received from B_1 and B_2 during the same rotation; it is possible that these exceptions represent what has been termed "non-Io-related" emission. The fact that B_1 and B_2 are stimulated by distinctly different Io positions is perhaps the strongest evidence to date of the reality of the division of B into subsources.

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PLANETARY SCIENCE

Discovery of an Anthracosaur Skull in the Durham Coal Measures

The discovery of labyrinthodont amphibia in the Coal Measures is most unusual. Most of the finds on which our knowledge of these forms is based were made in the past century and have been summarized elsewhere[1]. The only major discovery to be made in this century was the Coope Collection from Swanwick Colliery, Derbyshire, in the Yorkshire and East Midland coalfield, and some material from this collection has already been described[2]. Although the Low Main Seam at Newsham, Northumberland, was a classic collecting site in the past century, there have been no records of finds of fossil Amphibia from the Durham coalfield.

The present find was made at Usworth Colliery, Washington, County Durham, in November 1966 by Mr Bernard Casey, a miner. It was presented to the Sunderland Museum by Mr L. Bottoms, of the Washington Antiquarian Society, and is registered as No. 193/1966 *a–f*.

The specimen (Fig. 1), which consists of, roughly, the anterior two-thirds of a jawless skull, is preserved in a micaceous silty sandstone and is uncrushed. The normal mode of preservation of Coal Measure Amphibia is in a cannel or an ironstone and in the former considerable compression is usual.

The matrix overlies the Top Busty Seam at Usworth Colliery. The latter is almost certainly near the top of the Communis Zone, the boundary between the Communis and Modiolaris Zones being somewhere between the Top Busty and Harvey Seams in the Durham coalfield[3]. The horizon is thus in the Lower Coal Measures of Stubblefield and Trotter's classification[4]. It is of Yorkian age and is late Westphalian A on the European system[1].

The specimen is from an embolomerous anthracosaur, as shown by the toothless vomers, and appears strikingly similar to the type of *Anthracosaurus russelli* Huxley 1863 (ref. 5). The dentition allows preliminary identification of the new skull as the second known specimen of the species and the estimated size is approximately the same. There are ten maxillary teeth present on the right side which together with replacing pits would give a total

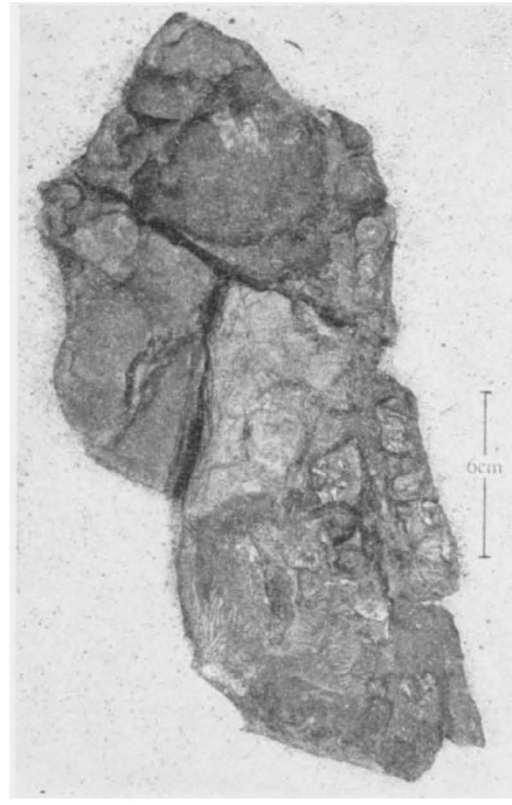

Fig. 1. The skull in palatal view.

count of seventeen or eighteen as in the type specimen; the size of the individual teeth is also comparable. The palatal dentition corresponds to that of *A. russelli* and the whole is in striking contrast to the more numerous teeth of *Eogyrinus attheyi* Watson, an anthracosaur of comparable size[6–8]. Preparation and comparison with the type of *A. russelli* should confirm the identification.

The type specimen comes from the Upper Modiolaris Zone of Airdrie, Lanarkshire, in the Scottish central coalfield and is thus considerably later than the new specimen[1,5,9], but the collection from Swanwick also showed that genera known previously from Westphalian *B* had a range extending down into Westphalian *A*.

We thank Mr Casey and Mr Bottoms for the preservation of this important discovery, Mr A. Pollack, manager of Usworth Colliery, and the area officials of the National Coal Board for permitting us to visit the site, and particularly Mr L. S. Robinson, unit surveyor at the colliery. Dr J. M. Jones confirmed our opinion on the nature of the matrix.

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