ICHTHYOLOGY

New Fossil Teleost

A LARGE fossil teleost recovered from the Upper Cretaceous Oldman Formation in Alberta by C. M. Sternberg as long ago as 1937 has now been described by D. Bardack (*Publs. Palaeont. Nat. Mus. Canad.*, No. 3; 1970) as a new genus and species (*Paratarpon apogerontus*). Although the specimen lacks a head, it is otherwise intact enough for Bardack to say that it is related to the living elopids and it seems to be most similar to the genus *Tarpon*. This makes the find the earliest record of this type of modern elopid in North America.

SOLIDS

Organic Semiconductors

from a Correspondent

AT the Faraday Society discussion on electrical conduction in organic solids at the University of Nottingham from April 14–16, experimental work on molecular crystals, polymers, glasses and biological materials was discussed.

In the introductory lecture, Professor M. Pope (New York University) reviewed recent advances in the understanding of photoconduction and semiconduction in crystals of the anthracene type. Although these materials are highly insulating, a clear idea of band structure and the mechanism of carrier generation and migration is emerging from photoconduction studies.

Steady progress is being made in the determination of the basic data relating to conduction processes. Professor H. Akamatu (University of Tokyo) reported measurements of work function, and several workers presented measurements of carrier mobility. Dr W. E. Williams (EMI, Hayes, Middlesex) has measured drift mobilities in rubrene by the pulse method of Professor W. Spear. Low frequency Hall measurements on 7,7,8,8-tetracyanoquinodimethane (TCNQ) salts were reported by Dr A. R. Blythe (ICI, Runcorn) and microwave Hall measurements on polymeric TCNQ salts and biological materials were reported by Professor D. D. Eley and his colleagues (University of Nottingham). The fact that mobility measurements can now be made over a wide range of materials is encouraging, but work still has to be done to establish the limitations of the different methods and the relation between mobilities obtained in different ways.

The contribution by Professor J. M. Thomas (University College of Wales, Aberystwyth) concerning the possibility of observing proton conduction in suitable organic crystals using palladium–hydrogen electrodes sparked off some lively discussion. Professor L. Glasser (Rhodes University, South Africa) reported experiments in which imidazole was used successfully as a proton injecting electrode. In the ensuing debate on proton transfer and migration the discussion inevitably turned to conduction in ice and the recent work of von Hippel. From the interest shown it seems likely that proton conduction is likely to be one of the major growth areas in the field during the next few years.

Although the possibility of developing useful devices is clearly the motivation of many workers in the field, only one contribution was concerned with a possible application. Using a variety of electrodes, Professor M. M. Labes (Drexel Institute of Technology, Philadelphia) has observed bustable switching in thin films of aromatic hydrocarbons, in some cases with added dopants. He attributes the effect to the formation of conducting filaments.

In the biological section the most notable advance was the ability to make measurements on ordered biological systems. Professor Eley reported measurements on mitochondria and Professor B. Rosenberg (Michigan State University) and Dr P. J. Reucroft (University of Kentucky) respectively discussed lipid bilayers and chlorophyll films. From the discussion that followed, it was clear that the conference had been highly successful in bringing together and promoting discussion between those workers interested in the fundamentals of the subject and those interested in its application to biological problems.

MOTOR VEHICLES

Exhaust Emission

from a Correspondent

A COLLOQUIUM was held at Queen Mary College, London, from April 22 to 23, to discuss the present state of knowledge of air pollution by road vehicles with particular reference to Britain's situation.

Professor M. W. Thring (Queen Mary College, London) divided the atmosphere into three critical zones. Zone 1 is the local region of closely spaced vehicles in a tunnel or street with high buildings where the time scale is 1 hour—here carbon monoxide can certainly reach unhealthy levels and diesel smoke and odours can have

Metabolic Modification of Collagen

THE principal biological function of collagen is to transmit forces or to provide a structural container for organs. It is frequently considered to be metabolically inert. That this is not so is demonstrated by two articles in next Wednesday's *Nature New Biology*. Spiro, Lucas and Rudall of Harvard University, the Shirley Institute and the University of Leeds, respectively, have studied the chemical bonding between hydroxylysine in collagen and certain sugars. The collagen they examined is of interest because it was obtained from the silk of the sawfly *Nematus rebesii*. Rudall has recently pointed out that the structure of the silk is not confined to the common β-protein fold but also exists in the α-protein and collagen conformations. Sawfly silk has already been shown to have the collagen structure. Collagens from the common fibrillar sources of vertebrates and invertebrates contain the amino-acid hydroxylysine and to varying degrees these residues are covalently linked to glucosylgalactose and galactose sugar units. The earthworm cuticle, however, contains no hydroxylysine. Spiro *et al.* have shown that the sawfly silk collagen must be classed by itself because a high fraction (37 per cent) of its residues are hydroxylysine but none of this is bonded to sugar molecules. They speculate that the reason is that the essential enzyme glucosyltransferase is missing so that potential "carbohydration" sites remain unoccupied.

In the second article Marc Dresden of Baylor College of Medicine, Houston, presents some evidence for the part played in collagen metabolism by the enzyme collagenase discovered some ten years ago. It had been shown *in vitro* that if substrate collagen is undenatured, the effect of collagenase on tadpole tailskin is to cleave the α-chains at a specific site and to produce a fragment 75 per cent of the original molecular length. In regenerating limbs of the newt and rat uterus, fragments of 67 per cent and 62 per cent of the original length are obtained.

It is now reported that *in vivo* there exists a small fraction of the collagen in the form of fragments resulting from collagenase action on tadpole tailskin, and the 75 per cent fragment is degraded in a similar way to that in rat uterus.