

A critical analysis of our data shows that, in general conformity with the findings of Gray *et al.*, the anti-mony content of urea stibamines (Brahmachari) is fairly constant and lies between 39 and 42 per cent. In only five instances (out of 100 analyses) was a figure above 42 per cent (but less than 44) found. In only one case, a figure below 39 per cent antimony was obtained. However, our maximum figure was definitely lower than the minimum figure (44.19 per cent) of Gray *et al.*<sup>4</sup>.

Napier<sup>8</sup> found that the lethal dose of urea stibamine for mice was 250 mgm. per kgm. body weight. Though an accurate statistical analysis of our mean lethal dose figures has not yet been made, it is possible to state that in the majority of our experiments a toxicity figure varying between 200 and 225 mgm./kgm. was recorded. The maximum tolerated dose was often in the neighbourhood of 150 mgm./kgm. and seldom exceeded 170 mgm./kgm. Specimens containing a higher antimony content apparently showed a higher toxicity and stronger therapeutic effect, but a statistically significant relationship between antimony content and toxicity could not be established.

Work is in progress to find out whether, in view of its fairly constant composition (within the limits stated above), urea stibamine can be employed as a standard for evaluating the potency of other pentavalent organic antimony compounds of similar composition manufactured in India. The absence of an international standard of unvarying composition for antimony, as in the case of organometallic compounds of the arsenic group, is keenly felt by workers engaged in drug standardization in India.

R. C. GUHA.  
N. K. DUTTA.  
B. MUKERJI.

Biochemical Standardisation Laboratory,  
Govt. of India,  
All India Institute of Hygiene  
and Public Health,  
Calcutta.  
Oct. 10.

<sup>1</sup> Brahmachari, *Ind. J. Med. Res.*, **10**, 492 (1922).

<sup>2</sup> Niyogi, *J. Ind. Chem. Soc.*, **5**, 753 (1928).

<sup>3</sup> Ghosh *et al.*, *Ind. J. Med. Res.*, **16**, 461 (1928).

<sup>4</sup> Gray *et al.*, *Proc. Roy. Soc., B*, **108**, 54 (1931).

<sup>5</sup> Brahmachari, *NATURE*, **145**, 1021 (1940); **145**, 546 (1940).

<sup>6</sup> Ghosh, *Ind. J. Med. Res.*, **16**, 457 (1928).

<sup>7</sup> Burn, "Biological Standardization", 252 (1937).

<sup>8</sup> Napier, "Kala-azar", 2nd Edit. (London, 1927).

in two parallel planes about 1.5 Å. apart, with the majority of the atoms lying probably in or near the two planes; one plane contains the purine radical, the other the ribose ring, and it is held that the hydroxyl groups as well as the primary alcohol group must be approximately in the plane of the purine radical, in order to accommodate this close lateral packing of atoms.

Hendricks thus postulates that in the nucleoside montmorillonites the hydroxyl groups at C<sub>2</sub> and C<sub>3</sub> of the pentofuranoside and the primary alcohol group C<sub>5</sub> are in the *cis* relationship with reference to the plane of the furanose ring, whereas in the ribofuranosides the configuration is such that the hydroxyl groups are both *trans* to C<sub>5</sub>; in fact, the sugar shown in Fig. 8a<sup>1</sup> is not a ribofuranoside but is a lyxofuranoside. Nevertheless it is generally accepted that the sugar in these nucleosides is *d*-ribose, and further proof of this identification will shortly be published elsewhere in so far as the pentose of the four nucleotides of the ribonucleic acid of yeast is concerned. Nucleotides from other sources are being similarly examined.

Consequently, there would seem to be two alternatives. (1) The sugar in the nucleoside ions examined was actually *d*-ribose; if so, the conclusions of Hendricks may require revision to accommodate the fact that either two hydroxyls or one primary alcohol group, depending on the as yet unsettled  $\alpha$ - or  $\beta$ -configuration of the glycosidic linkage, will lie outside the plane of the furanose ring, *trans* to the purine radical and at a distance from the furanose plane about the same as that separating it from the purine plane. (2) The sugar in the nucleoside ions examined was in fact  $\alpha$ -lyxose; in this case the position would be that the pentose in the nucleosides (nucleotides) may not always be *d*-ribose, a possibility which we have suspected for some time. In this connexion it may be mentioned that two of us have isolated *l*-lyxose in the form of a derivative from yeast ribonucleic acid; the details and significance of this observation will be discussed elsewhere. The material source of the nucleosides examined by Hendricks was not stated.

J. M. GULLAND.  
G. R. BARKER.  
D. O. JORDAN.

University College,  
Nottingham.  
Dec. 29.

<sup>1</sup> *J. Phys. Chem.*, **45**, 65 (1941).

<sup>2</sup> See Gulland, *J. Chem. Soc.*, 1722 (1938).

## Configuration of Purine Nucleosides

HENDRICKS<sup>1</sup> has measured the interplanar cleavage spacings, *d* (001), of a number of organic salts of the clay mineral montmorillonite by means of nickel *K $\alpha$*  radiation. Among the cations studied were those of the purine bases guanine and adenine and the corresponding nucleosides guanosine and adenosine, which are 9-guanine *d*-ribofuranoside and 9-adenine *d*-ribofuranoside respectively<sup>2</sup>. By his measurements Hendricks showed that the arrangement of the atoms of the two purine ions is coplanar, thus confirming the view which is reached from consideration of molecular models. He also concluded that the nucleoside ions have a van der Waals 'thickness' between oxygen centres (of montmorillonite) only about 1.0 Å. greater than would be required for a strictly coplanar atomic arrangement, and that the purine and sugar radicals of the nucleoside ions lie

## Newt Larvæ in Brackish Water

It is generally believed that amphibian larvæ are not found in salt or brackish waters, and therefore the following observation seems interesting.

On August 7, 1942, newt larvæ were observed in one pool of the many on the western side of Carradale Bay, Argyll. The pool was about nineteen yards from the nearest salt water pool on a gently sloping shore. Its bottom consisted of rock and shingle and it was surrounded by turf. It was fed by rain and seepage. A sample taken contained chloride equivalent to 0.28 per cent sea water. This is regarded as a fresh water.

On August 18 a neap tide came to within nine yards of the pool. During the night of August 18-19