

Aspects of Gold Mining and Mining Communities in the Shoalhaven Area of New South Wales: An Archaeological and Historical Study

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A case study of gold mining and settlement in a small area on the New South Wales Southern Tablelands on the west bank of the Shoalhaven River is described in this article. The area was originally surveyed by the author in a much broader consideration of mining archaeology and history in the Southern Tablelands which was conducted under the National Estates Grants Program. Particular emphasis is placed on the task of identifying and defining historical linkages, and the challenges in describing the long departed technology of hydraulic sluicing.

In Australia little attention has been given to the archaeology of mining technology or of the mining community. This article presents a case study examining these two issues together with a number of issues discussed recently by Neville Ritchie and identified in a much broader consideration of mining in the Southern Tablelands Monaro District of New South Wales.¹ Such issues include the definition of a site and the challenge of identifying and defining historical linkages, in particular the questions of attribution, mine location and community distribution as well as the task of recording large scale hydraulic sluicing complexes. A major focus of the paper is the very tight interdependence between archival research and fieldwork.

The study area lies on the west bank of the Shoalhaven River on the New South Wales Southern Tablelands at a height of between 530 metres and 610 metres, where it overlooks part of the Shoalhaven gorge. It was known variously as the Nerrimungah goldfields or as Spring Creek Jacqua, and extends over an area of almost 100 km², from Nerrimunga Creek in the north to Fernbank, just north of Oallen Ford in the south. The location of the study area, which we will call Spring Creek Jacqua, and other locations and features of significance in the Shoalhaven area are set out in Figure 1. Mining was intense, but short-lived, with the main activity lasting from 1869 to about 1875, with another burst in the period 1888 to 1895 and minor activity just prior to the First World War. Some sites were reoccupied on a small scale during the 1930s Depression.

The main geographical features of the Spring Creek Jacqua goldfields are set out in Figure 2. The study area is drained by a series of short streams originating in springs. The large creeks, such as Nadgigomar and Nerrimunga, drain broadly north east into the Shoalhaven. The area has both scattered quartz reefs and large areas of Tertiary alluvial gravels of the ancient Shoalhaven River. The study area was described by an 1870s observer as an immense deposit of water worn gravel and boulders, running along the west bank of the Shoalhaven in a north to south direction for a width of up to 6.4 km. The Tertiary alluvial gravels are easily exploitable by sluicing where there is sufficient slope to expose them, that is on the uppermost parts of the Shoalhaven gorge, and where sufficient quantities of water can be 'assembled' for sluicing. This has necessitated the exploitation of natural springs and the

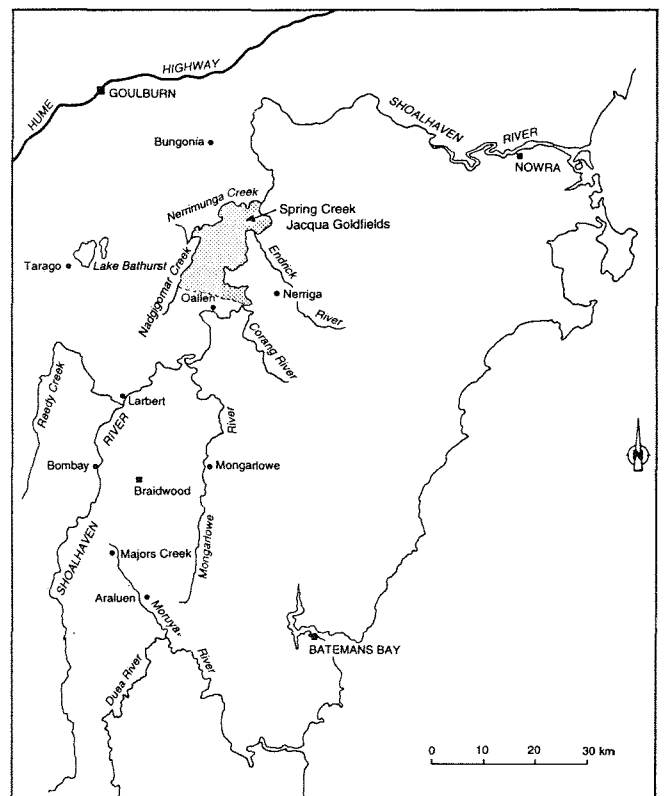


Fig. 1: Location of Spring Creek Jacqua Goldfields in the Southern Tablelands district of New South Wales.

construction of holding dams, races, flumes, pumping stations and feeder canals to the hoses and sluice boxes.

There are many mining areas on the west bank of the Shoalhaven which exploit these gravels, from Bungonia in the north to Bombay Crossing in the south. On the east side are other major goldfields based on the sluicing of gravels and quartz mining, such as Nerriga, Corang, Mongarlowe and Jembaicumbene Creek.

The locale was chosen because of the opportunity to study an area which had been completely lost to the archaeological and historical record for 100 years or more. In addition, there was a large body of archaeological evidence left intact. Mining in the Spring

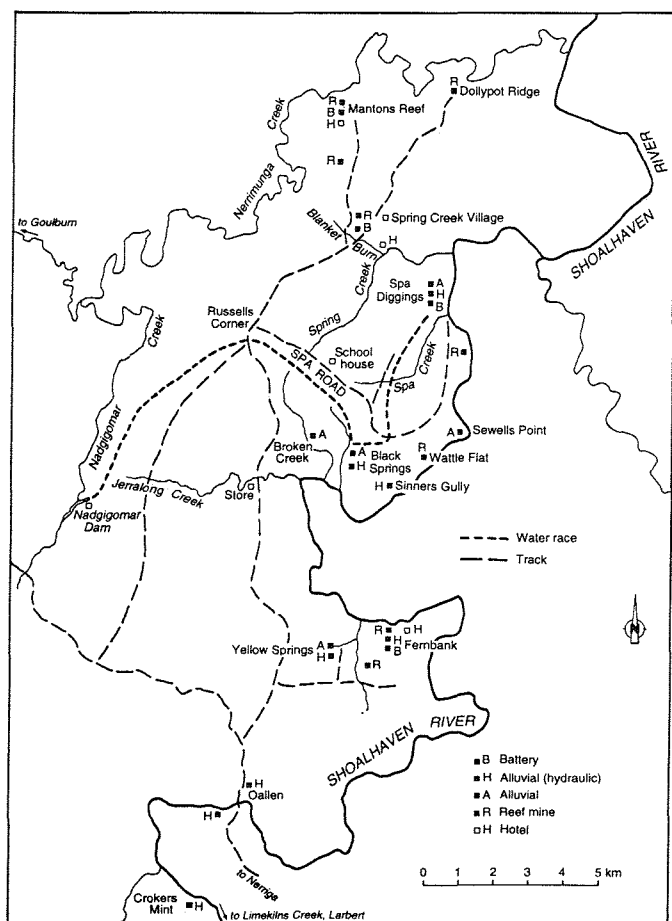


Fig. 2: Distribution of mining features at the Spring Creek and Jacqua goldfields.

Creek Jacqua area was spasmodic, often in short bursts, scattered and not particularly successful. The area was peripheral to the main gold producing areas in Australia. However, the 'ephemeral' nature of mining activity in the area has meant that much of the evidence of technology and settlement has been left intact. As Connah has observed, mining operations, such as those at Spring Creek Jacqua can offer a more detailed archaeological insight to the application of one or more gold mining techniques than is often the case with larger and more successful operations.² The study area is typical of many small scale mining locations in the Monaro Southern Tablelands districts, displaying a variety of technology, a scatter of workings and evidence of a dispersed population.

A major focus of the paper is the hydraulic sluicing complexes associated with the Spa diggings. Hydraulic sluicing is a long departed technology, originating in California in the 1850s and used extensively in a number of Australian goldfields such as the Beechworth area of Victoria, the Kiandra field in the Snowy Mountains and the Araluen valley south of Braidwood, before coming into vogue in the Shoalhaven area in the 1870s to 1890s. Descriptions of it can be found in some contemporary texts.³ A typology of alluvial tailings has also been provided by Ritchie in his 1981 study of the Central Otago goldfields in New Zealand.⁴ However, a detailed study of hydraulic engineering works and associated systems has yet to be attempted, and many questions of typology and technology remain. One aim of this paper is to outline the challenges in integrating all the disparate

elements of one such sluicing complex into a functioning whole.

There were several periods of mining in the area, spanning almost 50 years, which frequently resulted in several overlays of activity, with consequent difficulties in identification and dating. Landscape features, superimposed or not, present difficulties in interpretation. The spread and nature of artefacts across the sites adds to the problem. Often only broad time brackets such as 'late nineteenth-century' can be used. For example, at the Spa diggings two distinct periods of alluvial mining of varying dimensions can be identified and certain mining and settlement features were superimposed upon earlier ones. This also occurred at the Mantons Reef site and has been observed at other alluvial operations along the Shoalhaven, for example at Limekilns Creek, Bombay and Pipeclay. The type and period of main mining activity in most of the Shoalhaven areas discussed in this article are set out in Table 1.

The task of dating was rendered all the more difficult because of the paucity of official records and reliable historical accounts. For example, the New South Wales Department of Mines *Annual Reports* did not commence until 1875, and the first phase of mining for the most part preceded that date. Some local histories are available, but with the exception of *Braidwood Dear Braidwood* by Netta Ellis, they are of limited use. Thus contemporary newspaper accounts were critical as were advertisements and prospectuses, yet these presented questions of nomenclature which could only be corrected by assistance from local landowners and fieldwork. The interdependence between the historical, archaeological and oral accounts was very strong, no one approach held all the answers and there was a constant need to check and recheck one source against another.

An important aspect of the study is the question of community and the relationship between the separate settlements associated with both alluvial and reef mining. Individual settlements were spread over a considerable distance of rugged and broken terrain. As will be seen from both the historical, geographical and archaeological evidence, however, they seem to be linked as there was much movement of persons, equipment and even buildings between them. Despite the distances involved, such settlements cannot be viewed in isolation but only as part of a larger community.

Critically, the question of community was not obvious initially from the fieldwork and only really came to light as a consequence of archival research. On the basis of fieldwork alone the linkages were not apparent. Subsequent field work, however, following archival clues, supported the community concept. For example, there were several lines of communication, now largely disused, linking the various settlements with each other and to the outside world. The Spa water race also physically linked a number of settlements in the 1890s.

Public facilities such as schools, churches, post offices, halls, hotels (which often served as meeting places), picnic and recreation grounds are also important indicators of community. In the case of the main settlement at Spring Creek only the school and the hotels have been positively identified. The school was not located in the main village, but on the Spa road, almost equidistant from a number of the settlements, confirming the dispersed nature of the population. It should also be noted that the question of community is not confined to the Shoalhaven, but was a feature of several other mining locales in the Monaro Southern Tablelands districts.⁵

Table 1: Type and period of mining activity.

	Type of mining activity				
	Reef	Alluvial	Hydraulic sluicing	Battery	
Spring Creek Jacqua sites					
Mantons Reef	x			x	
Spring Creek/Blanketburn	x			x	
The Spa	x	x	x	x	
Black Springs		x	x		
Wattle Flat	x				
Broken Creek		x			
Sewell's Point		x			
Yellow Springs		x	x		
Fernbank	x	x		x	
Other west bank Shoalhaven sites					
Oallen					
Spring Creek		x	x		
Croker's Mint		x	x		
Limekilns Creek		x	x		
Bombay		x	x		
Pipeclay		x	x		
	Main period of mining				
	1850-1868	1869-1878	1879-1890	1891-1900	1901-1914
		x		x	x
		x			
			x		
			x		
				x	
					x
	x	x		?	
			x		
		x	x	x	
		?	x	?	
		?	x	?	

A related issue is whether a pattern of settlement and development can be discerned. In the case of the main settlement at Spring Creek the first phase was the commencement of mining due to the discovery of gold and the subsequent establishment of processing facilities and residential areas. Associated with this were the first signs of development of community with public and private facilities such as a post office, hotels, shops and some basic recreation facilities. The next phase arises from a further development of community consciousness and involves more substantial institutions or public facilities such as schools, churches, meeting halls and cemeteries. In the case of Spring Creek only the former

was evident, the others being incorporated into other structures and facilities. The ultimate decline was the final phase, with the cessation and or removal of public infrastructure and departure of the population, due primarily to declining productivity. The same pattern has been discerned in a number of other mining communities in the Monaro Southern Tablelands districts.

Nomenclature was an important issue and the source of much potential confusion. The area covered in the study was referred to on various occasions as Spring Creek Jacqua, Nerrimungah, Nadgigomar or Bungonia. In the first period of occupation the area often went under the name of Jacqua or Spring Creek Jacqua and was officially known as the Nerrimungah goldfields. There were two reasons for this. Firstly, Jacqua is probably a reference to the location of the turn off to the diggings from the main road from Bungonia to Braidwood, near Jacqua Creek, although the diggings were some distance from there. Secondly, the use of the name Spring Creek Jacqua distinguished this area from Spring Creek near Bungonia and Spring Creek to the south of Oallen Ford, where mining also took place during this time.

Local and oral history reports suggest erroneously that mining had commenced in the area in the 1850s, and that the main settlement and ore processing area was known as Blanketburn after the gully of the same name. The name Blanketburn is, however, a later addition to the toponymy of the area. The main settlement was known as Spring Creek. To add to the confusion, during the second period of occupation from 1888 to 1896 the area was referred to as Nadgigomar. This was probably because the main diggings at the Spa depended on water supplies from a dam on Nadgigomar Creek, some 10 km to the southwest. During this period the Goulburn press regarded Mantons Reef as part of the Bungonia area. To simplify this article the study area will be referred to as Spring Creek Jacqua.

MINING AND SETTLEMENT HISTORY

The Historical Context

Within months of the discovery of gold at Ophir in New South Wales in 1851, there were gold miners in the Araluen Valley, 25.7 km from Braidwood. By September of that year Bells Creek was pegged out and by October there was activity at Majors Creek. By April 1852 gold had been found at Little River (Mongarlowe) and subsequently at Nerriga and elsewhere. These fields were rich and for several decades supported thousands of miners and their families.⁶ For example, it was reported that by the end of 1852 at least half of the miners were making £1,000 per year, a fortune for then, considering that the average farm labourers' wage was about £30.

At Araluen excessive rain was a continual problem, and because the natural water table was high claims were easily flooded. Major flooding occurred in 1860 causing many lives to be lost.⁷ Further flooding occurred in 1870 and 1871 causing a number of miners to leave the valley.⁸ On the adjacent tablelands fields at places like Majors Creek the usual problem was a scarcity of water and the wet years of the early seventies which affected Araluen were a blessing.⁹ Similarly with the increased activity at the tablelands fields, efforts were made to trace the origins of the alluvial gold, resulting in the commencement of quartz or reef mining.¹⁰

These developments have important implications for the area under study, for there is no recorded mining activity in the Spring Creek Jacqua area until the late 1860s and early 1870s, although there was minor mining activity in some adjacent tablelands areas and at Oallen in

the 1850s. It is not unreasonable to assume, therefore, that the same environmental factors which led to a renewed vigorous activity at the Majors Creek fields in the 1870s were also at play in the development of the Spring Creek Jacqua fields. It is also fair to assume that the same environmental factors were at play in the 1890s. This article demonstrates that Spring Creek Jacqua was a functioning mining and industrial complex and a viable community, remote and peripheral to mining activities in New South Wales and ephemeral in the sense that it was only worked and therefore settled during 'boom' periods, when there was plenty of water for the races and the sluicing.

The First Period: 1868 – 1877

In 1868 a quartz reef was found near Spaw Creek, presumably the Spa Creek, recorded as 22.4 km south of Bungonia.¹¹ By July 1869 the population in the area had gradually increased, and the Manton Brother's crushing plant was fully operational by August.¹² It was a five-head battery, with capacity for ten. The site of the machine is of interest, for it was not located at Mantons Reef itself, but about 4.8 km to the south at Blanketburn Gully, where there was a supply of permanent water for its operation. By August 1869 there were about 200 people in the neighbourhood, with quartz mining and prospecting continuing apace. A two-horse coach was in operation between Marulan and Spring Creek twice a week, and a petition had been forwarded for the establishment of a post office.¹³

An extensive report on Spring Creek Jacqua is contained in a November 1869 issue of the *Goulburn Herald and Chronicle*.¹⁴ There was a considerable township at Spring Creek with stores, butchers, bakeries, and public houses, most of them of substantial construction, and other buildings scattered about between the main reef and Spa Creek, a distance of 9.7 km. A dam and tailing pits had been erected by Mantons Bungonia Mining and Quartz Crushing Company (Limited). The machinery was located in a weatherboard and corrugated iron building of some elevation, forming the chief feature in the town. The battery had ten heads and was crushing from 70 to 80 tonnes a week. Adjoining the mill was a retort room where the gold was refined into ingots.

There were two other crushing machines in the course of erection. One operated by May and Thomas of Braidwood was to be placed a short distance from Mantons, and a well-constructed dam had been erected to supply water as there was no permanent water on site. The other plant, the property of Mason and Flook, was to be at the Spa Creek some 4.8 km away. It was expected that the area would be an extensive and permanent field, and it was estimated that there were about 400 adults in the locality, and as many now had established their families, there were a considerable number of children. A movement was afoot for the establishment of a public school and a cricket club was in the course of formation. A post office had been established.¹⁵

By early December 1869, in anticipation of the arrival of the crushing machines a considerable tonnage of stone was at grass (ie. piled up). In the meantime the miners had gone harvesting. Mason and Flook's machine arrived not long after and a banquet was given in honour of the occasion, the machine being the first and only one available to the public.¹⁶ The *Town and Country Journal* travelling mining reporter visited the area in the same month and described the area variously as Spring Creek Reefs, Narramunga Goldfields and Jacqua Creek. He arrived on Christmas Eve in the midst of an impromptu race meeting at which about 150 persons were present.

Of the town there were two hotels, two stores, two bakers, two butchers and a post service. The writer presaged a good future for the field, although he stated prophetically that the gold decreased as the depth increased.¹⁷

By February 1870, however, Manton's battery had ceased work for financial reasons and Mason and Flook's had failed comprehensively, the correspondent lamenting that it had done more harm to the livelihood of the miners than if they had been held up by bushrangers. Mason and Flook's machine was dismantled and removed only a few months after it had commenced operations. Nevertheless, the crushing machine of May and Langdon, presumably a new partner in place of Thomas, was erected in February 1870 at Mantons Reef.¹⁸

Further financial problems with the machines must have ensued, for by October 1870 the one remaining machine was in the hands of the bank who would not divulge details of returns, to the detriment of the field. There were also problems with heavy rains disrupting work on the Shoalhaven River and breaching the dams. However, life went on, and in December 1870 the first official horse race meeting was held, followed by a foot race. It is interesting to note that mining matters were reported to be at a standstill, most people having left for their own selections.¹⁹

In September 1871 there were further reports on the Shoalhaven River diggings; a large nugget was found near Skull Island and there had been considerable workings at Sewells Point.²⁰ In February 1872 the first reports appear of a promising reef find at Yellow Springs, and in March a *Prospectus* for the Argyle Goldmining Company at Fernbank, Oallan and the Shoalhaven was issued, with a capital of 5,000 pounds.²¹ In April the Homeward Bound reef at Fernbank had a trial crushing at Barber's machine at Jacqua and there was reported generally to be great activity in the area. It was proposed to transfer Barber's machine to Fernbank.²² The location of Barber's machine is uncertain.

In May 1872 a correspondent described the town at Spring Creek as having two stores, two public houses, a butcher and a few other bark huts, the main function of the town being to serve the surrounding population for miles around. The main reef area (Mantons) was described as more populous than Spring Creek, with some huts, and a great number of women and children about, the '...latter running about wild and unschooled'. It was not until October 1873, however, that a provisional school was opened.²³ There was a public house (the Digger's Arms) and a store at Mantons. Although many of the claims at Mantons were abandoned, crushing machinery was at hand having been removed from Spring Creek; May and Langdon's had been removed earlier.²⁴ By July 1872 mining had picked up, with the place '...like the Phoenix of old, having risen most gloriously from its funeral pyre'. Many new claims were being pegged out, although some of this activity was highly speculative.²⁵

The *Prospectus of the Shoalhaven River Sluicing Company*, was issued in August 1872.²⁶ The purpose of the Company was to construct a water race along the west side of the Shoalhaven to ensure adequate water supplies for hydraulic sluicing. Obviously sufficient water was not available locally as it was proposed to source the water from 32.2 km away. Powerful pumping machinery would be erected at the water source for raising the water and pumping it into the race. From there it would be gravity fed to the diggings.

As part of the *Prospectus* the then Inspector of Mines included a report on a visit to the areas in question, including the results of his own testing of the field, under

'...a good deal of inconvenience and privation'. The journey was from Spring Creek in the south to Oallen, Fernbank, Yellow Springs and Spring Creek Jacqua to the north. The Inspector commenced prospecting at Spring Creek, 6.4 km north of the proposed head of race where a party of Chinese were sluicing on the south bank, about 0.8 km back from the Shoalhaven. Gold was found in all washings, both there and at Oallen, Fernbank, Yellow Springs, Black Springs, which was being worked by Chinese, and the Spa.

Over the next few months reports trickled in on the Spa and reef workings, with further indications that companies were being formed for the purpose of sluicing on the tableland above the Shoalhaven.²⁷ The *Prospectus* for the Shoalhaven River Sluicing Company was, however, withdrawn in September 1872. Although the proposed race did not proceed, a few years later the Company built a race and sluicing complex to the south on Limekilns Creek.

In February 1873 the alluvial at the Spa was reported as still paying wages, and Fernbank was continuing to prosper with the imminent arrival of hydraulic pumps and crushing machinery.²⁸ Mining matters were favourably reported on in March 1873 with reef finds inducing further prospecting. At the Spa sluicing claim the proprietors were confident of '...making a pile', and work was continuing at Yellow Springs.²⁹

By June 1873 the Mantons Reef mines and other mines close to Spring Creek were on the wane. While there had been promising developments at some mines, mining had generally been at a standstill for a time and business was dull. Some old residents were leaving and others were contemplating the same. Woollen removed his Commercial Inn from Spring Creek to Fernbank, and the general view was that Fernbank would soon go ahead at the expense of Spring Creek.³⁰ In July of that year there was reported to be a population of 150 at Fernbank, two hotels, the Commercial and Mr Devery's Globe, two butchers' shops, and a twice weekly horse express to Jacqua.³¹

In early August the Old Prospector's claim at Mantons was closed and the miners discharged. Some weeks later, however, the company owning the claim arranged to work the mine with half the number of previous employees. The Excelsior, which had cost over 8,000 pounds to purchase, had turned out badly with poor yields, barely paying for the cost of carting and crushing. The reefs at the Spa were, however, in full work and a trial load of ore had been sent to Sydney for crushing.³² The crushings showed very high yields of between 60-90 gms per tonne, however, the absence of local crushing machinery was inhibiting further development.³³

By January 1874 mining activity was again at a low level. The New Years Gift mine at the Spa was looking well and extensive development work was continuing. At the Prospector's claim at Manton's Reef about 150 tons were at grass. However, some mines were shedding labour and the population was gradually decreasing.³⁴

Thereafter press reports on the Spring Creek Jacqua area are few and far between, a likely indication that the fields were well into decline. A report in May 1875 referred to crushing continuing at the Old Prospector's claim at Mantons, but the Old Spa claim and Excelsior had ceased operations. The decline of the fields by this time was confirmed by the 1875 *Annual Report* of the New South Wales Department of Mines, the first such annual report, and the only one to include a reference to the Nerrimungah Goldfields.³⁵

In the 1875 report reference was made to mining activity by both Chinese and Europeans working the bed

of the Shoalhaven River, though no works of any great extent had been constructed, presumably because of the susceptibility of the river to flooding. Reference was also made to two large water races, well to the south of the Spring Creek Jacqua area, one by the Warri Company and the other by the Shoalhaven River Sluicing Company.

The *Annual Report* stated that while the Shoalhaven area had been mined for many years with average success, at the present time it was largely worked out and abandoned. The exact numbers employed in mining were difficult to ascertain because of the scattered nature of the workings. At the Spa Creek only two men were working. At Black Springs there were two Chinese miners working, while there were three men sluicing at Yellow Springs and Fernbank was abandoned. All reef mines in the area were abandoned with the exception of one claim at Mantons Reef.³⁶

In the 1877 *Annual Report* it was reported that while there were only about 12 Europeans and 20 Chinese at work, many were making profitable returns and the yield for that year was about 11,300 gms.³⁷ A lack of rain was, however, adversely affecting claims in the Shoalhaven area generally and this situation continued for many years, although the drought did break briefly in 1879. Combined with the availability of more remunerative employment on railway construction, for example, the Shoalhaven diggings entered into a period of steady decline. The decline of the Spring Creek Jacqua fields can be measured by the fate of the school, which had been originally named the Jacqua Reefs school, changing its name to Jacqua in 1875, before closing in June 1878.³⁸

The Second Period: 1888-1896

In 1888 the Hidden Treasure Gold Mining Company was established with a capital of 60,000 pounds. It was stated in its *Prospectus*, issued in 1888, that there were 13 reefs on the property, all of them easily worked and with payable gold in them.³⁹ Two shafts were down 6.1 m. However, the venture was obviously unsuccessful as there were no further reports of it.

In October 1890 a number of investors were reported visiting the alluvial prospects with a view to cutting a water race from Larbert, 48.2 km to the south to the Spring Creek Jacqua area, in particular, the Spa.⁴⁰ It is probable that this proposal formed the basis for the operations of the Spa Proprietary Hydraulic Sluicing and Gold Mining Company, referred to hereafter as the Spa Company, which was registered in Melbourne in late 1891.⁴¹

Soon after registration of the Spa Company, surveys were initiated to find the best means of water supply, and it was decided to adopt the Nadgigomar Creek pumping scheme, to be operated by the Spa Company. These operations are described in full below. There were two other important mining operations at the time, but they are outside the study area. Near Spring Creek Oallen were the operations of Croker's Mint Proprietary Hydraulic Sluicing and Gold Mining Company. The operation here differed from that at the Spa in that water was pumped directly from the Shoalhaven River to the sluicings, using a massive 9.7 metre, 8 tonne boiler and a pump to lift the water.⁴² The former Shoalhaven River Sluicing Company's claims at Limekilns Creek were resurrected in this period. The new company proposed erecting a dam at the head of the race, cleaning and repairing the race, and substituting steel flumings for the timber ones.⁴³

By 1895, however, it was all over for the Spa Company, Croker's Mint and the claims at Limekilns Creek. An enormous sum had been spent on development of the Spa

operations, in the order of 46,000 pounds. In common with many other mining shows, the owners went ahead with their proposal without first carefully examining the possible returns from the mine, in particular whether they could cover the costs of pumping.⁴⁴ At Croker's Mint it was stated that a shortage of gold was not the problem as over 2,500 pounds of gold was obtained in the first 12 months, but rather the cost and difficulty of the pumping scheme.⁴⁵ At Limekilns Creek, following extensions to the race and dam building, water was not the main problem, but rather the poor yields.⁴⁶

In July 1896 it was reported that suspension of labour conditions had been granted to the Spa Company to enable capital to be obtained to construct a race to bring water from the Shoalhaven to the lease. Miners using ordinary appliances were allowed to work the leases during suspension. Interestingly, it was stated in the application for suspension that a large sum of money had been spent to make a race to other claims and that extra money was required to extend the race to the Spa. Previous work had been abandoned due to the then prevailing drought.⁴⁷

In August 1896 a rich find of nuggets and alluvial gold at Wattle Flat was reported, and that arrangements were in hand for construction of a dam and water race. The only other mining activities recorded in the period up to 1914 were in the Mantons Reef area. In September 1895 it was reported that the Jasper's Creek Gold Mining Company was working the Old Prospector's claim.⁴⁸ The Mantons Reef area was worked again from about 1908 on. Development work continued in the Mantons Reef area for several years, with small parcels sent away for processing and yielding about 2 oz per ton. At the end of 1911 some 7,000 pounds had been spent, of which 750 pounds had been expended on machinery, and five men were working the claims. The main impediment was the cost of cartage to the railway at Marulan and the cost of processing.⁴⁹

LANDSCAPE ARCHAEOLOGY

The fieldwork was designed to locate and describe all features associated with the mining operation and occupation of the Spring Creek Jacqua area. The main mine sites were visited and the area around them surveyed. Advice from local informants and historical documentation stimulated much of the fieldwork, but many questions identified in the field could not be elucidated by documentary or oral sources.

The main area of field investigation comprises about 100 km² and is focused on a centrally located, but dispersed, settlement at Spring Creek of several square kilometres. The study area is linked by track to mining areas and settlements to the north and south. There are two reef mining areas to the north and two areas of small scale reef mining to the south east, three large scale sluicing areas and a number of mixed sites. A race was constructed in the 1890s to bring water from the Nadgigomar dam to the main sluicing areas. People lived at each mining area, at the dam and along the race and main tracks.

This area was linked to further mining areas to the south at Fernbank and Yellow Springs by a gazetted road along which a small settlement sprang up, including a store. Access to the Spring Creek area from the north was gained by a road from Jacqua. From the south access was along the above mentioned gazetted road. There were a number of other tracks, but these were the main ones.

SPRING CREEK

The main settlement in the Spring Creek Jacqua goldfields was at Spring Creek, which was centrally located to service the mining activities at Mantons Reef, the Spa, Black Springs and elsewhere. It comprised three sectors, the batteries at Blanketburn Gully, the village and the pub area, with tracks linking these areas with the various settlements and workings. Spring Creek is central to the question of community. On the basis of fieldwork there was no reason to link this area closely with other settlements in the Spring Creek Jacqua area and to ascribe a central role to it. The close links became apparent only after archival work which established the interrelationship between the various dispersed settlements and the centrality of the Spring Creek area. It was only then that the significance of the spatial relationships between the various sectors of Spring Creek and other settlements in the Spring Creek Jacqua area became apparent.

Although there are several reef mines in the area, the main activity at Blanketburn Gully was the operation of various batteries for the crushing and treatment of ore from Mantons Reef, several kilometres away to the north. For this purpose two earthen built dams were erected across the gully. One of the dams is shown in Figure 3. On the north side of Blanketburn Gully, between the two dams, there is a large shallow rectangular platform, with a cutting to the side and a log with bolts nearby, which confirms that this was one of the battery sites. There are three hut sites in the vicinity, and near one are the remains of a piano. The hut and oven site close to the battery itself was probably the retort room and assay office. The historical data suggests that there was at least one other battery in existence, but its precise location could not be confirmed.

Spring Creek village is located about one kilometre north of Blanketburn Gully. Between the village and Blanketburn Gully there are several other hut sites, in particular a large slab hut and barn known as Hockeys, both probably dating from the 1880s. All that remains of the village site are the scant stone foundations of six hut sites. There would have been more huts and tents, but the area has been clear-felled recently and is in parts deeply eroded.

The pub site is located about one kilometre to the east of the village, near the junction of Spring Creek and Blanketburn Gully. This complex is interesting for it has not been greatly disturbed and the clear outlines of four buildings can be seen. The quantity of broken glass nearby confirms that at least one of the buildings was a hotel. The site is shown in Figure 4. The remains of a grinding stone and paved floor suggest that one of the sites was a blacksmith's shop. Near a hut site on the bank of the creek, is a large cutting which may have been a stable site. Historical sources indicate that there was one other hotel, but its location is unknown. This complex is important for it is located between the village and the Spa diggings. The hotels were clearly placed here to keep some distance from the Spring Creek residents and their families, and to more effectively draw upon the dispersed clientele from the mines and other settlements.

The school was situated about four kilometres away to the south, near the Spa road. There was a post office and a racecourse and cricket ground, but their location is unknown. There was no cemetery or permanent church. In the press of 1874 there was an interesting lamentation on the absence of the local Protestant clergy from Spring Creek for the last fourteen months.⁵⁰



Fig. 3: Blanketburn gully showing earthen dam built for crushing purposes.



Fig. 5: Hotel site at Fernbank.



Fig. 4: Hotel site at Spring Creek.



Fig. 6: The collapsed five-head battery at Mantons Reef.

REEF (QUARTZ) DIGGINGS

There are a number of quartz diggings located throughout the Spring Creek Jacqua area. The diggings near Blanketburn Gully have been referred to above. There are also mine sites near Wattle Flat (quite possibly the Hidden Treasure mines), near the Spa and further south at Fernbank. The Fernbank diggings were extensive and included a battery. According to historical records Fernbank was strongly mooted as a successor to Spring Creek and a number of people and enterprises were relocated from Spring Creek to Fernbank. A hotel site at Fernbank is shown in Figure 5.

The main reef diggings were at Mantons Reef (there is also a scattered area of mines and huts to the south of Mantons) and for the purposes of this paper, the discussion will be confined to this complex. The community link between Mantons Reef and the Spring Creek Blanketburn Gully area was established by archival work. From the archival work it is clear that these mines were the mainstay of the Spring Creek Jacqua goldfields in the 1868 to 1877 period.

Mantons is a compact and relatively intact site, preserved in part because of its isolated and almost inaccessible location. Important relics include the remains of a traction engine, an intact but collapsed five-head battery (Fig. 6), and a boiler (Fig. 7). Also in the immediate vicinity is a small oven on a building site

which was either the assay office or the battery manager's house.

Just below the battery is a small concrete area with a low retaining wall which would have been used in some way for ore processing. A feature of the battery site is the large number of artefacts, including tanks and ore buckets. Contemporary photographs confirm that at its peak there were between 40 to 50 miners at the reefs during the 1868 to 1877 period. There are several deep shafts in the immediate vicinity and to the south of the battery site.

A track connects the battery site with its main settlement area, a few hundred metres to the north on either side of a gully. Eleven huts have been located in this area. In the gully are the remains of an earthen dam, which would have retained water for the battery and for domestic use. One of the hut sites is a pisé building which may date from the 1930s, on the basis of the artefacts nearby, such as an old car tyre. Near one hut site are the remains of a substantial stone oven which may have been used as a baker's oven.

On the evidence of the artefacts on site, such as thick bottomed glass and remnants of cooking pots, all buildings other than the pisé hut are likely to date from the late nineteenth century. However, the mines had several periods of occupancy in the 1890s and there is some superimposition of construction, making it difficult to unravel a building chronology for the site.



Fig. 7: Boiler at Mantons Reef.

ALLUVIAL DIGGINGS

Nadgigomar Dam and the Race to Black Springs and the Spa

The size and complexity of this system is almost overwhelming. From the viewpoint of the impact of mining upon the landscape and interpretation of the technology and settlement patterns, the recording of such systems presents many challenges and the remainder of the paper will concentrate on these aspects. It should be noted that the location of the various features of the system and the description of their operations has been largely dependent upon local oral sources and on archival research. The fieldwork clarified a number of these aspects. More extensive fieldwork and recording is needed, however, before a complete picture of the system can be obtained.

The dam is located where the Nadgigomar River makes a right angled bend between steep hills, about 20 km south west of the Spa. At present Nadgigomar Creek drains through a heavily eroded gully about 300 metres east of the dam. This must have been the location of the overflow channel which could not cope with the large amount of water in the reservoir in 1896. According to local informants, the heavily eroded cliffs of the gully were formed by the flood which occurred following the collapse of the overflow channel.

The dam was obviously well built, for as can be seen in Fig. 8 it is still intact. From a description given in 1894 we know that the water was raised from the reservoir by Worthington pumps 39.6 metres to a flumed race on

wooden trestles, and then into earthen cut races. The pumps used 20 tonnes of firewood a day. The dam was built of clay, rivetted on the reservoir side with stone work up to 0.6 metres thick. The dam was 141.7 metres in length, 26.8 metres in height from foundation to crest and 6.7 metres wide. A bywash 45.7 metres wide and 1.5 metres deep was deemed sufficient to cope with the heaviest flood.

The race was contoured for about 26.5 km, with flumes erected to cross gullies and ravines, the longest flume being over 700 metres. The Company had its own sawmill, and the troughs were made of strongly rivetted galvanised iron. Tunnels and cuttings were required, the longest tunnel being over 230 metres. The water took a little over four hours to run to the Spa.

Fieldwork generally has confirmed the dimensions and operations of this system. A boiler, almost totally covered by silt, is located about 100 metres west of the dam. It is out of position, and was probably dumped there after the Company had ceased operations. Some distance away to the north east, remains of wooden trestles can be found but almost all have collapsed as have the tunnels. Several tunnel locations have been noted. Most have collapsed entrances, but were large enough to walk through. Some tunnels have collapsed totally. Others are well preserved. For example, on the longest tunnel site the ventilation shaft is still visible and is at least 30 metres deep. Substantial cuttings up to 100 metres in length are also visible. The race is about 1.0 to 1.3 metres wide and generally one metre deep, with banks on the downside. On steeper slopes stone work is evident. The race can be clearly seen in proximity to the gazetted road to Jerralong Creek and Oallen.

According to a local informant whose grandfather worked on the construction of the water race from Nadgigomar Dam, it was originally built to service Black Springs. However, during the process of excavation a series of springs were tapped which provided as much water as was needed for the sluicing activities at Black Springs. It was then decided to continue the race to Spa Creek.

This alleged diversion raises more questions than it answers, primarily because all contemporary accounts refer to the construction of the race to the Spa, and of course the Company is named the Spa Proprietary Hydraulic Sluicing and Gold Mining Company. However, in support of the diversion, it was stated in 1896 in the Spa Company's application for a suspension of labour conditions, that a large sum of money had been spent to make a race to other claims and that extra money was required to extend the race to the Spa. Previous work had been abandoned due to the then prevailing drought.

The most likely explanation was that the race was built to service both Black Springs and the Spa, but that the timing differed for both. We also now know that there is a further area of sluicings, known as Sinners Gully, connected by race with Black Springs. Certainly, the dimensions of the Spa sluicings are such that they could only have been attained through the ready availability of a large supply of water. The date at which the extension to the Spa was made is, however, uncertain.

Black Springs itself was worked in both the 1870s and 1890s and again at least in the 1950s. There is, therefore, a considerable overlay of activity in both the area of settlement and workings. Black Springs includes a large complex of shallow water races leading to spectacularly eroded gullies (Fig. 9). Sluicing occurred on both the north and south sides of the creek and there was a network of canals on both sides. The creek has been sluiced to depths of between 20 to 30 metres. Upstream



Fig. 8: The dam wall at Nadgigomar.

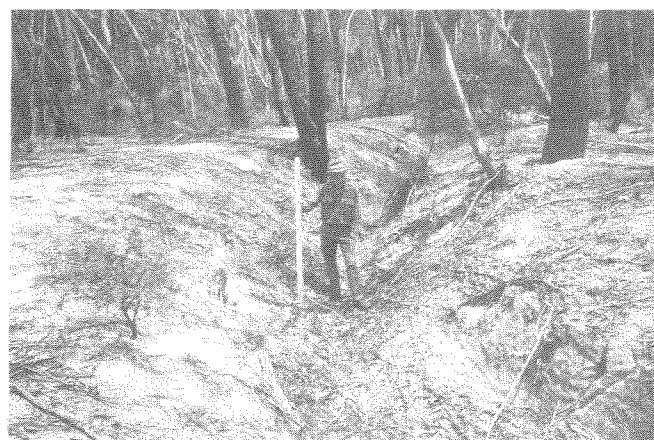


Fig.10: Water race at Wattle Flat.



Fig. 9: Black Springs: eroded gullies and pinnacles resulting from sluicing activities.



Fig. 11: Wattle Flat: trestles leading into (from) the dam.

is a large earthen dam about 60 metres long, 6 metres wide and 2.5 metres high. The spring continues to flow and the dam still retains water in a marshy pond.

There are a number of miner's hut sites downstream from the dam overlooking the sluicing area. These comprise the stone bases of chimneys, levelled platforms, posts, post holes, including one hut which is still inhabited. There is another area of habitation and workings on the north side of Black Springs, but this has not been investigated.

Wattle Flat is located to the east of Black Springs. The most prominent feature at Wattle Flat is a large dam or reservoir. On the west side of the dam are two water race complexes, one coming from the south from the direction of Black Springs via a tunnel to bring water into the reservoir. The function of the second race on the north side (Fig. 10), has not been determined. The dam is a four metres high embankment about 110 metres in length. Tall wooden trestles stand between three and four metres high, presumably to carry a flume more or less in the centre of the dam (Fig. 11). Along the north part of the embankment there are a series of short Y shaped trestles derived from tree branches which are about three metres apart.

The origins and purposes of this reservoir and the flume trestles are not clear. One possibility is that it was the dam referred to in 1896 as having been built to enable sluicing to proceed at Wattle Flat, and that both races supplied water to the dam. There are however no tributary races below the dam. The other possibility is that the reservoir was built to hold water on the way to the Spa. If this latter explanation is correct, then the trestles would have been used to convey water from the dam to flumes or water races. However, for this to happen a pumping plant would have been needed and there is no evidence of one nearby. If this was not the dam used for the Spa operations then there would need to be another not far away, for the size of the Spa operations exceeded anything that could have been worked using local water supplies. The purpose of the dam and the tributary races can only be determined by further field work.

The Spa diggings lie in the Spa Creek drainage system at 570 to 550 metres elevation, about three kilometres north of Wattle Flat, or five kilometres by water race. The diggings are extensive and comprise several important landscape features including two large sluiced areas, a ramp, platform and dam, a series of hut sites and shafts.

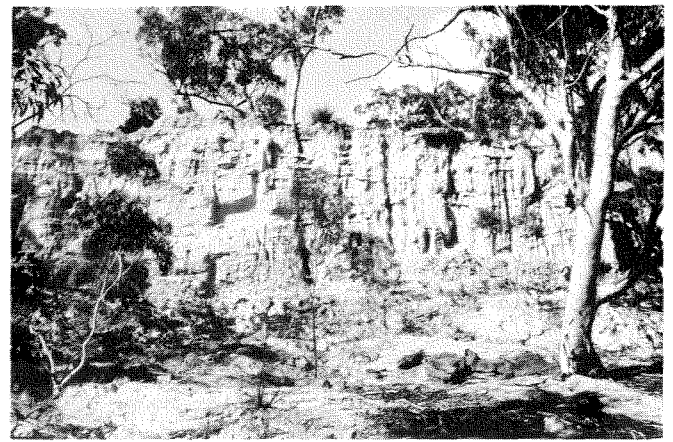


Fig. 12: (above) Flook's battery site at Spa Creek.

Fig. 13: (above right) Main sluiced area at Spa diggings.

Fig. 14: (right) Spa diggings, culvert draining into Spa Creek. Note small rock wall at entrance.

On the south side, adjacent to Spa Creek, there is a large raised platform or ramp at one end of which are the remains of a hut site. At the other end is a complex set of horizontal logs bolted in places and one upright, the others having long since vanished (Fig. 12). It is without doubt the site of Mr Flook's unsuccessful crushing machine of 1870. The machine may have been sited at the Spa to service more distant mines, but was more likely situated to service reef mines in the immediate vicinity. The exact location of these mines is uncertain, however, there are a number of deep shafts at a site called Gregorys Point, a few kilometres south east of Spa Creek, overlooking the Shoalhaven River. Importantly, the purpose of this structure was only obvious after archival work – from the fieldwork alone its purpose was unclear.

Remains of a log dam are located nearby in Spa Creek. The dam would have been used to store water for crushing purposes and the hut site on the platform would have been built after the removal of Flook's battery. There are five or six other hut sites in the immediate area. The Spa was worked in the 1870s and 1890s and the huts may have related to either period.

The Spa alluvial diggings are on a larger scale to those at Black Springs. There are two areas of sluicing and there are certainly at least two periods of use in the main sluicing area. The main sluicing area is about 30 to 40 metres deep at its upper end and about 200 to 300 metres long and over 50 metres wide in places. The sluiced cliffs are shown in Figure 13. The floor is at two levels characterised by long piles of rounded river pebbles. The upper, earlier level drains into Spa Creek through a series of seven narrow culverts cut through about 10 to 15 metres of natural hillside. Small rock walls were built around the entrance to each culvert to dam the wash to recover alluvial gold prior to draining (Fig. 14).

About five metres lower down there is a second sluiced level drained by a 100 metre long, two metre wide, two metre high tunnel cut through the natural hill which ends in a waterfall into the Shoalhaven Gorge. The two phases of use may indeed refer to the two known historical periods of sluicing activity at the Spa.

A network of shallow, one metre wide and 300mm deep, straight channels running downslope end abruptly at the top of the quarry. Further fieldwork is required to resolve the question concerning holding dams above the sluicings between Black Springs, Wattle Flat and the Spa, the role played by the Spa spring water itself in the first



phase of operation and the relationship of the network of distributory canals to the two phases of use.

There is a second area further to the north which has been sluiced to depths of up to 50 to 60 metres below the surface, also representing a giant quarry in appearance. The area drains into the Shoalhaven through a large culvert. The water race enters the quarry from the south.

The line of race to the west of the Spa diggings has been traced for a short distance. A number of shafts, some shallow, some deeper have been located near the race. From archival work it is now known that these were test shafts.⁵² It was the practice to test the suitability of gravels for sluicing by sinking test shafts to determine the likely yield and also its depth. The shafts would have been sunk both prior to and at the time of the race construction.

A detailed examination of the typology of rock piles (Ritchie's tailings) at the Spa has not been undertaken. However, unlike the hydraulic sluicings in Ritchie's Central Otago examples, the handstacked cobbles and pebbles were a feature of the Spa sluicings and other (but not all) major sluicing areas along the Shoalhaven River, for example, Bombay, Limekilns Creek and Pipeclay to name but three.

Peripheral Diggings Adjacent to the Spa and Black Springs

Sewells Point is located at the bottom of the Shoalhaven gorge, and is accessed by a steep bridle path commencing near Wattle Flat, about three kilometres south of the Spa. The sluiced area is 50 to 100 metres from the Shoalhaven River. There are numerous mounds of river worn stones, ranging in height from one to three metres, and extending in length for over 200 metres. There are two areas of interest, one being a tall hand packed rock channel and embankment, and the other a stone hut in reasonable condition. The main sluiced area is small compared to the Spa. There is no evidence of water races, thus hydraulic sluicing can be ruled out.

Broken Creek is located between the gazetted road from Spring Creek to Oallen and Black Springs. It is located south of the Nadgigomar to Spa water race, but the workings are not connected to this system. The diggings differ from other alluvial workings in this area as they appear to consist primarily of shallow pits and shafts, together with some small scale sluicing of the main creeks and gullies. As with Sewells Point there are no water races and the alluvial workings are small scale and consistent with the use of toms and pans. Near Broken Creek four hut sites were located, though there are probably others. In Specimen Gully there is at least one other hut site. To a degree the physical remains of the processes at Broken Creek and Sewells Point could resemble the Spa or any other location in this area in its earlier phase of operations.

The track from Spring Creek to Oallen is worthy of separate mention as it linked many of the communities in the Spring Creek Jacqua area with Oallen in the 1870s. The track commences at Russells Corner on Old Dundarra, and branches off to Broken Creek and Black Springs. South of Jerralong Creek, in the vicinity of Timberlight, the track branches off to Yellow Springs and Fernbank. There are several house sites along the track, the most important being Joseph McKane's at Jerralong Creek. This was a large holding and included a general store, blacksmith, orchards, gardens, and a dairy. Mc Kane supplied the miners with provisions. There was a further north to south track from Russells Corner to Nadgigomar dam. This would have been the main route used in the 1890s to link the Spa and Black Springs area with Oallen.

Yellow Springs and Fernbank were connected to Spring Creek by this road. Fernbank has been described briefly above. Yellow Springs was primarily a hydraulic sluicing area, using local sources of water only. The main sluiced area is not dissimilar to that at the southern end of the Spa and Black Springs, with steep, heavily eroded cliffs extending down a gully, which was a tributary of Yellow Springs. The sluiced area was supplied with water from a race, in turn fed from a reservoir further up the gully. The reservoir was constructed by building a log dam, the wall of which is 100 metres long. The reservoir, dam and spillways are still in place.

CONCLUSION

Conceptual and physical difficulties in recording the Shoalhaven sites are enormous. The hydraulic sluicing complexes and the associated engineering works are large by any measure, the sluiced areas often resembling eroded canyons. Further, these complexes contain many diversionary features such as subsidiary holding dams and secondary races for which the written evidence is scant. Their mode of operation can only be ascertained

by detailed field work, which at this stage remains to be undertaken. The Spring Creek Jacqua complex is but one of a number in the Shoalhaven area and highlights the need to adequately survey and record these various sites.

Many of the challenges recounted by Neville Ritchie are apparent here and have been noted elsewhere in the Monaro Southern Tablelands districts. In addition several other issues have been identified, such as the question of community, patterns of settlement, nomenclature, technology and the relationship between field and historical work. Again these issues are not confined to this study or even to the broader Monaro Southern Tablelands districts, but could be expected to recur in studies of other mining sites or indeed in historical archaeology studies generally.

I would conclude this article on the same note as Neville Ritchie. The significance of mining for Australia has been well documented. The gold rushes of the 1850s transformed Australia, and there were to be many other rushes with enormous implications for the Australian landscape, economy and society generally.

Although the Spring Creek Jacqua goldfields had similar features to gold mining areas elsewhere, the hydraulic sluicing complexes represent a major empirical testing and transformation of the landscape on a scale not replicated in many other parts of Australia, and are significant for this reason alone. The archaeological and historical significance of the area is also, however, derived from the short life span of the fields and their early abandonment. While some sites were reoccupied later, they were not built over to the extent evident on many other mining fields. Up until now, they have been totally undocumented.

ACKNOWLEDGEMENTS

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NOTES

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