

Excavations at Arltunga, Northern Territory

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The White Range settlement on the Arltunga Goldfield must have been as remote a spot as any group of miners could have found in Australia in 1903, the high point of its history. Although supplies arrived only at two or three month intervals, and had to be carried from far-off Oodnadatta by camel and horse-teams, it was nevertheless at White Range that John Wilson set up his store and that Patrick O'Neil (and his wife) apparently set up his billiard table! In the following paper Kate Holmes, of Alice Springs, discusses the light that her recent excavations have thrown on life at this remote settlement. Given the climate of the area, it must have been a harsh existence living in the tiny roughly-built huts of this settlement. Yet even here, amongst the excavated artefactual evidence, are objects that were manufactured in Paris, New York, and Lincoln in England. It seems that however remote the spot, the baggage of European culture got there.

The European history of the southern part of the Northern Territory has been comparatively short. John MacDouall Stuart was the first white man to cross Australia from south to north through South Australia and the Northern Territory in 1862.¹ Partly as a result of his favourable report on the country, South Australia took over responsibility for the Northern Territory in 1863. Very little development took place in the dry southern area until the completion of the Overland Telegraph Line in 1872;² this provided a base line for further exploration and settlement. Pastoral leases were taken up around the Alice Springs Telegraph Station,³ and Charles Winnecke explored to the north-east in 1878, noticing rubies or garnets in creek beds near the Hale River in his travels.⁴ At the time little notice was taken in South Australia of this discovery, as Adelaide was enjoying a period of high employment. However, a series of droughts and bad harvests in the early 1880s, plus the discovery of gold at Teetulp, induced greater interest in the mineral potential of the dry Centre.⁵

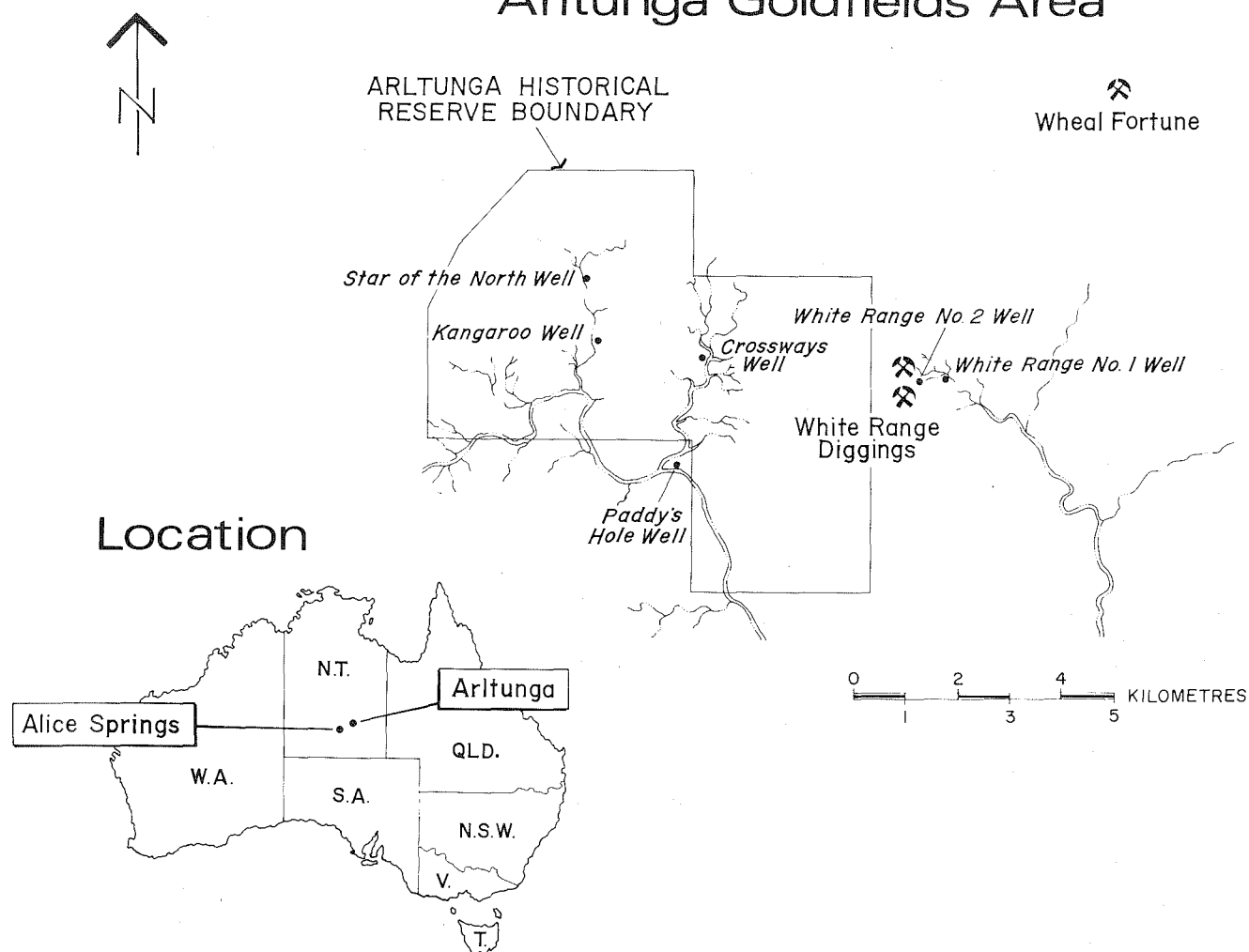
In 1885-6 David Lindsay also explored to the north-east of Alice Springs, and he was most enthusiastic about the 'rubies'.⁶ By July 1887 ruby-mining mania had taken Adelaide by storm, and hundreds of men were reported to have found their way to the fields,⁷ some 640 kilometres from the railhead at Hergott Springs, now Marree, in South Australia. Some of these prospectors realised that the country should be auriferous, and alluvial then reef gold was found around Paddy's Rockhole.⁸ This rockhole was considered permanent water by the Eastern Aranda Aborigines, but it soon gave out under the constant pressure of 20 or so men, their stock (horses, and goats for meat) and the need to pan the alluvial gold. At the time of the first of several visits by the South Australian Government Geologist, H. Y. L. Brown, in November 1888, the field was almost deserted because both the Rockhole and the well at Claraville were dry.⁹ Despite this problem, which remained for most of the field's history, the police stationed near the Alice Springs Telegraph Station suggested that a township be laid out, near the Station, to provide goods and services for the goldfield.¹⁰ By the end of 1888 the

'ruby' claims were deserted; the rubies were only garnets, and although of high quality, not as valuable as rubies.¹¹

In spite of a comparatively small population, usually less than 50 miners,¹² improvements were made to conditions on the goldfield. Water was a major problem, and wells were sunk at Claraville in 1888, Paddy's Hole in 1889, Star of the North in 1892, Kangaroo Creek in 1897 and White Range in 1899, 1902-5 and 1907-10 (Fig. 1).¹³ A four-weekly mail service between Alice Springs and Arltunga was established in 1891 to supplement the six-weekly service from Oodnadatta to Alice Springs.¹⁴ The name Arltunga as the official name for the goldfield seems to date from the opening of the post office, although there are references to the Paddy's Hole, Claraville or MacDonnell Range goldfield for some time.¹⁵ A full-time Warden was appointed in 1895, replacing the part-time efforts of the Alice Springs police.¹⁶ Storekeepers had been quick to follow the miners and at least one was established at Paddy's Hole by 1890.¹⁷ Stores arrived every two or three months from Oodnadatta, brought by camel or horse-teams; some road improvements were carried out to enable the teams to operate more quickly.¹⁸ All the goldfield needed was a public stamper battery, as none of the three small privately owned mills were very efficient. The South Australian Government agreed to the establishment of a battery and cyanide works in 1896, after receiving a second petition from the miners, and a recommendation from Government Geologist Brown.¹⁹

The battery machinery was soon organised, and the men employed by the end of 1896, but it took all of 1897 to get them to Arltunga and erect all the necessary buildings. The battery was opened on 8 February 1898, by Alice Springs Postmaster Gillen, amid much local rejoicing.²⁰ It was felt that the field could now be properly developed and this optimism was encouraged by the discovery of rich reefs at the White Range in March 1898.²¹ This low quartzite range 6.5 kilometres east of the battery soon became the most important mining area of Arltunga and largely supported the operation of the battery over the next twenty years.

Arltunga Goldfields Area



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The Government Geologist, Mr. Brown, had described the country between Paddy's Rockhole and Claraville on his first visit in 1888. He had found 'very steep ranges of gneiss, gneissic granite and other metamorphic rocks with granite diorite and numerous large quartz reefs'.²² He noticed that the reefs were made up of quartz, that the veins were small and most of the workings very shallow. The White Range itself is composed of a fine-grained quartzite, and the workings are similar to those elsewhere on the field: open cuts, very irregular, following the veins of gold into the hillside.²³ Few shafts were sunk, largely because of the lack of capital, and the ore was hand-picked before being sent to the battery. One of the few mines rich enough not to have to 'dress' the ore in this way was the Wheal Fortune, well north of the White Range, and operated from 1888 to 1910.²⁴ So, although the White Range mines usually produced over an ounce of gold to the ton, at least half of the ore had been rejected at the mine. An immense amount of labour went into the mining, and the small European population was quite willing to use Aboriginal labour whenever possible.²⁵

The goldfield survived the drought of 1900 and the bursting of the battery boiler in 1901, then was revitalised by the discovery of rich alluvial gold at Winnecke's Depot, 56 kilometres north-west of Arltunga, in November 1902.²⁶ The main rush was to Win-

Fig. 1: Location of the White Range settlement on the Arltunga Goldfield.

necke, but the Arltunga population also rose to possibly 200. By the end of 1903 the rush was almost over as the reef mines were not as rich as the alluvial. Also, some miners had been discouraged by an outbreak of typhoid which occurred when the only well was contaminated, and three men had died.²⁷ As the nearest doctor was in Oodnadatta, the South Australian Government was prevailed upon to send up a Dr. Shanahan who remained for the duration of the problem.²⁸ Arltunga residents were proud of their good health record, but from 1904 the local policeman sent in occasional Health Reports.²⁹

1903 was the high point in the history of the field, and after that it slowly waned until in 1910 there were only 20 miners, most working at White Range.³⁰ On 1 January 1911 the Federal Government took over control of the Northern Territory, and soon discovered that the field was a declining concern.

It soon became apparent that the battery was not working full time, and was costing the Government a substantial amount. An investigation in 1913 was most unflattering about past management, and stated that as no one was mining, the battery should close.³¹ This was done and the Assistant Manager, F. L. Cavenagh, who had taken up a nearby pastoral lease,

remained as caretaker. He was left with strict instructions to see that all the battery costs were met by the miners needing to crush ore. Mining continued in a desultory way, but the White Range store closed in 1912 and the Paddy's Hole store in 1913.³² The commercial centre of the field was firmly established at the Crossroads area, where there was a store and an hotel.³³

Some speculative leases were taken up on the White Range in 1921, but little work was done.³⁴ The Arltunga policeman was left in charge of the battery from the early 1920s, and the machinery was sold in 1936 although comparatively little was removed. The 1930s depression brought a renewal of interest in goldmining and the 1933 census recorded 198 Europeans and 56 occupied buildings at Arltunga, but it must be remembered that some of these people would have been involved in the pastoral industry. During the Second World War a two-head stamper battery was brought to White Range,³⁵ and the Catholic Little Flower Mission was moved from Alice Springs to Arltunga.³⁶ Alice Springs had become a huge army camp, and it was felt that the 180 Aborigines, mostly women and children, would benefit from a rural environment. The mission was established near Paddy's Rockhole and struggled until 1953 when it was finally moved to Santa Theresa, south-east of Alice Springs. A few prospectors have tried their luck since then but much of the goldfield became an Historic Reserve under the control of the Conservation Commission of the Northern Territory in 1975. Unfortunately this reserve does not cover the mines and buildings at the White Range, as a mining lease was current over part of the Range at that time. Mining activity has increased greatly since 1981, with one of the old mines being worked and some changes to the landscape through bulldozing tracks and dams. None of the buildings seem to have been affected, except that easier access has allowed casual visitors closer to the stone remains and in some cases resulted in damage to those structures.

The goldfield was small and poor by most standards, only producing 12,525 ounces of gold, mostly from White Range, by 1910.³⁷ However, it was very important to the development of the Alice Springs district. Many of the miners spent ten and twenty years at Arltunga, and some of the later comers took up pastoral leases or established businesses in Alice Springs. Some of their families remain in the district, and attempts are being made by the Conservation Commission to record their reminiscences and family history.

Despite the amount of information available on the history of the field, mainly from archival sources, there are very few references to buildings or how and why they were built. The building remains, mostly of stone, are a particular feature of the goldfield now, along with the almost complete machinery of the battery where only the ten-head stampers are missing. Trees suitable for building are not, and were not, available³⁸ but the soft outcropping schist, and quartzite were plentiful. Some of the structures retain one or two posts but most of the timber has been removed or burnt, as has any corrugated iron. There are considerable variations in the stone remains, from the professionally built at the battery and cyanide works to the less formal structures at White Range, which themselves vary

from ordinary house types to single chimneys and loose stone arrangements. There are small groups of buildings dotted throughout the goldfield area, usually clustered around wells or mine workings, but the greatest concentration occurs at the White Range.

My first visit to Arltunga occurred in 1971 when employed as a secretary for the Northern Territory Reserves Board (now the Conservation Commission). The Board had a very small staff at that time and no one to research historic sites, and there was very little information on Arltunga available locally. After some years working on excavations in England, and wanting to continue on historic sites in Australia, I thought of Arltunga. I had kept up contact with the Director, Mr. Tom Hare, and thought that some archival and archaeological investigations of the goldfield would be of great interest and value in understanding the remains.³⁹ My next visit, in 1976, took me to the White Range where Ross Bryan, the head ranger in the East MacDonnells, showed me a building known to him as the store, and others nearby. The full extent of the White Range settlement was not realized until the first main excavation season in 1978, and some planning and recording still has to be done up on the Range, which has some structures associated with mines.

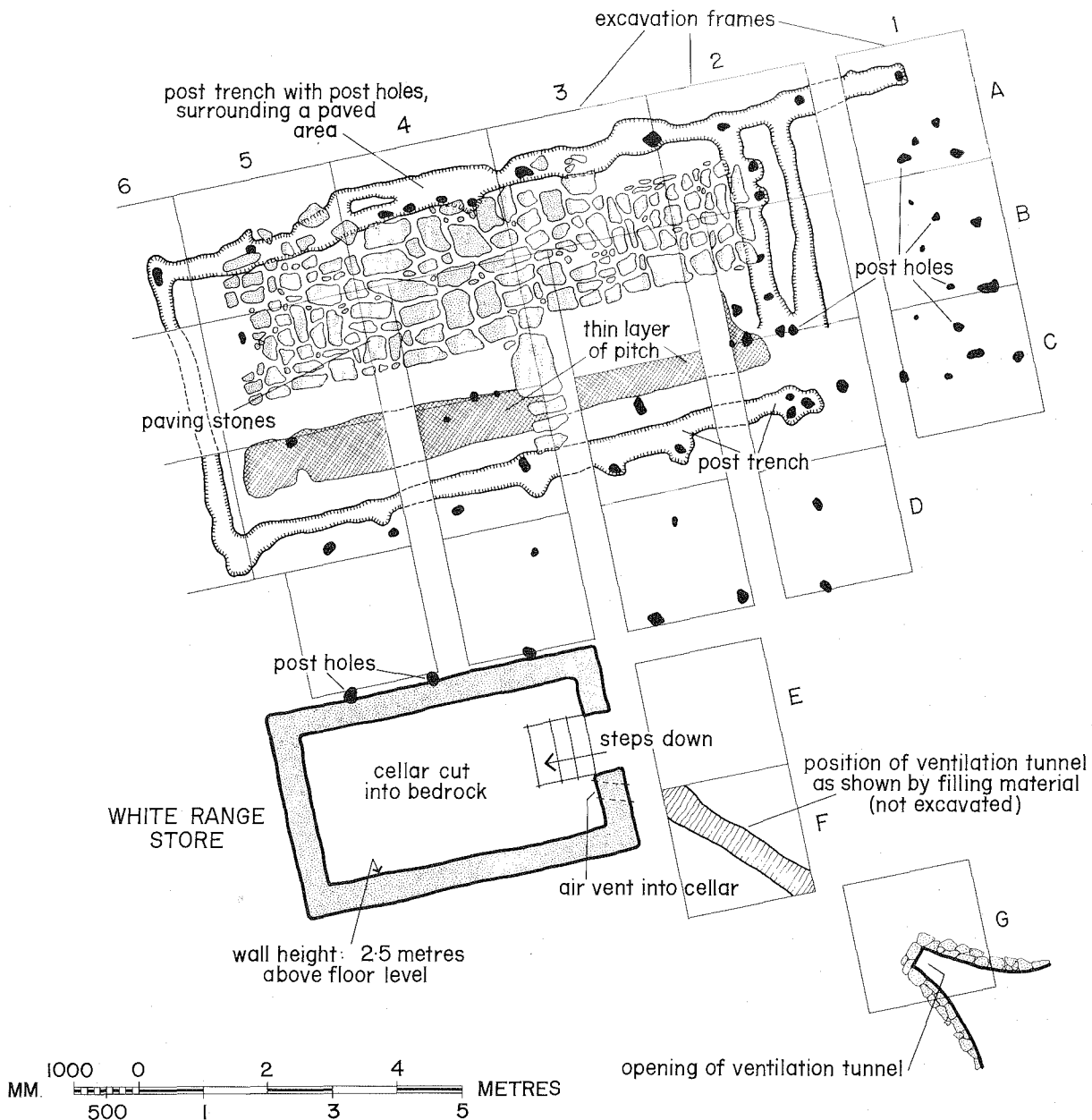
As there was some documentary evidence relating to the store, and as it would have been a focal point for the settlement, it was chosen as the first excavation site. Some of the licensing records are missing between 1898 and 1906, but the Warden mentioned that John Wilson, storekeeper, took over the contract for the sinking of the White Range No. 2 well in November 1902.⁴⁰ He held a business licence for the White Range until 1911, and for a store at Winnecke's Depot in 1906 and 1907 and possibly earlier.⁴¹ He appears to have had a manager, one Francis Bignell, also mentioned by the Warden in 1902, who took over the White Range licence but let it lapse in 1912. The only other reference to John Wilson was a letter from him to the Minister for the Northern Territory in November 1906 about establishing a Local Court at Arltunga. All the storekeepers had problems with bad debts: credit was needed by the miners until their first parcel of ore was crushed. If the results were poor, the miner and storekeeper might have to wait for another two or three months until the next crushing, or the miner could leave, hurriedly.⁴² Some of the storekeepers had slaughtering licences, but Wilson does not seem to have worried, possibly because the White Range wells barely provided enough water for domestic purposes, much less any goats or cattle for meat. *A Guide and handbook to the Arltunga and Winnecke's Depot Goldfields* published in 1903 listed the tinned and bottled foods available, along with the staples of tea, flour and sugar.⁴³ Teams arrived from Oodnadatta every two or three months, depending on the condition of the road and the amount of feed. Camel-teams were used to Alice Springs and Arltunga but most of the Arltunga teams were horses and possibly bullocks.⁴⁴

The store site consists of a particularly fine stone building and a large paved area some 4m north (Figs. 2 & 3). The building was very well finished with a doorway in the eastern wall and openings for windows in the north and west walls. The southern wall had collapsed into the building. It is by far the most professional of the many White Range buildings;

Excavation Site WR-A

WHITE RANGE STORE. Site 98.

PLAN showing paved floor with surrounding post trench and post holes, a length of pitch along the southern side of the paving, and a ventilation tunnel entrance and tunnel position leading to an air vent in the cellar.



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Fig. 2: Excavation of the White Range store site.

interestingly enough one of the men employed to build the battery finished there in 1898 and either remained or returned to the field as a miner. He was working at the White Range by 1904 and possibly earlier.⁴⁵

When the rubble from the collapsed southern wall was removed, some interesting features were noted. The interior had been given added depth and possible coolness by digging out the bedrock to between 30 and 60cm. Three steps led down into this basement and south of the steps a small hole had been left in the

eastern wall just above bedrock. Excavation outside the building showed that a small mound to the south-east of the doorway was artificial and had partly collapsed over the wedge-shaped entrance to a short ventilation tunnel exiting into the store through the small hole (Fig. 2). The outside entrance faced the south-east, the direction of the prevailing winds, and was protected from animal intrusions by wire mesh found during excavation. The tunnel was very carefully made and although a slight natural slope was utilised, much of its length had to be dug out of the natural soil down to bedrock, some 50cm. The walls were carefully built



Fig. 3: Excavation in progress at the White Range store site. The site is seen from the north-east.

up with flat stones and the roof made of larger stones, making a tunnel 20cm by 15cm. The space above the roof was filled in with fine grey gravel, probably from the bedrock excavation inside the store.

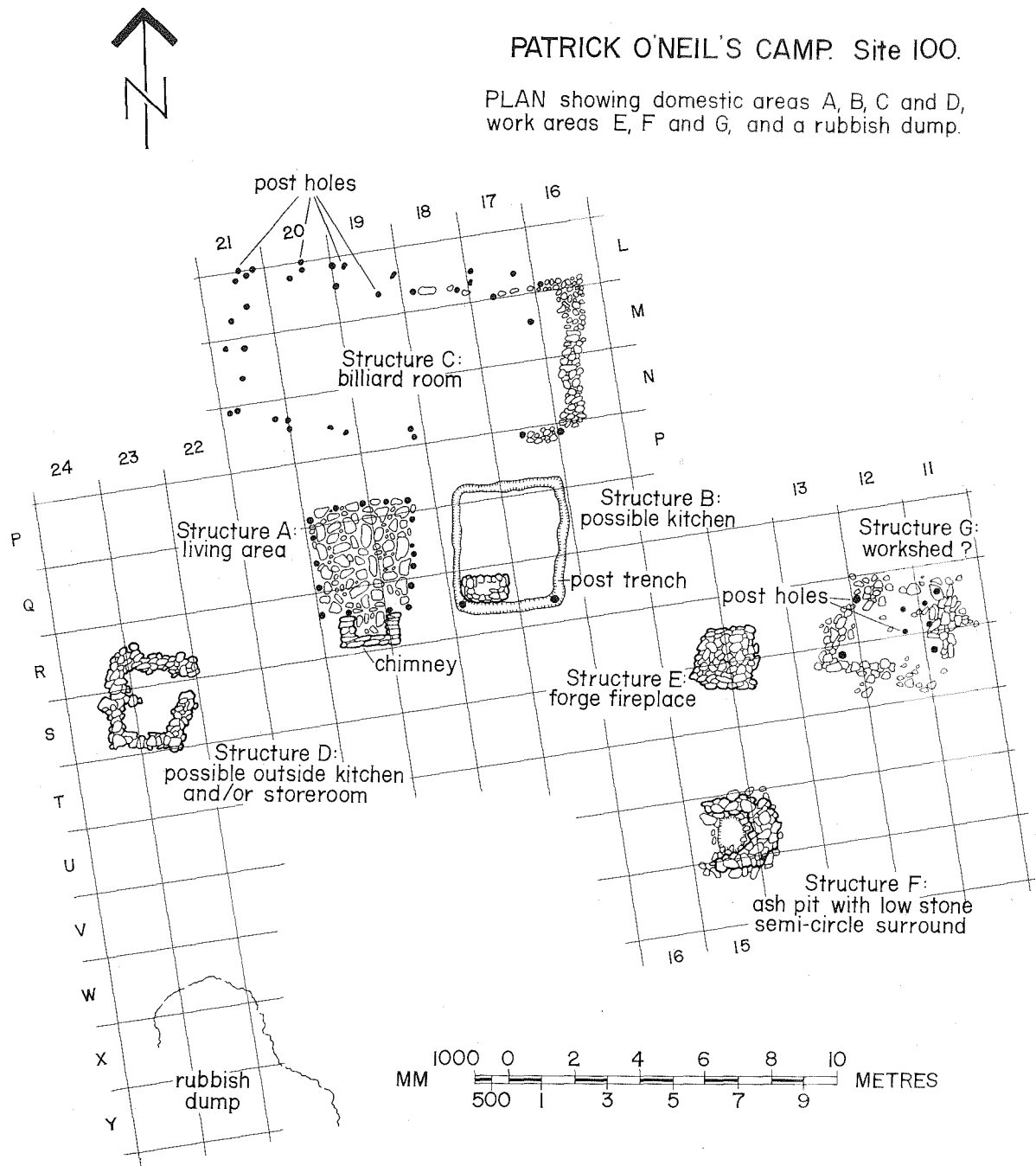
At first I thought the paved area might have been an unloading bay, but excavations found a post trench and a large number of post holes around it (Fig. 2). The post trench followed the northern edge of the paving very closely but there was a gap of some 2m on the southern side. A thin layer of pitch covered some of this area, apparently put down as a protection against ants and other insects. It was no more than 5cm thick. It is probable that the paving was the floor of a substantial timber building while the less obviously aligned post holes may have belonged to an earlier structure. There does not seem to be any particular reason for the number of post holes in the 1A-1C squares, although one in 1A was a mistake: it had been filled with contemporary rubbish, bottles and tins. The most easterly line of four holes may indicate a set of hitching posts as most of the miners would have had their own horses, and would have come to stock up on stores at intervals.

Although there is no definite evidence for it, I believe that there may have been three stages of building. An early rough timber structure would have been put up very soon after the first White Range claims were pegged and good ore mined. As time allowed, the paved floor with its timber superstructure was erected, followed by the stone building. The latter may have been added at the time of the 1903 rush, when the population rose. This would fit in reasonably closely with the presence of an experienced builder at White Range.

The artifact evidence supporting the identification and use of the site as a store or stores tended to be negative. There were very few domestic items, i.e. tins or broken bottles, especially when compared with the second site excavated. Quite a few tin-opener keys were found, but none of them had been used, and they appeared to have fallen off their tins during handling. A group of stationery items, apparently in mint condition, came from 5B where the paving was slightly indented. These included pen nibs, paper fasteners, and a pencil eraser. The latter was identified by its still-legible label: the Eagle Pencil Co. of New York, Pencil Eraser. This company was operating by the 1890s but I have yet to see an illustration of the wedge-shaped eraser found at Arltunga in any of the catalogues.⁴⁶ Most of the pen nibs were rusty, but one in very good condition showed manufacturer and type quite clearly: Esterbrook & Co's Relief No 514. This type is illustrated in Lassetter's 1906 catalogue, and the company was established in Camden, New Jersey, U.S.A. in 1860.⁴⁷ It was much squarer in shape than the other examples found, with a shorter point.

The second site excavated appeared from the above ground remains to be more complicated, with several stone structures loosely grouped together near the edge of a gully some 60m across a small plateau from the store site. On the flatter area was a domestic group: a chimney with a paved area (Structure A), a small rectangular solid stone construction (Structure B), a low stone wall (Structure C) and a small square stone foundation (Structure D). On the sloping edge of the gully, slightly east of this main group, were three other structures making up a work area: forge fireplace, possible workshop or storage area, and an ash pit. Fig. 4 shows the relative positions of the remains and the rubbish dump.

Excavation Site WR-D



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Fig. 4: Excavation of Patrick O'Neil's Camp at the White Range settlement.

The domestic area was excavated first. Working on a 2m grid plan, an area of 10 by 12m was opened up (16-21 L-Q, see Fig. 4) which turned out to cover the three main structures, A, B and C. Cleaned over, the outlines of the paved floor in front of the chimney (Structure A) became clear (Fig. 5), and nearby to the east a narrow black deposit indicated the outline of another structure around the stones of Structure B. Around the edge of the paving of Structure A, and mostly set into gaps between the stones, was a series of post holes. Connecting these was a very shallow depression and there was no direct evidence of the

walling material until the last square was excavated, 20R, at the south-west corner of the structure. Between the corner post and that at the western arm of the chimney, just below the present ground surface, was a piece of corrugated iron with a ragged upper edge. This piece must have been too securely wedged for easy removal when the building was robbed of re-usable material. Another piece was found fitted down the eastern side of the chimney's western post hole, no doubt as a protection against fire. A concentration of roofing nails around Structures A and B indicated corrugated iron roofing as well as walling for Structure A.

Excavation around the stone remains of Structure B uncovered a narrow post trench, filled with soft dark brown soil and lumps of clay. These indicated slab post



Fig. 5: The chimney and paved floor of Structure A, Patrick O'Neil's Camp. Seen from the north after excavation.

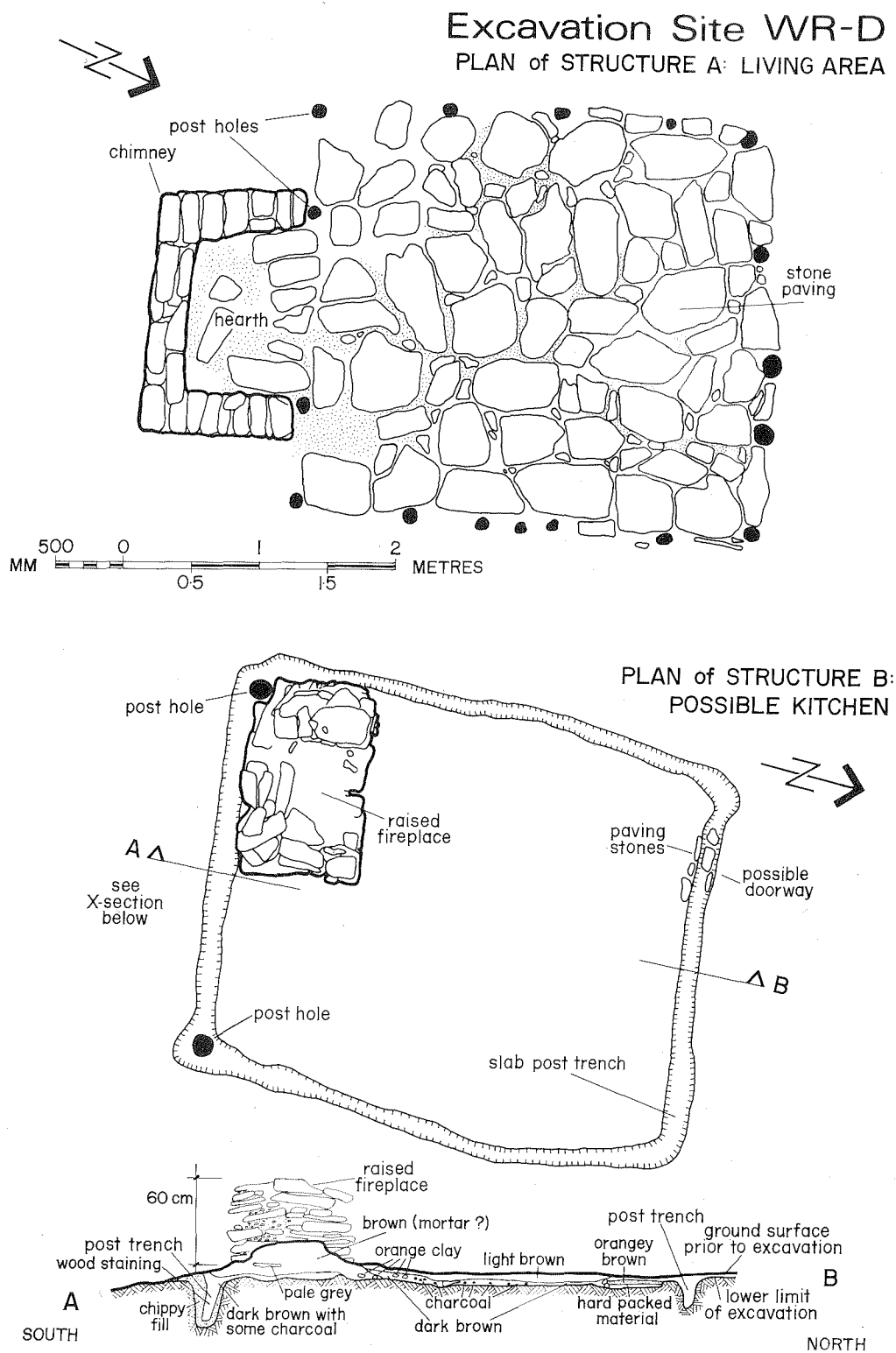
walls, and some of the posts were found still in place making the conclusion definite. The interior of Structure B contained only very shallow deposits, as indicated in Fig. 6, but there was plenty of evidence of burning in the form of fine black deposits mixed with burnt clay. The walls may have collapsed as a result of a bushfire, or a domestic disaster, as the artifacts and a study of the stone remains indicated that Structure B may have been a kitchen. The rectangular stone 'platform' was built up at the ends and the back; from other building remains at Arltunga it seems probable that a 4 gallon drum fitted into the central part for use as an oven. The artifacts included parts of a mincer, an almost complete pottery jar for meat paste or similar contents and most of a shattered earthenware jar probably for whisky. Other domestic artifacts tended to be scattered between Structures A and B: parts of a lamp or lamps, three small barrel keys, door fittings and two padlocks. There are references to food and tobacco being stolen from camps by the Aboriginal women who cleaned and washed for the miners, so the locks and keys may have been necessary.⁴⁸ In addition, no doubt some secrets had to be kept from other miners. It seems reasonable to suppose that the

two structures were used together, one as a kitchen/eating place, and Structure A as a small living/sleeping area. The rooms are not large and give some indication of the cramped conditions in which most miners lived (Fig. 6).

Structure C did not fit quite so well with the domestic scene indicated by Structures A and B. The area covering most of this structure was part of the original excavation area, but having been left for some months, was recleaned by trowel. It then became obvious that the low stone wall in the eastern squares was part of a substantial timber structure extending westward for some 10m and indicated by a shallow black deposit. When excavated, this deposit revealed a series of post holes outlining the walls, some of the post holes being in pairs or groups (Fig. 4). Once the extent of the building was realised (10 by 4m) a look at the interior showed that an attempt had been made to level the floor. At the eastern end the natural slope was more pronounced, and here a line of large stones acted as a slight retaining wall. Apart from the number of post holes, and the low stone wall at the eastern end, the structure appears to have been comparatively flimsy. The double post holes could indicate the use of light brush walling, while the concentration of tacks suggests the possible use of canvas. The stone wall would have given extra protection from the prevailing winds.

The most interesting problem, however, concerned the use of such a large room, but here again the artifact evidence was helpful. Scattered over the whole of the site, not just Structure C, we found many broken pieces of slate, too thick to have been used as building material. These probably came from the slate bed of a billiard table. Some of the fragments had holes for counter-sunk screws and showed curves such as would occur around the pockets of a billiard table. The size, and carefully levelled floor of Structure C, must indicate its use as a billiard room. A search in the South Australian Archives has revealed that the Northern Licensing Bench at Port Augusta granted a billiard table licence to Patrick O'Neil, Arltunga, in September 1903.⁴⁹ This was the year of the big rush to Winnecke and Arltunga, and the Register showed that several people planned to build hotels with billiards. The rush was over so quickly, however, that none of the other plans came to fruition, although it does seem likely that O'Neil did set up his table. The licence was not renewed, so it was not a very lucrative venture. Warden Gee mentioned allotting a business licence to O'Neil at the White Range, close to Wilson's store, in May 1903. It seems more than likely that the B. O'Neil, married woman, who signed a petition in 1904 was Patrick's wife.⁵⁰ There are later references to both O'Neils being interested in the mining activity at White Range and Patrick won the contract to sink the third White Range well in 1907.⁵¹ The last reference to him occurs in 1910, in the battery records, while Elizabeth O'Neil and her three partners paid rent on the White Range Excelsior South mine until 1911.⁵² There is a decrease in detailed documentary evidence from 1911 onwards, and it is impossible to say when the O'Neils left the field. There are references to deaths of miners from 1911 and as their names do not appear, I presume they left.

From the documentary evidence seen so far, there were very few white women at Arltunga, and none before 1903. The presence of a woman might explain



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Fig. 6: Excavation of Structures A and B at Patrick O'Neil's Camp. Section of Structure B at bottom.

the relative complexity of the domestic building remains, although as no other domestic site has yet been excavated such a conclusion may not be justified. However, Elizabeth may have been the reason for the presence of Structure D, the square low-walled building at the western edge of the site, perched on the lip of the gully (Fig. 4). In most of the interior and

spilling further west of the structure was a large quantity of ash. It seemed likely that the area had been used for cooking, or as a safe repository for hot ashes. Local informants told me that it could well have been a hot-weather kitchen, such structures being common among early station buildings.⁵³ In summer it can be stifling to cook within a timber and corrugated iron structure such as the Structure B kitchen, so the alternate cooking area simply had stone foundations to restrain the fire, and no other walls or roof. It is thought that the

walls of Structure D would have been a metre high originally, and there were no signs of internal or external post holes for a roof. The structure may also have been used as a store-room; the finds included several broken but easily reconstructed bottles including a 'Clarke's World Famed Blood Mixture',⁵⁴ several tins and from outside the northern wall a small metal and wood fork. The only other eating utensil found on either site was a teaspoon from the store site, such items must have been precious to the miners in such an isolated area. A rather fine buckle, just over 3 by 2cm, with a double tongue and stamped 'Paris', was found inside the structure, which may be another indication for the presence of a woman.

To the east of the domestic buildings was a work area situated on the gully slope (Fig. 4). Structure E was clearly a fireplace for a forge: it was a solid stone structure now between 50 and 70cm high. Part of a bellows, several small iron wedges, other odd pieces of iron and some lead fragments were excavated from around the structure. South of Structure E there was a rough semi-circle of stones designated Structure F. When the interior of this structure was excavated, it was found to contain some 20cm of ash down to bedrock. When it was removed, a rectangular pit, 1m by 50cm, was found dug into the bedrock to 50-60cm, completely filled with ash. This was one of the deeper deposits investigated at Arltunga and indicates the importance of dealing carefully with ash and fires in a hot, dry climate. The last structure in the work group, Structure G, to the east of the forge fireplace, was initially indicated by a loose square of stones. Four corner post holes were excavated, plus four smaller internal post holes possibly for a table. This structure may have had a bough roof and no proper walls, or possibly canvas walls, and may have been used as a shelter for tools or as a workshed.

NOTES

Most of the detailed information comes from the South Australian Archives and most of that from the Incoming Correspondence of the Minister for the Northern Territory, 1863-1910, filed under 790.

1. Stuart, J. MacD. *Explorations across the continent of Australia, 1861-62*.
2. Completed in August, 1872. Clune, F. *Overland Telegraph*; Taylor, P. *An end to silence*.
3. Undoolya and Owen Springs were taken up in 1872; Duncan, R. *The Northern Territory pastoral industry 1863-1910*.
4. Winnecke, C. *Explorations between Alice Springs and the eastern boundary of the province, 1878-79*.
5. Coghlan, T. A. *Labour and industry in Australia*, vol. IV: 1791-1804; Gordon, D. J. *Handbook of South Australia*, 1908: 36-39 also marks the importance of Broken Hill silver to the South Australian economy.
6. Lindsay, D. *An expedition across Australia from south to north, between the Telegraph Line and the Queensland border, 1885-6*.
7. Reported in the *Port Augusta Despatch*, July 26th 1887.
8. Police reports mentioned gold in August 1887, and by November gold reefs were being registered SAA 790/1887/512 and 923.
9. Brown, H. Y. L. *Report on a journey from the Hale to the Adelaide River, 1888*.
10. Suggested in May 1888 SAA 790/1888/311.
11. SAA 790/1888/169 and 206; *The Observer* July 28th, 1888.
12. The Warden mentioned that the field had supported 30 to 50 men since 1888 SAA 790/1892/118.
13. Brown, 1888 op. cit. refers to Claraville well, also 790/1889/914; for Paddy's Hole well 790/1890/90; Star of the North 790/1892/118; Kangaroo Creek 790/1897/459; White Range No. 1 790/1899/248; White Range No. 2 790/1902/228 and No. 3 790/1906/511.
14. SAA 790/1890/625; the Oodnadatta-Alice Springs mail run had become a fortnightly service by 1898 SAA 790/1898/343.
15. R. Kimber, ethnographer/historian of Alice Springs, believes it likely that Arltunga is corrupted from the Aranda word, Aldolanga, meaning 'Easterners'.
16. SAA 790/1894/284.
17. SAA GRG 67/14, 1890, Register of the Northern Licensing Bench shows that Joseph Harding was granted a licence in September 1890.
18. SAA 790/1895/11, 1896/456, 1901/524.
19. A petition in 1890 was signed by 42 people, SAA 790/1891/6; the 1896 petition by 39 people, SAA 790/1896/72.
20. The problems encountered in establishing the battery were detailed in the manager's reports, SAA 790/1897/83.
21. Reported by the Warden, SAA 790/1898/46.
22. Brown, 1888 op. cit.
23. Brown, H. Y. L. *Report on the White Range Mines, 1902*; Hossfeld, P. S. *The White Range Goldfield, 1937*.
24. Matthews, W. H. *Report on Arltunga and Winnecke's Goldfields, 1905*.
25. SAA 790/1896/390; 790/1905/574 mentioned about 17 out of 100 Aborigines at White Range were working for whites.
26. SAA 790/1902/437.
27. A Vigilant Committee was formed in April, but illness became almost epidemic by June SAA 790/1903/260, 411.
28. He arrived in Alice Springs on 11 July, went out to Winnecke later that month, and left early in September SAA 790/1903/497.
29. These usually reported that health was good and sanitary conditions satisfactory.
30. According to the battery records, SAA 790/1910/50.
31. Oliver, T. G. *Report on the batteries and mines of the Northern Territory, 1913*. Losses between 1911-13 were over £3000.
32. Commonwealth Archives, Darwin Book of Registrations CRS F1086.
33. The hotel did not open until 1910, and T. A. Wallis had the store from 1907.
34. Mr. E. H. White had 16 leases over the White Range from 1921 until 1938. Mines Branch, Darwin.
35. Commonwealth Archives, Darwin, op. cit.
36. Commonwealth Archives, Darwin F1 42/259.
37. Battery records, Reports of the Administrator.
38. Brown, H. Y. L. *Report on the Arltunga Goldfield, 1890*, referred to stunted mulga, ironwood and beefwood, suitable for fuel, while some of the gums in the

- creekbeds could be used for building. The battery manager mentioned the difficulty of finding building timber, SAA 790/1897/83.
39. I later found that Frances O'Kane had written a B.A. (Hons.) thesis, Melbourne University, 1969, on the history of Arltunga.
 40. SAA 790/1902/228.
 41. Commonwealth Archives, Darwin Registration Book.
 42. SAA 790/1907/156.
 43. Frearson, R. *Guide and handbook to the Arltunga and Winnecke's Depot Goldfields*, 1903.
 44. There are several references to horse-teams, e.g. SAA 790/1900/308.
 45. Mark Colley was employed as a carpenter, SAA 790/1896/478; left the battery in February 1898, and was at White Range by 1904/37.
 46. Depew, C. (ed.) *One hundred years of American commerce*, 1895, mentions the Eagle Pencil Co.; their stationery was illustrated in *Sears Roebuck Mail Order Catalogue* of 1902, and Lassetter's *Monthly Commercial Review* in April 1906 and No. 4, 1909.
 47. Depew, op. cit.; Lassetter 1906 op.cit.
 48. SAA 790/1900/80 Mounted Constable Johnstone reported that the miners, mostly very low class, employed lubras about their camps who stole food for their men.
 49. SAA GRG 67/14, 1903.
 50. SAA 577 diary kept by L. C. E. Gee, Warden in 1903. Patrick and B. O'Neil signed a petition requesting changes in the rules governing the battery SAA 790/1904/256.
 51. SAA 790/1903/602, 1904/20, 1907/35, 1908/6, 1909/8.
 52. SAA 790/1910/50; Darwin Mines Branch information.
 53. Mrs. Peg Nelson; whose family the Bloomfields have held one of the pastoral leases close to Arltunga since the early 20th century.
 54. This tonic was made in Lincoln, England, from the 1860s (Davis, A. *Package and print*, 1967; 93).

REVIEW

K. H. Kennedy, P. Bell and C. Edmondson, *Totley: a study of the silver mines at One Mile, Ravenswood District*, Department of History, James Cook University of North Queensland, Townsville, 1981; pp. x, 61.

The Department of History at the James Cook University of North Queensland is establishing an enviable reputation as the patron of local and regional history with a strong archaeological flavour. It is also a vigorous publisher and its publications deserve to be better known in the south.

The latest publication, and the first monograph, to appear is a well-presented study of the silver-mines at Totley, which lies less than two kilometres from Ravenswood, the well-known gold-town of the 1870s. Using documentary research, photographic evidence, a survey of the surviving physical remains and a marvellous interview with the last owner of the Great Extended Mine, the Townsville team have done a pioneering piece of industrial archaeology for North Queensland.

The surface equipment at the Great Extended is still as it was when the mine closed in 1965. This equipment, including a steel headframe, winding gear and the original diesel engine, was erected at Totley only in 1949, but, like so much mine equipment, was in fact second-hand. One of the most telling parts of

the interview with the former owner is his description of how he found the machinery at the Louisa no. 1 mine at Maytown on Cape York Peninsula, took a war surplus six-wheeled truck north from Chillagoe, cutting his own path for eighty kilometres through the bush from the Mitchell River to Maytown in 1947 and carted the dismantled equipment back to the Chillagoe railhead in about twenty instalments.

As well as the major remains at the Great Extended Mine, there are much earlier bases of a flue and two buddles at the Great Extended Mill of 1889-91. Substantial footings, mullock and tailings associated with King's Mine and Mill of 1880-91 are plotted and described, while the remains of the township of the 1880s (including a blacksmith's forge made from a ship's water-tank) are discussed briefly. The amount of smaller, more portable, and thus more vulnerable equipment still on the sites is unremarkable, but includes a colonial one-cylinder steam engine made in Monmouthshire, parts of the Cornish lift pump of the 1880s, two kibbles of the 1950s and the Great Extended safety cages apparently brought from the Louisa.

The two phases of mining at Totley, in the 1880s and the 1950s, are very well presented and the rapid production of this well-illustrated monograph ought to prod others into publishing the extensive work done on the industrial archaeology of the Eastern States.

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