

gave confirmatory evidence in favour of the much grander dimensions of the Alpine glaciers in a past age. In addition to the morainic walls he referred to ice transport of the erratic boulders dispersed in such numbers in Alpine valleys and across the plains at the base of the Alps, and throughout Northern Europe.

Under the influence of Venetz, Charpentier (*ante*, p. 103), director of salt-works and a personal friend of Venetz, became deeply interested in glacial studies. Starting with the idea that his friend had formed erroneous conceptions, Charpentier soon became a convert, and declared himself openly in their favour. He gave in 1834 a memorable address at Lucerne, in which he showed that the large erratic blocks could not have been transported by water; that the frequent scratches and deep grooves on the rocks in Wallis are the work of glaciers; that the occurrence of morainic walls and erratic blocks remote from the present glaciers proved incontestably the former presence of longer, wider ice-rivers. He thought the greater glaciation of the Alps in a former epoch might be explained by the greater height which the Alpine summits had once attained.

Enthusiasm for the subject was now thoroughly aroused in Switzerland. Acting on the initiative of Charpentier, and under his personal guidance, Louis Agassiz, in the summer of 1836, made his first glacial studies at Bex on the erratics in the Rhone Valley, and explored the glaciers of Diablerets and in the neighbourhood of Chamonix. His fellow-student and friend, Karl Schimper, accompanied Agassiz on most of these excursions. The genial Munich botanist had already made a study of the erratics on the Bavarian plain at the base of the Alps, and had explained them as masses transported from the mountains by floating icebergs.

Schimper, from numerous observations on the variation of past floras and faunas, formulated his conception of alternating epochs of desolation and re-animation. He identified the youngest period of desolation as that during which the erratics had been distributed, and regarded it as a great Ice Age. Schimper embodied these ideas in courses of lectures delivered in Munich to a small circle of friends. In the winter of 1836-37, Agassiz also gave a course of lectures at Neuchâtel on glaciers and the Ice Age, and copies of an ode written by Schimper on the Ice Age were distributed by the poet