had not, so far, turned down worthwhile projects through lack of funds—if more cash became available it would most usefully be used for strengthening the effort in fields of particular promise.

The chief danger to cancer research in Britain, as to all research at present, is inflation. The CRC's investment portfolio was below cost because of depressed prices at the time of audit, and £120,000 has had to be set aside from this year's surplus to guard against further losses. The Duke of Devonshire, vice-president of the CRC, said at the opening of the campaign's new apartments that unless income growth could be maintained above 10 per cent per annum over the next three years, "our research efforts in real terms cannot expand".

FOSSILS

Permian Change

PRELIMINARY reports from the summer 1970 expedition to the Urals of the Palaeontological Institute of the Academy of Sciences of the USSR indicate that the Palaeodyctioptera formerly thought to be predatory insects, were, in fact, herbivorous. Investigation of Middle-Upper Carboniferous and Permian strata has revealed numerous impressions of the seeds of gymnosperms bearing evidence of damage by insects. Associated with these finds (made on the banks of the river Chuna, a right tributary of the Podkamennaya Tunguska), there were found impressions of the wings, and parts of the bodies of insects, more than half of which belonged to the Palaeodyctioptera. The illustration shows a fossil of a new type of Palaeodyctioptera (*Permiakovia uralica*) found in Lower Permian deposits in the Urals.

According to A. G. Sharov, head of the expedition, these finds indicate that as early as 300 million years ago, there was a close ecological link between the Palaeodyctioptera and gymnosperms of Cordaites type. Previously, the Palaeodyctioptera were thought to be predatory. Sharov's finds, however, reveal that these insects had a strong sucking proboscis which penetrated the outer covering of the seeds and sucked out the fluid content.

SPACE FLIGHT

Death on Re-entry

from our Soviet Correspondent

THE death of the cosmonauts Dobrovolskii, Volkov and Patsaev during the re-entry of Soyuz-11 has inevitably evoked considerable speculation, not only about the cause of the tragedy, but also about what effect this will have on the future of the Soviet manned spacecraft programme.

Although the commission of inquiry into the disaster will not publish its report for some time, it would appear from a statement by Academician Boris Petrov, a leading figure in the construction of the Soyuz orbital station, that the death of the cosmonauts was due to a fault in the operation of the Soyuz-11 itself rather than to any radical defect in the design of the Soyuz type or to any insurmountable biological barrier.

Writing in *Pravda*, Academician Petrov points out that Soyuz craft have in the past performed a number of space missions, and that the cosmonauts have landed unharmed. "One can never rule out accident, however, when a complicated technology is being tested out and mastered".

He says little of the biological hazards of the mission. Medical and biological experiments, including radiation monitoring, were carried out, and will, he says, make an important contribution to various fields of knowledge. Significantly, perhaps, in view of the speculation on the possibility of long-term weightlessness being a contributory factor in the death of the cosmonauts, Petrov refers to weightlessness only as having been studied in connexion with its effect on the hydroponic garden aboard Salyut. Nothing is said about the success or otherwise of the "penguin suits" worn by the cosmonauts, which were intended to counteract physiological deterioration. However, his confidence in the continuation of the Salyut programme indicates that purely physiological causes are not considered to be the main cause of the tragedy. "We can say with certainty", he writes, "that the 'seventies will be an epoch of the development and wide scale use of long term piloted orbital stations with replacement crews, which will permit the changeover from episodic experiments in space to a regular watch of scientists and specialists in space laboratories". He does not indicate how long each tour of duty would last, but the general tone of his description of the type of experiments to be performed by such teams suggests weeks rather than days.

Petrov does not commit himself on the cause of the accident. Until

Academician Keldysh and his commission report, what can be gathered from the brief official announcements seems to indicate an apparently routine landing. Following the death during re-entry of Vladimir Komarov, in 1967, the re-entry systems of manned spacecraft were made fully automatic, and, as Petrov somewhat wryly comments, the present disaster is valuable evidence of the efficiency of the automatic soft-landing systems of the Soyuz craft. After the orientation of the Soyuz-11 for re-entry and the switching on of the braking motor, the final stages of its programme—aerodynamic braking, deployment of the parachutes and finally, "immediately" before landing, the switching on of the soft-landing motors—proceeded automatically. As far as the cosmonauts were concerned, loss of signal apparently occurred as for a routine re-entry. After the braking motors ceased to operate and aerodynamic braking was over, the signal was not re-established. Official sources stated simply that the cosmonauts were found "in their working places, without any sign of life". Until Keldysh's commission reports, it would seem, any further information on this subject must be largely speculative.

HISTORY OF MATHEMATICS

Committee at Work

from a Correspondent

THE proposal to form a national association for the history of mathematics was considered by a meeting in London on July 2 under the auspices of Dr J. G. Whitrow of Imperial College and Dr J. M. Dubbey of Thames Polytechnic. The immediate outcome was the formation of an organizing committee consisting of Dr Margaret Baron of Stockwell College, Mr A. Morley of Nottingham College of Education and Dr J. D. North of the University of Oxford. The proposal has been encouraged, in part at least, by the existence of a sub-commission in the history of mathematics within the International Union for the History and Philosophy of Science.

The meeting on July 2 was only in part procedural. The short papers presented to the scientific part of the meeting reflected the dual character of the history of mathematics as a teaching subject and a research subject, but the meeting itself recognized that such a separation can distort. Elsewhere, some participants noted, and especially in Germany, with its annual international conference at Oberwolfach, the exchange of ideas in the subject has been fostered for some time. History of mathematics is a subject in its own right, with its own philosophical and