

Record of *Typhlocaris Galilæa*

Two specimens of the blind prawn, *Typhlocaris galilæa*, were obtained recently from the cistern of the water-mill near Tabgha at the north end of the Sea of Galilee. This species had been reported as being exterminated by drainage operations. It appears probable that the species normally inhabit a dark cave or grotto formed by a hot sulphur spring, and the specimens obtained by me were stragglers which were carried out into the cistern.

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## Blood Groups among the Khasis

THE Khasis are inhabitants of the district of Khasia and Jaintia Hills, Assam. They are short statured with a high mesocephalic head, a mesoprosopic face and a mesorrhine nose, and in the height of the root of the nose above the level of the orbit they are pro-opic. The head varies from long to medium and has a high vault. The hair is of medium growth, straight and black in colour. The forehead is vertical and medium in height. The depression of the nose is shallow and the nasal bridge is concave. The malars are prominent and there is no alveolar prognathism. The lips are of medium thickness, the chin ordinary and the angle of the lower jaw medium. The eye colour is light brown and the eye slit is horizontal.

Samples of blood were collected from fifty individuals—male, female and children. The percentage ratios in groups are given below and compared with others:

	O	A	B	AB
Khasis .. ..	46.6	15.6	33.3	4.5
Japanese .. ..	44.8	29.9	23.7	9.8
Negritoes (Grove) .. ..	48.5	33.3	14.1	4.0
Indians .. ..	31.3	19.0	41.2	8.5

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## REFERENCES

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Isolation of an Anhydro *l*-Galactose Derivative from Agar

It has been found possible to methylate agar by direct treatment of the polysaccharide with methyl sulphate and sodium hydroxide solution. The product had OMe, 33.0 per cent,  $[\alpha]_D^{20} - 93.1^\circ$  in chloroform and it contained no sulphur.

Methylated agar is easily hydrolysed by boiling with 2 per cent methyl-alcohol hydrogen chloride, and the hydrolysate contains little or no methyl levulinate. Thus, the hydrolytic products from methylated agar (14 gm.) contained only a very small amount of ester which was separated as the barium salt (0.18 gm.). The mixture of glycosides was separated, by distillation, into three fractions: Fraction 1 was a mixture of the  $\alpha$ - and  $\beta$ -forms of 2:4:6-trimethyl methyl-*d*-galactoside, identical with that already separated by Percival and Somerville<sup>1</sup> from methylated agar. Fraction 2 was a mixture of

1 and 3. Fraction 3 was collected in five successive fractions the constants of which were sufficiently close to warrant the assumption that no great difference in composition existed among them: OMe, 37–40 per cent. On further methylation with methyl iodide, each of these sub-fractions yielded a crystalline derivative which had the composition of a dimethyl anhydro methylhexoside. It is recognized as 2:4-dimethyl 3:6-anhydro methyl *l*-galactopyranoside for the following reasons.

It shows the properties characteristic of 3:6-anhydro methylhexosides (cf. Peat and Wiggins<sup>2</sup>) in that it is hydrolysed by cold acid and is unaffected by prolonged boiling with sodium methoxide solution. It was possible to compare the substance with 2:4-dimethyl 3:6-anhydro methyl *d*-galactopyranoside, which had been synthesized in this laboratory for another purpose (Haworth, Jackson, and Smith, unpublished work). The comparison established that the two were optical enantiomorphs:

	Product from agar	Synthetic product
Melting point .. ..	82–83°	82–83°
$[\alpha]_D$ in chloroform .. ..	+85.3°	–86.6°
$[\alpha]_D$ in water .. ..	+73°	–76°
$[\alpha]_D$ in cold dil. sulphuric acid .. ..	+77.8 → –21°	–69.4 → +20°

Dr. E. G. Cox, of this department, reports: The complete identity of the X-ray photographs of single crystals of the two substances, coupled with the rotational data given above, shows that the two are enantiomorphs. Further, calculation of the molecular weight from the X-ray data indicates that the substances are monomeric in the crystalline state.

Hydrolysis of the galactoside from agar yields 2:4-dimethyl 3:6-anhydro *l*-galactose, m.p. 114°. The corresponding product from the synthetic *d*-galactoside has m.p. 115°.

The existence of *l*-galactose in agar was demonstrated by Pirie<sup>3</sup>, who isolated hepta-acetyl *dl*-galactose by the acetolysis of agar, and experiments are now in progress to determine whether the 3:6-anhydro-ring structure which is present in methylated agar exists preformed in the original polysaccharide.

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<sup>1</sup> *J. Chem. Soc.*, 1615 (1937).<sup>2</sup> *J. Chem. Soc.*, 1088 (1938).<sup>3</sup> *Biochem. J.*, **30**, 369 (1936).

## Isolation of an Anhydro-Sugar Derivative from Agar

SINCE by the kindness of Prof. W. N. Haworth we have learnt that a publication on agar is shortly to appear from the Birmingham laboratories<sup>\*</sup>, we feel it desirable that one aspect of our researches on the subject should be communicated here.

Accompanying the 2:4:6-trimethyl methyl-galactoside obtained by the hydrolysis of methylated agar with methyl-alcoholic hydrogen chloride, we reported<sup>1,2</sup> the presence of a syrup (c. 25 per cent) which appeared to be a dimethyl methylketoside. Further work has now shown that this portion is not homogeneous, since it can be partially separated into two fractions by extraction with boiling light petroleum, and these fractions in turn are also

<sup>\*</sup> Added on proof: Hands and Peat, *Chem. and Ind.*, **57**, 937 (1938).