FOSSIL VERTEBRATE TREASURES FROM THE KIMBERLEY

At the March 1996 meeting, Dr John Long, Curator of Vertebrate Palaeontology at the Western Australian Museum, introduced Society members and guests to recent fossil discoveries, particularly of fishes, in the Kimberley region.

John has had eight field seasons in the Kimberley since 1986 amassing an enormous amount of material that takes painstaking work to prepare before the skulls are revealed in three dimensional perfection. This work enables the reconstruction of musculature and nerve and blood circulatory pathways, and even phosphatised muscle and collagen in cell spaces is preserved. The Kimberley's Devonian fish fossils are thus of great international importance.

John showed, by means of beautiful slides, how the Devonian limestone reefs which encircle the Kimberley, such as the Emanuel Range, enclosed quiet embayments (now valley floors) where continual weathering has exposed limestone nodules. About one in two thousand of these nodules contains a fossil fish. Forty new species of fossil fishes have been described from the Kimberley, and one of the nodules contained a late Devonian placoderm fish from Gogo station (Mcnamaraspis), which has been selected as Western Australia's fossil emblem.

The Kimberley has examples of fossils from the oldest life on earth, 3.5 billion year old stromatolites, to fossil marsupials, represented by a Diprotodon jaw found near Kununurra.

Armoured fishes (placoderms) and cartilaginous fishes (Chondrichthyans) developed together through the Devonian period but the Placoderms became extinct by the end of the Devonian 355 million years ago while the cartilaginous fishes continued as the still very successful sharks, almost unchanged from their ancestors of 400 million years ago. Bony fishes appeared in the late Silurian (410 million years ago) and they too can be found in Kimberley deposits along with the other groups.

One of the most interesting placoderms was Bothriolepis with the pectoral fins forming long segmented arms. he genus has been found in every continent, suggesting it lived in the sea, but all the fossils are from fresh water deposits. It had lung-like organs and may have used its arms to crawl out of pools to escape predators and invade new pools.

Fossil fishes have also been found at Carlton Hill station and the Hargrave Range in the north Kimberley, while a bone bed in the Blina shale of the Erskine ranges, dated at 230 million years, has produced an early amphibian, Blinasaurus, about 60

cm long. Dinosaur footprints are well known from the Broome area where John and others have found evidence of at least seven species in the Cretaceous (about 130 million years old) Broome Sandstone. These include the three toed theropods (similar to Tyrannosaurus rex) whose gait, deduced from trackways, is mammalian rather than reptilian, some hand and foot prints of sauropods (like Apatosaurus), an ornithopod (like Iguanodon) from Prices Point, and the first Australian record of Stegosaurid from Australia.

Throughout his talk, John held the audience enthralled with his animated delivery and his slides of fossils, reconstructions and the remarkable rock formations in which they are found.

Loisette Marsh