sively increases while the peak at 538 mμ (malonaldehyde) increases very slightly. This is thought to be due to the slow liberation of a compound, which reacts with the excess TBA present in the solution to give rise to the complex absorbing at 450 mμ. It is not due to the rearrangement of the malonaldehyde-TBA Complex, as postulated by Landucci (4), since there is no decrease in absorption at 538 mμ.

Summary

The quantitative production of malonaldehyde during the oxidation of pure, unsaturated fatty acids under controlled conditions, has been measured and correlated with their off-odor. It was found that malonaldehyde does not accumulate as a stable end-product of fat oxidation but reaches a peak at the same time that oxygen uptake begins declining. Oxidation products of all of the fatty acids investigated reacted slowly with TBA to give a compound absorbing at 450 mμ in addition to the malonaldehyde-TBA complex absorbing at 538 mμ.

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[Received May 2, 1960]

• *Letter to the Editor*

Preparation of 8t,10t-Octadecadienoic Acid

IN THE JANUARY ISSUE of this Journal Gupta and Kummerow (1) report the preparation of 8t,10t-octadecadienoic acid by the bromination of oleic acid with N-bromosuccinimide and free bromine, followed by debromination with zinc in ethanol. Their method results in a 15–20% yield and therefore represents a considerable improvement over previous procedures, making this acid as easily accessible as the corresponding isomers of 9,11- and 10,12-octadecadienoic acids.

Their review of previous literature however indicates that they were not aware of the fact that this acid, which Smit (2) originally thought to be an isomer of 9,11-octadecadienoic acid and which was later identified as the 10,12-compound by von Mikusch (3), has also been prepared by us from methyl oleate and methyl elaidinate *via* allylic bromination, followed by dehydrobromination with collidin (4). They furthermore refer to the work of Schmidt and Lehmann (5) and, like these authors, have obtained a lower-melting product thought to be a 9,11-octadecadienoic acid. This work however has been rechecked by von Mikusch (3), with the result that no evidence was obtained for the formation of the supposed 9,11-octadecadienoic acid melting at 32–33° and that this product evidently was an eutectic mixture of higher melting *trans,trans*-acids. It is therefore unlikely that the small amount of conjugated acid, m.p. 33–34°, obtained by Gupta and Kummerow is 9,11-octadecadienoic acid.

In this connection it seems appropriate to supplement further the list of known conjugated octadecadienoic acids given by the recent authors by referring to the two *cis,trans*-isomers, which have also been obtained pure and identified, *i.e.*, *trans,cis*-10,12-octadecadienoic acid, m.p. 23°, and *cis,trans*-9,11-octadecadienoic acid, m.p. 20°.

The former was first described by Nichols *et al.* (6) and independently by von Mikusch, who thought this compound had a *cis,cis*-structure (7) but later accepted the view of Nichols *et al.* (8). Nichols *et al.* also obtained a fraction, m.p. −6 to 3°, which was thought to be the impure *cis,trans*-9,11-isomer. By a similar procedure, *i.e.*, extensive crystallization of alkali-isomerized linoleic acid, von Mikusch obtained the pure *cis-trans*-9,11-octadecadienoic acid, m.p. 20°, $n^{25/D} = 1.4810$. The structure of both of these compounds was characterized by diene and pandiene values and by the maleic anhydride adducts, which may well serve for identification purposes. Adducts for the three positional isomers have the following melting points:

M.A.-adduct of 8,10-octadecadienoic acid
m.p. 110°C.
M.A.-adduct of 9,11-octadecadienoic acid
m.p. 94.5°C.
M.A.-adduct of 10,12-octadecadienoic acid
m.p. 102°C.

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[Received April 21, 1960]