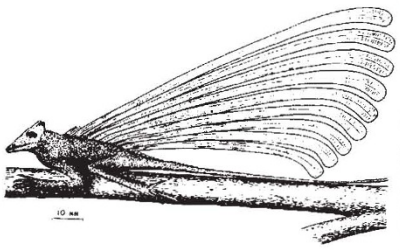
## Triassic Glider



THIS illustration shows a reconstruction of the lower Triassic reptile, *Longisquama insignis*, the remains of which were recovered by A. G. Sharov of the Soviet Academy of Sciences in the river clay deposits at Fergami in the Turkestan Ridge, 60 km from Leninabad (*Priroda*, No. 7, 108 ; 1971). The spinal appendages in this pseudosuchian were plate-like and were arranged in pairs down the spine. In addition to the skeleton, Sharov also found the scaly cover of the body and extremities.

phase affecting a broad area of crust before the drifting of the continents. He constructed two - dimensional stress trajectories (orthogonal lines representing variation in maximum and minimum stress directions) by drawing lines normal to the dyke trends (minimum stress) and lines parallel to the dyke trends (maximum stress). From these trajectories it is not only possible to determine surfaces of regional tension but also surfaces of regional shear and it was these surfaces that were later utilized to form the spreading axis of the Atlantic. The continental margins of North America north of the Bahamas and of West Africa north of Senegal broadly follow tension lines as does the southern coast of West Africa off Liberia. But from the Ivory Coast west to Nigeria the continental margin follows a direction of shear possibly related to the Romanche fracture zone.

Furthermore, the stress trajectories show a concentration of stress in an area around the Bahamas Ridge—a point not made by May but apparent from his construction. This concentration of stress in the upper mantle resulted in the tensional phase over a wide area of the overlying crust with the consequent dyke intrusion in the Late Triassic. At a later date the continental crust split, possibly initially at the point of stress concentration and subsequently along incipient lines of tension and shear. With the onset of rifting the stress on the continent was relieved and further displacements of the mantle resulted only in the production of new oceanic crust in the rift.

SENSORY PHYSIOLOGY

## Olfaction and Taste

from a Correspondent

MOST of the research discussed at the fourth international symposium on olfaction and taste, held at Starnberg, Munich, between August 2 and 4, illustrated the progress which has been made in the understanding of the morphology and electrophysiology of single sensory cells or sensory epithelia, with relatively little emphasis on the central processing of chemosensory information or the influence of chemical stimuli on behaviour.

To elucidate the transduction mechanism by which chemical stimuli induce electrical changes in cells, it is convenient to be able to obtain reasonably large quantities of receptor membrane for analysis of the composition and conformation of the receptor surface. Dr J.-P. Changeux (Institut Pasteur, Paris) has used cell fragments of the electroplaque of the electric eel as a bulk preparation of cholinergic receptors and has been able to extract protein fractions which seem to bind acetylcholine, carbamylcholine and decamethonium.

The ubiquitous *Escherichia coli*, which is also readily available in bulk, has been used by Professor J. Adler (University of Wisconsin) to investigate the molecular basis of chemotaxis. Several species of receptor molecule on the receptor surface of the bacterium interact selectively with one of a group of substances to influence the direction of movement of the organism.

In spite of the difficulty of preparing pure extracts for analysis, sugar binding proteins from the sensory cells have been identified in cow tongue by Dr M. Sato (Kumamoto University) and in rat tongue by Dr K. Hansen (Zoologisches Institut, Heidelburg). In some particularly small scale experiments with blowflies, Dr H. Morita (Kyushu University) has found $\alpha$-glucosidase activity associated with single contact receptor endings. Much more work will be needed, however, before it is understood how such interactions may be associated with changes in the ionic permeability of sensory cell membranes. Dr U. Thurm (Ruhr University, Bochum) has demonstrated that part of the total potential difference across insect sensory epithelium is dependent on metabolic energy. No further evidence was presented, however, to

## Skiddaw Slates and Borrowdale Volcanics

THE rocks of many areas have been greatly faulted and cleaved as a result of Earth movements following their deposition. Over the years much geological work has been carried out in the Lake District, as elsewhere, to unravel the types and ages of Earth movements which have disturbed the country rocks. At the base of the stratigraphical succession of the sedimentary rocks of the Lake District are the Skiddaw Slates, of Ordovician age, on which rest the Borrowdale Volcanic rocks, also considered to be Ordovician. These in turn are succeeded by the Coniston Limestone Group (Ordovician) on which lie the Silurian flags, grits and shales.

The junction between the Skiddaw Slates and the overlying Borrowdale Volcanic rocks has been variously described as conformable, an unconformity, or faulted. A considerable obstacle to a confident opinion on this problem is the rarity of clear sections of the junction, because the surface of the country is widely covered by glacial and other drift deposits.

The Coniston Limestone Group succeeds the Borrowdale Volcanic rocks and it is now widely thought that the junction between these two groups of strata is markedly unconformable.

A thick succession of shales, flagstones, grits and greywacke lie above the Coniston Limestone Group and these belong to the Silurian System. These beds are succeeded with marked unconformity by the local representatives of the Old Red Sandstone (Devonian) or Carboniferous Limestone Series.

Recent wide scale mapping, involving the collection and plotting of large numbers of dips, strike lines and faults, suggests that the structure is more complicated than previously supposed. In particular, the relationship between the Borrowdale Volcanic rocks and the underlying Skiddaw Slates has been examined in great detail where exposed, but opinion still differs as to whether the junction is conformable, unconformable or faulted and, if the last-named, the nature of the faulting involved. Some workers, indeed, claim to recognize six groups of minor structures in the Black Combe area which, together with south-west Cumberland, Borrowdale (Keswick) and Cross Fell, has recently been re-examined.

In next Monday's *Nature Physical Science*, Helm and Roberts describe in detail the latest information about the Skiddaw Slate–Borrowdale Volcanic junction. But there is still much doubt about the detailed succession and the faulting and folding in the Skiddaw Slates.