

The author might well have introduced also the giant steps seen in many strongly glaciated valleys where icefalls have come into being and locally over-steepened the valley bottom. Although in general these declivities are less striking than the cirque head-wall, the plunging ice in many cases has likewise scooped out a rock basin (now perhaps holding a lakelet) at the foot of the cascade where erosion was greatest. Attention should be called to the fact that the steep plunge of an icefall must change its direction nearly to horizontality at the foot of the fall and that the resisting flood which causes this deflection of the ice necessarily suffers excessive erosion at this place. No bergschrund is at the top of a downstream icefall, but the deep crevasses which form there may enable rock fragments from the surface to reach the glacier bottom, functioning there as an additional illustration of the operation which Fisher has clearly portrayed for the cirque.

The last two chapters, entitled "Shiftings of the Axis of Gyration of the Earth as an Originating Mountain-Making Force" and "Overturned Folds in Mountain Ranges and their Origin," tackle difficult problems in tectonic geology with which experts are struggling but without as yet developing more than partial solutions. The author is far less secure climbing these slopes than on snow and ice. Quantitative tests of the adequacy of possible shiftings of the axis of gyration to produce our major mountain ranges could probably be made fairly readily by a series of calculations based on reasonable assumptions of how much earth mass might be displaced by recognized geologic processes. Any real verdict must await quantitative appraisal.

R. T. C.

*War Below Zero; The Battle for Greenland*, by Bernt Balchen, Corey Ford and Oliver Lafarge, with a foreword by General H. H. Arnold, 8vo.; 127 pages, with 15 full pages of illustrations from photographs and an end-paper map. Boston: Houghton Mifflin Co., 1944. Price \$2.00.

Lying inappropriately named, across the top of the world, half within the Arctic Circle, Greenland offered splendid bases from which the Germans could refuel submarines to prey on North Atlantic shipping, launch planes within bombing distance of North Atlantic shores and gauge the future weather of Europe. For us

it offered the shortest possible ferry route to England, equally valuable forecasts of European weather, and a testing ground for Arctic equipment for use on other northern fronts. The three parts of this short book give a poignant and breath-taking account of how the Army Air Force, aided by knowledge and experience gained with Byrd in the Antarctic, dealt with these problems and dangers.

In the first section, "Greenland Adventure," Colonel Balchen, Norwegian-American Arctic flyer, and Major Ford, writer, both of the Army Air Force, give an over-all description of the Battle for Greenland: the establishment by Balchen, with the permission of the Free Danes, of our first base in Greenland, in the summer of 1941; the hazardous rescues undertaken in 1942 and 1943; and the destruction of German bases discovered there in 1943.

Major Lafarge, Historical Officer of the Air Transport Command, in the "Long Wait," reconstructs from four verbal accounts the heroic and terrible story of the rescue of the crew, or most of it, from a Fortress which crashed on the icecap on November 9, 1942. It was April before the assignment, under Captain Turner and others, was completed.

The book closes with two first-hand accounts: one by a ferry pilot and the other by a member of the Army Air Force Security Expedition which spent nearly nine isolated months at an army weather and rescue station on the icecap. Failing for the most part in impossible rescue attempts, it nevertheless forwarded invaluable data on weather and Arctic equipment. The ferry flight was led to disaster by false radio information which in turn betrayed the presence of Germans on the island.

The unremitting efforts made to rescue the men of the wrecked Fortress are shot through with the attitude expressed by Major Lafarge in the following words: "Wherever our men have been stranded or cast away, there have been the same determined, combined operations to save them. They belong to the armies of that half of the world which believes that all men are valuable and even a single human being is important . . . It would be regarded more appropriate, one imagines, for the men [of the Axis nations] to have patriotically frozen themselves to death having first arranged their bodies in the form of a chrysanthemum or other appropriate emblem."

M. H. M.

*Immortal Wife*, by Irving Stone. 8vo., 456 pages and list of sources; no illustrations. New York: Doubleday Doran & Co., 1944. Price \$3.00

This is the biography of Jessie Benton Frémont, daughter of Thomas Hart Benton, first Senator from Missouri, and wife of the early explorer of the West, John C. Frémont.

From a strictly mountain climbing point of view, the interest in this popular biography would be limited to the single page (p. 77) in which Frémont describes to his wife the difficulties and beauties of his famous scene in the Wind River Range—"The highest point in the Central Rockies" to quote from Frémont's words. Jessie Frémont's comment to her husband's enthusiastic report, "That is a lovely story," strikes a chord of sympathy with every mountaineering reader. This ascent is the first genuine mountaineering exploit within the limits of Continental United States, Popocatepetl having been climbed over 300 years before, as the first mountaineering ascent in the Western hemisphere, by the Spanish.

To those of us interested in the broader background of mountaineering in the west, this biography is, however, most interesting—as a historical record of the blazing of the trails by which the west was opened to settlers, California added to the Union, the gold of the Sierras developed, and the first trans-continental railways laid out—without all of which the Rockies would still be inaccessible to climbers.

The whole book is very readable and, to the best of my knowledge, historically correct in every detail. From a great uncle of mine who was a member of the 27th Congress (1841-1843) I happen to have a notebook carrying the autographs of all the members of both houses at that time, many of whom are mentioned in *Immortal Wife*, and I propose to have those pages of about 250 autographs re-bound into a copy of the subject of this review, for the shelves of the A. A. C. library.

*The Ashley Book of Knots*, by Clifford W. Ashley 4vo., 619 pages, fully illustrated. New York: Doubleday, Doran & Co., 1944. Price \$7.50.

If the would-be reader is told that close to 4000 knots are written up in this book, each with one or more illustrations, and explanations of how to tie them, he will probably think it is a dry encyclo-