

the hymenium which is distinctly polyporoid. It is closely adpressed to the substratum and extends up to a foot in length. When fresh, the fungus is of dark ash-grey colour with a shining lustre which no one can afford to overlook.

Prof. Burt to whom the specimen was sent has also identified it as *Grammothele cineracea* Bres. He further writes to me to say that this species was first described from specimens collected in Cuba, under the name of *Kneiffia grisea* Berk. and Curtis.<sup>2</sup> Its inclusion in *Kneiffia* was, however, unfortunate. It was next collected by Rev. Rick at Sao Leopoldo, Rio Grande du Sol, Brazil, South America. These specimens were distributed in the exsiccati of Theissen Decades *fungorum brasiliensium*, No. 5. The same species was again reported from the Philippines and described by Bresadola as *Grammothele cineracea*.<sup>3</sup>

The name *Grammothele grisea* Berk. and Curtis should have been the proper nomenclature for this species. But as it is already pre-occupied by another species of the same authors, the type specimen of which was also collected at Cuba and a description published along with that of *Kneiffia grisea* Berk. and Curtis,<sup>2</sup> the comparatively recent nomenclature adopted by Bresadola has been retained for this species. It is very near to *Poria hydnopora* Berk. which, according to some, is a species of *Grammothele* but differs from it in having smaller sub-angular pores and other characteristics.

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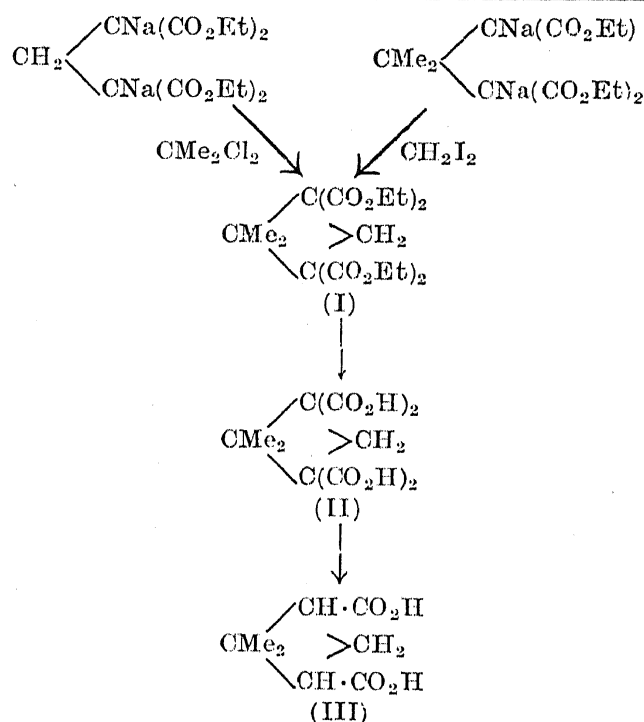
May 30, 1934.

### Two New Methods of Synthesis of Norpinic Acid.

THE synthesis of norpinic acid has been achieved by the following two new methods, namely, (1) by the condensation of sodium methylene dimalonate and  $\beta\beta$ -dichloropropane, and (2) sodium derivative of isopropylidene dimalonate with methylene iodide.

<sup>2</sup> *Journ. Linn. Soc.*, X, p. 327, 1868.

<sup>3</sup> *Hedwigia*, 56, p. 299, 1915.



The tetracarboxylic ester (I) suffered hydrolysis and decarboxylation simultaneously on being boiled with 50 per cent. sulphuric acid yielding *trans*-norpinic acid (III) m.p. 145-146° softening at 136°. The tetracarboxylic acid m.p. 200° (II) obtained from (I) by hydrolysis with alcoholic potash was decarboxylated by heating at 220-240° or by boiling with 50 per cent. sulphuric acid. The yields of II and III are poor.

As a result of a large number of experiments conducted under varying conditions, it has been possible to effect considerable improvement upon the methods of preparation of isopropylidene malonic (yield 1315 g. from 1170 g. of malonic ester) and dimalonate (yield 42 g. from 80 of isopropylidene malonic ester) esters described by Clemo and Welch (*J. C. S.*, 1928, 2621).

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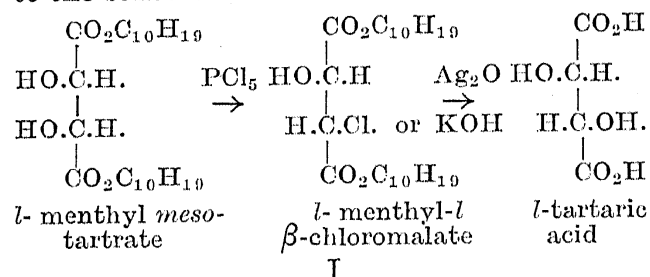
### Conversion of *Mesotartaric* Acid into an optically active form by Walden inversion under asymmetric conditions.

ORGANIC compounds, containing asymmetric centres in their molecule, but inactive due to internal compensation, are generally supposed to be non-convertible into the active

enantiomerides and there is no mention in chemical literature of any attempt having been made so far to achieve such a conversion. It appeared probable that if by any means the disposition of the atoms or groups attached to one of the asymmetric carbon atoms in an internally compensated compound can be altered, the resulting compound might show optical activity. But any such alteration, tried under normal conditions, by which the internal compensation can be disturbed provides a scope for the production of both the *d*- and *l*-forms in equimolecular proportions giving rise to a racemic product. Just in accordance with this concept, it was found that ethyl mesotartrate by the action of phosphorus pentachloride (Anna Rao and Guha, *Ber.*, 1934, 67, 741) gave diethyl *dl*- $\beta$ -chloromalate.

To overcome this difficulty, it was planned to study Walden inversion process on meso-tartaric acid under asymmetric conditions. If, in place of the ethyl ester, optically active ester groupings are introduced, it is hoped that, under the influence of the active ester groupings there would be formed an excess of one of the two antipodes from which an active product would arise after the ester groups have been knocked out.

An experimental verification of this conception has now been made. *l*-Menthyl mesotartrate has been taken as the starting material. The halogenation has been conducted by means of phosphorus pentachloride and hydroxylation by means of silver oxide or alcoholic potash. It has been found that during hydroxylation, the ester groups are also split up and the end product yields a small amount of *l*-tartaric acid according to the scheme:



The identity of the compound (I) has been confirmed by reducing it in an alcoholic solution by means of aluminium-mercury couple, and hydrolysing the reduction product by potash whereby an acid showing *laevo*-rotation is obtained. There is no theoretical possibility of any optically active

acid other than malic acid being formed in this process.

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### X-Ray Analysis of the Crystal Structure of Dibenzyl.

DIBENZYL crystallises in the monoclinic prismatic class. A preliminary X-ray analysis by Hengstenberg and Mark<sup>1</sup> shows that it belongs to the space group  $C_{2h}^2$  with two molecules in the unit cell; the molecules possess a centre of symmetry. I have made a detailed X-ray analysis of the structure of this crystal, and the positions of the various carbon atoms in the unit cell are as follows: The 6 carbon atoms of each benzene ring form a regular hexagon as in diphenyl<sup>2</sup>; one of the aliphatic carbon atoms, *viz.*, C, (see Fig. 1) lies on the prolongation of the line joining the atoms 4 and 1, and the other

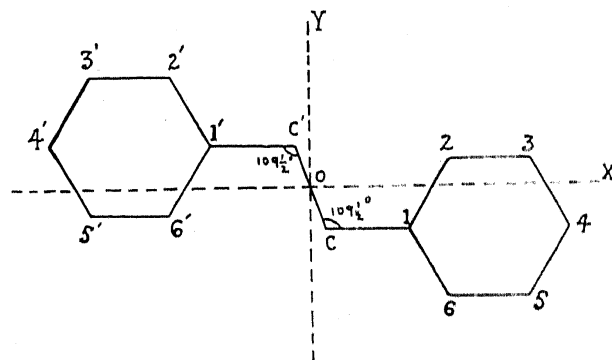


Fig. 1.

on the line joining 4' and 1' (adopting the usual notation). The line joining C and C' makes with each of the above lines (*viz.*, 4-1 and 4'-1'), the usual tetrahedral angle of  $109\frac{1}{2}^\circ$ . Further, the two benzene rings do not lie in the same plane, but lie in parallel planes slightly separated from each other. Thus in Fig. 1, all the carbon atoms on the right hand side of OY may be supposed to be raised above the plane of the paper by about  $0.12\text{\AA}$ , and all the atoms on the left side to be pushed below the plane by the same distance.

In order to define the orientations of the molecules in the unit cell, consider in Fig. 1

<sup>1</sup> *Z. f. Krist.*, 70, 283, 1929.

<sup>2</sup> *Ind. J. Phys.*, 7, 43, 1932.