

and Minnesota. In these States the tenure of the university president compares very favorably with that of any other class of educational institutions in any part of the country. Among the conspicuous college presidents of the United States, President Angell stands next in seniority to President Eliot, of Harvard. The presidents of these four State universities have served terms varying from seven to thirty years, and averaging over fifteen years. The significance of this long tenure of office is apparent, if we recall the uncertain and fluctuating fortunes of the two great political parties in these Northwestern States during the last ten years.

A particularly striking instance of the development of public opinion against political interference may be found in Illinois. In the year 1894 the State University was subject to the management of a Board of Trustees, consisting of nine elective and three *ex-officio* members. Of the nine elective members of the Board, six were Democrats, as were also at least two of the three *ex-officio* members. One of these two, a member in fact as well as in name, was Governor John P. Altgeld, the vigor of whose partisanship no one will question. In spite of this decisive Democratic majority in the Board of Trustees, that body elected as the new president of the University a gentleman who was well known as a member of the opposite political party, and who had held, a few years before, a conspicuous and responsible position in the party councils of another State. * * *

The freedom of university teaching will probably always stand in need of jealous defenders. No human institution can secure itself absolutely against all influences in restraint of truth, some of which are none the less serious because they are not of a kind to attract public attention. Yet, all things considered, the State universities of the Central West may fairly claim to have made a good stand for non-partisan treatment of university teaching.—*The Independent*, N. Y.

CURRENT NOTES ON PHYSIOGRAPHY.

SNAKE RIVER CANYON.

SOME brief account of the great canyon of Snake river is presented by W. Lindgren (The

gold and silver veins of Silver city, de Lamar and other mining districts in Idaho, '20th Annual Report, U. S. Geological Survey,' 1900, pt. 3, 65-256, numerous plates and figures), supplementing the description given a few years ago by Russell (U. S. Geological Survey, Water-Supply and Irrigation Paper, No. 4, 1897). Where the river forms the western boundary of Idaho, the lava plateau has an elevation of from 6,000 to 7,000 feet; its successive flows, revealed in the dark brown canyon walls, are from 20 to 150 feet thick. Hereabouts, the river has cut down into the pre-lava mountains, the contact revealing a buried surface of strong relief. The canyon walls for a depth of 2,500 feet are benched on the horizontal lava beds; a remaining depth of the same amount is steeply buttressed with porphyries and diorites. "The bottom of the old valleys clearly lie far below the deep cut of Snake river, how far is not known. * * * It may be confidently advanced as a working hypothesis that this whole district * * * far from having been elevated since the Tertiary era * * * represents an area of depression, standing now at lower levels than during the Miocene period" (93).

ALPINE MORPHOLOGY.

A MONOGRAPH of unusual interest and value is found in E. Richter's 'Geomorphologische Untersuchungen in den Hochalpen' (*Pet. Mitt.*, Erg'heft 132, 1900, 103 p., 6 pl., 14 fig.).



FIG. 1.—A corrie beneath a sharp peak with serrate spurs.

It is concerned particularly with the origin of Kahre (cirques, corries, botner), which consti-

tute so characteristic a feature of the high Alps: arm-chair-like recesses in the mountain slope, frequently arranged in groups all backing towards a central peak or an axial ridge and separated by sharply serrate spurs. Valley troughs are also considered, and these as well as the Kahre are referred to glacial erosion under conditions that are critically specified. Among many important conclusions are the following: The high Alps, rising above the snow-line of the glacial period, owe their form largely to the destructive processes of that time. Whole ranges, 100 kilometers long, exhibit sharp high-mountain forms, with corries and serrate spurs, although they bear no glaciers at present. If it had not been for the glacial period, these ranges would to-day have the rounded forms appropriate to mountains of middle height. During the most extensive glaciation, the Swiss ice-fields stood so high—even over the forelands towards the Jura—that they were above the level of the snow-line; the slope of the snowy surface was gentle and the movement of the ice-streams in the larger valleys must have been slow. The trough form that obtains in all the strongly glaciated valleys—with over-deepened floors and over-steepened walls—is due to erosion by glaciers of medium size, whose surface did not rise above the trough walls, but whose movement must have been relatively rapid because their surface slope was strong. Ice-scouring during maximum glaciation reached far up the mountain slopes above the trough walls, but was without great influence on form. A level of extensive erosion is seen in the high Alps, coincident with the snow line of the glacial period; the peaks that rose above this level were actively consumed by weathering, while the surrounding valleys were smothered in heavy but slow-moving ice.

NEW ZEALAND.

THE ninth volume of the *Bibliothek der Länderkunde*, entitled 'Neuseeland' by R. von Lendenfeld (Berlin, Schall, 1900, 186 p., 24 pl. and fig., map), is a very attractive volume from which one may gain a clear impression of the country dealt with. Limiting this note to sections of a physiographic nature, mention may

be made of Banks peninsula, a dissected volcanic group, standing in front of the Canterbury plains, with which it is connected by long tangential sand reefs. A tunnel cut through one of the volcanic slopes has disclosed 174 different layers; lava, loose or compact, conglomerate, and weathered soil. The Canterbury plains, composed of recent fluvial deposits brought from the mountainous background, have a gentle slope seawards; the flooded rivers build up their surface with coarser deposits near the mountains and finer deposits near the shore; as their channels become clogged, the water deserts them for new courses, thus the whole surface is slowly aggrading. The account of the fiords of the southwest coast mentions their numerous waterfalls, but one must read between the lines to see that the falls leap forward from hanging valleys, such as now appear to be characteristic of strongly glaciated mountains. A striking example of such a valley seems to be shown in the plate of Mitre peak, Milford sound (fiord). The volume has a good index, but the pages are headed only with their numbers, in German fashion. The frontispiece of Mount Tasman and the Hochstetter glacier is remarkably fine.

W. M. DAVIS.

CONTEMPORARY THERMODYNAMIC EFFICIENCIES.

THIS is the day of remarkable things in the field of heat-engine construction. The *Inchdune*, and a sister ship on the 'Inch Line' of a well-known British steamship company, has produced the horse-power-hour on 0.96 pound of coal and, for the time, holds the world's record in steam-engine efficiency. This gives an efficiency, between the coal-pile and the point of transformation into power of the potential energy of the fuel, of almost precisely twenty per cent.

The steam-turbine is produced in such perfection of design and construction as to compete with the best of reciprocating engines of similar power and the report now appears in the German engineers' *Zeitschrift* that Jacobson, at Potschmühle, has tested a Laval Turbine which, rated at 300 horse-power, demands