

On adding small quantities of lead (within 2 per cent.),  $\chi_{\perp}$  was found to increase slightly while  $\chi_{\parallel}$  decreased considerably. The magnetic anisotropy fell from 2.56 for the pure metal to 2.00 when there was 2 per cent. of lead. Bismuth produced the same change as lead but the changes were much more pronounced.

We have also studied the influence of adding small quantities of tin.  $\chi_{\perp}$  increased considerably while  $\chi_{\parallel}$  decreased rapidly when the percentage of tin in the crystal was increased. When nearly 1.5 per cent. of tin was present in the crystal the magnetic anisotropy was found to be 1.

The influence of cold working on the single crystals was also investigated. The general effect was found to be an increase of  $\chi_{\perp}$ , a decrease of  $\chi_{\parallel}$  and consequently a decrease in the value of the magnetic anisotropy.

Full details of this investigation including a discussion of the results will be published elsewhere.

S. RAMACHANDRA RAO.

A. S. NARAYANASWAMY.

Annamalai University,  
Annamalainagar,  
December 6, 1937.

<sup>1</sup> Rao and Subramaniam, *Phil. Mag.*, 1936, **21**, 609.

<sup>2</sup> Susceptibility values are given in  $10^{-6}$  units.

<sup>3</sup> Rao, *Proc. Ind. Acad. Sci.*, 1936, **4**, 186.

### Rottlerin—Part II.

THE substance  $C_{19}H_{21}O_6N$  (?) m.p.  $206^{\circ}$ , described by us<sup>1</sup> has been further investigated. Rottlerin tetramethyl ether (19.5 g.) was treated with sodium nitrite in glacial acetic acid and 17.5 g. of the above substance was isolated. Therefore it is clear that the substance cannot have 19 carbon atoms. The other possibility, namely, that oxides of nitrogen have added to one of the double bonds seems more plausible in view of the high yield. This point is being further investigated.

The above substance, m.p.  $206^{\circ}$ , on catalytic reduction with palladium and hydrogen is converted into a substance m.p.  $162^{\circ}$  after crystallisation from alcohol. [Found: C, 63.44; H, 6.23; N, 4.0.] These analytical values have yet to be established by duplicates. This substance (m.p.  $162^{\circ}$ ) when treated with alcoholic alkali and warmed, passes into solution and unlike the unreduced substance, m.p.  $206^{\circ}$ , does not give any benzaldehyde. This latter observation proves that the addendum has not added to the

double bond carrying the phenyl group (Ph. CH = CH —). The alkaline solution of the substance (m.p.  $162^{\circ}$ ) furnishes another substance, m.p.  $139^{\circ}$  (pale yellow needles from alcohol) on acidification. This substance gives C, 63.33; H, 6.12; N, 4.13% and seems to be isomeric with the substance, m.p.  $162^{\circ}$ .

We have considered the possibility of  $C_2H_3N_2O$  adding to one of the double bonds of tetramethyl rottlerin, the calculated values of C, H and N of the substances m.p.  $206^{\circ}$ , m.p.  $162^{\circ}$  agree well with those found but difficulty arises with the substance m.p.  $139^{\circ}$  which can be accommodated only if it is assumed that the acetoxy group has not been split off by alkali—rather a difficult assumption to make. We are further investigating the nature of these substances.

We may mention that the substances (m.p.  $162^{\circ}$  and m.p.  $139^{\circ}$ ) are resistant to reduction by platinum oxide catalyst. The substance m.p.  $162^{\circ}$  on oxidation with aqueous acetone potassium permanganate solution gives a substance m.p.  $123^{\circ}$ . (Found N, 2.89 per cent.)

Further work is in progress.

K. S. NARANG.

J. N. RAY.

B. S. ROY.

University Chemical Laboratories,  
Lahore,  
December 4, 1937,

<sup>1</sup> Narang, Ray and Roy, *Curr. Sci.*, 1937, **6**, 156.

### Cyclopentyl and Cyclohexyl Succinic Acids and Resolution of Cyclopentyl Succinic Acid.

THE cardiac aglucones would seem to owe their physiological action to the lactone group in the molecule, and the ætiocholane ring structure perhaps serve the purpose of a convenient framework for the resting of the lactone group. To throw light on this assumption as also to verify the mechanism of formation of the lactone group from the side chain of norcholanic acid as postulated by Windaus,<sup>1</sup> work has been started. The object is to synthesise lactones of relevant structure but carrying different rings.

A standard method had to be devised for the synthesis of  $\alpha$ -ring-substituted succinic acids which are to constitute the starting material for the synthesis of the lactones. The condensation of cyclopentanone with ethyl  $\alpha$ -bromosuccinate was studied with a