of Reading). From experiments on anthocyanin synthesis in etiolated turnip seedlings with light of different wavelengths given in varying sequence, Grill concluded that the response to far-red light may not be entirely due to phytochrome action. Turner's results suggested that, despite the two-peak action spectrum for the suppression of hypocotyl elongation in etiolated lettuce seedlings, several differences in the responses to far-red and blue light indicate that more than one photoreceptor is involved.

The role of phytochrome in the control of flowering was discussed by D. Vince (University of Reading) and evidence was presented that, in many long-day plants, there is a change in sensitivity to the presence of the active form of phytochrome during one day. Photoperiodic effects on vegetative growth were considered by A. P. Hughes and K. E. Cockshull (ARC, Reading); leaf expansion in *Callistephus* was shown to be promoted by a night-break with light giving a lower concentration of active phytochrome than is needed to effect flowering; Vince showed that, in *Fuchsia*, anthocyanin production in leaves and suppression of stem elongation is also affected by the presence during the night of phytochrome at a level lower than required for flowering.

H. Meidner (University of Reading) presented absolute measurements of net intake and net evolution of CO_2 in the light, above and below the CO_2 compensation point. These measurements make possible an assessment of the true rate of photosynthesis. If the amount of reassimilation of CO_2 produced in the light is equal to that released into CO_2-free air, the true rates of photosynthesis in tobacco and wheat seem to be 10–15 per cent greater than the net rates. This estimate assumes that CO_2 production in the light and ordinary air is the same as in CO_2-free air, an assumption which has yet to be justified.

A photometric method for estimating phytochrome in plant material was described by C. J. P. Spruit (Wageningen). The apparatus measures extremely small changes in absorbence due to phytochrome, despite the presence of light scattering cellular material which can give an apparent absorption of four units. The "dual wavelength" method is used in which the apparent absorbence at the wavelength of maximum absorption by phytochrome is compared with that at a longer wavelength, where the degree of scatter is similar. But the pigment does not absorb.

OIL PALMS

Dangerous Plant

from our Botany Correspondent

FOLLOWING the report from Alvim and Seeschaft that a new species of the tree *Acanthosyris* causes die-back and death of cacao trees in Brazil, Dr A. C. Zeeven of the Institute of Plant Breeding, Wageningen, reports what may be a similar situation in Nigeria.

The people of the Ibibio district of eastern Nigeria believe that the shrub *Millettia aboensis* Baker, of the family Papilionaceae, induces and promotes trunk rot in oil palms, especially semi-wild palms growing on *mbri* soils. (These soils have developed from compound soils and are rich in organic matter.) Natives say "That plant kills the oil palm", because one or two years before an epidemic outbreak of trunk rot (mostly caused by a species of the fungus *Ganoderma*) among the palms in a dense grove, many saplings of *Millettia aboensis* were found growing under the palms. So far Dr Zeeven has seen no fungal sporophores on the stems or roots of the shrub, and does not know whether *Millettia aboensis* promotes the growth of the fungus, whether it weakens the palm, or whether the proximity of shrub and diseased palm is purely accidental.

Trunk rot is the most common cause of death in West African groves of oil palms. The trees are so weakened by fungal attack that they are easily blown down, and the stem may sometimes crack as it hits the ground.

PHYLOGENY

Chemical Aids to Taxonomy

from a Correspondent

THE Phytochemical Society held a symposium on phytochemical phylogeny in Bristol from March 30 to April 2. Dealing with fossil evidence for the origin of life and early periods of plant evolution, G. Shaw (University of Bradford) provided impressive chemical evidence that the hydrolysis-resistant surface deposit of pollen grains and spores—sporopollenin—is formed as a polymerization product of carotenes. He demonstrated the synthesis of the polymer from β-carotene in the laboratory in the presence of oxygen and a boron trifluoride catalyst, and gave evidence that much of the insoluble organic kerragen from Pre-Cambrian deposits may be a form of sporopollenin.

The question of finding phytochemical support for the major taxonomic groupings in the plant kingdom was considered in papers dealing with the distribution of cell wall polymers in fungi, and with lipids, diterpenes and triterpenes in other plant groups. D. Boulter (University of Durham) gave a preliminary report of the use of amino-acid sequences in proteins, with particular reference to cytochrome *c*, in tackling problems of angiosperm phylogeny.

Another group of papers dealt with the contribution of phytochemistry in understanding evolutionary processes and taxonomic problems in contemporary plant groups. Professor J. McClure (University of Miami) proposed a re-alignment of species in the *Spirodela-Lemna* complex on phytochemical evidence. Professor W. Turner (University of Texas) illustrated well the value of phytochemical analysis by using gas chromatographic data of diterpene content to disprove earlier reports of introgressive hybridization between *Juniperus ashii* and *Juniperus virginiana* in Texas.

The symposium aroused lively discussions of many subjects including problems of contamination in the geochemical analysis of early fossils and extra-terrestial objects, the assembling and computer analysis of phytochemical data for taxonomic purposes, the origins of cellular organelles and the philosophy of hierarchical phylogenetic arrangements of the major groups of plants. It is increasingly clear that the alliance between modern analytical techniques of organic chemistry and the use of computers for the evaluation of the data can greatly accelerate routine descriptions and taxonomic decisions involving geochemical and phytochemical analyses. What is less evident, but increasingly important, is that this deluge of information should not blind scientists to the need to ask those questions which may really deepen our understanding.