

ketone group will provide the second acid function and undergo benzilic acid rearrangement on alkali fusion. When the appropriate triketocycloheptene-carboxylic acid is written in the dienol forms (I) and (II), the possibility of resonance between them by hydrogen bond chelation becomes evident; such a compound would be expected to show abnormal stability and lack of ketonic function. Moreover, the ketol group, from analogy with β -diketones, should show acidity, and the resonating ion, colour. The solubility in strong acid to a hybrid of (III) and its tautomer parallels the analogous behaviour of indophenol. The ready decarboxylation of (A) and the properties of the product are at once explained. Tetrahydrostipitatic acid (7) is probably (IV); cyclic α -diketones often give monoketonic derivatives.

The isomeric trimethyl derivatives (4) correspond to (I) and (II); in the dimethyl derivative, where the ketol and ester groups are esterified, the enolic hydroxyl is still weakly acidic. In the monomethyl derivative the lone hydroxyl is methylated (cf. the methylation of hydroxybenzoic acids).

The monobasic diacetyl derivative (5) will have the two hydroxyls protected, while the isomeric dibasic compound is presumably a nuclear acylated monoacetate; phenols are sometimes acetylated in the nucleus by acetic anhydride-sulphuric acid.

If stipitatic acid actually has the resonating structure (I) or (II), it represents a new type of aromatic system; the parent cycloheptatrienolone might be termed 'tropolone'. This system would be closely analogous to azulene, while the hydrogen chelation as part of an aromatic system has long been known in the porphyrins. Cyclopentadienolone may prove to have an analogous structure. An attempt to synthesize an analogue of (I) with the carboxyl replaced by methyl, by condensation of mesityl oxide with ethyl oxalate in presence of two moles of potassium ethoxide in boiling ether, unfortunately gave the isomeric benzene derivative.

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¹ *Biochem. J.*, **36**, 242 (1942).

Preparation of Thin Sections of Synthetic Resins and Wood-Resin Composites, and a New Macerating Method for Wood

VARIOUS softening methods have been used in preparing sections of hard material for microscopic examination; but none of these has been found effective for so-called 'improved wood' made up of wood veneers impregnated with phenol-formaldehyde or other resin and compressed and bonded at a high temperature. The microscopic examination of synthetic resins and materials incorporating such resins is of value in revealing the nature and distribution of fillers, colouring matter and reinforcements, and other features of the internal structure. It has also been found useful as a means of identifying the different kinds of resin used as adhesives in plywood¹. In order to prepare microscope sections of the harder forms of these materials, some investigators have had recourse to the petrologists' method of grinding and polishing thin sections for examination by transmitted light, and the metallurgists' method of examining a polished surface by reflected light.

It has now been found that a mixture of 1 part by volume of glacial acetic acid with 2 parts by volume of hydrogen peroxide (20 volumes) at 60° C. and atmospheric pressure has a softening action on fully cured phenol-formaldehyde and urea-formaldehyde resins and on wood-resin composites. After being treated in this way for periods of 24–48 hours, solid blocks of resin and of various types of 'improved wood', up to $\frac{1}{2}$ in. cube, have been sectioned without difficulty in a Reichert sledge-type wood microtome.

A modification of this treatment, using equal parts by volume of glacial acetic acid and hydrogen peroxide at 60° C. for 48 hours, has the effect of decomposing or disintegrating urea-formaldehyde resin. Phenol-formaldehyde resins are softened to the extent that 'improved wood' incorporating such resins is broken down and the wood itself is macerated. Incidentally, this method has certain advantages over standard methods of macerating ordinary wood for microscopic examination.

It is known that acetic acid in the presence of oxidizing agents has a delignifying action on wood², but this process does not appear to have been employed before in microscopic technique either for wood, resin or composite materials.

The effect of varying the proportions of the two reagents and the temperature and pressure during the reaction is being investigated further.

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¹ Rendle, B. J., and Franklin, G. L., *J. Soc. Chem. Ind.*, **62**, 11 (1943).

² Wiltshire, W. A., *Proc. Papermkr's Assoc. G.B.I., Tech. Sect.*, **24**, 347 (1943).

Age of the Baker's Hole Coombe Rock, Northfleet, Kent

SINCE the Abbé Breuil published his view¹ that the palaeolithic 'floor' at Baker's Hole, Northfleet, belongs to the Levallois I–II stage of his classification, some Pleistocene workers² have been inclined to follow him in correlating the superincumbent Coombe Rock with the cold phase which produced the *Rissien* solifluxion of the Somme succession.

The stratigraphical evidence at Baker's Hole is that an undisturbed 'floor' of implements rests on a bench at about 30 ft. above O.D. (which is elsewhere buried by 50-ft. Terrace deposits), and is directly succeeded by the Coombe Rock^{3,4}. The precise position which we assigned to this deposit in our suggested Thames sequence⁵ depended partly on the identification of the 'floor' as Lower Levalloisian. The fact that the Lower Crayford Brickearths of the 50-ft. Terrace have yielded an industry identified by Breuil⁶ as Middle Levalloisian (Levallois III), together with the evidence published by Burchell⁷, led us to the conclusion that the Coombe Rock antedated the Taplow-Crayford aggradation, and corresponded to the apparent coombe rock below the 50-ft. Terrace gravels exposed in the Taplow Station pit⁸.

One of us (K. P. O.) has recently had occasion to handle all the material found by F. C. J. Spurrell in the part of the Northfleet 'floor' which was exposed in the Tramway Cutting west of the Ebbsfleet, and now preserved in the Geology Department, British Museum (Natural History). A number of features of this industry, including the occurrence of cordate hand-axes along with the tortoise-cores and flakes