, a mixture of sterols from a fresh-water sponge[1] was acetylated and subjected to repeated chromatographic adsorption analyses, using activated alumina. The fraction most strongly adsorbed displayed a strong Rosenheim reaction and showed absorption maxima at 272.5, 282.5 and 294.5 mμ, which correspond to those obtained with ergosterol and 7-dehydrocholesterol.[2] The maximum at 282.5 mμ had an extinction coefficient of 7200, as compared

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[1] *Spongilla lacustris*, collected and stored under acetone at Trout Lake, Vilas County, Wisconsin.

[2] Windaus, Lettré and Schenck, *Ann.*, **520**, 98 (1935).