CHAPTER - II

MATERIAL AND METHODS

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The material for the present investigation comes from the well known geological strata called as Kota formation. It is named after the village Kota which lies on the eastern side of Pranhita river in Chandrapur district of Maharashtra. The Kota formation is a characteristic Gondwana deposit found in the Pranhita Godavari Graben. The deposits are formed by limestone grits and red clays associated with sandstones. King (1871), Kutty (1961) and others have given the stratigraphical data of this formation. Mahabale (1967) studied the Kota-Maleri Stage and brought out some new information about the fossil flora of these areas. Rao and Shah (1963); Shah et.al. (1973), Biradar and Mahabale (1978) and Rajanikanth and Sukh Dev (1989) have made contributions to the fossil flora of this information. Except these workers not much information is available about the floristic composition of this region. Hence it was thought worth while to add more work.

The plant fossils are found as silicified woods as well as impression on the shales. The woods were collected from three different localities (See map - 1 and 2). The woods were collected from streams and river beds near the Kota. Here the sediments are some what brownish in colour and they are associated with sandstone and clay bands. The woods were exposed in the sandstone region which is

situated in the bedding plane of the stream banks. They are also found scattered in the river beds when the water is dried. The limestone beds are usually devoid of silicified woods.

The second locality Sironcha lies about 8 Km. south of Kota. Here Pranhita river and Godavari river shows a confluence. This place is popularly called as Kaleshwar. At Sironcha the silicified woods were mostly collected from the dried stream blanks. Some time they are found in situ. At places the woods are partly exposed from the limestone layer on the stream banks. They are separated by loosening the soil.

Third locality Chitur is a small village which is about 28 Km. from Kota in the south-east direction. It is some what rich in the silicified woods. They are found near the road cuttings and also in nallas out side the village. These woods are larger in size and show better preservation than others. The larger pieces were transported by using bullockcart.

The petrified woods were cleaned and washed in ordinary water before they were brought to the laboratory. The pieces were labelled on the spot by using white acrylic paint and India ink. The labelling was made serially, where name of the locality, the year of collection were introduced in the labells. Finally the woods were packed in polythin bags.

In the laboratory they were examined for the microscopic characters and quality of preservation. About 20-25 pieces were selected for primary investigation and those showing promising and distinct characters were selected for the final phase of the work. The pieces were throughly washed under top water using a mild solution of HCl to remove the dirt. Then they were cut in different planes showing T.S., T.L.S. and R.L.s, by using circular diamond saw driven by electricity. The equipment is called as a cutting machine which is of American make. The sections were cut by using machine where woods are immersed in a water bath mixed with cutting oil and soap solution. The sections were cut to desirable thickness and finally seperated from the specimen. The sections were further polished on a glass plate by using 'o' number carborandum power. It was ground to make the surface smooth and polished. Next the smoothened part of the section was fixed on a glass slide by using canada balsam (Natural). The fixing was done by heating sufficient amount of canada balsam on the slide by using spirit lamp.. After properly heating, the polished surface is pressed again the layer of canada balsam and then it was allowed to cool. Next the slide was ground on the grinding machine using different grades of carborandum powder like 60°, 90° and 120°. The grinding was continued till the section become sufficiently thin and some what transluscent. The grinding machine is equipped with a circular iron disc driven by an electrical motor.

The disc is equipped with a continuous water driping mechanism. It keeps the carborandum powder wet and prevents from flying away from the disc. Later on the slides were finally ground on the glass plate using 400 grade of carborandum powder. The grinding was stopped when the section becomes sufficient thin. The characters were observed under the microscope before the final mounting. Next the final mounting was made by separating the section from the slide. This is done by heating the slide and loosening it from the mounting medium. After separating the section was throughly cleaned by placing it in petridish containing Xylene solution. This was done to remove the particles of carborandum powder, which were attached in the earlier phase. Lastly the section was mounted on a new slide using Stafford and Allan canada balsum of laboratory grade. It was covered with cover glass carefully and kept on the hot plate for some time to remove air bubbles. The slides were observed under microscope. They were observed for the selected characters and the text figures were drawn by using camera lucida technique. For this purpose camera lucida of ERMA make was used. The camera lucida sketches were drawn on Ivery paper and finally inked by using India ink. There magnifications were calculated and introduced in the explanation of text figures. The measurements of tracheids, pits, ray cells etc. were made by using circular micrometer called as 'OKNOR'. The readings taken from

this equipment were finally converted into μm by using a suitble formula.

The photographs of important characters from the slides were prepared by using microphotographic camera. For this purpose JENAVAL camera is used. For photography black and white film of ILFORD make having 100 ASA speed was used. Since the instruments is equipped with autoexposure mechanism. There was no need for standardising the exposure timings. After exposing the film it was developed in the contrasted developer.

Finally the prints of desirable magnifications were prepared on Agfa paper of suitable grades like hard, normal, and special. The photoplates were prepared and their magnifications were calculated. They were introduced in the explanation of plate figures.

The impressions were collected from Kota and other places like Chitur. They are found in the limestone beds exposed at a stream section near Chitur. The impressions were exposed by breaking the shales along the bedding plane. Some times the shales are already open. Such specimens were some what easy for collection. The impressions were carefully packed on the locality spots and then transported to the laboratory. In the laboratory they were cleaned by using soft brush and some time by using a cotton plug dipped in the Xylene solution. It helps to clear the venation pattern

and other morphological characters of the plant impression. The impressions were grouped according to their classification and then described. The habit sketches of the impressions were drawn on the Ivery cards. These sketches are used as text figures. The magnification of these sketches were calculated and introduced in the explanation of text figures. The impressions were photographed by using Pentax camera. For photography the film of ORWO make with 125 ASA speed was used. The black and white photographs were prepared by using hard grades of photographic paper. The magnifications were prepared by using hard grades of photographic paper. The magnifications were calculated and introduced in the explanation of plate figure. For copying of text figures R 90 paper was utilized. It gave better results due to mat texture of the paper.