CYTO-GEOGRAPHY OF SOME INDIAN PLANTS*

THE Plant Geographer is concerned not only with the distribution of plants in Space but also in Time. The primary cause of changes in the distribution of plants seen in the present day, lies in the variation in the distribution of climates. This again is closely related to the changes in the distribution of land and water brought about by cycles of mountain building and the Ice Ages which have always followed these revolutions.

The breaking up of the great Gondwana land and the Himalayan uplift took place after the evolution of Flowering plants. This has resulted in the dispersion of related families and genera in the continents of South America, Africa, Australia and Peninsular India, all of which formed part of this great land system.

The analysis of some genera of Indian plants has been correlated with the performance of allied plants in these regions. For this study. chromosome changes and polyploidy have been used as a measure of genetic advance. In such genera as Magnolia and Viburnum, the North Asian tribes which are all diploids, have undergone evolutionary changes resulting in new polyploid species in Eastern Himalayas.

The diploid *Nymphœa stellata* of Kerala is closely related to the *Nymphœa* of Madagascar and East Africa while the same species occur only as hexaploids in the Gangetic Plain. Hexaploids are also found in Egyptian and European species of *Nymphœa*.

The genus Buddleia probably arose in Africa where only diploids ($2n = 38$) are found in this genus and allied genera. Amongst Indian species, very high polyploids ($2n = 114$, $2n = 304$) occur in Sikkim and Assam regions.

Some of the trees belonging to Magnoliaceæ which have been identified with fossils are found to be diploids. They may therefore be considered to have remained diploids since their first appearance on the earth! This is true also of some of the *gigantic trees of the Humid Tropics of India*. We therefore, have in these regions, a vegetation which is similar to what existed on the earth during Cretaceous times.

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THE 2-METER—PLANO GRATING SPECTROGRAPH

THE first German grating spectrograph (Fig. 1) uses a Zeiss-original grating of the best resolution with 650 ruled lines per mm. on a divided area of 70×50 mm. The advantage of the chosen Ebert set-up is the stigmatic,

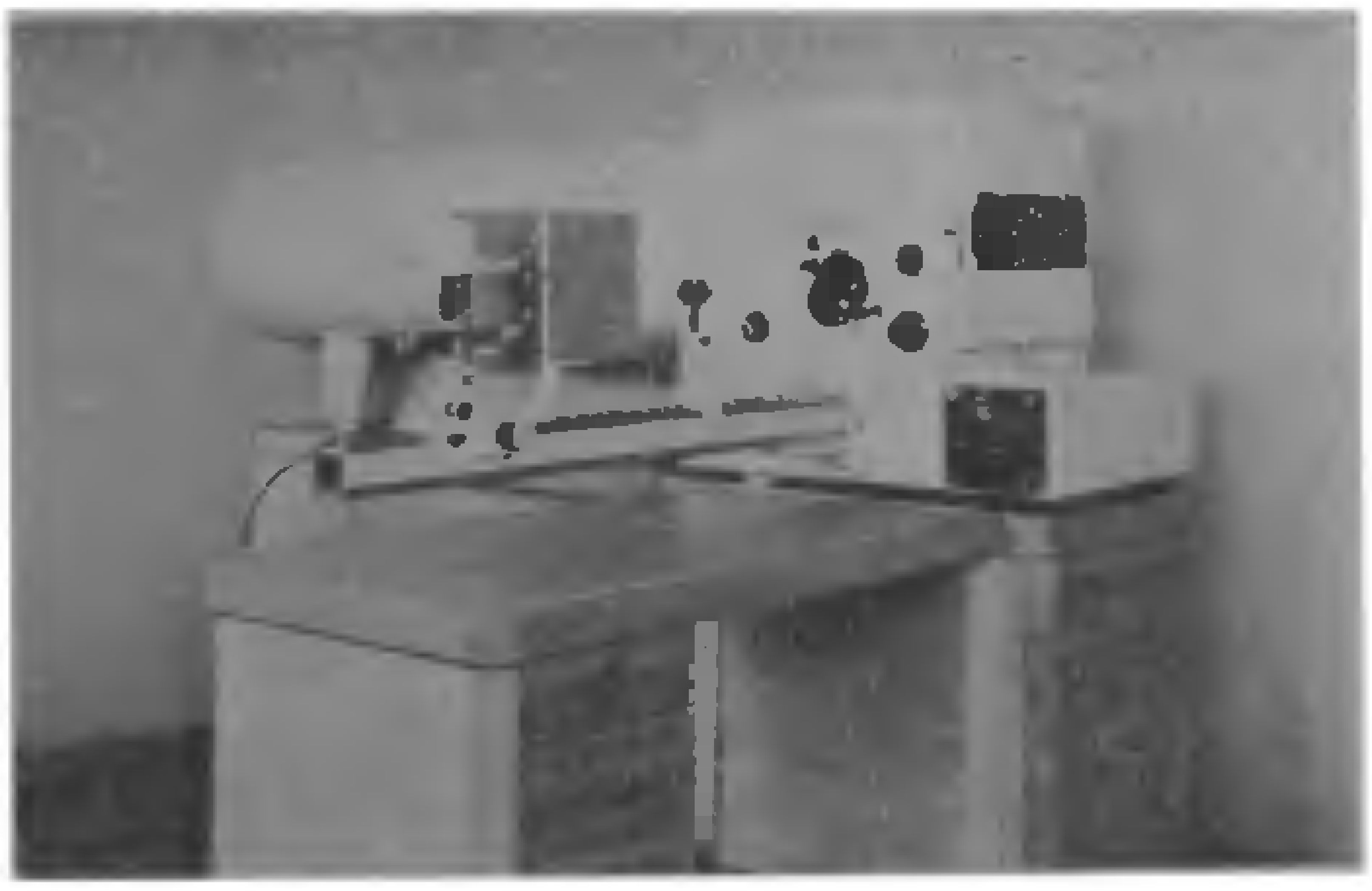

FIG. 1

nearly plane image of the spectra. The dispersion is 7·4 Å/mm. in the first order at a theoretic resolution of 45000, which is nearly obtained. At an opening proportion 1 : 30 the spectral range from 2000 to 28000 Å is covered in cut-outs of 1750 Å on the fixed plate of the length 240 mm., and in cut-outs of 2200 Å on the fixed plate of the length 300 mm. The Grating Spectrograph particularly excels in that a wavelength scale within the range of 2000-7000 Å of the first order may be copied. The shutter and the dark slide displacement adjustable in stages are operated automatically. It is possible to connect a time switching appliance. A novel and extraordinarily stable square rail takes up the spark gap and the condenser optics.

The device is mounted on a special table and embodies exacting optical performances as well as a finished appearance.

The gratings used have saw-toothed profile of the ruled lines. The "Blaze" properties are within the ultra-violet and visible of the first order with a degree of reflexation of about 70%. The relative intensity of the very weak Rowland reflexions is below 0·1% of the main line in the first order. Since the grating, may be screwed for reading within the range of $\pm 65°$, exposures of the higher order may easily be taken after the tabular adjustment of the grating.—*VEB CARL ZEISS JENA.*