



NATURAL RESOURCES

to as Newer Basalts, occur generally in the west and north, where in places they reach a thickness of 120 feet. The rock is dense, hard and durable, and requires the extensive use of explosives for its excavation. The eruption which produced these newer basalts occurred in comparatively recent times and resulted in the lower part of the Yarra valley being filled with lava. This lava flow dammed back Gardiner's Creek at Heyington and the Yarra itself at Fairfield, resulting in the formation of lakes. The Yarra finally cut a course for itself along the eastern side of its old valley, drained the lakes it had formed, and took a course through the Albert Park lagoon to the sea. Under the influence of currents, the mouth has shifted to its present position, and thick deposits of water-bearing muds and silts have formed in the vicinity.

Features of the geological formation are the deposits of pleistocene muds and silts around the mouth of the River Yarra in the central district, the predominance in the western suburbs of grey basaltic clay, which is sticky and tenacious in wet weather, unsuitable for garden cultivation, and subject to marked change in volume with variations in moisture content; the general basaltic formation in the north-western suburbs where the soil, although similar to that in the west, is somewhat more favourable; the outcrop, in the north-eastern and eastern suburbs, of silurian bedrock from which most of the sands and gravels have been eroded; and, in the south, the sands and clays of the old coastal plain characterised by the ease with which they can be cultivated and by their capacity to absorb moisture. It is worth noting that, except for an outcrop of older basalt near the South Melbourne Town Hall and a small area of newer basalt in Hawthorn, the basaltic formations are found only north of the River Yarra.

Climate

Melbourne enjoys a temperate but invigorating climate, and experiences a relatively high amount of sunshine without suffering any high degree of humidity during the summer months. The prevailing winds vary between north, west and south according to the season. These climatic conditions favour out-door sporting activities all the year round, and, with the adequate reticulated supply of water, encourage the development of the public and private gardens which are such a feature of the city and suburbs.

Rainfall shows a peculiar and marked variation across the metropolitan area as will be seen from map 6. While the metropolitan average is 25.6 inches annually, the corresponding figure in the west is less than 20 inches and in the outer eastern suburbs about 35 inches.

All these physical characteristics have exerted a considerable influence on the trend of Melbourne's urban development. Proximity to the pleasant hill country to the east, and to the beaches of Port Phillip Bay on the south, together with the more favourable topographical, climatic and soil characteristics, have made the suburbs to the east and south

particularly attractive for residential purposes and in consequence they have developed more rapidly than those in the west and north.

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The nature and extent of the natural resources within and near to a city are important factors in its development, and one of the purposes of planning is the preservation of the assets provided by nature.

Although in the mountain areas to the north and east there are considerable resources of timber and water, within the Melbourne metropolitan area there are no sources of domestic water supply, little sub-artesian water, no marketable timber, and only insignificant quantities of gold or other minerals. The only coal is a deposit, in the Altona area, of brown coal about 70 feet thick underlying hard basalt and other overburden approximately 350 feet deep. Although it has been estimated that about a hundred million tons of brown coal are available near Altona, the high cost of extraction and the immense quantities of more readily extracted coal in the Latrobe Valley area of Gippsland make the exploitation of this deposit unattractive.

The natural resources of the area are limited therefore to the extensive deposits of sands, clay, mudstones (usually referred to as "reef") and stone, all of which are used in some form or other for building and manufacturing purposes. The stone is used for roadmaking and for concrete aggregate, the sands for brick-laying, plastering, concrete work, foundry work, glass-making and silica brick manufacture, the reef for brick manufacture and the clay for earthenware and terra-cotta products, special brick tiles and the like.

At the present time about 3,000,000 cubic yards of these materials are removed each year from the ground within or near the metropolitan area as follows:

Sand	670,000	cubic yards
Reef	600,000	" "
Clay	200,000	" "
Stone	1,600,000	" "
Total	3,070,000	" "

The sand generally comes from the south-eastern suburbs, the reef from the north and east, the clay from the east and the stone from the west and north. Most of these materials are readily available in sufficient quantity to meet the city's requirements for many years. In the few instances where quantities are limited the Department of Mines is carrying out investigations with the object of locating new sources of supply. One of the chief problems is that many local councils have prohibited the opening of new quarries or pits, and in some instances have attempted to prohibit the extension of existing quarries, because of the effect of excavations on residential development. Although the excavations are a temporary disfigurement to the districts in which they are made,