Chloroacetal prepared from alcohol and chlorine, has been condensed with diethylamine (*Ber.*, 1897, 30, 1504) to give 30 per cent. yield of the acetal (II); and 66 per cent. of unreacted diethylamine is recovered. The hydrochloride of (III) is obtained from (II) in quantitative yields, and condensed with acetone in presence of alkali to form *diethylaminopentenone* (IV), (b.p. 103-5°/30 mm., n_D^{26}, 1·4453) in about 15 per cent. yield. On reduction with hydrogen in presence of Raney's nickel, (IV) furnishes diethylaminopentanone (V) (yield, 80 per cent.) which is converted to the required amine (I) in the usual way. The yields of compounds (II) and (IV) require further improvement to make this process commercially successful.

In order to conserve the costly diethylamine as much as possible, the following reactions, represented schematically below, have been tried:

$$ClCH_2CH(OEt)_2 + CH_3COCH_3 \rightarrow$$

$$\rightarrow \underset{(VI)}{ClCH_2CH(OH)\cdot CH_2COCH_3} \rightarrow$$

$$\rightarrow \underset{(VII)}{ClCH_2\cdot CH{=}CH\cdot COCH_3} \xrightarrow{NHEt_2} \underset{(IV)}{}$$

Attempts to dehydrate the compound (VI); (yield 38 per cent.; b.p. 128°/15 mm.; d_{30}^{30}, 1·086; $n_D^{26\cdot5}$, 1·4151) to (VII) have not been successful, either complete decomposition or resinification taking place.

Organic Chemistry Section,
Dept. of Pure & Applied Chemistry,
Indian Institute of Science, Bangalore,
March 12, 1943.

P. C. GUHA.
P. L. NARASIMHA RAO.
T. GEORGE VERGHESE.

EXCITATION AT THE ANODE AND THE CATHODE

THE fact that on closing the current through a nerve, the excitation wave starts from the cathode shows that cations are important agents. How, then, is the fact of excitation at the anode, which occurs on breaking the current, to be explained. It is pointed out by Kieth Lucas (1912) that "the one feature which is common to the cathode when the current is made, and the anode when the current has just ceased to flow, is an increase of the concentration of cations above the value which occurred at each of these points immediately before". At the anode, however, the concentration of cations only rises to its normal level by diffusion, after having been decreased.

Experiments on unstriated muscle have shown, that ions may produce their effects, either excitation or inhibition, after their concentration having been lowered below normal, is again raised to normal, this concentration previous to being lowered, having no such effect. Thus frog stomach may contract if it is at first placed in a solution, free of sodium chloride, and then the concentration of the latter being raised to normal (Singh, 1939); instead of contraction, inhibition may be produced, probably due to the fact that the effect of sodium is inhibitory, and that of chloride excitatory, the result depending upon as to which of these actions predominates. In the guinea-pig uterus, the normal concentration of potassium in the mammalian saline has no appreciable effect; if the muscle is deprived of potassium for ten minutes, its reintroduction produces marked inhibition (Singh, 1942).

The muscle thus accommodates to normal concentration of ions.

Brigade Laboratory,
Allahabad,
January 18, 1943.

INDERJIT SINGH.

1. Kieth Lucas, *Proc. R. Soc.*, 1912, **85B**, 495. 2. Singh, I., *J. Physiol.*, 1939, **96**, 367. 3. Singh, I., *Ind. J. Med. Res.*, Oct. 1942.

ON THE MOUTH-PARTS OF THE INDIAN GLOW-WORM, *LAMPROPHORUS TENEBROSUS* WLK.

THE larval mouth-parts of *Lampyris noctiluca* L. and *Luciola gorhami* Rits. have been worked out by Haddon, K. (1915) and Mehta, D. R. (1932) respectively. Paiva, C. A. (1919) and Hutson, J. C., and Austin, G. D. (1924) have described only the habits and life-history of the Indian Glow-worm, *Lamprophorus tenebrosus* Wlk. The mouth-parts of this form have not been worked out in detail till now.

The following observations were made from material collected from the College premises, Tambaram, Chingleput Dist. The adult male head is hypognathous and the mouth-parts are mandibulate with minimum growth of hairs. The larval and female head is prognathous and highly retractile. The head capsule is smooth and dorso-ventrally flattened with the epicranial suture well-emphasised. The labrum is an inflexed plate forming the roof of the buccal cavity. The mandibles are strongly falcate with double condylar articulations with the head capsule. The maxillæ are fused into a compound labio-maxillary plate, the major portion of which is formed by the stout stipites. The female mouth-parts resemble those of the larva but slightly modified. The larval mouth-parts are wonderfully adapted for attacking and consuming the snails (*Ariophanta ligulata*, *A. bistrialis*, etc.) on which they feed. The maxillary palp is 5-jointed in the male, 4-jointed in the female and 3-jointed in the larva. The labial suture is conspicuous and the labial palp is 2-jointed throughout. The mouth-parts of the larva are characterised by the enormous development of hairs all round