

# VICTORIAN BUILDING STONES

*Issued by*

GEO. BROWN, Secretary for Mines.

under the authority of

The Hon. H. E. BOLTE, M.L.A., Minister of Mines



MINES DEPARTMENT,  
Melbourne, Victoria, Australia

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## QUARRY SITE LEASES AND LICENCES.

The Mines Department, under authority of the *Mines Act* 1928, issues leases entitling the holder to quarry and remove stone from Crown lands (with the exception of Reserved Forest areas, which are dealt with by the Forests Commission), or from land alienated from the Crown since 1st March, 1892. These leases provide for the payment of an annual rental, based on area and general economic consideration, but no royalty is levied on stone removed. Such mining (or quarrying) leases are issued for terms of up to fifteen years, and confer on the lessee the right of renewal under certain conditions. Stone deposits on land alienated from the Crown on or before 1st March, 1892, are the property of the registered proprietor of the land, with whom any quarrying arrangements must be made by private treaty.

This land may, however, be marked out for a mineral lease, subject to compliance with the provisions of the *Mines (Minerals) Act* 1944.

When only a short period of working is contemplated, provision is made in the Land Act for the issue by the Lands Department of licences for a maximum period of twelve months, allowing the removal of stone from Crown land not leased or licensed as an agricultural, grazing, or selection purchase allotment. The terms and conditions of these licences vary with the locality and with the kind of stone being quarried.

For the purposes of the above-mentioned leases and licences the word "stone" includes all building stones (as granite, marble, sandstone, &c.), stone used for road metal, and limestone, whether used for structural purposes or for the manufacture of lime.

## EXPERT ADVICE AVAILABLE.

Full information as to the extent and accessibility of stone deposits throughout the State, and also as to the conditions under which they may be worked, will be promptly supplied on receipt of an inquiry addressed to the Secretary for Mines, Treasury Gardens, Melbourne.

## THE GEOLOGICAL MUSEUM, MINES DEPARTMENT.

An exhibit of Victorian building stones, granites, and marbles is displayed at the Geological Museum of the Mines Department in Gisborne-street, East Melbourne (near the intersection of Collins and Spring streets). Photographs of modern stone

buildings, and of typical stone quarries, may also be seen. The Museum is open on week days (except Saturdays) from 9 a.m. to 4.30 p.m.

### MODERN STRUCTURES.

The information contained in this booklet has been compiled firstly to direct attention to the important part that natural stone has played in the architectural progress of Melbourne, and secondly to indicate the facilities provided by the Mines Department to encourage the development of stone quarries throughout the State.

In the earliest days of Victoria good quality building materials were so scarce that the erection of even moderately large buildings was almost impracticable. Attempts to utilize the local Silurian sandstone resulted unsuccessfully, as is evidenced by the fact that one hotel building constructed of this stone in 1844 had to be re-surfaced within a period of three years, and private dwellings of similar construction fared little better. The first bricks manufactured in the colony were also very unsatisfactory, and for some years considerable quantities were imported from England and Tasmania.

The inevitable consequence was the extensive exploitation of the abundant and easily accessible "newer" basalt, and there are to be seen in Melbourne to-day "blue-stone" buildings almost as old as the city itself. The earliest of these buildings, which are relics of days when skilled labour was so scarce as to be almost unobtainable, are of rough coursed stone cemented with a crude mortar, the greater part of which has long since decayed and weathered away.

This type of structure served as a prelude to an era of smooth-coursed, masoned, blue-stone buildings, the more pretentious of which, including the first permanent Melbourne Town Hall and the early Prince's Bridge, contained ornamental courses and pilasters of granite. Lack of adequate transport facilities made it necessary to obtain the material from near locations, and for many years small quantities of grey granite were quarried at Broadmeadows.

As the pastoral resources of the colony developed, many deposits of serviceable building stone were recorded, and, with the general increase of prosperity following the discovery of payable gold, the City of Melbourne expanded rapidly. More money was now available for structural works, transport services improved rapidly, and with the growing demand for larger and less sombre buildings, blue-stone began to give way to

granite, sandstone, and limestone, although the great durability and strength of blue-stone kept it in constant demand for base courses and hidden walls.

To-day these same stones are widely employed, but methods of quarrying and dressing have changed vastly, as has the manner in which the stone is applied, and, indeed, the whole science of building construction.

A brief study of the trend of building development leads one to the conclusion that any lack of popularity of natural materials has been due more to injudicious selection for the purpose required, than to any real inferiority. For instance, experience has proved that many marbles, while of undoubted excellence for interior use, are not satisfactory when exposed to weathering, particularly in an acid-laden city atmosphere. For ornamental exterior facings, suitable for use under city conditions, polished granite, although more expensive than marble, is both very attractive in appearance and so extremely durable that it can frequently be used again after the building has been demolished. There are in Melbourne numbers of "second-hand" granite columns and facings in such perfect condition as to be indistinguishable from new, although in some cases they were not even re-polished before being fitted to the new building.

In isolated instances, certain freestones have proved unsuitable simply through lack of mechanical strength and weather resisting properties. In this connexion, however, it should be remembered that these freestones have frequently proved to be very satisfactory for local use in small structures, so that once again the problem is reduced to that of suitability for the purpose in question.

As a result, however, of more skilled development along lines indicated by experience both in Victoria and other parts of the world, the architect may now select a natural building material in which he can place even greater confidence than in any artificial equivalent. The fact that many of our newest and most attractive buildings embody large quantities of natural stone may be accepted as proof that this material is maintaining a position of first importance in the world of modern construction. It is evidence also of the fact that the science of economic stone masonry is keeping pace with the modernization of architecture.

It is not proposed to discuss here the rather complex subject of building costs, but it should be noted that the comparative prices of natural and artificial materials constitute a factor of vital importance to Victorian stone-masons who, with the aid of more advanced methods of production and marketing, are constantly striving to maintain a favourable basis of competition for their products.

Except in comparatively rare instances, such as church and hall construction, the structural strength of large modern buildings is not provided by the stone-work, which usually takes the form of a bonded wall with a brick-work backing, or of a veneer facing over a steel and concrete frame. These types of structure allow the architect to reduce to a considerable extent the total mass of stone in a building without sacrificing either permanence or appearance. Hence in modern structures stone masonry does not generally represent a major proportion of the total cost, but it is still an appreciable item, and one whose magnitude is justified by the durability and distinction thereby obtained.

Victorian stones have been used with good effect in numerous Melbourne buildings, which provide pleasing visual evidence of the various ways in which stone-work is employed in modern construction. Another feature worthy of special note is that marble is maintaining its pre-eminent position among the various media of interior decoration, and attractive displays of this material are to be seen in old and new buildings alike.

With the object of indicating the quantities of stone-work involved in familiar buildings, the following brief descriptions are given. The approximate costs included in these are quoted for illustrative purposes only, it being considered that the relative amounts are more easily appreciated in money than in quantity units.

The head office of the State Savings Bank of Victoria in Elizabeth-street was constructed in three stages (1912, 1924, and 1933). It is one of the largest bank buildings in the city, and, completed, represents an outlay in the vicinity of £500,000, of which amount the white exterior freestone (Grampians) cost about £83,000, and the grey granite basework (Harcourt) about £15,000. With the exception of the top story the stone-work is of the massive "cube" type, forming, with a brick backing, a bonded wall, and being mostly in the form of pilasters and cornices. In the banking chamber and interior arcade of shops, several varieties of marble, the greater part of which is Australian, form an attractive display, and are sufficient in themselves to make the building worthy of inspection. An indication of the permanence of a building such as this, constructed throughout of first-class materials, is gleaned from the difficulty experienced, even after a close scrutiny of the exterior, in identifying the various stages of construction, although the first and last periods are separated by more than twenty years.

Contrasted with this more massive type of masonry the Bank of New South Wales building on the north side of Collins-street (between Elizabeth and Queen streets) provides an interesting

example of modern architecture and effectively illustrates the possibilities of freestone veneer facing. This building, which was completed in 1935, was in the following year awarded the medal of the Royal Victorian Institute of Architects for street architecture. It cost approximately £200,000, of which amount the veneer of Grampians sandstone represents less than £8,000, while the basework of Dromana granite, partly cube and partly veneer, cost about £6,000. The entrance and banking chamber are treated with Victorian and New South Wales marbles which, valued at about £5,000, are considered to repay amply this outlay. The combination of white Grampians sandstone with green Dromana granite gives to the exterior of this building an attractive air of dignity particularly suitable for modern bank premises. It is moreover a type of facing that may be confidently expected to require an absolute minimum of maintenance for a very long period.

When completed in 1932 the Port Authority building at the corner of Market and Little Flinders streets provided a very welcome addition to the rather limited classic architecture of the city. This building, unusual in that it may be seen from all sides, displays on its north and east faces massive white columns of Grampians sandstone standing out from a background of the same material, the whole exterior being effectively relieved with bronze fittings and ornamentation, and surmounting a base course of polished grey Harcourt granite. The Grampians sandstone, which as a bonded wall with cornices, columns, and pilasters, forms the exterior of the building, is valued at £66,000; the granite base-work represents a further £13,000 and the decorative interior marble about £4,000. The sandstone in this building forms a higher proportion of the total cost (about £300,000) than in either of the buildings described above. This is explained, to a large extent, by the fact that it forms all four exterior walls as compared with two of the State Savings Bank and only one of the Bank of New South Wales. The classic beauty of the Port Authority building gained for it in 1933 the award of the Royal Victorian Institute of Architects.

### **TYPES OF BUILDING STONES.**

The various building stones quarried or available for quarrying in the State of Victoria may be broadly classified as:—

#### **IGNEOUS ROCKS.**

“Granites” as a trade class may be described as “all even-grained compact igneous rocks capable of taking a polish,” and therefore include granite, granodiorite, adamellite, epidiorite, dacite, &c.

"Porphyries" are similar to granites, except that they are not even-grained, being characterized by the presence of large crystals or "phenocrysts" in a more finely grained ground mass.

"Basalts" include all volcanic rocks of basaltic texture. Common blue-stone predominates in this class.

#### SEDIMENTARY ROCKS.

Sandstones are composed almost entirely of grains of silica (sand) cemented together in various ways. The quality of the stone depends to a large extent on the amount and nature of the cementing material, which is most commonly siliceous, calcareous, or ferruginous.

Limestones are rocks of which the principal constituent is calcium carbonate. The proportion of impurity, which usually consists of sandy, clayey, or carbonaceous material, varies greatly, and may be as much as 70 per cent.

Marble is a more compact form of limestone, which has, through subjection to heat and pressure, developed crystalline structure and is capable of taking a polish. The percentage of impurity in marble is usually very low.

Victoria is particularly well supplied with all types of igneous rocks. Among the "granites" and "porphyries" practically every type required for building or monumental purposes is available, except the group known as "pearl granite" which comprises a unique family of syenites, found only in Southern Norway, and exported from there to all parts of the world. The use of imported granites other than these has been due to a limited demand rendering the exploitation of specialized local types impracticable, rather than to any shortage of raw material. Transport difficulties also have militated against the development of some of our most attractive stones, such as those from Gabo Island and Dergholm.

The conveniently accessible supply of good quality basalt is so vast as to almost justify the term inexhaustible. The following locality list includes basalt deposits at Footscray, Lethbridge, and Malmsbury. These are intended as type representatives, rather than as individual quarries, which are too numerous to be mentioned separately. Basalt of the Newer Volcanic Series covers hundreds of square miles in south-central and western

Victoria, and while the texture and working qualities of the stone vary from place to place, the range and quantity available are so great that quarries may usually be located in conveniently accessible positions. For this reason many small quarries have been opened up to supply stone for one contract only, and numbers of others are worked intermittently. At the present time there are 55 bluestone quarries in the metropolitan area and 120 in country districts, the greater part of the output of which is used for road-making and general concrete structural work. There is, however, ample stone available for paving, kerbing, breakwater construction, and building purposes. A number of quarries in the eastern and south-eastern portions of the State have opened up stone of the Older Volcanic Series, which, partly on account of its location and partly on account of its lack of good working qualities, has been used chiefly for road metal and for railway ballast.

Victorian limestone deposits have been exploited in several localities and some have proved fairly satisfactory, but not sufficiently so to create a very great demand for modern structural purposes.

Marble of excellent quality and considerable variety from Buchan has for many years found a ready market. In other parts of the State many beautiful marbles occur, and in view of the increasing popularity of light-coloured types, such as those worked extensively in New South Wales, the development of some of these areas would appear to be well justified.

Victoria has, in the Grampians sandstone, one of the strongest and most durable freestones in the world, and recognition of its really excellent quality and its practically unrivalled lasting ability is gaining for it a well-merited popularity. Other Victorian sandstones have been used quite extensively with varying results, and many, which promise well, have as yet remained untried.



## LOCALITY LIST OF BUILDING STONES.

The following list shows alphabetically the localities from which our principal building stones are derived. A short account of the more important physical properties of each stone is included, but no attempt has been made to describe them petrologically. Where the name shown in the "Variety" column is in parenthesis, it is to be regarded as a trade definition rather than as one possessing geological significance.

Locality.	Variety.	Description.
Apollo Bay ..	Sandstone ..	A fine, even-grained, bluish-grey stone of Jurassic age, easily worked and dressed. The Cape Otway lighthouse, constructed from this stone in 1848, is still standing and is in good condition. Also used in the Windsor Telephone Exchange.
Aura ..	Dacite ("Granite")	A fine-grained "black granite". Takes an excellent polish, outcrops over a wide area, and has been quarried within a few yards of the railway line between Aura and Emerald. Was used in the Swanston-street branch of the E.S. and A. Bank (demolished 1927).
Bald Hill (Bacchus Marsh)	Sandstone ..	A soft, even-grained, light brown stone of Permian-Carboniferous age. Although not uniform in colour or hardness its appearance is attractive. Does not always weather well. Used for local structures and for the Old Treasury Buildings, Melbourne, in which blocks have had to be replaced.
Ballan ..	Sandstone ..	A close-grained white to brown Permian-Carboniferous sandstone. Used locally.
Barrabool Hills (near Geelong)	Sandstone ..	A fine, even-grained, light green-brown stone of Jurassic age. Its weathering qualities are rather variable and blocks should be quarry-marked to indicate the bedding. It appears to last better rock-faced than smooth dressed. The stone is easily worked, but careful selection is necessary. It has been widely employed in various types of structure, and has generally proved to be very satisfactory. Used in St. Paul's Cathedral, Scots Church, Assembly Hall, and a number of University buildings. Also fairly extensively used at Geelong and in suburban church buildings.

Locality.	Variety.	Description.
Batesford (near Geelong)	Limestone ..	A sandy buff-coloured limestone of Tertiary age. Its strength and texture are variable, but are such as to justify its being described as a good freestone. Used in the City Court, Latrobe-street, and the Bendigo Roman Catholic Cathedral. Also known as "Moorabool stone."
Beechworth ..	"Granites"	A wide range of granitic rocks of varying colour and texture outcrop in this district. Colours include grey, pink, salmon, yellow, and green.
Briagolong ..	Sandstone ..	A fine-grained grey stone of Devonian age. Used locally.
Broadmeadows	Adamellite .. ("Granite")	A grey stone of medium texture. Was used in several early Melbourne buildings and in the basement of the present Flinders-street Railway Station.
Buchan ..	Marble ..	The Buchan marble deposits are of Middle Devonian age. They comprise a wide range of colours, including a variety of greys, "golden vein," and a black, which, however, is imperfect. There is a vast quantity of stone available. It works well, and takes an excellent polish. Among the numerous city buildings in which this marble has been effectively used are the <i>Argus</i> Office (Elizabeth-street), Chancery House, Foy and Gibson's, Museum and Public Library, Shrine of Remembrance, Temple Court, Town Hall, &c. It is also to be seen at Australia House, London, and was awarded a gold medal at the Panama Exhibition, 1915.
Cape Woolamai (Phillip Island)	Granite ..	This stone is salmon pink and varies from medium to coarse texture. It has an extremely high resistance to crushing and takes a splendid polish. Was used for the base-course and columns of the Colonial Mutual Life Building, Collins-street. The quarry is at the water's edge, and has not been operated within recent years.
Casterton ..	Granodiorite .. ("Granite")	A light-grey stone of medium texture. Used for monumental purposes. It is quarried at Wando Vale, about 8 miles north of Casterton (see also "Dergholm").
Ceres (near Geelong)	Epidiorite .. ("Granite")	This is a dark-green stone of varying texture, locally known as "green stone." It is very hard and tough, and has a particularly handsome appearance when polished. Has been used for monumental purposes, but proved expensive to quarry and dress.

Locality.	Variety.	Description.
Colquhoun ..	Granite ..	A fine-grained brick-red rock. Reported to be difficult to work, but takes an excellent polish. Used for monumental purposes. Quarry is close to railway siding. A very attractive pale-pink granite from this locality has been quarried extensively for breakwater and groyne construction at Lakes Entrance.
Cudgewa ..	"Porphyry"	A red stone of coarse porphyritic texture.
Dandenong ..	"Granite"	A grey stone of fine to medium texture. Used for monumental purposes, also for facings of "Flinders Way," Little Flinders-street.
Darley (Bacchus Marsh)	Sandstone ..	A soft, fine-grained, buff-coloured stone of Permo-Carboniferous age. Does not always weather well. Was used for portion of the Parliamentary Library.
Dergholm ..	Granite ..	A medium to coarse-grained red rock, showing a distinctly green tinge on polished surfaces. Takes an excellent polish, and has a particularly handsome appearance. The quarry is located about 20 miles north-east of Casterton, the stone being sometimes referred to as "Casterton Granite." Used as a rough-dressed base for the new A.M.P. Building in Collins-street, and as polished slabs in the Mutual Store (Degraives-street), and a branch of the Bank of New South Wales at 190 Bourke-street.
Dromana ..	Altered Granodiorite ("Granite")	A fine-grained green stone. When polished it is of extremely attractive appearance, and its working qualities are good. The future of this stone will depend to a large extent on whether a good working face can be developed. It has been used for base work in the Bank of New South Wales Building, Newspaper House, the <i>Argus</i> Office (Elizabeth-street), and the Swanston-street branch of the Union Bank of Australia.
Everton ..	"Granite"	A coarse grey stone.
Footscray ..	Basalt ..	Dense, dark, blue-black olivine basalt. This stone is extensively quarried, and widely used both for building purposes and for road metal. St. Patrick's Cathedral is constructed almost entirely of Footscray basalt, as are the bases of numerous city buildings, including the Town Hall, St. Paul's Cathedral, and the Central Telephone Exchange. Also used extensively for paving slabs, pitchers, &c., as in Collins-street.

Locality.	Variety.	Description.
Gabo Island..	Granite ..	This is a rich red stone of fine texture. While not difficult to quarry, dressing and polishing are, on account of its hardness, less easily accomplished than is the case with many granites. It is probably the most handsome of Australian red granites. To quote the Cambridge Museum catalogue, "its bright red colour surpasses in brilliancy the celebrated Peterhead granite of Scotland." The stone was first used for the construction of the Gabo Island lighthouse in 1862, and subsequently in the base of the Elizabeth-street post office; also as polished columns in the London and Lancashire, Olderfleet, and Rialto buildings, and as an architrave in the main entrance of the Victorian Club. It has been used more extensively in New South Wales, but the difficulty of access by sea has prevented its being landed in either Melbourne or Sydney in sufficient quantities for massive structural works.
Gong Gong (Ballarat)	Granodiorite ("Granite")	A grey stone of medium texture, resembling in colour and grain the Harcourt granite, but lacking its brilliant lustre.
Grampians (Stawell)	Sandstone ..	A fine, even-grained, white sandstone, probably of Lower Carboniferous age. It is characterized by siliceous segregations and by its freedom from cementing and colouring matter. On account of its initial hardness and the presence of "flints" the stone is difficult to quarry cheaply, but its durability and appearance amply repay the rather high cost of production. To chemical and mechanical tests it gives such splendid results that it can be used with confidence as a 2-in. veneer. It is the most widely used of Victorian sandstones, and no instance is known of its failure in a building. Prominent examples of its use in the city are Bank of New South Wales, Law Courts, Newspaper House, Parliament House, Port Authority Building, State Savings Bank, Taxation Offices, Union Bank of Australia, &c.
Greendale ..	Sandstone ..	A coarse-grained light-coloured stone of good appearance, and of Permo-Carboniferous age. Little is known of its weathering qualities, but they are probably similar to those of the Bald Hill and Darley stones.
Harcourt ..	Adamellite ("Granite")	A medium-grained light-grey stone. Takes a splendid polish, and is obtainable in blocks of almost any size and in unlimited quantities. It is easily the most widely used of Victorian granites. Among its more prominent city usages are Colonial Mutual Life Building, National Bank of Australasia, Port Authority Building, State Savings Bank, Taxation Offices, T. and G. Building, &c.

Locality.	Variety.	Description.
Korong ..	"Granite" ..	A fine-grained dark red rock.
Kyneton ..	"Granite" ..	A grey stone of medium texture.
Lauriston (Kyneton)	Sandstone ..	A fine, even-grained, buff-coloured stone of Permo-Carboniferous age. It is unevenly stained with iron, giving an attractive "zoned" effect. This stone works well but with a rather high percentage of waste, and is to be seen in the Arts Building at the University, and in the interiors of the Shrine of Remembrance and the A.M.P. Building. A limited quantity of white stone is also available, and was used to complete the Natural Philosophy School at the University.
Lethbridge ..	Basalt ..	Dense, dark, blue-black stone. Used for steps of Parliament House, Crown Law Offices, Government Offices, and Spencer-street Railway buildings.
Lilydale ..	Marble ..	This deposit of Silurian age is used chiefly for lime burning, but parts of the rock are suitable for polishing, and may be seen as "Rainbow" marble in the Bank of New South Wales building in Collins-street.
Limestone Creek	Marble ..	A wide range of attractive colours in Silurian and Devonian marbles. Mostly veined and mottled on cream, white, and grey bases.
Longwarry ..	Sandstone ..	A buff, even-grained stone of Jurassic age.
Malmesbury ..	Basalt ..	A slate-grey, somewhat porous, olivine basalt. Possesses excellent working qualities, and was very widely used in the past. Not suitable for road metal. Used for base courses of numerous Melbourne buildings, including many of the Government Offices, Bank of Australasia, City Mutual Life Buildings, E.S. and A. Bank, Scottish House, &c.
Mansfield ..	Sandstone ..	A buff, even-grained stone of Lower Carboniferous age. Has been used locally.
Martin's Creek (Orbost)	Marble ..	Salmon pink and dove-grey marbles, probably of Devonian age. Used in Agent-General's Office, London, and obtained an award at the Franco-British Exhibition, 1908.
Morang ..	"Granite" ..	A light grey stone of medium texture. Used in "Granite Terrace," Gertrude-street, Fitzroy.
Mt. Abrupt (Dunkeld)	Sandstone ..	A fine, even-grained, light-brown stone of Lower Carboniferous age. Iron staining and false bedding are marked defects. Used in the Women's Hospital (now demolished) and in the Presbyterian Church, Hamilton.
Mt. Lookout (Bairnsdale)	Sandstone ..	A light-coloured siliceous stone of Upper Devonian age. Fairly easy to work, but the quantity available is probably limited. Used in superstructure of Bairnsdale Court.

Locality.	Variety.	Description.
Mt. Taylor ..	"Porphyry"	A range of colours in coarse porphyritic rock, including reds, greys, and pink and green.
Orbost ..	Granodiorite ("Granite")	A dark greenish-grey stone of fine texture. It is easily worked and is of attractive colour, but contains a number of segregations of basic minerals ("black spots"). Used in base of Commonwealth Bank, Collins-street.
Portland ..	Limestone ..	A white polyzoal limestone of Tertiary age. Used in local buildings.
Shelley ..	"Granite" ..	A grey stone of medium texture.
Talbot ..	"Granite" ..	A red stone of fine to medium texture.
Tallangatta ..	Granite ..	A grey stone of fine texture.
Tallangatta ..	Porphyry ..	A pink quartz felspar porphyry, quarried about 16 miles south-east of Tallangatta. Takes a good polish, and may be seen in the Eight Hours' monument, Lygon-street, Carlton.
Toongabbie ..	Marble ..	Grey to black crinoidal limestone of Silurian age. Used ornamentally in small quantities.
Trawool ..	Porphyry ..	A fine-grained dark-grey stone containing large porphyritic felspar crystals. Used in the base of Griffiths' Building, Flinders-street, and as ornamental bands in the City Mutual Life Building, Collins-street.
Tynong ..	Granite ..	A light-grey stone of medium texture. Its working qualities are good, and its freedom from "black spots" is an advantage. Used for the exterior facing of the Shrine of Remembrance.
Violet Town	"Granite" ..	A dark-grey stone of medium texture.
Warby Ranges (Wangaratta)	Altered granite	Three distinct types, comprising a pale pink fine-grained rock characterized by the presence of pyrites, a cream-coloured rather porous type, and a pink to purple stone containing limonite. Used in Collins House, and in the Anglican Cathedral and the Roman Catholic Church at Wangaratta.
Warrnambool	Limestone ..	A porous dune limestone of Pleistocene age. It is light brown in colour, and readily sawn into blocks. Very widely used in Warrnambool district.
Wauru Ponds	Limestone ..	A brown, rather impure, Tertiary limestone. Has been employed for building purposes for many years, and though of variable quality has proved satisfactory. Used in interior of St. Paul's Cathedral, and in the Melbourne Technical College, Queen's College, and Ormond College. Also in a number of Geelong buildings.

## BUILDINGS WITH STONE CONSTRUCTION.

The details of natural stone-work given in connexion with the following list of prominent buildings are derived from the most reliable information obtainable, but do not represent the results of petrological examination by the Mines Department.

In a few instances, with prominent buildings, where other than local stone has been used, the country of origin has been shown.

The pink granite designated "Dergholm" is frequently called "Casterton granite."

The sandstone designated "Grampians" is occasionally referred to as "Stawell freestone."

The sandstone designated "Lauriston" is sometimes called "Kyneton" or "Redesdale" stone.

The reference "Sydney Sandstone" includes freestones from the several quarries in the Triassic Hawkesbury Series.

Building.	Material Used.
Alliance Assurance Building, 410 Collins-street	Base, basalt (Malmsbury) Superstructure, limestone (Oamaru, N.Z.)
Argus Office, 365 Elizabeth- street	Base, basalt (Footscray) Columns and facings (part), sandstone (Sydney) Shop window facings, granite (Dromana) Interior, marble— Greys (Buchan) White (Angaston, S.A.)
Assembly Hall, 156 Collins- street	Base, basalt (Footscray) Superstructure, sandstone (Barrabool Hills with Sydney dressings) Steps, marble (Italy)
Atlas Building, 406 Collins- street	Base, basalt (Malmsbury) Columns, granite (Harcourt) Interior, marble— Cream (Caleula, N.S.W.) Grey (Buchan) "Black Belge" (Belgium) White (Italy)

Building.	Material Used.
Australia Hotel, 270 Collins-street	Facings, granite, "Emerald Pearl" (Norway) Marble floor— "Black Belge" (Belgium) White (Italy)
A.C.A. Building, 118 Queen-street	Linings, counters, &c., marble, "Buroura Black" (N.S.W.)
A.G.E. Building, 108 Queen-street	Facings, granite— Grey (Harcourt) "Balmoral Red" (Finland) Steps, marble (Italy)
A.M.P. Building, 425 Collins-street	Base, red granite (Dergholm) Superstructure, sandstone (Sydney) Lining, sandstone (Lauriston) Stairs and paving, brown sandstone (Grampians) Counter facings, buff brecciated marble (Italy) Dados, &c., marble, "Golden Vein" (Buchan)
A.P.A. Building, 379 Collins-street	Base, basalt Facings, granite, "Balmoral Red" (Finland) Vestibule, marble— Greys (Buchan) White (Angaston, S.A.) Steps, &c., white (Italy)
Bankers and Traders Building, 358 Collins-street	Facings, "trachyte" (Bowral, N.S.W.)
Bank of Australasia, 396 Collins-street	Base, basalt (Malmsbury) Superstructure, limestone (Oamaru, N.Z.) Vestibule, steps, counters, &c., "Travertine" marble (France)
Bank of N.S.W., 368 Collins-street	Base, columns, &c., granite (Dromana) Superstructure, sandstone (Grampians) Vestibule and Banking Chamber, marble— "Rainbow" (Lilydale) "Blue Ball" (Cudgegong, N.S.W.) "Black Belge" (Belgium) White (Italy)
Bank of N.S.W., 196 Bourke-street	Base, granite (Dergholm) Superstructure (part), sandstone (Sydney)
Bank of N.Z. Chambers, 349 Collins-street	Base, basalt Square columns, granite— Grey (Harcourt) Red (Shap, Westmoreland) Vestibule, marble— Greys (Buchan) White (Italy) "Black Belge" (Belgium)



Building.	Material Used.
Buckley and Nunn, 306 Bourke-street	Lift facings, marble, "Bleu Belge" (Belgium) Show windows, granite, "Emerald Pearl" (Norway)
Chancery House, 440 Little Collins-street	Facings, granite (Harcourt)
Chancery House, 485 Bourke-street	Facings, granite, "Balmoral Red" (Finland) Vestibule and passages, marble— Greys (Buchan) White (Italy)
City Club Hotel, 207 Collins-street	Facings, marble (Angaston, S.A.)
City Court, Russell-street ..	Structure, limestone (Batesford)
City Mutual Building, 459 Collins-street	Base, basalt (Malmesbury) Superstructure, sandstone (Sydney) Ornamental work— Exterior, granite (Trawool) Interior, marble (Italy and Belgium)
Coles Stores, 304 Bourke-street	Show window facings, granite, "Emerald Pearl" (Norway)
Collins House, 360 Collins-street	Base, "trachyte" (Bowral, N.S.W.) Superstructure, granite (Warby Ranges, Wangaratta) Vestibules, steps, and passages, marble— Rouge (Borenore, N.S.W.) White (Italy)
Colonial Mutual Building, 407 Collins-street	Base, granite (Harcourt) Superstructure, sandstone (Sydney) Vestibule, &c., marble— Greys (Buchan) White (Italy)
Colonial Mutual Building, 316 Collins-street	Base, granite (Cape Woolamai) Columns, granite (Cape Woolamai) Superstructure, granite (Harcourt) Interior, marble— White (Carrara, Italy) "Black Belge" (Belgium) "Bleu Belge" (Belgium) "Rouge Belge" (Belgium) "St. Anne's Grey" (Belgium)
Commercial Bank of Australia Ltd., 337 Collins-street	Base— Basalt Grey granite (Harcourt) Superstructure and large columns, sandstone (Sydney) Smaller columns and facings, red granite (Peterhead, Scotland)

Building.	Material Used.
Commercial Banking Co. of Sydney Ltd., 251 Collins-street	Base, basalt Superstructure, sandstone (Tasmania) Interior, marble— Creams (Caleula, N.S.W.) Reds (Caleula, N.S.W.) " Bleu Belge " (Belgium)
C.T.A. Building, 318 Flinders-street	Base, granite (Harcourt) Vestibule, marble— Greys; " King Edward " (N.S.W.) Rouge (Borenore, N.S.W.) " Bleu Belge " (Belgium)
Commercial Union Building, 411 Collins-street	Base, &c., grey granite (Harcourt) Pillars, red granite (" Hill of Fare," Scotland) Superstructure, sandstone (Sydney) Interior, marble (Italy and France)
Commonwealth Bank, 367 Collins-street	Base, granite (Orbost) Columns, &c., " trachyte " (Bowral, N.S.W.) Superstructure, sandstone (Sydney) Interior, marble— Greys (Buchan) White (Italy)
Crown Solicitor's Office, Lonsdale-street	Base, basalt (Malmsbury) Superstructure, sandstone (Grampians)
Dunkling's Building, 315 Bourke-street	Facings, granite, " Emerald Pearl " (Norway)
Eight Hours Monument, Lygon-street	Pink porphyry (Tallangatta) Granite (Harcourt)
Elizabeth-street Post Office	Base— Basalt Red granite (Gabo Island) Superstructure, sandstone— Original (Tasmania); additions (Grampians)
Equity Trustees Building, 472 Bourke-street	Columns, granite (Peterhead, Scotland) Bases, &c., granite (Tarana, N.S.W.) Part superstructure, sandstone (Sydney) Lining, coloured sandstone (Grampians)
E.S. and A. Bank, 388 Collins-street	Base, basalt (Malmsbury) Superstructure, sandstone (Sydney) Vestibule, marble— Greys (Buchan) White (Angaston, S.A.)
E.S. and A. Bank, 225 Swanton-street	Base, granite (Harcourt) Superstructure, sandstone (Sydney)
Flinders-st. Railway Station	Base, columns, &c.— Basalt (Footscray) Granite (Harcourt)

Building.	Material Used.
Flinders Way, 238 Little Flinders-street	Base, granite (Dandenong) Superstructure, coloured sandstone (Grampians)
Foy and Gibson, Bourke-street	Show window facings, granite, "Emerald Pearl" (Norway) Marble over stairways and lift facings—Greys and "Golden Vein" (Buchan)
General Post Office ..	See "Elizabeth-street Post Office"
Goldsborough, Mort and Co., Bourke-street	Structure, basalt (Footscray)
Griffiths' Building, 30 Flinders-street	Base, granite (Trawool)
Herald Office, 44 Flinders-street	Base, granite (Elphinstone) Vestibule, marble, Greys (Buchan)
Kodak Building, 252 Collins-street	Facings, granite, "Carnation Red" (Sweden) Interior, marble— "Ivory and Gold" (Cudgegong, N.S.W.) "Blue Ball" (Cudgegong, N.S.W.) "Bleu Belge" (Belgium)
Law Courts, Lonsdale-street..	Base, basalt (Malmsbury) Superstructure, sandstone— Original (Tasmania); additions (Grampians)
London Assurance Building, 85 Queen-street	Facings, "trachyte" (Bowral, N.S.W.) Vestibule, marble— Greys (Buchan) "Ivory and Gold" (Cudgegong, N.S.W.)
London and Lancashire Insurance Building, 400 Collins-street	Base— Basalt (Malmsbury) Granite (Harcourt) Columns, red granite (Gabo Island) Superstructure, sandstone (Grampians)
London Hotel, 99 Elizabeth-street	Columns, granite, "Emerald Pearl" (Norway) Marble— White (Italy) "St. Anne's Grey" (Belgium)
McEwan House, 343 Little Collins-street	Facings, &c., "trachyte" (Bowral, N.S.W.) Vestibule, marble— Greys (Buchan) White (Ulam, Queensland) White (Italy)

Building.	Material Used.
Manchester Unity Building, 220 Collins-street	Interior, marble— Greys (Buchan) Creams (Caleula, N.S.W.) White (Angaston, S.A.)
Melbourne Technical College, Latrobe-street	Parts, limestone (Waurm Ponds) Parts, sandstone (Barrabool Hills)
Myer Emporium, 314 Bourke- street	Show window facings, marble— “Bleu Belge” (Belgium) Greys (Buchan)
Museum and Public Library, Swanston-street	Base, basalt— Original (Malmsbury). Additions (Footscray) Superstructure, sandstone— Original (Tasmania) Additions (Grampians) Stairway, facings, &c., marble— Greys (Buchan) White (Italy) “Black Belge” (Belgium)
Mutual Store, Degraives-street	Show windows, red granite facings (Dergholm)
National Bank of Australasia, 271 Collins-street	Base, granite (Harcourt) Superstructure, sandstone (Sydney) Vestibule, marble (Angaston, S.A.)
National Mutual Building, 395 Collins-street	Base, granite (Harcourt) Columns, granite— “Blue Pearl” (Norway) “Balmoral Red” (Finland) Superstructure, sandstone (Sydney) Vestibule, &c., marble— “Verde Alpi” (France) Red (France)
Newspaper House, 247 Collins- street	Base, granite (Dromana) Superstructure, sandstone (Grampians) Marble— Cream (Caleula, N.S.W.) Red (Caleula, N.S.W.)
N.Z. Insurance Building, 483 Collins-street	Base, basalt Granite Columns— Grey (Harcourt) Red (Peterhead, Scotland)
Northern Assurance Building, 448 Collins-street	Base, basalt (Malmsbury) Part superstructure, sandstone (Grampians)

Building.	Material Used.
Olderfleet Building, 475 Collins-street	Base, basalt Granite columns— Grey (Harcourt) Red (Gabo Island)
Old Treasury Buildings, Spring-street	Base, basalt (Footscray) Superstructure, sandstone (Bald Hill, Bacchus Marsh)
Orient Line Building, 356 Collins-street	Base, sandstone (Grampians) White marble (Italy)
Parliament House, Spring-street	Steps, &c., basalt (Lethbridge) Base, basalt (Footscray) Superstructure, sandstone (Grampians) Library, sandstone (Darley) Columns under portico, granite (Harcourt)
Phair's Hotel, 327 Collins-street	Facings, black marble (Spring Hill, N.S.W.)
Port Authority Building, 29 Market-street	Base, granite (Harcourt) Superstructure, sandstone (Grampians) Interior, marble— Greys (Buchan) Reds, &c. (Caleula, N.S.W.) White (Carrara, Italy) "Black Belge" (Belgium)
Post Office, Melbourne ..	See "Elizabeth-street Post Office"
Queensland Insurance Building, 84 William-street	Base, basalt (Footscray) Part superstructure, sandstone (Sydney) Marble, vestibule and passage— Rouge (Borenore, N.S.W.) Grey, "St. Anne's Grey" (Belgium) White (Italy) "Black Belge" (Belgium)
Queensland National Bank, 281 Collins-street	Base, "trachyte" (Bowral, N.S.W.) Vestibule, marble— Greys (Buchan) White (Angaston, S.A.)
Regent Theatre, 191 Collins-street	Marble stairs, &c., (Italy)
Reid's Building, 340 Flinders-street	Facings, granite, "Emerald Pearl" (Norway) Vestibule, marble, white (Angaston, S.A.)
Rialto Building, 497 Collins-street	Base, basalt Granite columns (Gabo Island)

Building.	Material Used.
Royal Exchange Building, 40 Queen-street	Base, granite (Harcourt) Vestibule, marble— Greys (Buchan) White (Italy)
Royal Insurance Building, 416 Collins-street	Base, basalt (Malmsbury) Part superstructure, limestone (Mt. Somers, N.Z.) Steps, &c., marble— White (Italy) "Black Belge" (Belgium)
Russell House, 452 Flinders-street	Base, basalt Vestibule, marble— Greys (Buchan) White (Carrara, Italy)
Saxon House, 454 Little Collins-street	Doorway, granite, "Balmoral Red" (Finland)
Scottish House, 90 William-street	Base— Basalt (Malmsbury) Granite (Harcourt) Columns, granite, "Balmoral Red" (Finland) Superstructure, sandstone (Sydney) Passage, marble— Brown, "Napoleon" (Belgium) "Bleu Belge" (Belgium) White (Italy) "Black Belge" (Belgium)
Scot's Church, Collins-street.	Base, basalt Superstructure, sandstone (Barrabool Hills)
Shrine of Remembrance, Domain	Exterior facings, &c., granite (Tynong) Interior, sandstone (Lauriston) Marble columns, grey (Buchan) Marble floor (Caleula, N.S.W.) Stone of Remembrance, marble (Buchan)
Southern Cross Insurance, 317 Collins-street	Base, granite (Harcourt) Columns, granite, "Corrennie Red" (Scotland) Superstructure, sandstone (Grampians)
State Savings Bank, 139 Elizabeth-street	Base, granite (Harcourt) Superstructure, sandstone (Grampians) Shop facings, granite, "Emerald Pearl" (Norway) Interior, marble— Greys (Buchan) "Ivory and Gold" (Cudgong, N.S.W.) "Bleu Belge" (Belgium) "Black Belge" (Belgium) White (Italy)

Building.	Material Used.
St. Patrick's Cathedral, Gisborne-street	Structure, basalt (Footscray) Dressings, sandstone (Tasmania)
St. Paul's Cathedral, Flinders-street	Base, basalt (Malmesbury and Footscray) Superstructure, sandstone (Barrabool Hills) Spires, sandstone (Sydney) Interior, limestone (Waurin Ponds)
Tattersall's Club, 252 Swanson-street	Doorway, granite, "Emerald Pearl" (Norway) Vestibule, marble— Greys (Buchan) White (Ulam, Queensland)
Taxation Offices, 436 Lonsdale-street	Base, granite (Harcourt) Superstructure, sandstone (Grampians)
T. and G. Building, 145 Collins-street	Base, granite (Harcourt) Vestibule, marble— Greys (Buchan) Cream (Calcutta, N.S.W.)
Temple Court, 422 Collins-street	Base, granite (Harcourt) Interior, marble— Greys (Buchan) White (Angaston, S.A.) White (Italy) "Black Belge" (Belgium) Rouge (Borenore, N.S.W.)
Town Hall, Swanston-street.	Base, basalt (Footscray) Superstructure, sandstone— Original (Tasmania) Additions (Grampians) Marble— Greys (Buchan) White (Italy) "Black Belge" (Belgium) Rouge (Borenore, N.S.W.)
Town Hall Chambers, 246 Little Collins-street	Facings, granite (Harcourt) Vestibule, marble— Greys (Buchan) White (Angaston, S.A.)
Union Bank of Australia, 351 Collins-street	Base, granite (Harcourt) Columns, red granite (Peterhead, Scotland) Superstructure, sandstone (Grampians)
Union Bank of Australia, 218 Swanston-street	Base, granite (Dromana) Superstructure, sandstone (Grampians) Vestibule, marble— Greys (Buchan) White (Italy)

Building.	Material Used.
Union Steamship Co. of N.Z., 59 William-street	Base, granite (Harcourt) Superstructure, sandstone (Sydney) Marble floor— White (Italy) "Black Belge" (Belgium)
Union Trustee Co., 331 Collins- street	Base, granite (Harcourt)
University of Melbourne, Carlton	Arts Building, sandstone (Lauriston) Biology School, sandstone (Barrabool Hills) Natural Philosophy Building— Sandstone (Lauriston) Limestone (Oamaru, N.Z.) Newman College, sandstone (Barrabool Hills) Ormond College— Sandstone (Barrabool Hills) Limestone (Wauru Ponds) Queen's College, limestone (Wauru Ponds) Medical School, sandstone (Barrabool Hills) War Memorial, sandstone (Grampians) Wilson Hall, sandstone (Sydney)
Victorian Club Building, 141 Queen-street	Base, granite (Harcourt)
Yorkshire Insurance Building, 20 Queen-street	Doorway, red granite (Gabo Island) Base, granite (Harcourt) Vestibules, marble— Greys (Buchan) White (Italy) "Blau Belge" (Belgium)

