Two other species of *Limnocnida*, namely, *L. tanganicæ* occurring in Lake Tanganyika, Victoria Nyanza and the River Niger, and *L. indica* in the Krishna Valley in the Western Ghats, have been recorded. Extending a suggestion of G. A. Boulenger, apparently supported by Cunnington and Annandale, it is possible that the three species may prove to be varieties of one species, which inhabited a sea connecting Africa and India in Middle Eocene times.

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[1] C. L. Boulenger, *Quart. J. Micro. Sci.*, **57**, 427.
[2] G. Arnold, NATURE, **91**, 111, April 3, 1913. G. Arnold and C. L. Boulenger, *Proc. Zool. Soc. Lond.*, **71**; 1915.

Adaptability of the Natal Crawfish

IN connexion with the South African Marine Biological Survey carried out off the Natal coast, while operating at Station 770 on August 12, 1925, fifty-three specimens of *Palinurus Gilchristi* were obtained. Three individuals (males) were brought into Durban harbour alive, and put into a wire cage which was lowered to a depth of approximately 2 fathoms. (This obviated the need of constantly changing the water.) The cage rested on the bottom and at regular intervals the crawfish were fed and examined. (The food consisted of fish.) The behaviour of the specimens throughout a period of almost two months appeared to be perfectly normal. The colouring of the shell and eyes, however, appeared to have undergone slight changes.

Certain chemical and physical observations were conducted and the comparatively wide variations of certain conditions of life are of interest.

The actual depth where the specimens were obtained was 209 fathoms, and the bottom consisted of dark green mud. These crawfish are only found in certain areas in depths of 150–250 fathoms. At a depth of 200 fathoms in sea water of average salinity, the pressure is approximately 36 atmospheres (500 lb.) per square inch. The hauling up of the net from this depth, that is, 200 fathoms, took approximately twenty minutes, and was done in one direct haul.

At depths of the order of 200 fathoms there is a noticeable diminution of red rays. Also the intensity of the light is considerably affected. Where the captive specimens were kept, they were exposed to the full intensity of the morning sun, through a depth of twelve feet.

A series of observations on the temperature, salinity and hydrogen ion concentration were conducted near the floor of the ocean in the immediate vicinity of where the crawfish were obtained and also in the harbour.

The average figures obtained are shown in the accompanying table.

Depth	Depth of water samples	Bottom	Temp. °F.	Salinity, parts per thousand	*p*H
212 fathoms	185 fathoms	Green mud	51·3	35·35	7·97
2 ,,	Surface	Sand	71·1	35·66	8·25

On October 3, as the ship was proceeding to Cape Town, the specimens were taken out of the cage and placed in a large galvanised iron tank on board. The water was changed every four hours throughout the voyage. Owing to stress of weather and engine defect, the ship was delayed for thirteen days at East London. Here the crawfish were again placed in the cage and lowered over the side. On October 18, the ship resumed her voyage and the specimens were again placed in the tank. On October 19, the ship encountered heavy weather and the tank containing the specimens was damaged. Two of the specimens were washed overboard, the one remaining being found in the damaged tank. It was probable, however, that this specimen had been injured. On October 25, this specimen died.

Two specimens of the crawfish were under observation for 59 days, and one specimen for 65 days.

It is highly probable that the specimens would have survived a considerably longer period if it had not been for misadventure.

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Stereochemistry of the Free Triarylmethyl Radicals: A Totally Asymmetrical Synthesis

THE problem of the steric configuration of the free triarylmethyl radicals is as old as the discovery of the radicals itself. In spite of many attempts, no experimental evidence has been brought until the present to show whether the valencies of the free radical are directed towards the basis of a pyramid or whether they lie on a plane.[1]

Many years ago, one of us[2] tried to prepare an optically active triarylchloride with the intention of proving the possibility of the existence of optical activity in the free radical itself. The attempts did not succeed.

In a systematic investigation on this subject, it is now possible by means of illumination of asymmetrical triarylmethyl radicals with circularly polarised light to activate one of the two antipodes so that by the addition of chlorine optical activity appears.

Phenyl-ethylphenyl-methylphenyl-methyl was exposed to circularly polarised light of wave-length 4300 A., while diluted chlorine was led to the illuminated parts at a temperature of 0°. We observed the appearance of an optical rotatory power of 0·1°.

In the case of the phenyl-biphenyl-α-naphthyl-methyl which was treated in the same manner, an activity of 0·2° was observed. By illuminating the last radical with 5890 A., the wave-length of the corresponding absorption band in the red region of the radical, the opposite optical activity was created. This is in agreement with the fact that the anisotropic factors of the different absorption bands may have an opposite sign.

These results make it clear that the three valencies of the carbon atom of the radical *do not lie on a plane*. By these experiments an example is provided of a completely asymmetrical synthesis of an optically active substance from inactive material by means of circularly polarised light.

The apparatus used and the theoretical conclusions drawn from the experiments will be described in detail shortly.

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[1] Wallis, *J. Amer. Acad. Sciences*, 1929.
[2] G. Karagunis. Dissertation, Freiburg i. B., 1926. "Über Einige asymmetrische Triarylmethyle."