

# HVAC & R

**Nation**

AN AIRAH PUBLICATION

**FEATURE**

**ARBS  
2012  
PREVIEW**

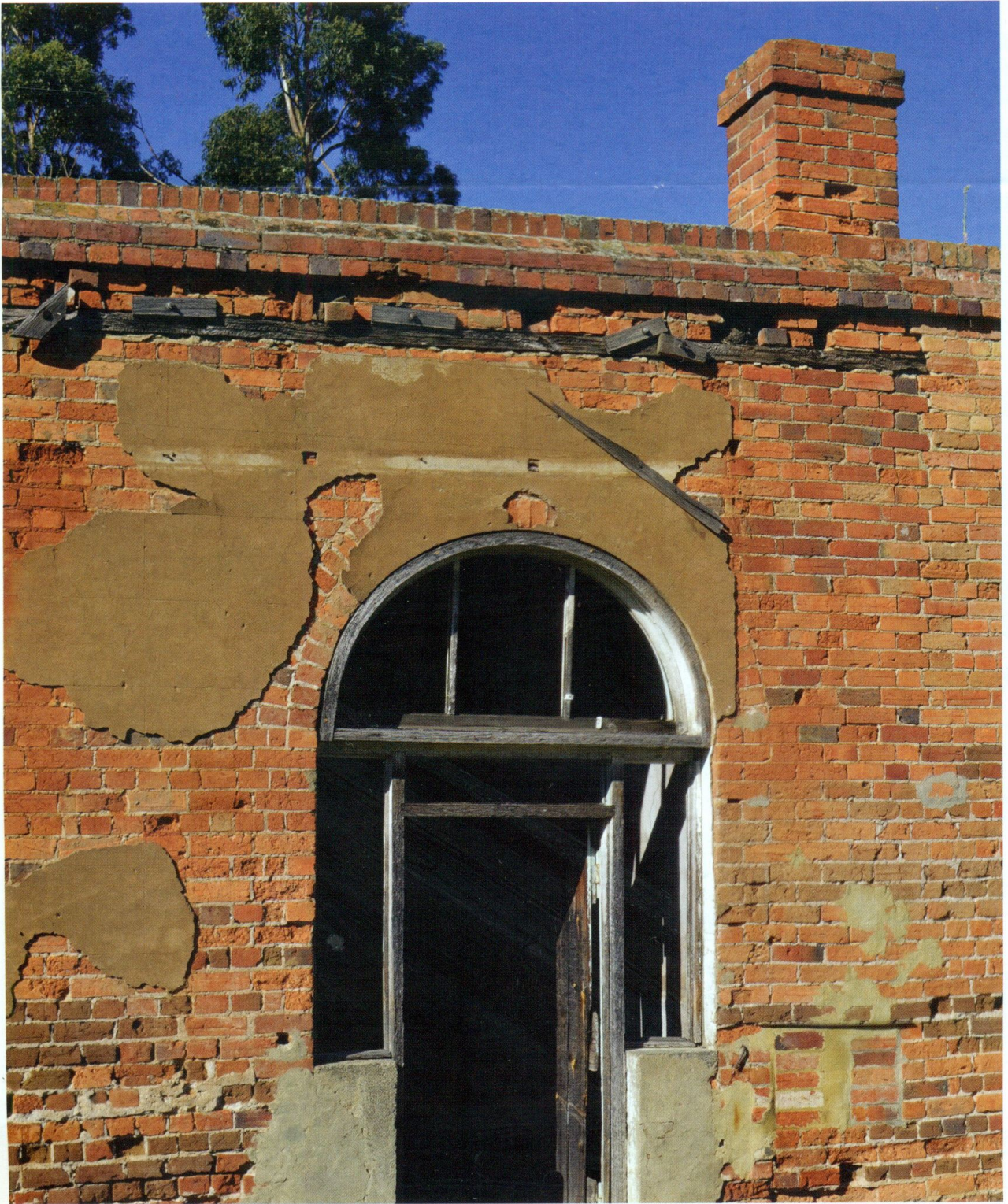
**FEATURE**

**CHILLED  
WATER PLANTS**  
We go back to basics

**WORKSHOP**

**Skills  
Workshop  
LIFT-OUT**  
Maintenance for  
Sustainability  
– Part 1

# TASMANIA'S TIME CAPSULE



*The historic Tasmanian Cool Stores near Moonah.*

Located down the remains of a country lane north of Hobart is a cool store that time and industry forgot. A century since it first served to extend the market life of the Apple Isle's famous fruit, it stands as a marker of Australia's early refrigeration industry.

**Sean McGowan** reports.

# THE PLANT THAT TIME FORGOT

**S**tepping into the walled gardens and brick remains of the New Farm homestead and Tasmanian Cool Stores is akin to entering a time capsule of Australia's fledgling agricultural, refrigeration and cold storage industries.

That the site remains almost intact exactly 100 years after it was first established is all the more incredible considering that the hectares of apple and pear orchards once surrounding it have given way to the suburbs of Moonah and Derwent Park, just 10 minutes north of Hobart.

But the buildings stand resolute amid their modern urban neighbours. And despite a myriad of uses since they ceased operating as cool stores in the 1970s, the original refrigeration plant remains intact.

According to Jane Armstrong, grand-daughter of Douglas Ockenden (one of the original owners of the cool stores), it is Tasmania's oldest remaining refrigeration plant.

The relics, including early 20th century oil engines, ammonia compressors and evaporator coils, provide a glimpse into our post-federation industrial and agricultural past. Armstrong hopes the buildings and their contents might one day be formally recognised and protected as a heritage site.

"I want to raise awareness of industrial and agricultural heritage, as not much of it is left in Tasmania," Armstrong says. "In particular, the engine room and industrial workshop area are of significant historical importance."

## **THE NEW FARM STORY**

New Farm, of which just 3.5 acres remains, was originally one of 10 100-acre parcels of land provided to the earliest settlers of Van Diemen's Land post-settlement in 1803.

In 1816, the property was purchased by ex-Port Jackson convict George Gatehouse, who, with the assistance of 30 convict labourers, established an extensive farm, orchard and brewery on the site close to New Town Rivulet. The property continued to prosper under Gatehouse and a subsequent owner until the 1890s, when a global turndown devastated Tasmania. At that point it was abandoned.

It remained in ruins for more than 20 years, during which time it was a favourite location of Australia's emerging impressionist artists, including Frederick McCubbin, whose 1899 work *Mezger's Mill* features the derelict building.

With the area's apple orchards commercialising their operations around the turn of the century, the growth of the industry was rapid as fruit began being shipped interstate. However, with appropriate cold storage methods yet to be perfected, results were mixed and significant losses occurred.

An article in Hobart's *The Mercury* newspaper from March 9, 1912, detailed the problems the fruit industry confronted at the time.



*Rusty roof coils remain intact*



*Oilers were used to lubricate bearings in machinery.*

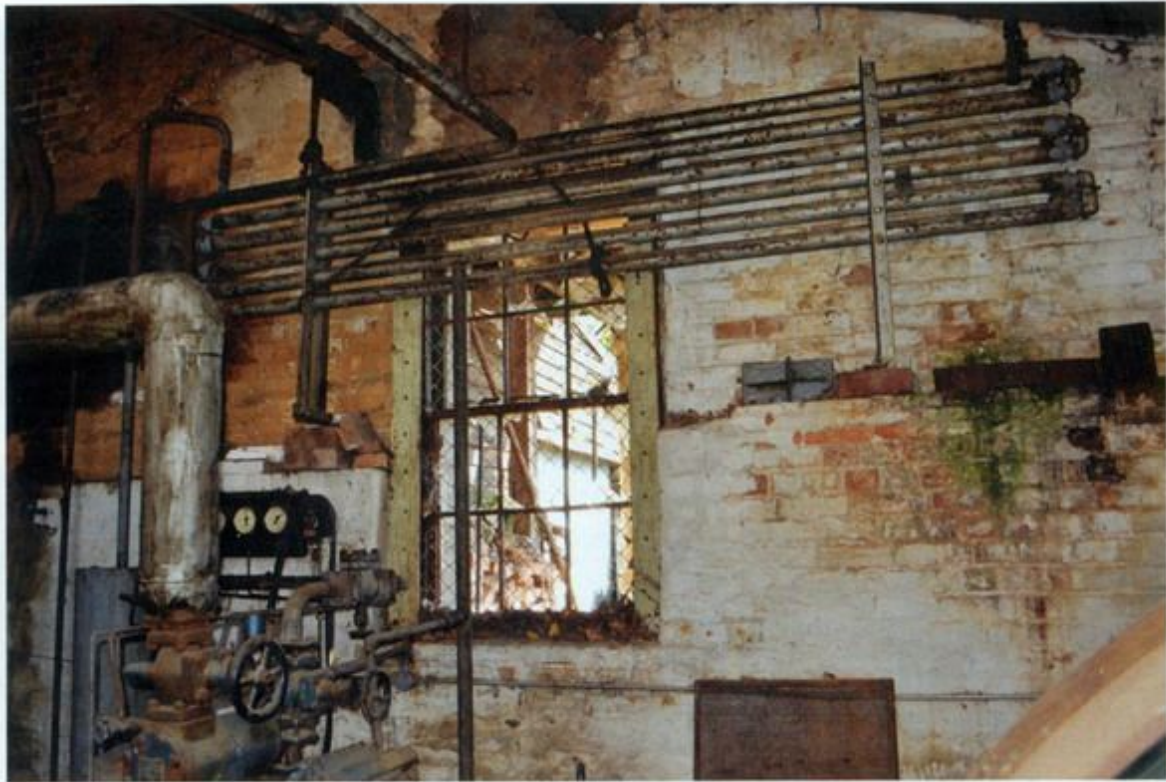
"The output of apples and pears in Tasmania is increasing so enormously that some means must be adopted to profitably dispose of the fruit, and the solution of the difficulty will be found in cool storage, which, by prolonging the season to nearly or quite double the natural period, tends to vastly increase the demand and consumption in Australia."

Recognising the opportunity in 1912 to follow the lead of the American industry, Dr Harry Benjafield, a local medical practitioner who had an interest in homoeopathy and cold storage, bought the New Farm property in partnership with son-in-law and engineer Douglas Ockenden and Ockenden's brother Edward.

## **Preserving Tasmanian Cool Stores**

Though Jane Armstrong has recently engaged an architectural historian to complete a conservation plan for the entire property, she remains open to suggestions by interested parties of the Australian HVAC&R industry as to how the cool stores can best be preserved.

If you have an interest in the preservation of this historically significant property, contact Neil Cox at [neil@airah.org.au](mailto:neil@airah.org.au) and we'll happily put you in touch with Jane.



*Cooling coils inside the cool store.*



*Werner Melbourne supplied two of three plant room engines.*



Encouraged by the support of local orchardists, the trio converted the brick building that formerly housed the brewery and a bone mill into Hobart's first dedicated fruit cool stores, with space for 20,000 cases of fruit.

## **TASMANIAN COOL STORES**

In converting the building into what was then considered a modern cool store facility, insulation of the existing walls was achieved through a central core of wood shavings packed to a depth of 15 inches (38cm), with horse hair used on the outer layers.

Internal shingled roofs were covered with a tarred material, while large heavy doors sealed the three rooms.

The ammonia refrigeration system was designed by American refrigeration exponent Madison Cooper, with the plant room originally featuring three engines – an upright Cunningham and Gearing (Atlas Engineering Works, Cape Town) oil engine and two horizontal Werner (Melbourne) engines. A petrol Werner engine and compressor was later added in the mid-1940s.

The New Town Creek that today still runs behind the property was used to condense the ammonia.

Atmospheric condenser coils and bare pipe ceiling evaporator coils were installed externally on the rooftop and, while rusted, remain intact today.

Commenting on the refrigeration plant, John Mott, M.AIRAH, of Gordon Brothers Refrigeration, says ammonia was widely used in refrigeration from around the 1880s.

"The earliest ammonia compressors tended to be verticals, then they moved to the horizontals around 1900 before moving back to verticals in the 1930s," says Mott. "Then the Crepaco-style multicylinder would have been circa-1950, perhaps.

"The glass canister is one of the oilers you find on all kinds of reciprocating or rotating machinery from that era, and was used to lubricate the bearing."

Along with the ammonia-based refrigeration system, the Cooper chloride-of-calcium process to defrost piping was used, as were Cooper false-floor and ceiling systems for air circulation.

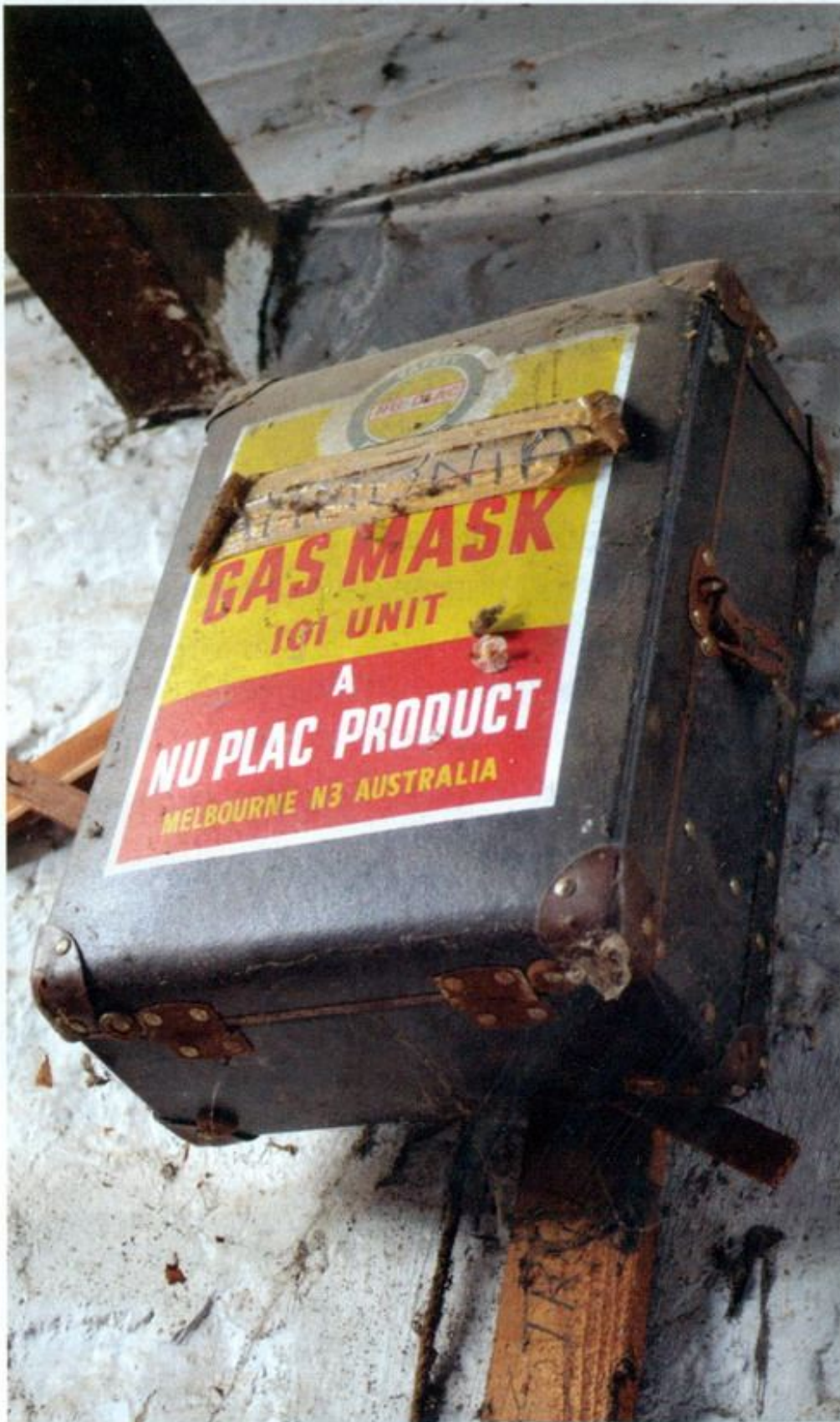
The *Mercury* article, in describing the refrigeration process to its readers, gives us some insight into how the system was originally designed and operated a century ago.

"Before the fruit, on arrival, is placed in the cool chambers, it is first partly cooled in a vestibule, and then passed into the chambers, thus preventing the changes of temperature which arise from opening doors to outside air . . .

"The cooling chamber is fitted with refrigerating piping. The air, which is moved by a centrifugal fan, first passes calcium chloride trays, which dries it, and it is then driven over piping and through ducts by which it falls to the required temperature of 32 degrees Fahrenheit.



*The large flywheel and belt.*



*An ammonia gas mask.*

"The fan is worked by shafting, driven by a 17-horse-power suction gas engine and compressors, put in the engine room. The two chambers which have been got ready carry 1,109ft of refrigerating piping . . ."

Remarkably, the basics of such a system have changed little in 100 years, according to Mott.

"We now use mainly screw compressors rather than reciprocating ones, and we use evaporative, or finned coil or plate and frame condensers rather than bare pipe atmospheric ones," he says, adding that finned coil or plate and frame evaporators are now used rather than bare pipe ceiling coils.

"Apart from that we are pretty much still the same."

## **CANNY INVESTMENT**

The Tasmanian Cool Stores proved a canny investment for Benjafield and the Ockenden brothers.

Within weeks of their opening, 8,000 cases of apples and pears had been promised for storage, forwarded to the facility by rail, cart or boat. Growers were charged one shilling six pence per case, and if desired, the fruit could be repacked immediately before forwarding, at a charge of three pence per case.

Learning from the experiences of the American fruit industry, Benjafield conducted research into the vagaries of fruit cold storage, determining that

different varieties kept well in storage for different periods. For instance, while Jonathon apples could store well for up to five months, The Lady in the Snow apple would only keep for two to three months.

Similarly, the successful storage of pear varieties differed. Beurre Bosc pears, for example, could keep well for up to four months.

Such was the impact of the cool stores that during the low season, fruit was sent interstate resulting in a reduction in the importation of apples from the United States, which typically totalled about 100,000 cases during the months of October, November and December.

Following Benjafield's death in 1917, the Ockenden brothers bought out the property, with Douglas buying out his brother some time later.

The property continued to operate as a cool store under the management of the Ockenden family until 1973 and, as if frozen in time, has since remained largely untouched.

Although the family carries out essential repairs to maintain the integrity of the property, its long-term preservation is by no means guaranteed.

As the saying goes, if you want to understand today, you have to search yesterday. The Tasmanian Cool Stores is quite the find. ▲