VII. PALYNOLOGY IN MALESIA

Ever since the pioneer researches of Miss Polak on Malesian peat before the second world war, it has been clear that an immense amount of information of great botanical interest was waiting to be discovered in the peat, coal, clay and shale deposits, which are so widespread in the sedimentary record of this area.

It was an economic motive which in 1953 led the Brunei Shell Petroleum Cy. in Brunei (NW.Borneo) to start palynological research. The aim was to distinguish palynological zones in the thick Tertiary oil bearing sediments which were difficult to correlate otherwise. During the course of this work many data of botanical interest came to light and short notes on these results have been published already.

In New Guinea Dr. T.G.Walker of the Australian National University has started palynological work on lake deposits of the Papuan highlands. This work which is still in its initial stages, promises to yield results which will be of importance for ecologic studies in the montane zone.

The contribution which palynology can make towards Malesian Botany of course will depend entirely on accurate knowledge of the recent pollen. Therefore any study of dispersed pollen has to be preceded by assembling a recent reference collection, derived from accurately determined herbarium material or from fresh specimens, followed by careful description and comparison of morphologically similar pollen types. This large job can be tackled most economically by the compilation of monographs of genera of special interest or by studying the pollen associations produced by typical vegetation types such as mangrove or peat swamp vegetation.

In this the palynologist is largely dependent on the cooperation of herbarium keepers, field botanists and forest officers, who have the best chance of collecting the fresh ripe flowers needed for optimum results. Still herbarium sheets, dating from a century ago, often yield surprisingly well preserved material and can be of great value when type material of rare species has to be studied.

The botanical affinity of the more common fossil pollen and spore types encountered in Quarternary of Upper Tertiary sediments is generally fairly soon detected, although sometimes real puzzles occur.

One such case was formed by a 4-5-porate pollen grain with a quite typical aperture structure which was locally abundant in peat deposits and had already been figured by Polak. It did not at first turn up in an extensive collection of peat swamp species made by Dr. Anderson in Kuching. On certain morphological resemblances it was thought for some time to represent a species of Symplocos. However, none of the many Symplocos species which were subsequently collected for com-

parison exactly matched the peat pollen type. Then, after several years of fruitless searching, it suddenly turned up in a relatively rare Garcinia sp. which had never before been collected in flower. This in turn led to a closer study of pollen types in the genus Garcinia and it was discovered that a great variety of pollen types is present in this genus which will be of great help for a future monographer.

The study of the pollen content of the immense peat deposits on the NW.Bornean coastal plains has been taken up by Shell Palynologists, working in Brunei in collaboration with Dr. Anderson in Kuching. Several peat bogs have been studied in order to come to a better understanding of the successional stages.

These studies can also be extended to fossil peat bogs, which are widespread in Tertiary sediments in the shape of coal beds. A detailed investigation of a Miocene coal bed in Brunei has already revealed a striking parallelism with the development traced in the present day peat swamps. It will be of great interest to find out, by analyzing progressively older coal beds, whether any marked differences turn up in the peat building vegetation in the older Tertiary.

Other vegetation types for which it has been possible to draw a first outline of the history are Mangrove and Montane Vegetation. When the botanical affinities of the dispersed pollen types are firmly established a study of the stratigraphical ranges may throw an important light on historical plant geography in the Malesian area. The investigation of Cretaceous deposits in W.Sarawak has given a first glimpse of the very early Angiosperm flora in which the percentage of unknown pollen types is much higher than in the Tertiary. It is only in the Miocene that the pollen flora attains a modern aspect.

This short review can do no more than indicate the potentialities of palynology in Malesia. It is hoped that, just as has been the case in Europe 50 years ago, increased interest will start an upsurge of palynological activity, resulting no doubt in a large and varied harvest of botanical information.

Oegstgeest, October 1966. J. Muller.

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VARIA

"A visitor to my laboratory, where I do research on the anatomy and morphology of tropical plants, once remarked, 'a good deal of nineteenth-century botany going on here'. This remark I felt was very complimentary although certainly that was not its intention. It arose, no doubt, from the visitor seeing the modest way in which I work: living plants in various stages of dissection littering the benches, no impressive array of equipment, in fact not much more apparatus than might have been found in a well-equipped botanical laboratory in the later years of the nineteenth century.

But I was unconsciously complimented because nineteenth-century biologists were great observers. They were fortunate in living relatively uncomplicated lives, they were not overburdened by an unwieldy literature, and particularly they were not plagued with textbooks, those formidable fossilizers of misconception. Their major source of information was plants and animals rather than the printed page. They were required to dissect and look in order to understand. Mistakes were made, countless times, but the most patient and painstaking observers were always rewarded by the truth because they studied the only reliable source - the living organism itself.

Continuing to examine plants and animals in just whatsoever way he pleases, the observer with the "good eye" will discover new facts, regardless of whether his laboratory looks old-fashioned or not. After all, research is only the "good eye" without the textbook."

B.P.Tomlinson, The good eye,
a paper in "Carolina Tips".