

EARLY DISCOVERERS  
XXVI  
ANOTHER FORGOTTEN PIONEER OF THE  
GLACIAL THEORY

JAMES HUTTON (1726–97)

By GORDON L. DAVIES

(Department of Geography, Trinity College, University of Dublin, Dublin, Eire)

THE problem of erratic boulders lying far from their place of origin attracted considerable attention during the closing decades of the eighteenth century. More especially, interest focused upon the blocks of Mont Blanc granite resting on the flanks of the Jura. Various fanciful explanations, ranging from debacles to gigantic explosions, were offered to account for such phenomena (some of the early explanations have been reviewed by Agassiz (1840) and North (1943)) but the true explanation long eluded even the most astute observers. It was not that there was a failure to appreciate the transportive power of glaciers—de Saussure (1786–96, Vol. 2, p. 21) and others recognized the ability of glaciers to move large boulders—but a failure to recognize that glaciers had recently extended far beyond their present limits.

John Playfair's (1802) classic *Illustrations of the Huttonian theory of the Earth* is commonly regarded as the earliest work to expound the view that the Alps had undergone an extensive glacierization and that the swollen glaciers had been responsible for transporting erratics into the Jura. This, Seylaz (1962) has urged in a recent paper, entitles Playfair to be hailed as "the first to give a valid explanation of the origin of the wandering boulders and of their transportation far from their original sites". Playfair certainly did expound this theory, and in his usual eloquent prose, but the theory was not original to him; he was merely advancing one of the doctrines of his friend and preceptor, James Hutton.

Hutton's name is familiar to all historians of science; his theory of the Earth, first made public in 1785, is universally recognized as having given the earth sciences their dynamic framework. In its original form, as published in 1788, the theory made no reference to glaciers, but in the expanded version of the theory, published in 1795, Hutton did allude to glaciers and to a former glacierization of the Alps. He claimed that at some time in the past, before denudation had lowered the mountains to their present level, the Alps had been sufficiently lofty to support extensive snowfields. Hutton (1795, Vol. 2, p. 218) continued:

"There would then have been immense valleys of ice sliding down in all directions towards the lower country, and carrying large blocks of granite to a great distance, where they would be variously deposited, and many of them remain an object of admiration to after ages, conjecturing from whence, or how they came. Such are the great blocks of granite which now repose upon the hills of Saleve."

Unfortunately he offered no further comment upon this postulated glacial epoch, but there is one other passage in the 1795 *Theory* which deserves mention in this context. It is a tantalizingly vague passage, reflecting something of Hutton's well-known stylistic obscurity, but it does leave us wondering whether he had some inkling of the potential of glacier ice as an agent of erosion. The passage occurs when, amidst a discussion of river valleys and fluvial erosion, Hutton (1795, Vol. 2, p. 296) suddenly adverts to valleys of a different type, as follows:

"But, in the Alps of Switzerland and Savoy, there is another system of valleys, above that of the rivers, and connected with it. These are valleys of moving ice, instead of water. This icy valley is

also found branching from a greater to a lesser, until at last it ends upon the summit of a mountain covered continually with snow. The motion of things in those icy valleys is commonly exceeding slow, the operation however of protruding bodies, as well as that of fracture and attrition, is extremely powerful."

It is strange that Hutton, a Scotsman living far removed from any glaciers, should have lighted upon the correct explanation of the erratics in the Jura, when his contemporaries, many of them possessed of a wide field experience of glaciers, were still having resort to the most fanciful of processes to account for the phenomenon. Hutton was, of course, familiar with accounts of glaciers in the literature—de Saussure was one of his favourite authorities—but there is a slight possibility that Hutton actually had first-hand experience of glaciers. In 1747 and 1748 he was a medical student in Paris and, although this was a period before his interest in geology had been aroused, one wonders whether he ever escaped from his studies to pay a visit to the Alps.

Whether or not Hutton ever saw a glacier is now of small consequence. What matters is that he, and not Playfair, was the first British writer to postulate an Alpine glaciation. His priority has repeatedly been overlooked. On various occasions Bailey (1921, 1950) sought to correct the record, but his pleas on Hutton's behalf have evidently passed unnoticed.

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