STUDENT SCIENTIFIC EXPEDITION TO GHANA

UNDER the auspices of the Imperial College Exploration Board, seven students from the Imperial College of Science and Technology, London, organized an expedition to Ghana in the summer vacation, 1957. One of the seven, G. A. Matthews, made a detailed and restricted study of the infestation problems of ships' cargoes. The remaining members, including two women students, led by N. D. Jago (a third-year entomologist), undertook ecological research which centred upon soil conservation, one of the most important and fundamental problems in the tropics.

The main body was based in the Bobiri Forest Reserve near Kumasi, where two suitable areas were selected for examination. One was a strip transect containing a stream, thick forest and swamp, and the second a river area now drained and deforested, supporting a rice crop. Rice has only recently been introduced into this district, and the selected areas provided the opportunity for comparative studies.

The usual method of farming in Ghana away from the coastal plain is to clear the mature forest and to plant crops. The humus is immediately dried by the sun, and the soil nutrients, no longer held by an extensive root-system, are leached away by rain and the area is soon allowed to degenerate into secondary bush vegetation. The focal point of the investigation was the factors affecting formation and destruction of humus. In addition, associated problems were studied by individual members of the party.

During the eight-week period in the forest region several trips were made by the students in order to extend the work and see different peoples and places. B. M. Gerard went as far as Agades, on the southern fringes of the Sahara, accompanied by D. H. Barry,

Fig. 1

lecturer in botany in the Kumasi College of Technology. Together they began an analysis of leaf-hopper associations in different grasslands in the various savannah regions.

Just before the party returned, an area of forest was completely cleared of vegetation and it is hoped that other expeditions from the College will be able to study this region and thus continue the work which has had so successful a beginning.

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FLAVONOIDS OF THE PRIMULACEAE

Distribution of Flavonoids in Genotypes of *Primula sinensis*

THE Chinese primrose, *Primula sinensis*, a plant of which a wide range of colour mutants is available¹, provides excellent material for investigating the biochemical genetics of the flavonoid plant pigments. Earlier, Scott-Moncrieff² showed that red flowers (*K*-genotypes) contained malvidin-3-monoside which was dominant to pelargonidin-3-monoside in coral flowers (*kk* genotypes). A Mendelian factor *Dz* controls the independent production of pelargonidin in the presence of *K*. Other genes present influence flower colour by controlling production of an unidentified flavone co-pigment, by altering the pH of the cell sap and by regulating the concentration of anthocyanin.

A re-investigation of the flavonoid pigments of this plant was prompted by the facts that the stocks used by Scott-Moncrieff were still available and that better methods of identifying these pigments had been developed since her investigations. The flavonols and anthocyanidins produced by acid hydrolysis of

direct plant extracts have been examined in both the floral and foliar parts of the different genotypes of *P. sinensis*. Identifications have been based on comparisons with authentic compounds using paper chromatography in several solvent systems³, and spectrophotometry⁴. The results show that all the six common anthocyanidins and also the three flavonols, kempferol, quercetin and myricetin, are present in various forms of *P. sinensis*.

The distribution of these pigments, which are all closely related chemically, is as follows. Flowers of *K*-genotypes which are coloured contain mainly malvidin, some petunidin and traces of delphinidin; in the leaves and stems, there is much more of petunidin than of the other two pigments. In the flowers, kempferol is the predominating flavonol and lesser amounts of quercetin and myricetin are present. In the leaves and stems, quercetin is present in greater amount than myricetin and kempferol. *K*-genotypes which bear white flowers have the same pigment pattern, except, of course, that there are no anthocyanidins in the flowers. In addition, pelargonidin occasionally appears in both floral and foliar parts