Edwards has calculated the first two of these, corresponding to the entanglement of molecules in twos and threes respectively. Experience elsewhere, as in the evaluation of integrals representing multiple interactions in liquids, for example, would suggest that the value of calculating many more complicated members in this series will be limited. More immediately, however, it is interesting that the expressions for the probability of molecular configurations defined by definite values of the invariant integrals turn out to be identical with the formalism of the quantum field theory of charged scalar mesons—problems of renormalization included. One obvious possibility is that the construction of a series of Feynmann graphs of increasing complexity will be a convenient intuitive means of classifying molecular entanglements of increasing complexity. Given the extra complexity of real assemblages of molecules, however, the chances are that the new theoretical calculation will help with the description of the properties of real assemblages of long molecules—pieces of rubber, for example—intuitively rather than by exact calculation. It is therefore important that Professor Edwards has already described how existing theories of rubber-like materials should be modified to take account of molecular entanglements (*Proc. Phys. Soc.*, **92**, 9; 1967).

New Plants from the Past

by Mary Lindley

DEVONIAN plants, two of them newly discovered, were the subject of a symposium held by the Palaeobotany Group of the Linnean Society on January 2.

As Professor T. M. Harris said in his introduction, widespread botanical interest was only focused on the Devonian in 1917 when the famous deposit was found in the village of Rhynie in Aberdeenshire, when Kidston and Lang described the three vascular genera *Rhynia*, *Horneophyton* and *Asteroxylon* with their erect dichotomously branched stems, covered with leaves in the case of *Asteroxylon* and naked in the other two genera. In the Rhynie Chert, Kidston and Lang also found specimens which they supposed to be the fertile part of *Asteroxylon mackiei*, the type species of the genus, but in 1964 Dr A. G. Lyon—a botanist who also happens to own the Rhynie Chert—described lateral sporangia of *A. mackiei*, suggesting that the fertile parts found by Kidston and Lang were a separate plant, to be called *Nothia aphylla*. At the meeting Dr W. S. Lacey described some work by a former student of his, Dr W. El-Saadawy, who has examined new specimens and established that *Nothia aphylla* is a separate species with a slender dichotomously branching stem and terminal sporangia.

Dr Lyon himself reported a new plant from the Rhynie Chert, the first for almost fifty years. Two years ago he found some very localized remains which, by virtue of their xylem, could not be pieces of arachnid leg. They turned out to be sections of a stem with epidermal hairs—unicellular outgrowths from epidermal cells—which clearly distinguish this plant from the others of the Rhynie Chert. The stem has xylem—the conducting elements are tracheids with what appears to be annular thickening—surrounded by large phloem like cells and then cortex. There were also many sporangia associated with these remains, but their mode of arrangement is uncertain. An unusual feature is that the vascular tissue appears to pass into the sporangium and then fan out. Dr Lyon thinks that this plant is different enough to be put in a genus of its own, but he would not reveal the name that he is proposing for it; it remains the "hairy plant".

Another new plant was described by Mrs Dianne Edwards when she discussed the Lower Devonian genus *Cooksonia*, one of the earliest plants to be successful on land. This genus, with terminal sporangia borne on a naked dichotomously branching stem, has been described from sedimentary rocks in England and also Czechoslovakia and Russia. There is a great deal of variation within populations, and the relative maturity of specimens may add to the difficulty of the taxonomist, whose specimens may anyway be very poor. Mrs Edwards was very dubious about the Russian species, *C. rusanovii*, which is based on one very bad specimen. She was also suspicious of the two species of *Cooksonia* described by Lang, who named the genus in 1937, and thinks that the two may grade into each other. Mrs Edwards has also found better specimens of *C. downtonensis* and thinks that this should perhaps be in a genus separate from Lang's *Cooksonia*. Her own species of *Cooksonia* was found in Scotland, and is very like Lang's species. In this case, however, the sporangia have thickening around them and each one has a definite and distinctive base. Like Dr Lyon, Mrs Edwards would not divulge the name she has given to her new plant.

A new find which has proved more mysterious was described by Mrs Margaret Mortimer. She and Dr W. G. Chaloner have been studying specimens of a cellular membrane which first turned up in lower Devonian rocks in South Wales, and later in boreholes in Cambridgeshire and the Sahara. The specimen shows a network of irregular cells, probably in more than one layer, containing regular circular pores. This is quite unlike the cuticle of any Devonian vascular plant, and in this case there is no evidence of stomata. On the assumption that it is not an animal membrane—it has not been recognized as belonging to any animal—the membrane compares best with the cuticle of some non-vascular Devonian plants, and best of all with *Spongiophyton*. Although the specimens in question have nothing to compare with the larger pores in the cuticle of *Spongiophyton*, Mrs Mortimer and Dr Chaloner are inclined to think that this is the correct identification. It clearly illustrates the sort of detective work in which the palaeobotanist has to indulge when identifying his specimens.

Enzymes made Insoluble

from a Correspondent

THE attendance of 200 people at the Biochemical Society's colloquium on enzymes attached to solid matrices, held at the Medical College of St. Bartholomew's Hospital last Friday, was no mean achievement for the organizers when it is considered that only a few years ago the subject was often regarded as obscure.

Enzyme molecules have been made insoluble in four ways; by adsorption (ionic or otherwise), by immobilization in a gel, by cross-linking either immediately or after absorption on to a solid matrix and by covalently coupling them to a suitable insoluble