valleys of mid-oceanic ridges. The African rifts are sites of undersaturated, predominantly mafic volcanics erupted in comparatively small volume from single vents. Murray interprets these products as the end result of partial melting in the mantle at depths of more than 100 km. When melted, to reach the surface the liquids would have to pass through a considerable distance in which temperatures were colder than the solidus of the surrounding peridotite. In these conditions, the liquids would be fractionated at high pressures, become nepheline-normative and decrease in volume.

In regions of high heat flow, on the other hand, partial melting in the mantle would occur at depths of less than 60 km, and the liquids would thus avoid passage through peridotite at sub-solidus temperatures. Greater volumes of such magmas would reach the surface than in low heat flow areas, olivine would be the principal crystal phase to separate and, if no previous fractionation had occurred, the magmas at the surface would be tholeiitic. Accordingly, this model predicts voluminous oceanic tholeiites at mid-oceanic ridges; and these are observed. Murray's models are based on recent high pressure experimental results on the origin of basaltic magmas.

From the heat flow data and the nature and volume of the surface volcanics, Murray concludes that the upper mantle conditions below the East African rifts and mid-oceanic ridges are fundamentally different. It follows from this that because mid-oceanic ridges are regions of upwelling mantle material, the African rifts probably are not. This does not apply to the northern end of the rift valleys in Ethiopia, of course. There, heat flow is high, the volcanics are more voluminous and dredging has indicated the presence of typical oceanic tholeiites beneath the Gulf of Aden and the Red Sea. The northern end of the rifts is well established as a region of young sea floor spreading. Murray's view, however, is that the southern end cannot even be regarded as an area of "embryonic" spreading.

FISH

South African Clinids observe Rules

from our Marine Vertebrate Correspondent

THE clinids constitute the dominant group of fishes that live permanently on the shores of South Africa from south-west Africa to Natal; north of both of these provinces they are replaced by other families of shore fishes. Within this area the clinids predominate, and the composition and abundance of the thirty-three species found there vary with the changing physical conditions in the same way as those of other intertidal animals.

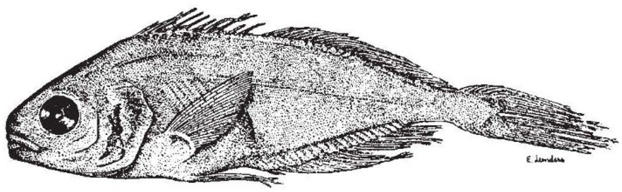
The late T. A. Stephenson and his colleagues, in their now classical distribution studies of the intertidal fauna and flora of South Africa, pointed out that the distribution of these fishes, as known in 1948, agreed with the general trends on that coast. The precise ranges of most species, however, were not then well known. Recent field work has produced a better understanding of their distribution, and Mary-Louise Penrith has summarized the data in a study of the distribution of the fishes of the family Clinidae in southern Africa (*Ann. S. African Mus.*, **55** (3), 135; 1970).

In general, fishes are unhelpful animals in littoral distribution studies, either on account of their mobility, or because they are very adaptable to various habitats, or because many of them possess a pelagic larval or post-larval stage. The South African clinids, however, are exceptional in that they are viviparous, sedentary animals, and speciation having proceeded lavishly might be expected to be restricted in their habitat selection. They are therefore extremely appropriate fishes for distribution studies.

Penrith has shown that their distribution corresponds very well with the faunal regions proposed by Stephenson. The west coast populations extend from Lüderitzbucht (South-West Africa) to Cape Point; a south coast group of species extends from there to East London, where the east coast group begins, extending northwards to Laurenço Marques. Some minor assemblages partly overlap these zones or are found in two adjacent zones but never more than two. Penrith concludes that because the clinids conform to the South African intertidal provinces established by other workers and these have been shown to be temperature dependent, then temperature must be a factor in their distribution also. This probably operates in two ways, the direct effect of temperature on the fish being of paramount importance, but its effect on other organisms which go towards constituting a suitable habitat is of considerable significance. An example of the latter is cited in *Clinus cottoides* which feeds on the legs of acorn barnacles. It is abundant on the south coast where dense balanoid barnacle zones are characteristic, but absent on the west coast where the balanoid zone is absent because of the different temperature.

FISH

New Nomeid



A new member of the family Nomeidae, discovered in the eastern Pacific, has been named *Psenes sio*, in honour of the Scripps Institution of Oceanography. The specimen shown here, which is immature, is 75·5 mm long and has been described by R. L. Haedrich (*Breviora*, No. 351; 1970).

PEPTIDES

New Paths to Structures

from our Molecular Biology Correspondent

PROTON magnetic resonance work on proteins, especially since the advent of the 220 MHz instrument, has often appeared to the observer as somewhat of a scramble for the spectacular, but not too arduous, *coup*. At the same time, however, some sober application has gone into the more modest area of peptide structure. From comparison of observed and calculated couplings of the protons on the α-carbon and peptide nitrogen atoms, and from other features of the spectrum, attempts have been made to deter-