and distantly jointed. Between the anal and caudal fins there is a considerable interval. The caudal is inequilobate, with attenuated body prolongation ; its rays are slender, smooth, and with distantly placed articulations. The fulcra are very obvious in all the fins, notwithstanding the small size of the fish.

Remarks.—This species is allied to *R. carinatus* in general form, and in the large size of the scales of the flank, but differs obviously from it in the general larger proportional size of the scales, in the ornate character of those along the dorsal and ventral margins, and in the greater delicacy of the fins, and smaller number of their rays. The head seems also to be larger in proportion to the size of the fish.

Geological Position and Localities.—A fish of the middle or “Edge Coal” group of the Carboniferous Limestone series, the specimens above described being from Wallyford, near Tranent, in the collections of Mr D. J. Brown ; and from Possil, near Glasgow, in the collection of Messrs James Thomson and John Young, F.G.S. To the kindness of these gentlemen I am indebted for the opportunity of describing this most distinct and interesting little form.

On the Cranial Osteology of *Rhizodopsis*, and on some points in the Structure of *Rhizodus*. By Dr R. H. Traquair.

(Abstract.)

Read May 21, 1877.

This paper contains an account of the cranial structure of *Rhizodopsis* as far as this can be elucidated by an examination of a suite of specimens from the Coal Measures of Fenton, Staffordshire, in the collection of Mr Ward of Longton, supplemented by additional specimens from various other localities.

The cranial shield of *Rhizodopsis* resembles in general form and structure that of the Saurodipterini, though the surface of the bone is elaborately sculptured instead of presenting the smooth glistening aspect characteristic of the external plates and scales of the last named group. The posterior part of the shield is composed of two elongated *parietals*, and having on its outer margin two smaller plates, anterior and posterior, which may be considered as the *post-frontal* and *squamosal* respectively. The anterior or fronto-ethmoidal

portion forms the depressed rounded snout, the front margin of which above the mouth, is formed by two small dentigerous *præmaxillary* bones entirely differing in form from the bones described as such by Messrs Hancock and Atthey. The gape is wide, the *hyomandibular* bone being slightly inclined backwards; there is apparently no *symplectic*. The form of the *maxilla* is well known; the structure of the *mandible* is exceedingly complex. Its dentary element is found to correspond with the bone interpreted by Messrs Hancock and Atthey as "*præmaxilla*," but turned in a contrary direction, *i.e.*, with its toothed margin upwards instead of downwards as supposed by them; it bears the anterior laniary tooth and the outer row of small teeth. The laniaries posterior to the front one are borne on separate *internal dentary* ossicles, the presence of which is clearly proved by a portion of a jaw of a large specimen of *Rhizodopsis* in the Edinburgh Museum. The external aspect of the lower jaw is completed by at least two *infra-dentary* plates situated below the inferior margin of the dentary, behind which there is another covering externally the articular and angular region of the jaw, and which is probably the equivalent of the *angular* of other ganoids. On the internal aspect of the mandible there is, besides the internal dentary or laniary ossicles, a well-marked *splénial*. The orbit is very anteriorly placed; as in *Megalichthys*, three plates cover the cheek behind the suborbitals, corresponding to the single large one in *Osteolepis*. The author does not find Professor Young's statements that the jugular plates of *Rhizodopsis* are "in two pairs, principal and posterior," and that there is "no trace of median or of lateral plates," corroborated by the specimens under examination. On the other hand, he finds *one pair* of large *principal* jugulars with at least four *lateral* ones on each side, as well as very distinct evidence of the presence of a median plate behind the symphysis of the jaw. The shoulder girdle is provided with well-developed *infraclavicular* plates.

The lower jaw of *Rhizodus Hibberti* is found to have essentially the same structure as that of *Rhizodopsis*. The dentary element is of the same form, and bears the anterior large laniary tooth and the outer range of small teeth, the posterior laniaries being borne on separate ossicles, which are sometimes found entirely detached.