

reported on the leaves of tropical plants<sup>12</sup> and the prevalence of bacterial leaf glands in New Zealand plants<sup>13</sup> is suggestive.

The associations between *Nostoc* and the bryophyte, and with certain fungi<sup>14</sup>, do not fit into this general picture, because *Nostoc* does not depend on the other symbionts for its energy source. (These symbionts could provide *Nostoc* with a more favourable mineral supply, and extend the periods during which water is available for its growth.)

I am indebted to many people, particularly Mr. A. W. Humphries, for suggestions and criticisms, and to Prof. E. J. Underwood for his support.

C. A. PARKER

Institute of Agriculture,  
University of Western Australia.

Dec. 19.

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### First Record of the Elver of the African Eel *Anguilla nebulosa labiata* Peters

FOUR species of eel have been recorded from those freshwaters of the African continent and the island of Madagascar which enter the Indian Ocean. Of these, *Anguilla mossambica* Peters and *A. bicolor bicolor* McClelland are known from both the mainland and from Madagascar; but the records of *A. nebulosa labiata* Peters and those of *A. marmorata* Quoy and Gaimard refer to the continent and Madagascar respectively<sup>1,2</sup>. Three of these species are 'long-finned' eels and one, *A. bicolor bicolor*, is 'short-finned'.

Elvers of three of the four species of eel have been found. For the mainland Barnard<sup>3</sup> records an elver of *A. mossambica* from Natal and another specimen from the Breede River (Cape Province), and elvers belonging to this species have been taken in Madagascar<sup>1</sup>. The elvers of *A. marmorata* and *A. bicolor bicolor* are known only from Madagascar, and there are no records at all of the elvers of *A. nebulosa labiata*.

In 1956 I received from Mr. G. J. Lockley, fisheries officer for Tanganyika Territory, two elvers which had been collected on January 29 and provisionally identified by Dr. P. H. Greenwood, of the East African Fisheries Research Organization, Jinja, Uganda, as *A. nebulosa labiata*; later Mr. Lockley sent me eleven others taken in mid-February. These thirteen elvers were collected in the Mzinga River at Mtoni, near Dar-es-Salaam, Tanganyika. The water supply for this town is pumped out of the Mzinga River which flows into a tidal system, Mzinga Creek, and the elvers were discovered at a point about 200 yards above high-water mark in this creek and just below the intake of the water supply by Mr. G. Rowe, secretary to the Tanganyika Aquarist Society. The elvers, which ranged from 50.0 to 61.5 mm. in length, were preserved in alcohol, and those of the

first sample had retained their shape and pigmentation—characteristics marred in the second due to damage in the post.

The characters by which Ege<sup>1</sup> separates adult eels include colour, dentition and certain body proportions, in particular that of the "distance between verticals through anus and origin of dorsal fin in percentage of total length", a character which in conjunction with vertebral counts, pigmentation of the tail, etc., he also uses to identify elvers. This ano-dorsal distance formula, when applied to the elvers from Dar-es-Salaam, gave values by which I identified two of the fish as *A. nebulosa labiata* and the remaining eleven as *A. bicolor bicolor*. These values, together with some specimens, were then sent to Dr. V. Ege of the Marinbiologisk Laboratorium, Charlottenlund Slot, Denmark, who had kindly offered to examine them. He confirmed my identification of *A. bicolor bicolor*, which is the only species of eel in Africa with a short dorsal fin, but he suggested that I should check the identity of the two elvers assigned to *A. nebulosa labiata* by a count of the vertebrae. This count, which Dr. Ege also made, agreed with that given for *A. nebulosa labiata*.

Therefore, of the thirteen elvers from Dar-es-Salaam, two (one of the two collected in January and one of the February collection) are *A. nebulosa labiata* and are the first elvers of this species (which is confined to Africa) to be found, and eleven belong to *A. bicolor bicolor* and are the first record of elvers of this eel for the mainland of Africa and the second time they have been recorded from African freshwaters.

Records of elvers from African waters are most welcome since not only do they extend knowledge of the distribution of *Anguilla* spp. but also they throw light on the life-history of eels in Africa about which so little is known.

WINIFRED E. FROST

Freshwater Biological Association,  
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### Thermostable Liquid Culture Medium for the Minute Inoculum of Human Tubercle Bacilli

BOVINE serum or its fraction is generally used in liquid culture media, such as Kirchner<sup>1</sup> or Dubos<sup>2</sup> medium, for the minute inoculum of tubercle bacilli. This makes preparation of the media very cumbersome, and there has been a need for a long time for a thermostable liquid medium the whole of which can be subjected to autoclaving sterilization.

We have devised such a medium, using 'Tween 80' aqueous solution of egg-yolk extract, and we have succeeded in cultivating the minute size of human tubercle bacilli. The present communication deals with the method of preparation of the medium and the results obtained with cultures.

The composition of the medium is as follows:

KH <sub>2</sub> PO <sub>4</sub>	1.0 gm.
Na <sub>2</sub> HPO <sub>4</sub> .12H <sub>2</sub> O	2.0 gm.
Sodium glutamate	3.0 gm.
Sodium citrate	0.1 gm.
MgSO <sub>4</sub> .7H <sub>2</sub> O	0.1 gm.
Ferric ammonium citrate	5.0 mgm.
0.2 per cent Malachite green solution	0.5 ml.
Egg-yolk 'Tween 80' solution extract	100 ml.
Distilled water	900 ml.