Madagascar, Java on the south. Therefore it includes the Amazon, Nile and Niger, Zambesi and the rivers of India. The third volume treats of the north and south temperate zones and finally, also, the Arctic and Antarctic regions. The latter are small in area but exceedingly interesting in their mysteries. The temperate zones are those on which we love to dwell because there the events of the modern world have taken place. Of course the six hundred pages of Hann's third volume, devoted to the temperate zones, and the following one hundred, devoted to the Arctic and Antarctic regions, are full of interest and novelty. Although we think our annual means of temperature are moderate and temperate as compared with those of the polar regions and the tropic zones, yet the monthly means and the annual ranges show the greatest contrasts. Thus we may have $-40°$ C. and $-50°$ C. as the normal for an average January in northeastern Asia, while the same Januaries in southern Asia, in Japan and China, Afghanistan, Persia, may be from zero up to $+10°$. By analogy we find the January temperatures in North America show similar contrasts, such as $-14°$ C. at Bismarck, N. Dak., and $+12°$ C. at New Orleans, or 10° C. at San Francisco and $-5.6°$ C. at Portland, Me. Such contrasts of average temperature give zest to life in the temperate zones.

CLEVELAND ABBE

Resultats du voyage du S. Y. Belgica en 1897, 1898, 1899, sous le commandement de A. de Gerlache de Gomery: Océanographie, les glaces, glace de mer, et banquises par HENRYK ARCTOWSKI; Schizopoda and Cumacea by H. J. HANSEN, 1908; Diatomées par H. VAN HEURCK; Petrographische untersuchung der Gesteinsproben von A. PELIKAN; and Quelques Plantes fossiles des terres Magellaniques par A. GILKINET. 1909.

Still another batch of publications on the results of the *Belgica* expedition to the Antarctic is at hand, and more to come, according to the schedule, though one can not help wondering if volume X., by Dr. F. A. Cook, will eventually be among them, as originally announced. In the present instance the work is by scientists of quite another stamp.

In his discussion of the different forms under which ice appears in those regions Arctowski attempts to systematize and sum up the data given much more fully in his journal of the voyage; and also to consider the question of the limits of the ice pack, historically and from the *Belgica* observations. The movements and behavior of the pack and floe ice are fully explained. The character of the surface and how it is affected by wind and snowstorms are admirably shown by excellent half-tone reproductions of photographs.

Hansen devotes 20 pages and three excellent plates to the study of the crustacean Euphausia, Cyclaspis and related forms of marine habitat, so characteristic of the austral seas.

Van Heurck treats of the diatoms obtained in samples of the bottom obtained in sounding and in the residue from melted sea ice obtained at various places. The diatoms of the plankton are reserved for further study. An appendix on the diatoms of Kerguelen and a complete list of polar diatoms, Arctic and Antarctic, complete the memoir which is illustrated by thirteen phototype plates whose execution leaves nothing to be desired.

The photography of the rock specimens brought home by the expedition is the subject of Pelikan's memoir. The rocks are crystalline or igneous, mostly granite, diorites, porphyrites, basalts and gangue minerals. Two plates of magnified microscopic sections accompany the text.

Gilkinet devotes a few pages to a few fossil plants, mostly beeches and *Myrtiphyllum,* not new, but which present a certain interest because they come from a station near Punta Arenas, not far from a locality visited by the Swedish expedition, and comprise species not hitherto known from that locality, but only from the Sierra de los Baguales at a considerable distance from the *Belgica* locality. Also the maps showing geological distribution have not indicated hitherto tertiary beds at

the *Belgica* locality which is Passo del Cabeza del Mar, near Pecket Harbor, Strait of Magellan.

The members of the *Belgica* expedition are to be congratulated on the quantity as well as the quality of the results of their arduous labors in the field.

WM. H. DALL

The Subantarctic Islands of New Zealand. Reports on the geophysics, geology, zoology and botany of the islands lying to the south of New Zealand. Philosophical Inst. of Canterbury, Wellington, N. Z. Government printer. 1909. 848 pp., 4to, plates, text-figures and maps.

New Zealand is situated upon a submarine bank, roughly twenty degrees of longitude wide and twenty-five degrees of latitude long in a north-and-south direction within the 1,500-fathom curve. The islands of which this report treats, with the exception of the Macquarie group, are included within the 1,000-fathom curve together with the north and south islands of New Zealand proper. The most important groups are those of the Chatham, Bounty, Antipodes, Campbell and Auckland Islands. Only Macquarie and Campbell are within the northern limit of drifting ice, but the curve-enclosing sea bottom less than 2,000 fathoms in depth indicates a connection between the neozelandic bank, the Antarctic lands and Australia by way of Tasmania.

The climate of these islands is cold, wet and tempestuous, their coasts in large part inhospitable, with projecting reefs and dangers; and the record of shipwrecks and loss of life, or extreme privation of survivors, is most melancholy. Into these perilous waters the search for the fur seal and sea elephant drew many adventurers, a goodly number of whom hailed from the United States; and, while occasional fortunes were made, many ships and men suffered disaster.

The government of New Zealand has established depots of provisions and other necessaries on the principal islands, for the relief of shipwrecked mariners, and once a year the government vessel makes the round of the islands to supply or repair these depots and rescue any persons who may have reached these desolate shores. On the petition of the scientific societies of New Zealand, the authorities agreed to transport an exploring party to Auckland and Campbell Islands and to pick them up on the return trip in 1907.

The collections and observations thus made form the basis of two handsome volumes, consecutively paged, profusely illustrated, and edited by Professor Charles Chilton, of the University of New Zealand.[1] The government of New Zealand contributed a substantial sum toward the expenses of publication.

The fauna and flora of these isolated islands, seldom visited by man and into which only a few pests like rats and mice from whaling ships or sealers can have been unintentionally introduced, have a very special interest, not only on account of the modification the plants and animals have undergone, but for the light they may throw on the former distribution of Antarctic lands.

It is impossible within the space assigned to us, to discuss the several papers by specialists which are brought together in these volumes, but a brief list of the subjects treated will indicate their contents.

Following an account of the expedition and an historical survey of the islands we have articles on magnetics; on the radium content of certain igneous rocks; on the meteorology and geology of Campbell Island; on the physiography, geology, soil and soil formers of the various islands; on the vertebrates, mollusca and general entomology; special articles on macrolepidoptera, lepidoptera, hymenoptera, coleoptera, diptera, collembola, spiders, crustacea, polychæta, oligochæta, echinoderms, holothurians, planarians, nemerteans, leeches, myriapods, medusæ, actinians, sponges and foraminifera. In botany articles are provided on systematic and ecologic botany, plant formations and associations, grasses, algæ and cryptogams. A summary of the biological relations of the islands, by the editor, a bibli-

[1] The volumes may be had of Dulau & Co., 87 Soho Square, London, the agents of the Philosophical Institute of Canterbury, New Zealand.