

Acetylene Illumination of Early Tasmanian Show Caves

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INTRODUCTION

Tasmania, the apple isle, possesses some unique and interesting speleological features. One aspect of cave tourism in Tasmania, which has fascinated me since reading about a brief mention of it in the Journal of Sydney Speleological Society (Middleton 1988), is their illumination by means of an acetylene generator.

Acetylene illumination, although interesting and novel at the time, really damaged the cave environment. The noxious smoke and gas filled the cave, formations were stained, ceilings became covered in soot, and spent carbide was a problem to dispose of. (All this, plus the usual developmental damage the caves endured, but remain today as a time capsule or window into this fascinating period of cave tourism.)

This short article is a result of my studies into this little known and documented piece of Australian spelean history.

INVENTION OF CALCIUM CARBIDE

The English chemist, Edmund Davy, first documented calcium carbide in 1836. Ideas and improvements were made in 1862 when Frederic Woehler (nationality unknown) discovered that when calcium carbide came into contact with water, acetylene gas was given off. Davy had noted that a noxious gas was produced when combined with water but failed to see any significance with this reaction.

Easy commercial manufacture of calcium carbide only began after 1892 when Thomas L. Willson of Spray, North Carolina, discovered that passing a high ampere low voltage electromotive force through a finely powdered mixture of coke and lime produced calcium carbide. This method of manufacture became the standard for all carbide manufacturing plants worldwide.

COMMERCIALLY AVAILABLE CARBIDE IN AUSTRALIA

Tasmania with its hydro-electric potential had Australia's only commercial calcium carbide manufacturing plant at Electrona, south of Hobart. It seems unlikely that Tasmanian caves were illuminated by Tasmanian carbide, as this plant didn't come on-line until about 1924, after most, if not all the show caves finished using it as a method of illumination.

Carbide import companies such as Slade, C.H. & Co. of 304 Kent Street, Sydney, and the Federal Oil Co. Ltd. of 33 Rowe Street, Sydney, advertised in 1916/1917 (Anon 1916, 1917). Gillies Bros. of 74 Collins Street, Hobart, were importers of a wide range of related material and hardware. Similar companies or agents would have supplied the various caves with their carbide requirements.

WORLD SCENE

Gregg Clemmer (Clemmer 1987) notes several references to acetylene illuminated caves in the U.S.A. He records that in 1908 Mammoth Cave, Kentucky, was considering installing an acetylene generator outside the cave and piping the gas to burners positioned alongside the underground passageways (Anon 1908).

The La Jolla (pronounced La Holya) Sea Caves near San Diego, California, were being illuminated with acetylene as early as June, 1909 (Anon 1909). Wonder Cave near Monteagle, Tennessee, in 1909 had a large 100 burner system installed and this was later increased to 200 burners (Anon 1914). Additionally, Mount Tabor Cave, Ohio, was fitted with a similar system, using over 4,000 feet (1,300m) of piping (Anon 1911). Although these caves are all in the USA other cave areas worldwide would have experimented with acetylene.

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THE TASMANIAN EXPERIENCE

Five individual caves in two different locations in Tasmania were at one point in time illuminated by acetylene gas generated in a stationary system with piping plumbed throughout the general visited area of the cave. These caves are as follows

- King Solomon Cave
- Marakoopa Cave
- Baldock's Cave
- Scott's Cave

All these four present and former tourist caves are located at Mole Creek near Deloraine. The Tasmanian Collection Pamphlet (Anon 19??a) says *There are four sets of caves, which compare favourably with any in Australia. They are lit with acetylene and can be visited either by day or night.* The other cave is at Gunn's plains near Ulverstone in Tasmania's north.

King Solomon Cave

A.D. and R.K. Skinner (Skinner 1978) state that King Solomon Cave was discovered in 1906 by a timber splitter named Poachin while hunting. He later opened the natural entrance to the floor. Somewhere between July 1908 to July 1909 King Solomon Cave was illuminated by acetylene (1909b). By 1913 (Anon 1913) a Mr E.C James was Proprietor of the Cave, which was still *lighted with acetylene*. Skinner notes that between the years of 1930 to 1933 Mr W. Marchant was the Cave Guide. In the previously undated guide book, "Deloraine, The Tourist's Paradise", mention is made of the recent cave *purchase by the Government Tourist Department* (Tasmanian Tourist Association) and (that they) *will be opened up at an early date; and lit up with electricity*. Although undated it is fortunate that an advertisement for the Racing Club of Deloraine advertising their Spring Meet Sat Dec. 9, 1922, and their Easter Tuesday, 1923, Meet was published in this guide. As this guide is of great importance to this article the author will refer to its date as 1922 (Anon 1922). Another presently undated information sheet by The R.A.C.T. Touring Service (Anon 19??b) states that, *the lighting with power provided by a stationary engine, is most effective and shows to advantage the many extraordinary formations which vary from slender and fragile pieces to one which weighs about three quarters of a ton and is held by a small neck.*

It would appear that when the change over to electricity happened in about 1922 or 1923 all the lead piping, burners and reflectors were removed. Fortunately the acetylene generator remained and is now a feature at the end of the modern day cave tour as at 1997.

Two oval legends with raised stamping soldered to the tank state that the unit was manufactured by a 'C. Davis, Furnishing Ironmonger' (McCabe 1997). This appears to be the same Charles Davis who in 1933 was granted a Registered Design for a Carbide Lamp (Anon 1933). At that time Charles Davis Limited was located at 64 Elizabeth Street, Hobart. This would indicate that the acetylene plant is of Tasmanian manufacture. Company research in this area may provide additional information.

Marakoopa Cave

Skinner (Skinner 1978) records that George and Harold Byard discovered Marakoopa Cave around 1910. The Byards obtained a lease covering the cave and opened it to tourists in 1912. The guide 'Deloraine, The Tourist's Paradise' (Anon 1922) as dated from the racing advertisement, records that Byard's (Marakoopa) Cave was owned at this time by the Tasmanian Tourist Association. No relics of the acetylene plant or piping is left in the cave other than former pipe anchors drilled and inserted into the cave wall.

Baldock's Cave

Baldock's Cave was one of the Government operated show caves in Mole Creek. By 1913, (Anon 1913) Baldock's Cave was under the control of The Northern Tourist Association (NTA) with its headquarters in Launceston. Acetylene illumination was in use by the middle of 1908 (Anon 1909a).

Twelve years earlier J.C. Wiburd of Jenolan Caves N.S.W. visited Mole Creek (Anon 1901). In a report to the NTA he encouraged gating the entrances to prevent access without the right authority, thus preventing the cave being *destroyed by sperm or other grease from candles, markings from*

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names, but not least, destruction of the stalactites by breakage, which I am sorry to say almost every visitor seems to delight in. Candle composition varied between different brands, most contained sperm oil which was rendered down from sperm whale blubber, a major industry in Tasmania at the time.

It appears that the NTA over time developed the cave and are responsible for installing its lighting system. By July, 1917, the Tasmanian Tourist Association, which was founded in May, 1893 and was a rival to the NTA, took over its Launceston offices.

On 27th November, 1934, it was formally separated from the railways and became an agency in its own right (Archives Office of Tasmania 1997). Again in the guide 'Deloraine, The Tourist's Paradise' (Anon 1922) the writer describes a trip to Baldock's Cave. *After picking up the guide a span of half a mile lands you right at the entrance of the Caves These caves are owned by the Government, who have made a wonderful difference in easy access by enlarging narrow openings and making a footpath all the way through, so that the visitor may walk through in comfort, keeping quite clean and thus fully enjoy what one can only describe as "Aladdin's Wonderland".* He also adds that *at present they are well lit up with a large acetylene gas plant, but which is shortly to be replaced with electric light.* It would seem that this never happened.

Baldock's Cave abounds in relics of this acetylene era. In the entry chamber the near complete (McCabe 1997) generator body and broken guide frame still stands in its original position. All the lead piping is long removed but a number of burners with reflectors and in-line gas cocks still exist as does remains of two wooden bridges. Wax still covers the burners from the cave guide illuminating each station as the tour progressed.

Scott's Cave

An article published in the Daily Telegraph (Anon 1909b) on Scott's Cave documents that *During the past twelve months rapid strides have been made in the development of the caves in Mole Creek district. "Baldock's", "the King Solomon", and "Scott's caves have all been illuminated with acetylene gas"* A.D. and R.K. Skinner (Skinner 1978) state that Scott's Cave was operated privately as a tourist cave for ten years from 1908 by family members. In the guide 'Deloraine, The Tourist's Paradise' (Anon 1922) the writer records visiting Scott's directly from Baldock's Cave. *Returning from Baldock's caves after the two mile span the road branches off to the right for Scott's caves. The guide and owner, Mr Scott, lives at the end of the road. Leaving the car here a walk of three-quarters of a mile brings you to the entrance. These caves are well lit up with acetylene and although the smallest of the Mole Creek series, one well worth a visit.* It becomes apparent that Scott's Cave was operated longer than ten years as previously thought, as the Archives Office of Tasmania possess a Visitors Book for Scott's Cave dated Jan. 1911 to June 1927 (Scott 1911). Written on the inside cover of the Visitors book is 'Gorden Scott, Proprietor, Mole Creek'. The only photograph known (to the author) of anything involving the illumination is the one in the Skinner book page 12 of Mr Anderson Scott standing next to what remains of their acetylene generator. Access to this cave could not be obtained when the author visited the area in 1997 (McCabe 1997).

Gunn's Plains Cave

As early as 1912, Ulverstone: The Tourist's Delight reads (Anon 1912) *the caves are quite dry and are well lit with acetylene gas.* In the Complete Guide to Tasmania issued by the Tasmanian Government Railway Department, 1913 (Anon 1913), we read on page 85, *Gunn's Plains Caves are about 18 miles from Ulverstone, and within 200 yards of the macadamised (road surface made with successive layers of small broken stones rolled in with some binding material) road. They are well lit up by acetylene gas, which throws into relief some wonderful and beautiful shawl formations of the limestone within the caves. The drive to the caves passes through Gunn's Plains, and is one of the most beautiful in Tasmania.* According to Des Wing (Gates 1981) the caves were found in 1906 when a local by the name of Bill Woodhouse was shooting possums. He hit one and it fell out of the tree and into a cavern. In 1930 the Ulverstone Tourist and Progress Association installed electric lighting in the caves. Indeed by 1934, the caves at Gunn's Plain were electrically lit (Anon. 1934). Likewise, page 11 of "Tasmania the Wonderland" (Anon. 1936) states that *further inland, but within one hour or so motor drive, are to be seen wonder-inspiring sights of nature – the caves at Gunn's Plain, electrically lighted.*

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Control later passed to the National Parks and Wildlife Service (NPWS). The state government spent £1,400 (\$2,800) on new lighting in 1958. NPWS then spent \$35,000 on lighting and handrails in 1980, and also cemented all the paths.

In 1981 Des Wing had been guide at the caves for the past 22 years having started in 1959. Family involvement began in 1916 when his grandfather, Ethram was guide. Then his uncle, Graham Maxwell took over and after 42 years handed the responsibility on to Des in 1974 (Gates 1981). The dates indicate that both Des and Graham's service overlap as Graham appears to have begun in 1932. Another reference indicates that Graham Maxwell began in 1929 (Anon 1961), so these dates cannot be considered too accurate.

The author does not know if anything remains of the former acetylene plant as this cave has never been visited.

PHOTOGRAPHIC DOCUMENTATION

Other than postcards very few photos remain from the early tourist caves of Tasmania. Although postcards exist of formation in the various caves, images of the lighting apparatus were apparently not documented or in some cases removed from the original photograph.

Note that the postcard of 'The Marble Pillar, King Solomon Cave' has a pipe running across the formation, a similar image can be seen on the postcard of 'The Shrine, Scott's Cave'. 'The Marble Hall, Baldock's Cave' Postcard No.464 by Spurling & Son, Launceston, is a particularly good example of a reflector / burner assembly which was rubbed out of the original photograph. Note: lower RHS circular mark to the right of the stalagmite. Further research is required in this area; photographic material in the Tasmanian Museum and Art Gallery as well as material in private local history libraries may provide more insight into this exciting period of gas lighting.

CONCLUSION

Although there is both physical and written evidence of generation of acetylene for illumination of tourist or show caves in Tasmania, very little substantive information appears to have been preserved in relation to its engineering or use. The author hopes that anyone with further information, references, or even photographs could make contact with him either directly or through the Sydney Speleological Society or The Highland Caving Group.

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Baldock's Cave Postcard

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***Baldock's Cave acetylene generator with
Mole Creek caver in period costume***
M Lichon photo



***The author studying what remains of the
Baldock's Cave generator***



***The author and Mole Creek Caving Club
member, Cameron Hill studying and
recording measurements of generator***
*Note: Water filling funnel at top, water cock
and open carbide chamber*
M Lichon photo



***The author holding the water adjust cock
which feeds water into the carbide chamber
below (Bulk head cover missing)***



The author next to the King Solomon Cave generator



One of the burners in good condition, note it is missing the screw in Bray burner



King Solomon Cave acetylene generator tank maker plate or legend - 80mm long