

of rocks, and the evidence furnished by their supposed *Dipterus* has not been confirmed. And as the Old Red Sandstones of Scotland have no true fossiliferous base, but rest on primary rocks both to the south and north of the Grampians, it may be regarded as in some degree a moot point whether the lowest fossiliferous beds to the north be older or newer than those to the south, or, what is quite possible, of the same age. Provisionally, however, I have arranged my paper on the supposition that the Coccostean formation of the north is the lowest and oldest of the three; and this from the following considerations. In the first place, the *Coccosteus* and its contemporaries appear in the north at a very short distance above the base of the system. I have disinterred an *Osteolepis* from a fish-bed near Cromarty only thirty-three feet over the great conglomerate, and only a hundred and twenty-nine feet over the granitic gneiss beneath; whereas the *Cephalaspis* beds occur high above the primary base of the system in the south,—at some distance over even the thick conglomerate of Stonehaven and Dunnottar; and under this conglomerate, as shown in the section furnished by the valley of the North Esk, there lies a pale red sandstone member of the system, estimated by Colonel Imrie at seven hundred and eighty feet in thickness. The conglomerate itself he estimates at twelve hundred feet. Adopting as correct Colonel Imrie's section, taken along the banks of the North Esk,—and the Colonel was unquestionably a truthful observer,—the *Cephalaspis* beds of the south lie nearly two thousand (nineteen hundred and eighty) feet above the Azoic slates on which the Old Red Sandstone of Forfarshire rests, whereas the *Coccosteus* and *Osteolepis* beds of the north lie only one hundred and twenty-nine feet over the Azoic gneiss on which the Old Red Sandstone of Cromarty rests. There is thus at least *room* in the south for an underlying fossiliferous formation between that of the *Cephalaspis*