

feel none of those difficulties which now occur to his mind, nor would he bring forward a fossil like *Dictyonema*, which has so extensive a range, to prove or disprove the correlation of certain beds. I look rather to the general order of the deposits, and the general character of the fauna, for a clue, than to one doubtful fossil, and it is on this ground that I still maintain that the Russian faunas are, as far as we can yet make out, Silurian in type, and not Cambrian.

As to the depression in the British area being dependent upon the volcanic action, I must remind Prof. Linnarsson again that we have no evidence of volcanic action having taken place until the Arenig period, or until after the area had been depressed to a depth sufficient to allow from 15,000 to 20,000 feet of undisturbed sediments to have been heaped up. Here his argument fails from mistaking the cause for the result. For volcanic action in this case was undoubtedly the result of the depression, and not the cause of it.

HENRY HICKS.

#### AGE OF THE OTOTARA FORMATION.

SIR,—In the note by Dr. Hector, attached to Mr. H. Woodward's paper "On a Crab from the New Zealand Tertiary," I find the following: "From the comparison which this table affords with the recent fauna of the same area, the Ototara formation would seem to have no claim to a place among Eocene formations. This is confirmed by the occurrence of a few fossils of decidedly Cretaceous type, such as Saurian forms and fragments of the shell of *Inoceramus*, and the presence of many forms that are associated with decided Mesozoic fossils in the underlying strata."<sup>1</sup> In the table of formations given he makes the Saurians range up into the Ototara series, and in the section accompanying the note he also shows: "(k) Sandstones with Saurian bones, Ammonites, etc.," near Brighton.

The members present at the meeting seem also to have understood that Secondary fossils occurred in the Ototara formation; for in the discussion Mr. Charlesworth asked "whether the presence of the few Cretaceous fossils found in the deposit which had furnished the *New-Zealand Crab*," etc.

Now I wish to point out that no Cretaceous fossils have as yet been found in the rocks containing *Harpactocarcinus tumidus* and *Palaeodyptes antarcticus*; and I am not aware that any Cretaceous fossils or Saurian remains have ever been found on the west coast of the South Island. I have collected the fossils of the Ototara formation largely at Oamaru without finding any showing a Cretaceous facies.

F. W. HUTTON.

DUNEDIN, May 5th, 1876.

#### "ESMERILO PRETO."

SIR,—Can you, or any of your readers, kindly inform me what was the origin of the pebbles "Esmerilo Preto?"

PADIHAM, PRESTON, LANCASHIRE,  
May 17, 1876.

H. LAPPINGTON.

<sup>1</sup> Quart. Journ. Geol. Soc., 1876, vol. xxxii. p. 56.