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New Information on the Head and Shoulder Girdle of *Canowindra grossi* Thomson, from the Late Devonian Mandagery Sandstone, New South Wales

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ABSTRACT. The head of *Canowindra grossi* is redescribed from newly prepared casts of the holotype. The cheek has a fractionated postorbital series consisting of one large and two small postorbital bones; the lachrymal is small relative to the postorbitals and jugal, and the jugal is elongate. The opercular is deep, and higher than long. The skull table features a parietal shield without differentiated intertemporal, supratemporal or parietal bones. *Canowindra* shares with osteolepids plus eusthenopterids (Osteolepiformes) a large, externally ornamented anocleithrum, and a cheek with bar-like, vertical preopercular and single, large squamosal bone. It differs from these groups in the structure of the postorbital series and skull roof table. *Canowindra* represents an endemic genus which should be regarded as the only member of a taxon equivalent to osteolepids plus eusthenopterids. An amended diagnosis of the genus is given.

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Canowindra (Thomson, 1973) was the first crossopterygian genus known only from Australia. Prior to that work only fragmentary bones and scales of *Strepsodus decipiens* (Woodward, 1906) were documented from this country, and that identification has been questioned recently (Long, 1982). *Canowindra* is known from a complete natural mould in a slab of Mandagery Sandstone (Australian Museum F47153) collected in 1956 from a road cutting near the township of Canowindra. Besides the crossopterygian, the slab contains over a hundred well preserved armours of the antiarchs *Bothriolepis* and *Remigolepis*, and a partial armour of the euarthrodire *Groenlandaspis* (Dr A. Ritchie, pers. comm.). A Fammennian age is indicated by correlation with nearby marine intercalations containing brachipod faunas, and also by the abundance of the placoderm *Remigolepis* (Young, 1974; Long, 1983).

The new observations reported here resulted from further preparation of the original natural mould by Dr A. Ritchie and Mr R.K. Jones of the Australian Museum. The new latex cast of the head region reveals important features which could not be described by Thomson, and these are of great importance in discussing the phylogenetic position of the genus. Terminology used herein follows Jarvik (1980).

Description

The head is preserved in dorsal view with the cheeks, opercular bones and part of the pectoral girdle articulated (Figs 1, 2). Overall, the head is broad posteriorly and rather shallow with an acutely pointed snout. Sutures are not distinct on the fronto-ethmoidal shield but can be made out on the parietal shield and cheek. Laterosensory lines are not visible on any part of the head except for obscure pit-lines on the parietals, frontals, squamosals and dentary. Proportions of cranial bones are summarized in Table 1.

Fronto-ethmoidal shield. The fronto-ethmoidal shield reveals little new information. The presence of a large median postrostral (Thomson, 1973: 212) cannot be confirmed. Cracks on the surface suggest a polygonal bone mosaic at the front of the snout, although these do not appear as distinct sutures like the median line separating the frontals (Fr). A pineal foramen (Pin) appears to be present in the posterior