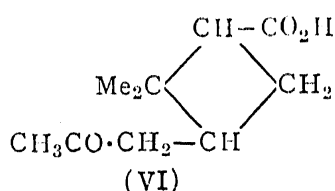
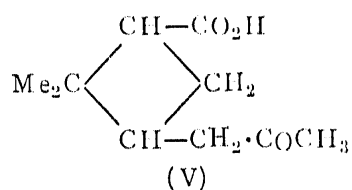
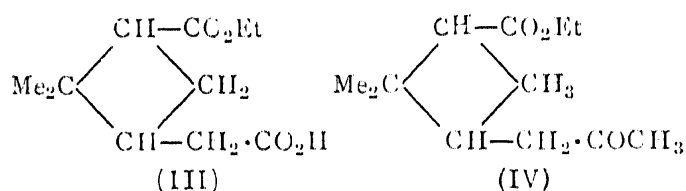
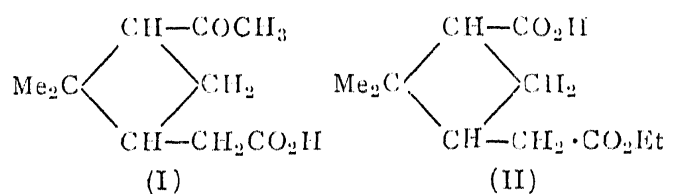


**Trans-1-acetyl-2:2-dimethylcyclo-
butane-3-carboxylic Acid: An Isomer of
Pinonic Acid.**

In an attempt to synthesise pinic acid mono-ester (II) by (i) partial esterification of pinic acid, and (ii) partial hydrolysis of diethyl pinate, with an object to convert the acid-chloride of (II) by Blaise reaction into pinonic acid (I), the isomeric acid ester (III) has been obtained in very good yield by the latter method. The mono-acid ester (III, b.p. 158–60°/5 mm.; d_{30}^{20} , 1.0693; n_D^{30} , 1.4532) readily gives the acid-chloride (b.p., 118°/4.5 mm.) with thionyl chloride, which in its turn with zinc methyl iodide yields the ketonic ester (IV, b.p. 118–119°/5 mm.; semicarbazone, m.p. 134°). The ketonic ester on hydrolysis, furnishes the corresponding acid (V, semicarbazone, m.p. 186°). The difference of this acid from both the *trans* and *cis* varieties of pinonic acid (I) obtained from pinene, has been established by comparing the melting points of the semicarbazones and the acid (III) should, therefore, have the constitution assigned to it. Hence, it was expected that the structure of the ketonic acid should be identical with that of orthodonic acid (V) obtained by Fujita¹ by the oxidation of orthodene from orthodon lanceolatum. In view of the difference between the melting points of the semicarbazone of our acid (m.p. 186°) and that of orthodonic



acid (m.p. 116–18°), it seems that orthodonic acid may have the *cis*-configuration while our acid (VI) being derived from *trans*-pinic acid² represents the *trans* variety.

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¹ *J. Chem. Soc., Japan*, 1933, **54**, 1811.

² *Ber.*, 1937, **70**, 1505.

**Redox Systems in the Latex of *Carica
papaya*.**

THE latex obtained from *Carica papaya* contains a remarkably large amount of sulfhydryl compounds, in fact, about ten to twenty times the concentration in any plant or animal source till now known.¹ A fraction of these -SH compounds occurs as glutathione which serves as a natural activator of papain. The search for an enzymic system specific for the reduction of glutathione and SS-compounds to the -SH form, has been actively pursued and a definite lead in this direction has already been given by the work of Hopkins and co-workers. In view of the circumstance that SH-compounds occur in very high concentrations in the latex of *Carica papaya*, it is of interest to enquire whether similar reducing systems are present in it.

Hopkins and Elliot² have established the presence of heat labile SS reducing systems in animal tissues. They showed that molecular oxygen oxidises the -SH compounds present in liver to the SS form and the enzymic systems in this tissue reduce the SS-form back to the SH. In the latex of *Carica papaya* freshly obtained, there are similar SH \rightleftharpoons SS redox systems. Here again the SH is readily oxidised to the SS by molecular oxygen. The presence of reducing systems is shown by the circumstance, that when the latex, dispersed in phosphate buffer (pH 7.4) is aerated, the concentration of SH does not fall during the earlier part of the process, but remains constant (or sometimes even slightly increases). The curves shown in Fig. 1 are typical of several experiments. It will be seen that in the earlier part of aeration the reduction processes equalise (and sometimes even out-