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EARLY MAN AND THE ASSOCIATED FAUNAS IN THE OLD WORLD¹

By Sir ARTHUR SMITH WOODWARD

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THE correlation of Pleistocene and later geological formations is always difficult, but the relative ages of the sporadic and isolated deposits which contain the remains and handiwork of fossil man are especially hard to determine. Cave deposits can only be dated by their contained fossils, unless they are clearly associated with some wide-spread incursion of the sea, a pluvial period, or a glacial episode. River terraces, lake terraces, and raised sea beaches can also often be correlated by their relative height above the present level of the water in which they were formed. In neither case, however, is it easy to correlate the past sequence of events revealed by the deposits in one region with those of a distant region. There can be little success unless similar fossiliferous deposits have been traced at intervals through the intervening land.

An interesting illustration of the means of deter-

mining the geological age of human remains is afforded by the discovery of the skull of *Eoanthropus dawsoni* in an iron-stained gravel at Piltdown in the Weald of Sussex, England. This gravel occurs in a district where earth movements caused extensive denudation in late Tertiary and Pleistocene times. It consists chiefly of hard waterworn fragments of sandstone and ironstone from the Wealden formation on which it rests; but mixed with the local material there are numerous waterworn flints, which must have been derived from the denudation of the chalk formation which originally overlaid the Wealden district, and still fringes it both to the north and to the south. These flints are well patinated, and many of them exhibit small slightly hollowed flaked surfaces, which suggest that they lay long exposed to the weather—especially to frosts—before they were eventually washed into the gravel by a river.

The Piltdown gravel was certainly deposited by a

¹ Presented before the International Geological Congress, Washington, D. C., July 22 to 29, 1933.

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