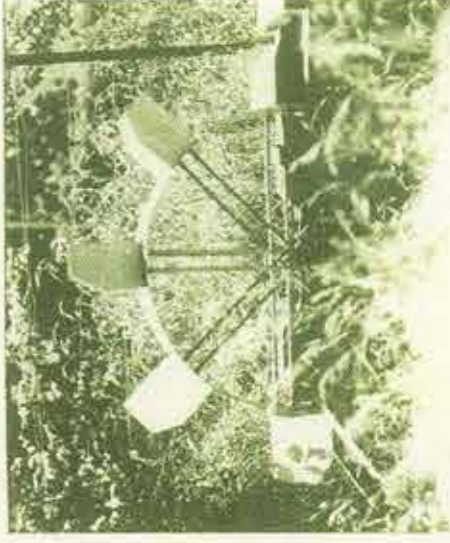


IRRIGATING THE DRY PLAINS



MELBOURNE'S LIVING MUSEUM OF THE WEST HERITAGE TOURS.
A car or bus tour looking at the development of irrigation in Melbourne's West. The whole tour will take at least a full day or it may be done in sections. References are to current Melways
© Melbourne's Living Museum of the West 1988



Destidger wheel

FRONT COVER: Loading cabbages for market - Borelli's market garden, Keilor. Photo by courtesy of Joe and Cath Borelli, Keilor.

Moore, G. and Oomes, J., *Bacchus Marsh: A Pictorial Chronicle*, Bacchus Marsh Historical Society, 1986

Compiled by Gary Vines for Melbourne's Living Museum of the West. This project was funded by the Victorian Ministry for Planning and Environment through the Western Region Commission - Regional Action Program.

Mantello, Maria, *Now and Then: The Sicilian Farming Community in Werribee 1929-1949*, Il Globo, Carlton, 1986.

James, K.N. *Werribee: The First 100 Years.*, Werribee District Historical Society, Werribee, 1984.

The Rural Water Commission in Werribee conducts tours, provides an educational service and is a good source for historical material. Ph. 741 2155.

FURTHER INFORMATION

considerable input into the success of the Werribee irrigation area.

The Werribee area has a tradition of agricultural research beginning with the experiments in breeding programs in crops and stock at Werribee Park in the 1880s and leading to the establishment of the State Research Farm in 1912. As one of its first lines of inquiry was in irrigation problems, the research farm may have had

One of the first major State Government schemes was developed with the assistance of George Chaffey in Werribee in the 1890s. Later schemes used the waters of the Lenderderyg, Werribee and Maribyrnong Rivers and Pyke's Creek to irrigate the alluvial lands near Bacchus Marsh, Keilor, Melton and Werribee. Miles of channels and pipelines were constructed and fields were levelled to control the distribution of water. Most of the successful schemes were carried out under the direction of the State Rivers and Water Supply Commission (SRWSC). This was one of the first government bodies in the world to control public water resources. (Now known as the Rural Water Commission)

PUMPS AND PIPELINES

If you begin at the Humes Historic Site *Mel 28 C9* take time to see the concrete pipes made by Humes Pipes and used extensively in farm irrigation and drainage from early this century to today.

CANNING STREET

Mel 27 G8

A small market garden which draws its water directly from the river can be seen from the road just west of the Maribyrnong River. You can get a closer look from the river path to the Canning Street Reserve. Water is raised by pump to the top of the garden and then distributed to the crops through pipes and sprays or allowed to run down open furrows in the ground along the contours of the hill. While the power source has changed, this system is like that used by the first irrigators in this country and the same principle was employed by the ancient farmers of Asia and the Middle East. Like many of the larger irrigation areas, this small farm is on the alluvial terraces of the river. The soil there is formed by silt being built up when the river floods and is therefore particularly fertile.

KEILOR

The river flats on the Maribyrnong were the site of several early farms using irrigation for orchards and vegetable gardens. David Milburn, probably the first irrigator in Victoria, used hand-powered pumps to lift water from the river into his irrigation channels. Later, horse-powered chain water-lifts were used, followed by windmills and eventually three hydraulic rams. Water was raised between 20 and 50 feet. The weir the constructed to store water for irrigation can still be seen just up-stream of the Arundel Road bridge. *Mel 14 H2*

Apart from irrigation works, Werribee also has relics of early domestic water supply schemes, including the concrete water tower on Tower Road *Mel 206 A8*, and one of Melbourne's first water supply tanks, now in the MMBW farm.

requirements for fresh vegetables. A unique environment producing much of Melbourne's community developed in the area. It continues to be a sponsor their relatives to emigrate so that a close with water. Such prosperity helped the early migrants to and productivity of the land once it had been supplied doubled, between 1928 and 1936, due to the prosperity rotation during the year. The population of Werribee more intensive with three crops sown and harvested in a single crop a year. In Werribee the pace was faster and poor soils of their native Sicily that could only produce to the area, though their new home was a contrast to the land and irrigation rights. They leased and later purchased area of South Werribee. In the 1920s, Italian immigrants began to settle in the market gardens at that time.

By 1929 about two hundred acres of fruit trees were planted in Werribee South. The largest orchard was thirty acres, owned by a Mr Thomas. Experienced market gardeners also came into the area and introduced successful farming methods which were copied by locals. Much of the area under lucerne was converted to market gardens at that time.

1931 work began on the present concrete channels. blockages were caused by erosion and weed growth. In drawn scoops followed by men with shovels trimming off. They were unsatisfactory because breaches and The original channels were formed in earth by horse-

of each of the reservoirs. system including increasing storage capacity in the River. Constant improvements have been made to the completion of the Mellon Reservoir on the Werribee River. The water supply was enlarged in 1916 with soldiers. The water supply was enlarged in 1916 with donator schemes for settlement of returned soldiers. The water supply was enlarged in 1916 with their trees matured. After World War I, G.T. Chirnside looked for orchards and grew vegetables while the scheme officially opened in 1912. Several farmers by the Minister of Water Supply, Mr. Swinburne. The 9061 acre forward Pyke's Creek and was intended to provide a plan of 7,500 acres with water from other families closely associated with the origins of irrigation in the district were the Goudies, the Dodds, the Cahills and the Borellis. Jose Borelli was an immigrant from Spain and lived on the farm just off the old Calder Highway east of the river which is now part of Brimbank Park. *Mel 14 K8* He was particularly adept at getting high yields from his land, developing and adapting the techniques he brought from Spain and coming up with his own innovative methods. The Dodds and Goudies also farmed land now part of Brimbank Park. The fields, once planted with fruit trees and vegetables, have been levelled to ensure an even distribution of water. The terraced fields can be clearly distinguished in many parts of Keilor.

EXFORD

Mel 255 G2

The Mellon Reservoir was constructed in 1912 as an extra storage facility for the Werribee Irrigation Scheme. With its opening in 1916 Werribee ceased to rely solely on Pyke's Creek Reservoir.

BACCHUS MARSH

Mel. 219

Today this town is the centre of a thriving market gardening and orchard area. It has been so for most of the last sixty or so years, having developed from a predominantly hay and grazing district last century.

Federal Milk Factory, Bacchus Marsh.

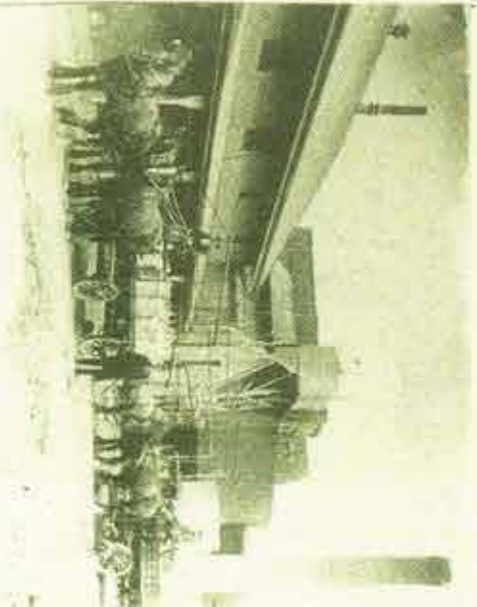
HISTORICAL BACKGROUND

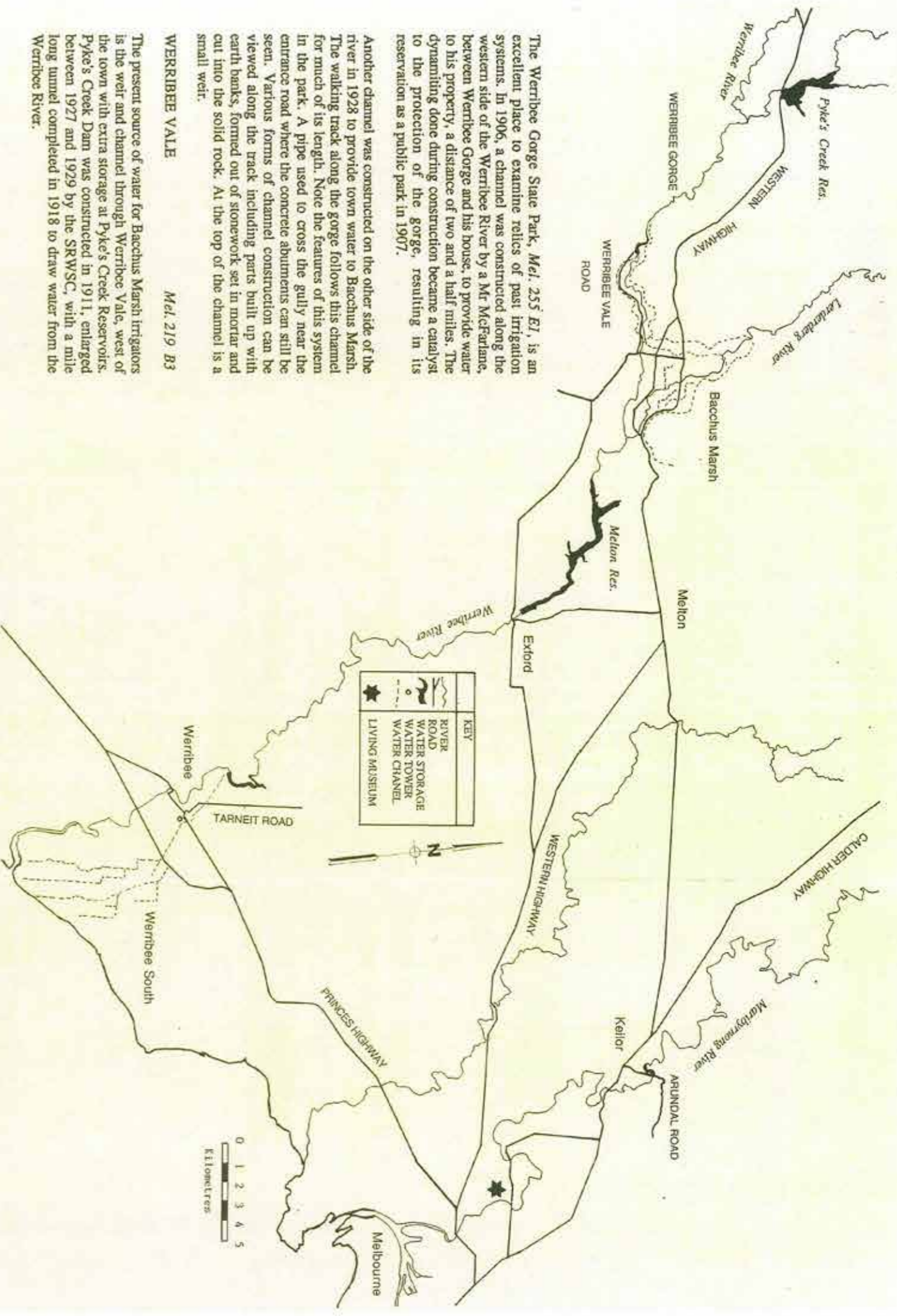
The basalt plains to the west of Melbourne, bounded on the west and north by uplifted plateaux and on the south and east by the bay and river valleys, have a climate of their own. The area is in a rain shadow and has an average rainfall of less than 550 mm per year. This makes the country suitable for grazing or hay production but not for intensive cultivation. The soil, however, is fertile. From the excellent growth that followed good rain, the early settlers saw that, but for want of water, they could be farming a rich land.

The progress toward irrigation came from both private and public endeavours in various parts of Victoria with Melbourne's West playing an important role in both sectors. Probably the first effort in Victoria to bring water to the dry land was made by David Milburn of Grange Farm, Keilor in 1857. Elsewhere in the state, G. Eason was irrigating fruit trees and vegetables near Ballarat in 1858, Sydney Ricardo pumped water from the Yarra at Heidelberg in 1859 and the fourth may have been John Garden of Tarradale in 1861.

The State Government was slow in becoming involved in irrigation projects, only doing so after the efforts of Alfred Deakin in the 1880s and the establishment of local water supply trusts. In 1883 an Irrigation Act was passed in the Victorian Parliament, followed by a Royal Commission in 1884 to which Deakin was appointed. He travelled to India and America to learn something of the subject and was instrumental in bringing out the Chaffey brothers. They provided advice to the Victorian Water Supply Department (formed in 1886) and went on to develop the large schemes and settlements at Mildura and Renmark. The Irrigation Act of 1886 provided for the establishment of local water supply trusts which unfortunately were unsuccessful.

Werribee Vale





The Werribee Gorge State Park, *Mel. 255 E1*, is an excellent place to examine relics of past irrigation systems. In 1906, a channel was constructed along the western side of the Werribee River by a Mr McFarlane, between Werribee Gorge and his house, to provide water to his property, a distance of two and a half miles. The dynamiting done during construction became a catalyst to the protection of the gorge, resulting in its reservation as a public park in 1907.

Another channel was constructed on the other side of the river in 1928 to provide town water to Bacchus Marsh. The walking track along the gorge follows this channel for much of its length. Note the features of this system in the park. A pipe used to cross the gully near the entrance road where the concrete abutments can still be seen. Various forms of channel construction can be viewed along the track including parts built up with earth banks, formed out of stonework set in mortar and cut into the solid rock. At the top of the channel is a small weir.

WERRIBEE VALE *Mel. 219 B3*

The present source of water for Bacchus Marsh irrigators is the weir and channel through Werribee Vale, west of the town with extra storage at Pyke's Creek Reservoirs. Pyke's Creek Dam was constructed in 1911, enlarged between 1927 and 1929 by the SRWSC, with a mile long tunnel completed in 1918 to draw water from the Werribee River.

In summer, when the streams are low, the demand for water by farmers is high, so the sluice gates are opened to allow water to carry on down the river to the Werribee Vale weir. Here an hydraulically controlled gate regulates the flow into the concrete-lined channels.

The development of the scheme encouraged the growing of lucerne in irrigated paddocks. The lucerne chaff was produced in several chaff-cutting works established during the same period and used to feed the many dairy cattle in the area. Pearce Brothers, from a prominent local family, had at least two mills in Bacchus Marsh and the Australian Grain and Amblor Company had one at Parwan.

Channels can be discerned along the hills in several parts of Bacchus Marsh. Some are disused and replaced by underground pipes. Some are new, while some of the original channels are still in use. On the flats, a network of concrete and earth channels distributes water to each field. Metal wheels known as Dethridge wheels regulate the flow and record each farmer's allocation and so enables the SRWSC to calculate its charges. A SRWSC depot in Maddingley manufactured the Dethridge Wheel for supply throughout Australia.

In the lanes around Bacchus Marsh you can see the various types of channels and methods of distributing water as well as large varieties of crops being irrigated, ranging from fruit trees to vegetables and pastures. The methods include the following:

Border Check: using low embankments around small areas to control flooding of selected areas for pasture and fodder crops.

Wild Flooding: where there is little control of the water which is simply allowed to flow from the highest to lowest parts of the field.

Contour Banks: using earth banks following the contours of the land between which the water may flow.

Furrow: where furrows between each row of crop whether trees or vegetables, are flooded in turn.

Spray and Trickle methods have been used widely in recent years.

A number of milk factories operated in Bacchus Marsh from the 1890s. This is a further reflection of the extent of the influence of the irrigation schemes, as many other industries were linked to the farming developments.

WERRIBEE

One of the first major irrigation schemes in Victoria (or Australia) began in the area just north of Werribee township in 1889 by the Werribee Irrigation Trust and Investment Co., now commemorated in Riverbend Park. *Mel 205 F2*. George Chadley of the American irrigationist brothers became a director of the experimental irrigation scheme which used pumps to raise water from the Werribee River. A pumping plant was erected with a capacity of 1,500 to 2,000 gallons per minute. Avenues of peppercorns and gum trees were planted on the boundaries of the blocks. W.F. Solomon put in a forty acre orchard of peaches, apricots, plums, apples and pears, with a variety of vegetables being grown between the trees while they came to maturity. Others followed him on a smaller scale. The scheme did not prove a success, possibly because hay production provided sufficient profits to farmers in the area without the need for expensive irrigation systems.

Relics of the scheme, including channels and the site of Chadley's house, and a pictorial display can be seen at Riverbend Park. This is also the site of the Werribee diversion weir and the beginnings of the present day irrigation channels.

The Closer Settlement Act of 1904 allowed the sale of small blocks of land. In that year the State Government purchased 23,212 acres of George Christies's Werribee Park to expand farming in the state. However, the blocks of land were so small that people were discouraged from taking up land until a 1909 Amendment allowed the purchase of an increased area by an individual.

The establishment of the SRWSC heralded a new phase in irrigation. An American irrigation engineer, Mr Elwood Mead, was appointed chairman and his first task was to report on the scheme for the Werribee Park Closer Settlement area.

Werribee Vale weir, Bacchus Marsh.

