

3. MATERIAL & METHODS.

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During the Upper Gondwana period the East-Coast deposits are mostly paralic and lagoonal sediments. They are distributed along the East-Coast in the form of series of detached exposures which are parallel to the coastal line. These East-Coast Gondwana deposits are found in distinct river basins viz. Cauveri, Krishna-Godavari, Palar and Mahanadi.

The environment in these basins was favourable for the formation of upland flora popularly called as the Ptilophyllum flora. Present work deals with one of the basin of East-Coast Gondwanas developed by the Palar river in Tamil Nadu and therefore, named as the Palar basin. It consists of two distinct formations viz. (1) Sriperamatur beds, (2) Satyavedu beds.

Sriperamatur beds are basal part of the system and characterised by rich fossiliferous rocks consisting green shales, clays and sandstones. The flora is made up of Cycadophytes, Conifers, Pteridophytes and Ginkgoales. They are preserved as impressions and petrified coniferous woods.

Present work deals with plant remains collected from several places like Sriperamatur Poonamali and Vellum.

These localities are found on the Madras-Bangalore road and in the interior part of Sriperambutar-Kanjevaram beds.

1) Sriperamatur :

This locality is situated at the distance of 40 Km from Madras on the Madras-Bangalore road. It is a small town situated near the sea coast having sandy soil. The fossiliferous exposures are not easily exposed. They are found in the wells, streams and small patches where lot of soil is eroded. We have collected the plant impressions at a place, which is 4 Km away from the town and exposed near a pharmacuticle factory. Here a large stream is present which is dry for most of the period and due to erosion the stream banks are exposed showing yellowish or brownish sandstones. The plants are collected by exposing the shales along the bedding plane. Except rainy season field work can be made and plant remains were collected.

2) Poonamali :

It is 20 Km from Madras and situated on Madras-Bangalore road. The plant fossils were collected in the newly dug wells, which were mostly in the form of impressions. From this place a small stream beds was exposed where few woods were collected. They were mostly smaller in size showing moderate preservation. From this place no earlier work has been recorded.

3) Vellum :

It is present on Sriperamatur Kanjeevaram road in the southern direction. The place is situated at the distance of 8 Km from Sriperamatur. Near the locality a water tank is present. Along the walls of water tank and near by slopes the petrified woods were collected. This locality is somewhat rich in petrified woods.

Sahni (1931) described some woods from this locality and commented that the woods are poorly preserved. However, we have collected several woods showing better preservation and belonging to different families of conifers. Interestingly at the distance of 1 Km the plant impressions were collected found on the shales along the streams. These shales are different from those found at Sriperamatur. They are compact and brown to black in colour. The report of plant impressions is 1st time made by our field work.

The material collected above were investigated by using suitable methods. The impressions were carefully collected after the breaking of shales. Packed properly in a news-papers and brought to laboratory. In the laboratory they were washed and cleaned using a soft brush. They were photographed for their morphological features using a FUJI colour film in strong sunlight. The pentax SLKcamera was used for photographs. Use of close-up-lens and suitable

filters was made, the prints were prepared on Kodak paper and introduced in the dissertation. The magnification were inserted in the explanation of plate figures. The plant impressions were also sketched for their habit, type of branching, pattern of venation, nature of apex, margin and other details. The sketches are drawn on Ivory paper using India ink. The sketches were drawn to the desired scale. These sketches were introduced as Text figures.

The explanation of Text figures was also given with magnifications. These magnifications were correlated with those of plate figures. The impressions are devoid of carbonaceous matter. The cuticular features could not be studied. However, some impressions were found with black crust, attempts were made to separate this black material by using colourless nail polish and also cellulose-acetate paper. But they produced no results, hence plant impressions showed only morphological characters.

The petrified woods after collecting in the field were brought to laboratory and washed thoroughly. This was done by using running water and sometimes they were dipped in the solution of dil. HCl. This was made to remove the dirt on the woods. After cleaning, the woods were serially numbered using white acrylic paint and India ink.

The woods were examined megascopically under the magnifying lens and selected for the investigation. The promising specimens were studied by using thin ground section method.

The wood was fixed in a vice in the cutting machine and adjusted for the cutting of thin section. The cutting machine is equipped with circular diamond saw which is driven by electric motor. The saw blade is dipped in the water and mixed with cutting oil. The sections were cut along T.S., T.L.S. and R.L.S. planes.

The section was first ground on the glass to make the surface smooth. It was then fixed on glass slide by using commercial Canada balsam. This was done by heating the sufficient quantity of Canada balsam on a slide, using spirit lamp. After burning the Canada balsam for sometime the slide is taken away from the flame of lamp. Later on the smoothed surface of the section is pressed against the heated Canada balsam. Later on it was allow to cool. Care is taken to avoid the formation of air bubble. Further the fixed section on the slide is ground on a grinding machine. The machine is provided with circular grinding plat-form equipped with running water. For grinding carborandum powder of 60, 90 and 120 grades was used. The grinding is carried out till the section become translucent. After making the

section sufficient thin, it was finally ground on a glass plate using 400 grade of carborandum powder.

Finally slide is washed thoroughly to remove the particles of carborandum powder and then separated from the glass slide, by heating it on the spirit lamp. The separated section is dipped in a petridish containing xylene. This is done to remove the traces of Canada-balsam and carborandum powder. Lastly the section is mounted on a new glass slide using laboratory grade Canada balsam and covered with cover glass.

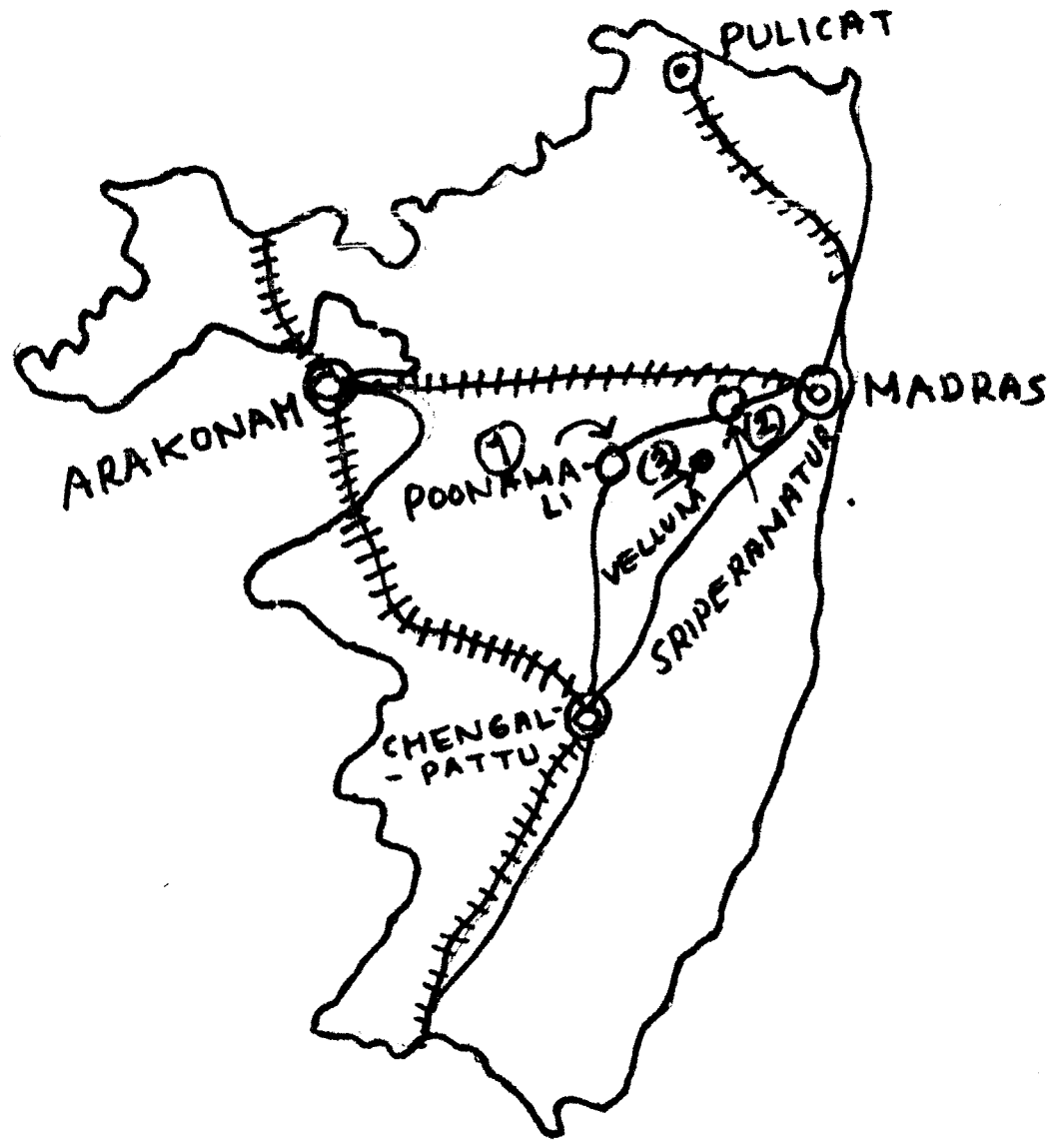
The mounted slide is now observed under microscope for it's anatomical characters. The characters seen in T.S., T.L.S. and R.L.S. were carefully noted and Camera-lucida sketches were prepared from them. For this purpose camera-lucida attachment of ERMA make was used.

The sketches were drawn on Ivory paper and inked with India ink. The sketches represent the text figures of the wood. The text figures were finally arranged in the form of plate. The explanation of the figures were introduced along with magnifications calculated by using a formula.

The photographs of the sections were prepared by using Jenaval microphotographic camera. It is provided

with computerised light source arrangement. For making the photographs 35 mm Black and White film of 125 ASA was used. Several brands of the film were tried, but the NOVA brand was found more suitable. The exposed film was developed in the fine grained developer. Prints were prepared from it. For the prints, photographic paper of sterling make was used, while preparing the photographs suitable grades of paper like hard, normal and special were used. The prints prepared were arranged for the plate figures. The explanation of plate figures is introduced along with magnifications calculated.

MAP-1



Fossiliferous Localities in Palar Basin.

- ① Poonamali.
- ② Sriperamatur.
- ③ Vellum.

