

seen of him alive by his party; his murder at Manwyne was evidently part of a scheme to attack and murder the whole party, who of course returned frustrated in their object.

It is not for us to enter into any discussion as to who are the real authors of the treacherous affair; so far as data permit, Sir Rutherford Alcock discusses the whole question, as well as shows the value of Margary and of his journey, in an Appendix. Whoever was to blame, Margary himself was blameless: it is difficult to regard his death as anything but an unrelieved loss: we trust her Majesty's Consular Service contains many like him.

OUR BOOK SHELF

Through Bosnia and the Herzegovina on Foot during the Insurrection, August and September, 1875. By Arthur J. Evans, B.A., F.S.A. With a Map and 58 Illustrations. (London: Longmans and Co., 1876.)

THIS is an opportune publication, and we recommend it to our readers as one that will give them a good and lively idea of the countries referred to and their various peoples—of much interest at present in connection with the Servian rising. Mr. Evans entered Bosnia at Brod on the Save, went leisurely south, with various divergences, through the country, reaching the sea near the mouth of the Narenta and coasting along to Ragusa. Mr. Evans mixed freely with all classes of the people wherever he went, is well acquainted with Bosnian, and indeed with general European history, is a discriminating ethnologist, and has a good knowledge of botany. He studied the features and habits of the people closely as he sojourned among them, and gives many notes that might be found of value to those who take interest both in Aryan and Turanian ethnology. The people are evidently capable of good things if they had the chance and were free from oppression; but Mr. Evans's observation confirms all that has been said as to the impossibility of the Turk ever treating a Christian subject with justice or even humanity, unless compelled. The book contains a map and many attractive illustrations, is interestingly written, and will give English readers a fair idea of a country that is almost as little known to the generality as the heart of Africa.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

Firths, Dales, and Lakes, Valleys and Cañons

IN NATURE, vol. xiii. p. 481, you honoured me by printing a notice of some writings on glacial subjects, and since then many pamphlets have been sent to me. I would gladly show that I have studied them. Though I do not believe in a "glacial period," I have convinced myself that local glacial climates, like the existing climate of Greenland and the "Arctic current" have prevailed in different regions at different times, and that marks of these "local glacial periods" include "valleys" of certain forms, with "firths" and "lake basins." Glaciation occupied the attention of the Geological Society at their last meeting, when Prof. Ramsay read an abstract of a paper, in which a foreign writer compared Greenland and Norway. So far as I understand that writer's views as to glacial action in general, I agree with him. Many writers hold opposite opinions as to "the usual evidence of powerful ice erosion," and "the alleged power of a glacier to excavate a depression in the earth's surface" (Judd), as to "abrasion," and "the inability of glaciers to excavate except under peculiarly favourable circumstances" (Bonney). Truth is learned by observation and by perseverance. A drop hollows a stone, not

by force, but by frequent falling, and that truth has become proverbial. A stream of water by flowing, and by rolling stones, makes a watercourse, and that truth is proved by every shower and in every gutter. By perseverance flowing water makes a deep watercourse. According to the latest official report of Dr. Hayden (June 4, 1876), streams which began to flow about the sources of the Mississippi, when the Rocky Mountains were raised, have gone on flowing ever since in the same channels, and some have worn cañons "from half a mile to a mile deep," not by force, but by frequent flowing. A glacier also flows. It is acknowledged that it wears and grooves rock, but still it is denied that a wide deep stream of flowing ice can make a wide deep furrow. It is said that ice "abrades," but does not "erode," that it cannot "excavate," unless under favourable circumstances. It is maintained that flowing ice cannot hollow out a basin, though flowing water does it on a small scale wherever it flows. Much is done by perseverance. As a drop hollows a stone, and water a watercourse, so ice makes an ice-channel slowly; and much repetition by glacialists may in time convince sceptics of that truth. Icebergs are the ends of glaciers pushed out into the sea, and there launched. Some of them are 3,000 feet thick. They prove their size by grounding in soundings off Newfoundland, and Labrador, and Greenland, and by their rate of flotation when they float with 300 feet above water, as "flat-topped islands of ice" in southern seas. A "glacier" cannot easily be measured on shore, but these vagrant fragments roughly measure parent glaciers. A pressure of 3,000, or of 1,000, or of 500 feet of ice upon sand, or stone moving in an ice-channel is great abrading force. At the base of every ice-fall, or ice-rapid, the plunging ice-river must tend to "excavate," because falls and rapids of water excavate pools of various size proportioned to their power. The area of Greenland nearly equals that of India, and that area, so far as it is known, is covered with thick ice which is slowly moving seawards. The coasts are furrowed by deep hollows, of which most contain flowing glaciers, of which many enter the sea, and launch "islands of ice." Some "bergs" now float to the lowest latitude reached by northern drift-stones on shore in Europe and in America. I say nothing here about marine glaciation. The Greenland glaciers are flowing from an area where water generally falls frozen; they flow as rivers now flow from India, and all of them are slowly wearing their channels at some rate, and working up stream like Niagara Falls. There is no measure for the time during which these powerful ice-rivers of Greenland have been slowly hollowing stone by frequent flowing, unless it be the work of erosion done. It is denied that the work was done by the glaciers. Yet no rivers flow where ice fills the dales, and these Greenland dales have been "eroded," and bear "the usual evidence of powerful ice erosion," according to photography and descriptions. According to the clearest marks the whole Scandinavian peninsula, and the whole of Finland have at some time been covered by ice on the scale of Greenland ice. Sermitualik glacier, photographed by Mr. Bradford before 1870, is near Cape Desolation in Greenland, opposite to Sheland, Bergen, Christiania, St. Petersburg, &c. It is from three and a half to four miles wide where it enters the sea, and there it is about 800 feet thick. It extends inland as far as the eye can reach, and probably comes from the watershed of Greenland. Taking the ice to weigh only 55 lbs. per foot cube, the pressure above the sea-level on the ice channel is about 44,000 lbs. on the foot square. Between ice and rock are large stones, grit, and mud; and the rock is rounded where it is visible at the edge of the glacier, near the sea-level. The slopes between the lakes of Finland, and the gulf near Viborg, at the side of the Saimen canal, and elsewhere, are polished, striated, and rounded. I took rubbings in September, 1865, and recognised the work of ice on the scale of Greenland ice. In Norway the old marks are plain on the sides of firths and dales, and some lead back to glaciers, which still flow from large areas upon the watershed, which still are covered by considerable sheets of ice. In Greenland this engine is seen at work; in Scandinavia the work of the engine is better seen. That work is, first a rounded worn plateau about the watershed called the "fjeld;" second, a series of slopes much glaciated; and third, below these slopes, long grooves hollowed out of the solid, called "dales." In these dales rivers now flow to lakes and to firths. Of these rivers some have worn deep watercourses, and cañons proportioned to their size and age. At the bottom of the dales are hollows which are called lakes, and firths when they hold fresh or salt water; in the rivers are smaller