n-dodecylamine on quartz¹, the surfaces of glass and quartz probably being sufficiently similar to justify the comparison.

The concentration of amine at which multi-layer formation began is too low to be determined from the curves. Thus the observation that adsorption of amine increases with increasing pH in the range studied refers only to the multi-layers, as does the conclusion that free amine molecules rather than alkylammonium ions are adsorbed. The demonstration^{2,3} that adsorption of the ions occurs on quartz at pH 7.5 is, therefore, not contradicted as very low concentrations of dodecylamine were used in this work, such that the monolayer was incomplete according to the results of Gaudin and Blocher¹.

As expected, it was found that glass electrodes used to measure the pH of a solution containing *n*-dodecylamine did not function properly under conditions which gave heavy adsorption of amine on the glass. This was found to be the case also in solutions containing tri-*n*-nonylamine used for experiments on the solvent extraction of metals. In each case the electrodes behaved normally after immersion in dilute hydrochloric acid.

The *n*-dodecylamine used was labelled with carbon-14 and estimated by using a liquid scintillation counter. We thank the University of London Central Research Fund for this instrument and the Department of Scientific and Industrial Research for a maintenance grant to one of us (G. H.)

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Diaboline from a Malayan Species of *Strychnos* and its Biogenetic Significance

In a previous article¹, it was pointed out, on the basis of the analysis of a great number of plants, that only in South American *Strychnos* quaternary curarizing alkaloids were present. No other alkaloid with strychnine-like activity was found in those plants. African and Asian species of *Strychnos* so far examined yield only tertiary alkaloids, and some species strychnine and related alkaloids.

Information about the properties of arrow poisons in Malaya investigated by Chu Yu Lin² have led us to investigate *Strychnos* species from Malaya with the aim of establishing the presence of quaternary alkaloids.

Particular attention was paid to an undetermined *Strychnos* species indicated as *Strychnos KL 1929*, which is very rich in alkaloid content. This plant grows in Selangor and is probably used for the preparation of arrow poison. This species, according to Dr. P. W. Leenhouts (of Rijksherbarium, Leyden), is closely related to *S. ignatii* Berg (syn. *S. tieuté* Lesch).

Leaves, fruits, stems, bark and roots of *Strychnos KL 1929* were percolated with diluted acetic acid. The percolates after concentration and basification were extracted with chloroform.

Stems contain no alkaloid; roots contain an orange alkaloid on which we shall report later. Another alkaloid was obtained from fruits and leaves (1.5 per cent). Its melting point and ultra-violet and infra-red spectra are identical with the one reported for diaboline. This was confirmed by direct comparison with the infra-red spectra, paper chromatography and melting point of an authentic specimen.

In order to confirm this result the alkaloid was hydrolysed by the method of Bader, Schlittler and Schwarz³, and the product obtained was identical through its melting point, picrate melting point and direct comparison of ultra-violet and infra-red spectra, with a desacetyl-diaboline sample.

Diaboline was first reported by King⁴ in a South American *Strychnos* (*S. diabolii*). This was confirmed by Schlittler and Bader³ and by Marini-Bettolo and Iorio⁵, who have also found desacetyl-diaboline in the plant.

The structure of diaboline has recently been elucidated by Battersby and Hodson, who showed that this base is the *N*-acetyl-Wieland-Gumlich aldehyde⁶. This aldehyde is closely related to strychnine⁷ and may also give rise, as demonstrated by Schmid and Karrer *et al.*⁸ and by Battersby and Hodson⁹, to quaternary *Strychnos* alkaloids.

The occurrence of diaboline in *Strychnos KL 1929* in fairly pure form and in large amounts in comparison with the content of South American *Strychnos* species is further confirmation of the biogenesis of *Strychnos* alkaloids and may represent the necessary linkage between the South American and Asian species of this genus.

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BIOCHEMISTRY

L-Ascorbic-1-¹⁴C Acid Catabolism in the Rhesus Monkey

So far as we are able to ascertain, a study of the catabolism of ascorbic acid in the rhesus monkey (*Macaca mulatta*) has not been previously reported. We wish to make a preliminary report of the excretion of radioactivity in the expired air and the urine of a monkey following intramuscular injection of L-ascorbic-1-¹⁴C acid.

A rhesus monkey, one year old, weighing 1,190 gm. was injected with 0.75 mgm. L-ascorbic-1-¹⁴C acid containing 116 µc. carbon-14 dissolved in 0.5 ml. water.