

ROBERT BROWN'S COLLECTINGS IN VICTORIA

by

J. H. WILLIS

(National Herbarium of Victoria)

To anyone interested in the history of botanical science in Victoria peculiar importance attaches to those plants which were found within the confines of the State by that greatest collector and elucidator of Australian vegetation—Robert Brown. His specimens were the first ever to be recorded from Victorian soil (such plants as George Caley may have acquired, while at Western Port with Lieut.-Commander James Grant in March 1801, were never made known) and no subsequent collections were taken until Major T. L. Mitchell's overland journey to Portland (June-October 1836). Meanwhile, sundry collectors had been operating in all the other Colonies. Thus Brown may undeniably claim the title "father of Victorian botany".

During his three and a half years' intensive botanizing around Australian coasts (December 1801-May 1805), Brown visited parts of every State in the present Commonwealth and estimated that he had collected approximately 3400 species, more than 2000 being new to science. Less time was spent in what is now Victoria than elsewhere, and correspondingly fewer plant species were collected here. Only the extreme southern portion of Port Phillip Bay was examined, and Brown refers to this region as "Port XVI".

The *Investigator*, commanded by Captain Matthew Flinders, had remained within Port Phillip Heads for a week, between April 26 and May 3, 1802, while Brown ascended Arthur's Seat and explored the surrounding heathlands of Mornington Peninsula, landing also where Portsea now stands and visiting Swan Bay. He was not among the party which crossed Port Phillip to the western plains and climbed Flinders Peak in the You Yangs. On January 18, 1804, Brown returned to Mornington Peninsula from the Tamar (Tasmania) and spent another week in the vicinity of present Sorrento during the closing days of Collins's unsuccessful attempt at a penal establishment there. He left again for Tasmania with the last party of evacuees on the *Lady Nelson*, January 27—having collected *Brunonia* Sm., which now bears his name.

The microfilm of Brown's yet unpublished journal at the British Museum (see transcription in preceding paper) describes his ascent of Arthur's Seat (1000ft.), his landings near Point Nepean and Queenscliff between April 27 and May 2, 1802; but we have no available information on his movements during the second brief visit of January 1804—"Port Phillip" is the only locality written on Brownian herbarium sheets that I have examined. In his journal Brown usually gives more space to general natural history and domestic chit-chat about the voyage than to discussing the flora at his various landing points—but it must be remembered that his official rôle on the *Investigator* was as naturalist, not botanist.

The Mornington Peninsula, at and south of Arthur's Seat, has an average annual rainfall gradient of 25-30 inches and affords a diversity of geological features: granite, dacite, older-basalt, dune limestone, recent sand dunes and alluvium are all present. Vegetational types are also varied, embracing plants characteristic of sea cliffs, freshwater swamps, heathland, stringybark-peppermint forest and even fern gullies. The various species that Brown noted hereabouts were doubtless drawn from all of these communities, as well as the saltmarsh at Swan Bay. The granite and basaltic areas of Arthur's Seat, alone, at present support no less than 250 species of indigenous vascular plants.

Unfortunately both visits to Victoria were made late in the summer season when very little would be in bloom, and Brown most probably did not bother to collect many plants which were already familiar to him from flowering material taken in Tasmania or New South Wales. We have yet to know the full extent of his Port Phillip gatherings. The seven volumes of Bentham's *Flora Australiensis* attribute 76 vascular species to Brown from Port Phillip district. Of these, 16 duplicate collections, half of them types, are now housed in the National Herbarium of Victoria which also has at least seven other Port Phillip species collected by Brown, though apparently overlooked in Bentham's *Flora*.

The publication of a list (alphabetically arranged) of the 96 species, in 74 genera, definitely known to have been collected (or noted) in Victoria by Robert Brown is deemed worthwhile. Additions may then be made, as other of his records come to light. In the following list, the abbreviation "MEL" denotes that duplicate Brownian material is preserved at the Melbourne National Herbarium. Indications are also given wherever Port Phillip was a type locality for any plant (viz.: in 26 instances, 9 types being wholly from there) and where a plant was noted in Brown's journal or manuscript botanical descriptions, but apparently not collected (13 instances). Nine other species are mentioned under ms. names in Brown's unpublished botanical descriptions, but it is not possible to recognise them with any degree of certainty, and they have been omitted from the following list. Microfilm copies of all Brown's ms. botanical descriptions of Australian plants (housed at the British Museum) are held by the Mitchell Library in Sydney, Division of Plant Industry (C.S.&I.R.O.) in Canberra, and by the libraries of Perth, Adelaide, Brisbane and Lae (New Guinea) herbaria. The writer gratefully acknowledges the loan from Miss N. T. Burbidge, Division of Plant Industry, Canberra, of a type-written Index to these unpublished descriptions: from this Index the names of several species noted by Brown at "Port XVI" were abstracted.

Acacia retinodes Schlechtend.
A. verticillata Willd.
Acacia anserinifolia (Forst.) Domin
 (MEL)
 [syn. *A. sanguisorbæ* (L.f. & Vahl)
Acrotriche serrulata (Labill.) R. Br.
 (MEL)
Adriana quadripartita (Labill.) Gaudich.

Alyxia buxifolia, R. Br.
Arthrocnemum arbusculum [Brown's
 journal, under "*Salicornia*"]
Astroloma humifusum (Cav.) R. Br.
 (MEL)
 —not in Benth. *Fl. Aust.*
Banksia integrifolia L.f. [Brown's
 journal as *Banksia*]

- Banksia marginata* Cav.
Beryia leschenaultii (DC.) Baill.
 [Brown's journal, under "Croton"]
Billardiera scandens Sm. [Brown's ms. descr. under "B. media"]
Bossia prostrata R. Br. in Ait.
Brunonia australis Sm.
Cassytha pubescens R. Br. (TYPE in part; also Tas., N.S.W., Q.)
Casuarina stricta Ait. [Brown's journal, under "C. equisetifolia"]
Cladium junceum R. Br. (TYPE in part; also N.S.W., Tas.)
C. procerum S. T. Blake
 [syn. *C. mariscus* Auctt., non (L.) Pohl.]
Clematis microphylla DC.
Coprosma hirtella Labill.
Correa alba Andr. (MEL)
Culcita dubia (R. Br.) Maxon
 [sub *Davallia dubia*]
Cynoglossum suaveolens R. Br. (TYPE in part; also N.S.W.)
C. australe R. Br.
Daviesia corymbosa Sm.
D. latifolia R. Br.
Dichondra repens R. & G. Forst.
Dillwynia glaberrima Sm. (MEL)
 [sub *D. ericifolia*, var.]—not in Benth. *Fl. Aust.*
Epacris impressa Labill.
Epilobium billardierianum Ser. in DC. (MEL)
 [sub *E. glabellum*, No. 4476 ?]
 —not in Benth. *Fl. Aust.*
Eriochilus cucullatus (Labill.) Reichb.f. (MEL) (TYPE in part *E. autumnalis* R. Br.; also N.S.W., Tas.)
 [sub *Caladenia unguiculata*]
Eucalyptus viminalis Labill.
Exocarpos cupressiformis Labill.
Geranium pilosum Forst.
Glycine clandestina Wendl.
Gompholobium pedunculare Lodd.
 [syn. *G. huegelii* Benth.]
Goodenia ovata Sm.
G. geniculata R. Br. (TYPE in part; also Tas.)
G. humilis R. Br. (MEL) (TYPE wholly)
Hakea nodosa R. Br. (TYPE wholly)
Helichrysum dendroideum N. A. Wakefield [sub *Ozothamnus ferrugineus*]
Hibbertia fasciculata R. Br. in DC.
H. sericea (R. Br. in DC.) Benth. (MEL) (TYPE wholly) [sub *Pleurandra sericea*, No. 4893]
H. stricta (R. Br. in DC.) F. Muell. [Brown's ms. descr. as *Pleurandra stricta*]
Hypericum gramineum Forst.f.
 [Brown's ms. descr. under "H. aureum"]
Hypoxis glabella R. Br. (TYPE wholly)
Imperata cylindrica (L.) Beauv.
 [Brown's ms. descr. under "I. arundinacea"]
Isopogon ceratophyllus R. Br. (TYPE wholly)
Lepidosperma congestum R. Br. (TYPE in part; also S.A.) [erroneously cited with *L. globosum* in Benth. *Fl. Aust.*]
Leptospermum laevigatum (Gærtn.) F. Muell.
L. lanigerum Sm. (MEL) [No. 4643, det. F. Muell.]
 —not in Benth. *Fl. Aust.*
L. myrsinoides Schlechtend. (MEL)
 —not in Benth. *Fl. Aust.*
L. juniperinum Sm. (MEL)
 —not in Benth. *Fl. Aust.*
Leucopogon parviflorus (Andr.) Lindl.
 [sub *L. Richei*]
L. virgatus (Labill.) R. Br. (MEL)
 —not in Benth. *Fl. Aust.*
Limonium australe (R. Br.) Kuntze (TYPE in part; also Tas., N.S.W., Q.) [sub *Taxanthera australis*]
Linum marginale A. Cunn. ex Planch, in Hook.
Lobelia anceps Thunb.
Lomatia ilicifolia R. Br. (MEL) (TYPE wholly)
Lycopus australis R. Br. (MEL) (TYPE in part; also Tas., N.S.W., Q.)
Melaleuca pubescens Schauer in Walp.
Olearia glutinosa (Lindl.) Benth.
O. myrsinoides (Labill.) F. Muell.
O. ramulosa (Labill.) Benth.
Paterosonia longiscapa Sweet
Pelargonium australe Willd. [Brown's ms. descr. as *Pelargonium*]
Persoonia juniperina Labill. (MEL)
Pimelea glauca R. Br. (TYPE in part; also N.S.W., Tas.)
P. octophylla R. Br. (MEL) (TYPE wholly)
Plantago varia R. Br. (TYPE in part; also N.S.W., Tas.)
Platylobium obtusangulum Hook. (MEL) [No. 5074]
Pomaderris apetala Labill.
P. oraria F. Muell. & Reissek
 [syn. *P. racemosa* Auctt., non Hook]
Pultenæa gunnii Benth. (MEL)
 [sub *P. revoluta*]
P. pedunculata Hook.
P. tenuifolia R. Br. in Sims
Rubus triphyllus Thunb. [Brown's ms. descr. under "R. sterilis"]

- Samolus repens Pers. [Brown's ms. descr. under "*S. littoralis*"]
 Scævola calendulacea (Andr.) Druce (TYPE in part *S. suaveolens* R. Br. also N.S.W., Q.)
S. microcarpa Cav., var. *pallida* (R. Br.) Benth. (MEL)
 (TYPE wholly *S. pallida* R. Br.)
 Selaginella uliginosa (Labill.) Spring.
 Senecio lautus Forst. f. ex Willd.
 [Brown's ms. descr. under "*S. polymorphus*"]
 Sporobolus virginicus (L.) Kunth
 Tetragonia expansa Murr.
 Tetrarrhena juncea R. Br. (TYPE wholly)
 Tetratheca ciliata Lindl. (MEL)
 Thesium australe R. Br. (TYPE in part; also N.S.W., Tas.)
 Velleia paradoxa R. Br. (TYPE in part; also Tas.)
 Veronica calycina R. Br. (TYPE in part; also Tas.)
 V. derwentia Littlej. in Andr.
 Viminaria juncea (Schrad.) Hoffm. [syn. *V. denudata* Sm.]
 Viola betonicifolia Sm. (MEL)
 Wahlenbergia bicolor N. Lothian (TYPE in part; also N.S.W.) [syn. *Campanula gracilis* Forst., var. *stricta* R. Br., No. 2617]
 W. billardieri N. Lothian
 Wilsonia humilis R. Br. (MEL)
 (TYPE in part; also W.A.)
 Xyris gracilis R. Br. (TYPE in part; also Tas.)

[In the preceding paper, a complete transcript of Brown's journal account of his experiences on King Island and in Port Phillip Bay, April-May 1802, was given. Grateful appreciation is extended to the Photographic Section at Australia House, London, which undertook the immense task of filming Brown's ms. journal and some 50,000 sheets of botanical descriptions.]

NOTES ON THE GROWTH OF AN ENGLISH ELM

In the *Proceedings of the Royal Society of Victoria* 31: 377 (1918), the late Professor A. J. Ewart recorded the growth in circumference of an English Elm, *Ulmus procera*, situated in the King's Domain near the present Shrine of Remembrance, Melbourne.

A smooth surface, which is still apparent, was prepared on a horizontal line, 5 ft. 6 ins. from the ground. The circumference in 1918 was 6 ft. 10 ins., and no growth was shown from July until the end of October. Growth began in November, but even at the middle of December the increase barely exceeded a quarter of an inch. The main growth took place from the 15th of December to the end of February, and amounted to one inch. It remained stationary until March, but at the beginning of April had decreased by 0.2 of an inch, and at the end of April by 0.3 in. Ewart stated: "Probably this contraction is due to the cambium layers being no longer so highly distended as when actually growing".

Reporting on similar experiments, D. T. MacDougal in "Growth in Trees", Carnegie Institute of Washington *Publication* No. 307 (1921), states: "The greatest amount of increase or change in volume is that which results from the multiplication by fission of the cambium cells, and their enlargement accompanied by the differentiations mentioned, all based upon hydration of cell-colloids".

In a similar experiment on the growth of a cultivated deciduous Velvet Ash (*Fraxinus velutina*), he records that trunk enlargements began on March 10th and continued until August 25th. The total increase in diameter of the tree amounted to 26 mm. or an inch per year.

The English Elm tree in the Domain, Melbourne, was again measured along the prepared line on August 15th, 1951, the circumference being then 9 ft. 11.5 ins.—an increase of exactly three feet (36 ins.) in thirty-three years. This corresponds closely to the rate of growth recorded of other similarly cultivated deciduous trees growing north of the Equator, each tree having a five months' growth range.

—P. F. Morris.