

A Collecting Trip into the Jurassic of Southern Mexico in 1935

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I had hoped for some time to collect in the Lower and Middle Jurassic beds of the Mixteca Alta in the state of Oaxaca, Mexico. G. R. Wieland had been there in 1909, and later published his *Flora liasica mexicana* (Instituto de Geologia de Mexico, Bull. 31, 1916). During a visit to the Institute in 1934 I had an opportunity to examine Wieland's types, and was impressed by the fact that these fossils could shed a new light upon the history of gymnosperms. I arranged for an exploration trip during September, 1935, after having attended the sessions of the Seventh American Scientific Congress held in Mexico City that year.

I had the good fortune of having Dr. F. K. G. Müllerried assigned as my travelling companion by the Director of the Instituto de Geologia, Ingenieur Manuel Santillán. Dr. Müllerried speaks Spanish like a native of Mexico, where he has been working in geology for seventeen years. We went by bus to Puebla and Tehuacan in the state of Puebla. From Tehuacan we went by Ford car to Huajuapam in the state of Oaxaca. The trip was continued on horseback, with one pack mule to carry specimens, and Indian guides, to the former property of the Oaxaca Coal and Iron Company on the Rio Consuelo. We slept with our guides in an abandoned mine house, collected coal specimens and plant fossils, and returned the same way we came. The trip was made more difficult by the rainy season, still much in evidence in September.

In the mountainous region of northwestern Oaxaca we find at the bottom Archeozoic sediments with much volcanic intrusion. Above the Archeozoic, or igneous rocks, is a rather well developed system of Jurassic layers in the following arrangement: Malm (Upper Jurassic); Dogger (Middle Jurassic); and Lias (Lower Jurassic).

The Lias and Dogger are mostly fresh water deposits with coal seams and plant fossils, while the Malm and the uppermost Dogger are of marine origin and contain invertebrates. Above the Jurassic are marine Cretaceous deposits and above the Cretaceous are Pleistocene and alluvial deposits. It goes without saying that southern Mexico had no glaciation in the Pleistocene.

The fossil plants and the coal seams were found throughout the Lias and Dogger. They consisted mostly of Cycadophytes, but also of Cordaites and Cycadofilicales. Formerly the two latter groups were considered to have been extinct at the end of the Permian or not later than in the Triassic. The fact that they were found in the Lower and Middle Jurassic invites further exploration in this interesting region.