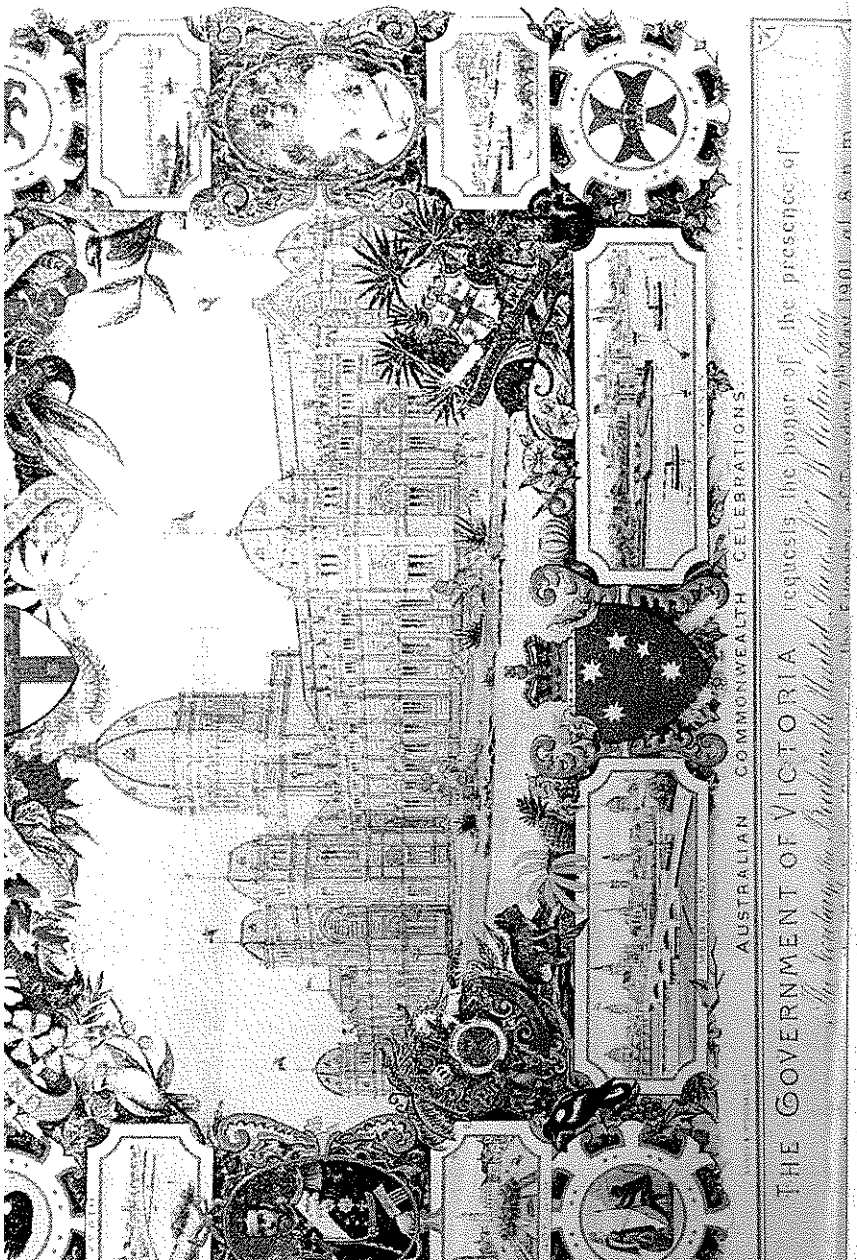
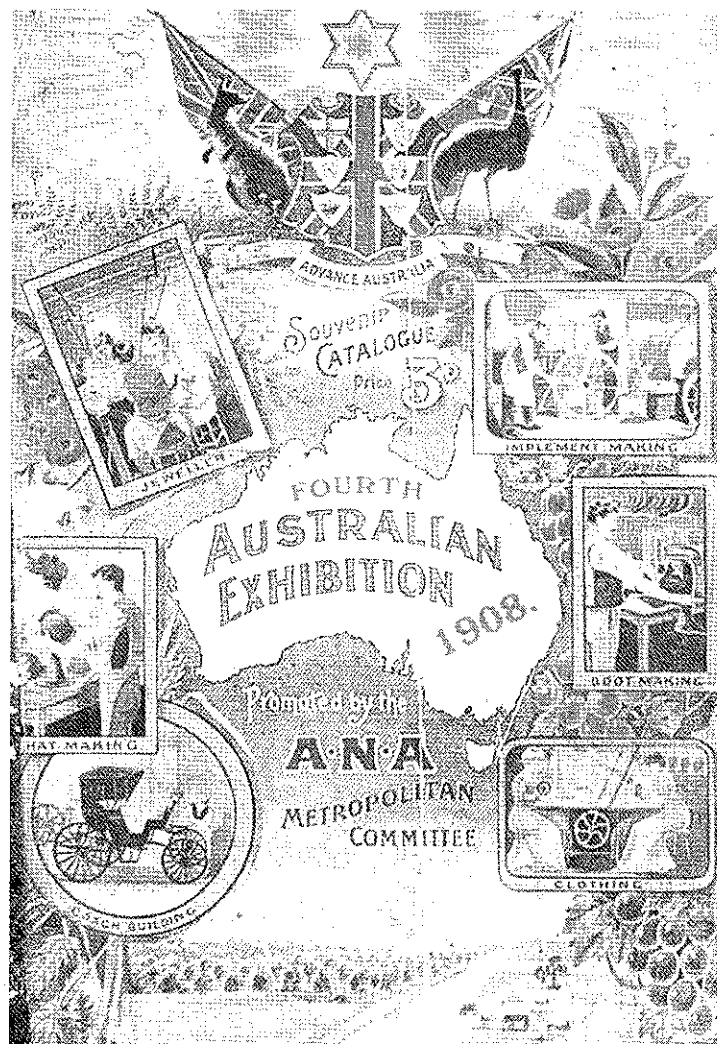


THE TOOL CHEST

CELEBRATING FEDERATION

TOOLS, TRADES AND CRAFTS IN AUSTRALIA



AUSTRALIAN COMMONWEALTH CELEBRATIONS

THE GOVERNMENT OF VICTORIA requests the honor of the presence of
The Secretary to Exhibitions, United Kingdom, Melbourne, 1901.

A Corrugated Icon

Ken Turner, Member, HTPAA

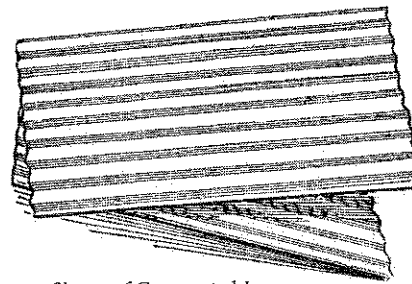
It is hard to think of another building material in Australia that has the icon status of galvanised corrugated iron.

If all the corrugated iron that has been used to form the roofs and walls of buildings throughout Australia since the mid-1830s were laid side by side on the ground, it would without doubt blanket a vast area of Australia. Today, no matter in which direction one travels in Australia, galvanised corrugated iron can be seen as roofing for churches, warehouses, stately homes, cottages and rotundas, and for making dunnies, water tanks, and fences – there is no escaping it, and while it is not exclusively Australian, it is very much part of the Australian landscape. Henry Lawson once said, “God may forgive the man who introduced galvanised iron into Australia – but I never will”.

The word corrugate is from the Latin *corrugare*, meaning *wrinkle*. ‘galvo’ and ‘gal’ are the Australian slang for galvanised iron. The *Australian National Dictionary* quotes the following from *The Bulletin* Sydney, May 24, 1983 – “It’s clear what Utzon’s Opera House needs instead of those neo-Islamic tiles, is more sheets of rusting, flapping galvo.”

Corrugated iron is believed to have first been made by hand in 1828 by a London builder, who apparently pressed each corrugation singly. This and other tedious methods were tried and used until, in 1844, John Spencer of Birmingham patented an efficient method of shaping the corrugations by a series of rollers.

Corrugated iron was first used in Australia circa 1837 and was initially used for quick construction of verandahs for which the material was ideal. The corrugations formed in flat iron sheet transformed the material into a rigid condition lengthwise. It was easily and quickly installed, even by unskilled labour, and it was light in weight, only needing a light structure to support it. It was easily transported in quantity to remote areas, even by camels.



Sheets of Corrugated Iron

Quantities sufficient to cover the roof of a small cottage, fitted comfortably in a cart or on a dray.

This ubiquitous material, now an Australian icon, was originally imported from England. Ton after ton arrived here on the wharves. Until then the common roofing materials were timber shingles of stringybark or sheoak. Occasionally roofs were clad with sheets of paper dipped in coal tar. Shingle roofs shrank in the sun, and swelled and expanded in the rain, and leaked as a consequence. Many such roofs were replaced by corrugated iron. Often corrugated iron was nailed directly over the existing shingle roof. Although perhaps unintended, the shingles beneath the iron served as effective heat insulation.

The process of galvanising was patented in England in 1837. Iron is galvanised by dipping it into molten zinc. The zinc coating is a particularly effective rust preventative because of its electropositive nature. However, in his book *Building Construction*, published in 1919, Charles Mitchell stresses that whenever galvanised iron is cut, the exposed metal should be painted.

In the 1840s the firm Morewood and Rogers in England patented a flat iron tile with two rolled parallel edges. These tiles were also galvanised, but they were not available in Australia for long, before galvanised corrugated iron sheets were introduced here in the 1850s. There was much more work involved in the installation of the flat sheet rolled edge tiles, and so they could not compete with the use of corrugated galvanised iron. As a consequence their use in Australia was short lived, and very few roofs with these tiles have survived.

Although not completely replaced by corrugated iron, the demand for the expensive slates for roofing from Wales and North America declined with the growing popularity of the cheaper and easily installed galvanised iron.

By the 1860s a method had been developed in England for producing curved corrugated iron, which added to the appeal of the material, and allowed architects scope in designing buildings using this material. Arched, bullnosed and bellcast verandah roofs were now possible which helped soften what could otherwise appear rather austere. Because of the material’s extra rigidity in the curved form, it could span its length without having to have side or intermediate structural support, and this proved to be a further cost and time saving advantage of the material. In the latter half of the 19th Century, corrugated iron curving machines for 3 and 5 inch corrugations were

advertised in Melbourne for let or for sale, which allowed plumbers to curve corrugated iron as required.

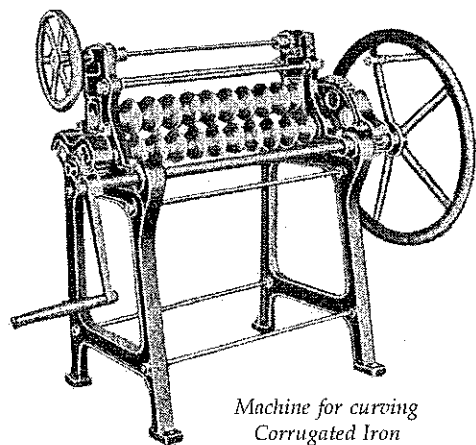


Curved Corrugated Iron

In a book titled *Galvanised Iron* by J Davies (1899), the following amusing instruction appears, giving requirements for operating a corrugating machine "The chief requisite is confidence, and alertness necessary to prevent the fingers from being corrugated in addition to the sheet iron."

Because of the shortage of housing and labour brought about by the gold rushes in the 1850s, prefabricated iron cottages were imported. These cottages had an iron frame and cast iron framed windows with walls and roof of corrugated iron, and were sometimes called 'iron pots'. Some prefabricated iron houses became locally made, notably by Peter Johns, Flinders Lane, Melbourne. The era of iron prefabs lasted almost twenty years but few examples now exist. There is still one group to be seen at 399 Coventry Street, South Melbourne. They were manufactured by Richard Walker of London and erected in 1853. These houses are now owned by the National Trust.

It is not quite clear when and which company was the first to manufacture corrugated iron in Australia. In about 1859 the Melbourne firm Carter's Steam Corrugated Works, produced corrugated iron with 2, 3, 4 and 5-inch corrugations. In about 1860 another Melbourne firm, Alex Rippingille, was manufacturing corrugated iron, both plain and curved. Curving alone was undertaken by Walter Powell & Co. In *The Cyclopaedia of Victoria* edited by James Smith, 1903, it is stated that the firm John Enticott & Sons, importers

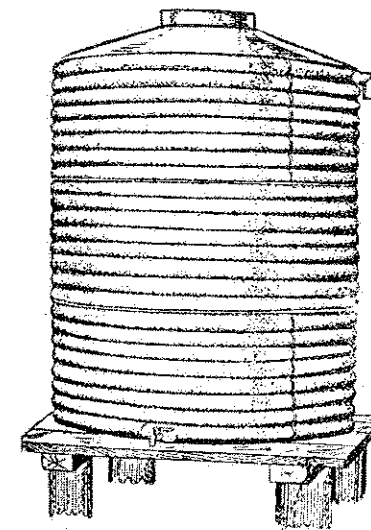


Machine for curving Corrugated Iron

and manufacturers of sanitary materials, 222 Little Lonsdale Street, Melbourne, was established in 1858 by John Enticott, the pioneer of the corrugated iron industry in Victoria—it is assumed this firm manufactured corrugated iron. John Lysaght Ltd imported corrugated iron from the parent St. Vincent Iron Works in Bristol in 1880. However, the brothers St John and Arthur Lysaght established the St. John Lysaght Galvanised Iron & Wire Netting Works at Parramatta in 1884,

independent of John Lysaght Ltd. It is assumed that the galvanised iron they list includes both flat and corrugated sheet. Corrugated sheet is confusingly often referred to as just galvanised iron.

A rolling mill was established by Esbank Iron & Steel Works in 1894 at Lithgow, NSW. Close to this date they also built a galvanising plant to produce amongst other products, galvanised corrugated iron. In 1921 John Lysaght Australia Ltd (yet another Lysaght Company) was also formed to manufacture galvanised iron—now Lysaght Brownbuilt Industries.



Galvanised Corrugated Iron Water Tank

After 1915 the product corrugated iron, was instead made of steel, so the term 'corrugated iron' has become a misnomer, depending of course on the context in which the term is used. With the latter-day introduction and growing use of 'Zincalume', an alloy of zinc and aluminium for coating corrugated steel, the term 'galvanised corrugated iron' is now even more inappropriate.

The brand names of local and overseas produced corrugated iron can often be seen on the underside where the material was used to roof verandahs. The following are some of the brand names that may be seen: 'Marksman', 'Iris', 'Vincent Crown', 'Phoenix', 'Crown', 'Gospel Oak', 'Queens Head' and 'Orb', 'Guinea', and 'Mars'.

Galvanised iron sheets have been available with 1", 3" and 5" centre to centre corrugations (the 1" at times referred to as ripple iron) and collectively were available in numerous sheet sizes and gauges.

The following additional gauges are listed as having been made in Britain—16, 18, 20 and 22.

Corrugated iron roofs in country Australia also served as catchments for rainwater, which ran off into galvanised iron water tanks, the dimensions of which vary from 200 to 1000 gallons capacity, 4 to 6 feet high, and 3 feet 3 inches to 5 feet 7 inches in diameter. These corrugated tanks are almost as much a part of the country landscape as the corrugated iron roofs and 'Southern Cross' or other make windmills, which they often accompany. Being

able to catch and store rainwater meant that isolated houses no longer had to be close to a creek or to have access to a well. Galvanised water tanks (not forgetting the iron roofs) improved inland life by making possible dependable drinking water, and the settlement of land even in semi-arid country distant from lakes, rivers or creeks. Where trees were few and far between and timber in short supply, corrugated walls as well as roofs, became quite common on the goldfields and in remote areas.

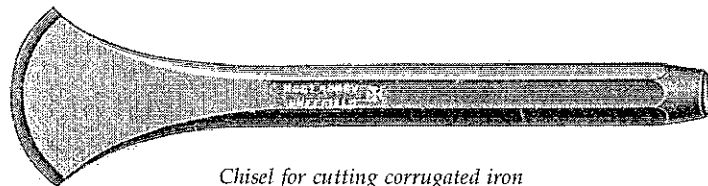
Before Federation, corrugated iron knew no boundaries, and during the last one hundred years of Federation it has continued to spread far and wide forming as it were, a patchwork quilt over the whole of Australia.

It is not surprising that the introduction of corrugated iron rapidly took over the use of shingle roofing, which was prone to leaking, insect attack and decay, and was a fire hazard, particularly in bush fire areas. Corrugated iron as well, in time, checked the rapid spread of slate roofing – slates were time consuming to lay, and needed skilled tradesmen with special tools, that generally only a slater would know how to use.

It is interesting that many corrugated verandas were painted in alternating colours, to resemble the striped canvas awnings they replaced.

In about 1880 a special load bearing corrugated iron was developed for fireproofing floors, mainly in commercial buildings. The iron had 2, 2½ and 4" (51, 63 and 102mm) corrugations which were as deep as they were wide. The material known as Traegerwellblech was developed in Germany in 1877. It is recorded that Lysaght's manufactured this material in Australia. However, further details of this particular corrugated iron are outside the parameters set for this article.

Collectively, the importation, manufacture and installation of this now common material, has shaped an industry that has provided the livelihood of thousands upon thousands of Australians, be they tradesmen, unskilled hands, or those involved in administration.



Chisel for cutting corrugated iron

Mention should be made here too of the Nissen Hut, named after the Canadian born inventor, Lt Col. Peter Nissen. The structure of the hut he designed was basically just semicircular corrugated iron set on the ground (archwise), so as to form both sidewalls and ceiling. The ground measurement of the initial design was 27 x 15 feet (8.23 x 4.57 metres). However, there has since been thousands upon thousands of such corrugated iron structures erected of all dimensions, used in both war and peacetime. The ends of these structures are usually filled in with timber walls incorporating doors and windows. The inventor was awarded the DSO for his design, which met an urgent need for temporary accommodation for large numbers of troops. While the idea is not Australian, the structures were seen in Australia and used for temporary immigration accommodation, warehouses, school buildings and for a number of other purposes.

As galvanised iron ages and weathers, it acquires hues that a number of Australian artists have been unable to resist capturing on canvas.

In the book *Leaves of Iron* by Phillip Drew, the author features the work of the Australian architect Glenn Murcutt, whose contemporary designs of the 1970s and 1980s includes the use of corrugated iron or I should say, corrugated steel, the special rust proofed steel 'Zincalume' or 'Colorbond', which at a distance looks similar to the corrugated iron introduced 150 years ago.

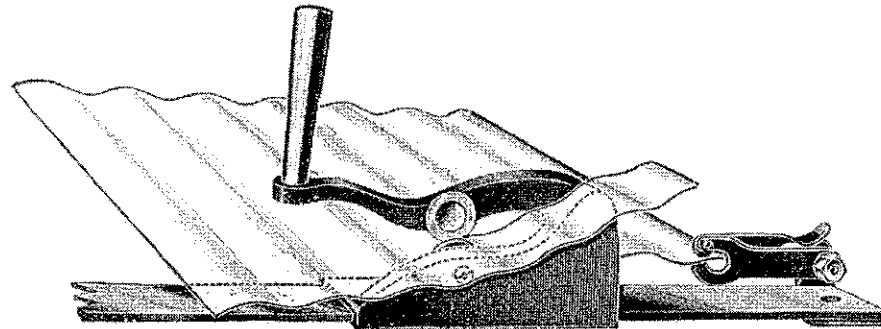


Makers marks on corrugated iron

Corrugated iron, incidentally, forms the roofs of all but the dome of The Royal Exhibition Building, Melbourne, in which the inauguration of Federal Parliament took place in May 1901. 🏠

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Tomkil's Patent Sheet Metal Cutter

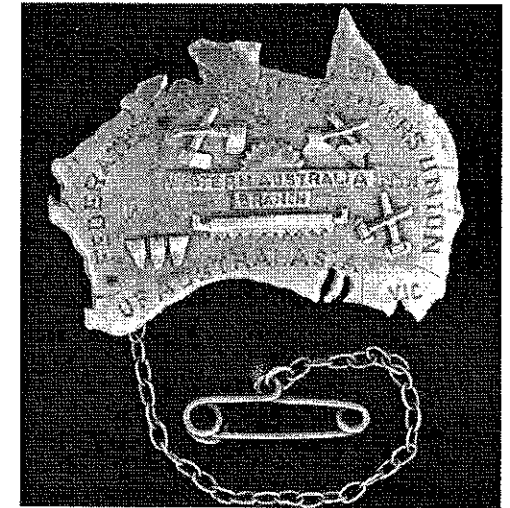
This machine will easily cut flat or corrugated sheet iron, up to 24 WG. The sheet is clamped to the back of the sidebar and the cut is made by pulling the cutter across the sheet. It will make straight or diagonal cuts, either lengthwise or across, without injuring the corrugations.

Toilers, Banners and Ribbons

Ken Turner, Member HTPAA

This is not the place to delve into the technicalities or politics of Trade Unions, but it is the place to recognise the important part Australian Trade Unions have played in shaping the quality of life in Australia during the past one hundred years of Federation.

Soon after their arrival by sailing ship to Australia, the skills of immigrant tradesmen were employed for the construction of government buildings, hospitals, sewers, warehouses, factories, and houses to meet the rapidly growing demand. At this time various societies and associations were formed to cater for the needs of the tradesmen. Members were required to meet weekly dues in return for which they received medical, unemployment and other benefits. As their membership grew, these small societies and associations gained strength. Numbers and unity allowed them to broaden their horizons and to spearhead campaigns for improved working conditions.



Gold badge produced by the Federated Timber Workers of Australasia, WA Branch (c. 1908). Axes, broad axes, mauls, wedges, cross-cut saw and circular saw can be seen in the design. (by permission from the Western Australia Museum ©)

In 1842 slaters and shinglers in Sydney formed a society initially as a safeguard against bogus tradesmen offering cheap rates, rates that were often accompanied by inferior workmanship. Members of the Stonemasons' Society appear to be the first to go on strike, in 1856, to fight for an 8-hour day. The campaign eventually involved a wide range of trades, such as boilermakers and bricklayers, carpenters and joiners, engine drivers and firemen, plumbers and plasterers, shipwrights and tailoresses, to name a few.

As at 1963 there were about 380 Unions, although 18 of them had approximately half the total union membership. From modest beginnings,