

series is believed to be later than Eocene and to be possibly of Oligocene or older Miocene age. It consists principally of blue or gray clays with septarian nodules, rich in fossils, among which gigantic forms of *Volutes* and *Cowries* are conspicuous. Later than these clays are certain (Miocene) deposits indicating marine, lacustrine, and terrestrial conditions, with the existence of contemporaneous volcanic activity toward the end of the series. The marine rocks consist mainly of calcareous sandy strata and limestones, with *Cellepora*, *Spatangus*, *Terebratula*, etc. The lacustrine deposits are clays and lignites, and the fluviatile materials consist of gravels and sands which are often auriferous. Great sheets of basalt, forming the older volcanic series, have been poured over these various accumulations, which are sometimes 300 feet thick. A large series of plants, mollusks, fishes, and marine mammals has been obtained from the Miocene series of Victoria.⁸⁹

New Zealand.—Rocks assigned to Miocene time in New Zealand are divisible into: 1st, A lower series, consisting of calcareous and argillaceous strata widely spread over the east and central part of the North Island and both sides of the South Island. They can be traced to a height of 2500 feet above the sea. Marine shells abound in them, including 55 species which are found among the 450 shells that now live in the adjacent seas. Some of the most notable fossils are *Dentalium irregulare*, *Pleurotoma awamoensis*, *Conus Trailli*, *Turritella gigantea*, *Buccinum Robinsoni*, *Cucullæa alta*. In some places thick deposits of an inferior kind of brown-coal occur in this subdivision. 2d, An upper series composed of littoral or sub-littoral accumulations of sand, gravel, and clay. They have yielded 120 recent species of shells, and 25 species which appear now to be extinct. Specially characteristic are *Ostrea ingens*, *Murex octagonus*, *Fusus triton*, *Struthiolaria cingulata*, *Chione assimilis*, *Pecten gemmulatus*.⁹⁰

⁸⁹ R. A. F. Murray, "Geology and Physical Geography of Victoria," 1887. M'Coy, "Prodromus of Victorian Palæontology."

⁹⁰ Hector, "Handbook on New Zealand," p. 27.