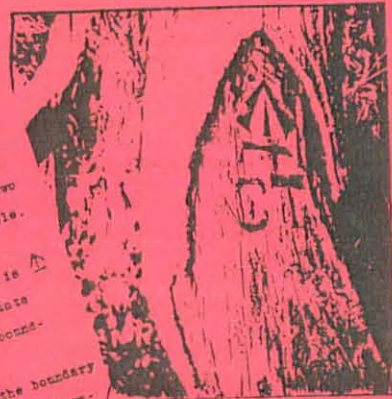
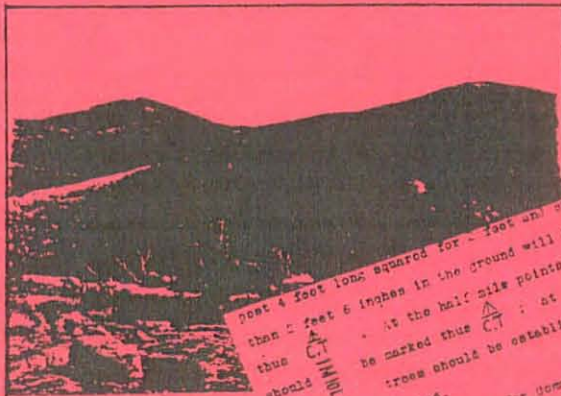







# Surveyors at the Snowline

Surveying the ACT-NSW Border 1910-1915



post 4 feet long squared for 1/2 foot and must not less than 2 feet 6 inches in the ground will be placed. Marked thus  At the half mile points a reference tree should be marked thus ; at the mile points two trees should be established where possible, and similarly marked.

The recognised mark for Commonwealth surveys is  which is to be used in order to distinguish from state surveys marked by ; the intersection of the boundary lines should be marked . Readings of all portions intersected by the boundary are forwarded for Mr. Scheiffe's information to the Surveyor-General of the Federal Territory.



## Matthew Higgins

This project was carried out with the assistance of funds made available by the Commonwealth of Australia under the National Estate Grants Program, and was sponsored by the National Trust of Australia (ACT).

1996



National Trust

HIG

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Border marker installed by Percy Sheaffe's survey party on the northern ACT boundary in 1911.

## **Introduction**

I first became aware of the existence of markers on the ACT-NSW border in 1991 when, at Mt Franklin, Stan Goodhew showed me a 1914 timber post marker (see the site inventory, cover page and site 26 in the inventory). During the next few years when on bushwalks in the Brindabellas I kept an eye out for other markers and gradually found a selection. Although one border marker had been specifically mentioned in the National Capital Development Commission's (later National Capital Planning Authority's) *Sites of Significance* series (site G45, volume 9 in the series), and a few others had been briefly noted in the series, it was clear that there was in fact a large number of markers of varying types still extant along the ranges.

Consequently in 1994 I applied for funding under the National Estate Grants Program to research the original survey of the border and to undertake fieldwork to locate markers along a specified section of it. That application was not successful but, believing that the project related significantly to the very foundations of the national capital, I applied again the following year. That time the application succeeded and funding was made available for 1996.

Firstly the project involved researching the political decisions behind the choice of the ACT borderline, the personnel involved in surveying the line, the process of survey itself and the surveyors' experiences while engaged on the job, and various other questions relating to the border. Then the fieldwork saw one third of the border walked in order to locate and record surviving original border markers. Various recommendations on the future of the markers were made.

Fundamentally, the objective of the project was to increase community and government awareness of the original survey, of the surviving markers, and of the markers' considerable heritage significance and the need for their conservation.

## **From Federation to finding a federal site**

Much has already been written about the processes that led to the formation of the Commonwealth in 1901, and no doubt much more will be penned in the lead up to Federation's centenary in five years time. Consequently only a brief resume of the course of events will be given here.

The sense that the Australian colonies would one day merge into a nation was evident well before the end of the nineteenth century. Indeed as early as 1867 NSW politician (and later premier, Sir) Henry Parkes commented in Melbourne on the need for a federal bond. Parkes was to play quite a role in that federal movement, and in 1889, after obtaining favourable responses from Queensland and Victoria to the federal idea, he made his well reported address at Tenterfield in northern NSW. Two years later the first National Australasian Convention was held in Sydney, with Parkes in the chair. The meeting, largely through the efforts of Queensland Premier Samuel Griffith, drafted a constitution for the nation. Unfortunately the 1890s depression then intervened and the movement lost impetus.

Edmund Barton (who in 1901 would become Australia's first Prime Minister) took up the cause and in 1893 interested groups met at Corowa to discuss federation further. Then through NSW Premier George Reid's suggestion, premiers met in Hobart in January 1895 and, with the economy improving, agreed to hold another constitutional convention. Conventions were held in Adelaide, Sydney and Melbourne during 1897-98 and the 1891 draft constitution was shaped further.

Various influences were at work within the populace as the move toward nationhood gained acceptance. There was a sense of homogeneity and nationality, and the 1890s

witnessed a spirited growth of Australian nationalism. Federation would mean an end to intercolonial tariffs (one of the symptoms of that rivalry which so marked the colonial period). A federal government would also take over responsibility for large issues of concern like defence and immigration. Other factors were also involved.

In June 1898 NSW, Victoria, Tasmania and South Australia held referenda to vote on federation on the basis of the draft constitution. A majority in each colony voted in favour, but in NSW the vote was below the 80,000 minimum which was required. Accordingly premiers met in Melbourne in January 1899 to amend the constitution to suit NSW and also Queensland which had been absent from the 1897-98 conventions. Significantly from the point of view of this project, one of the amendments was that Reid was able to have inserted in the document the proviso that the federal capital would be located in NSW and at least 100 miles from Sydney. A second referendum was held in June and the yes vote was overwhelming. Queensland followed suit in September and Western Australia joined belatedly. The Commonwealth of Australia came into being on 1 January 1901.

Federal parliament commenced sitting in Melbourne on 9 May 1901, for it had been agreed that Melbourne would be parliament's temporary home until after a federal capital had come into being. The search for a capital site traversed large areas of NSW and began as early as 1899. The Land Court advertised for possible sites and the Court's president, Alexander Oliver, visited areas that responded (he visited Queanbeyan in November that year, at the invitation of the town's Federal City Committee). Oliver concluded that the southern Monaro was the premier site, followed closely by Orange and Yass.

During 1902 Members of the House of Representatives and Senators visited thirteen sites, and a Royal Commission followed. At various times sites considered included Albury, Armidale, Bombala, Dalgety, Lyndhurst, Orange, Yass-Canberra, Lake George, Tumut and Tooma. In 1903 the House of Representatives and the Senate could not agree between Tumut and Bombala, so a draft Seat of Government Bill was dropped.

The following year a new bill was introduced by the Watson government and both houses agreed on Dalgety. The *Seat of Government Act 1904* was assented to on 15 August. The Act provided for a federal territory of not less than 900 square miles. Feisty NSW Premier Joseph Carruthers however would not co-operate, pointing out that Section 125 of the Constitution said that the territory should be 'not less than 100 square miles'. He offered the Commonwealth 100 to 200 square miles at several sites (including the Canberra area) which federal members then visited.

During 1907, while Prime Minister Alfred Deakin was in London, acting PM Sir John Forrest visited Canberra. At a Queanbeyan public meeting newspaper editor and leading townsman John Gale argued that the Canberra site was unrivalled, possessing ample water supplies, a good climate, access and building materials. In early 1908 the *Sydney Bulletin* criticised the Canberra site, saying that the Cotter 'Creek' was insignificant as a water supply and dam sites were too far away, whereas Dalgety had the Snowy River in its favour; the *Sydney Morning Herald* meanwhile favoured Canberra.

With the ascension to power of NSW Premier Charles Wade, a man more conciliatory than Carruthers, progress quickened. Wade visited both Canberra and Dalgety and was more impressed with the former. On the federal level, the Commonwealth Government introduced a new Seat of Government Bill and on 9 October 1908 the House of Representatives held further ballots on a site. The Yass-Canberra site won. Political considerations (i.e. the site's proximity to Sydney relative to Dalgety), may have played a part, but so also did questions like access (which worked against Dalgety and also Tumut, the other final contender), and weather, which did not go in Dalgety's favour,

and also the aesthetics of the setting. The *Seat of Government Act 1908* became law on 14 December and specified not only Yass-Canberra but also that the federal territory would not be less than 900 square miles and that the capital would have access to the sea.

The Yass-Canberra region had been selected as the general area for the capital, but now the task at hand was to locate a specific site for the city itself, and to define the surrounding federal territory. Responsibility for doing that rested largely on the shoulders of surveyor C.R.Scrivener. And it was Scrivener who, after the specific city site and territory had been accepted on paper by the government, supervised both the early surveying of the capital and most of the territorial border survey.

### **C.R.Scrivener**

Charles Robert Scrivener, after whom Canberra's Scrivener Dam and Scrivener Street, O'Connor, are named, was born in 1855 at Windsor, NSW. His father was a bookbinder and store owner. After working as an accountant, Scrivener joined the NSW Department of Lands in 1876, worked as a surveyor's apprentice and in 1880 passed the Surveyors' Board examination with a 100% result. Tragically, his first and second wives (Eugenie Rogers and Mary Harding respectively) died; in 1889 — aged 34 — he married for the third time, his new wife being Annie Pike.

Scrivener surveyed at Maitland from 1888 and at Gloucester from 1891. Five years later he was made acting District Surveyor at Wagga. Extremely capable and energetic, Scrivener was experienced as a surveyor in mountain bushland, having surveyed some of the roughest parts of the rugged Kowmung River in the Blue Mountains. In 1900 he took Alexander Oliver to Dalgety and he played an influential role in the 1904 decision to locate the capital in that district. In the course of this 1904 work Scrivener and his assistant surveyed up the Snowy River and he drew some of his plans in a 12x10 foot tent near the junction of the Snowy and Crackenback Rivers 'with the surrounding country deeply covered in snow'<sup>1</sup>.

Upon the selection of Yass-Canberra in 1908, Prime Minister Andrew Fisher chose Scrivener to identify the locations of city and territory — an indication of the professional esteem in which Scrivener was held. Accordingly, Scrivener was loaned by NSW to the Commonwealth for the task (three years later he was to transfer to the Commonwealth as the first Director of Lands and Surveys).

### **The territorial boundary: a question of catchments**

The Commonwealth instructed Scrivener on the primary essentials for the city and territory. The city site had to have the necessary topographical characteristics becoming of a federal capital. The territory had to embrace the total catchment area of the city's water supply, the supply itself being of sufficient magnitude and purity to be beyond question. The site had to provide for a perfect system of sanitation. Finally, the site had to be easily accessible from Sydney and Melbourne and also from a suitable harbour on the coast.

The surveyor's first task was to make a preliminary examination. By late February 1909 he had selected as the best site for the new city an area of land on the Molonglo in the vicinity of St Johns Church and the Duntroon property. As for the territory, Scrivener recommended that it consist of the catchments of the Cotter, Queanbeyan and Molonglo Rivers. An Advisory Board was formed to study these proposals and make recommendations to the government. The Board consisted of Walter Liberty Vernon (NSW Government Architect), Percy Thomas Owen (Commonwealth Director General

of Works), Colonel David Miller (Secretary of the Department of Home Affairs) and Scrivener himself. In March the Board backed Scrivener's proposals. Scrivener now proceeded with the next stage of the work, to undertake initial contour surveys of the city site and other work.

A survey camp was pitched on the southern side of the Molonglo, south-westerly from St John's Church, in the Klensendorlffe paddock on the Duntroon Estate (near the northern foot of today's Capital Hill). On 22 March, Scrivener with field assistants H. Sheaffe (who according to Scrivener was the son of the Goulburn District Surveyor) and G. Peachey commenced the contour work. Additionally, Scrivener further reconnoitred the water supply catchment, studied Jervis Bay and St Georges Basin as port sites and examined a railway route between them and the capital. This work was completed by 22 May and in June the Board recommended to the federal government that an area of 1015 square miles be acquired for the territory (plus 2300 acres at Jervis Bay). On 20 July the Prime Minister placed these proposals before the NSW Premier, inviting him to pass a state act surrendering the desired lands to the Commonwealth. However, NSW was not agreeable to the area proposed for the territory.

The central issue in all of this, and the one to cause most delay in the final birth of the federal territory, was the question of water catchments — indeed it is water catchments which are responsible for the shape of most of the territorial boundary today. From the outset the Commonwealth (and NSW too) realised that the federal territory would have to have full control of the water supply catchment for the new capital city, and Scrivener took very seriously his instructions to find a supply that was beyond doubt.

The Cotter River had at the turn of the century been put forward as the supply for a capital when Queanbeyan was proposed during Oliver's examination of sites, though as has been mentioned, the Sydney press differed in its views of the Cotter (views which were not always very well informed). A gauging station was installed on the river in 1908 at the site of the subsequent Cotter Dam. Yet there were only a few months of records available by the time that Scrivener was given his task. A dry year, 1908 showed a Cotter daily flow of 37 million gallons. Scrivener, having studied the bigger Snowy River in 1904, was unsure about the Cotter. He was fairly confident it was sufficient in terms of domestic supply, but he was very concerned about the cost of bringing the water to Canberra, having looked at the studies by Ernest Macartney de Burgh, Sydney's Chief Engineer for Harbours and Water Supply, who on behalf of the NSW Government had been looking at gravitational and pumping options on the Cotter since 1907 (incidentally, statistics gathered by NSW's William Corin, after whom Corin Dam is named, were used by de Burgh). Further, Scrivener did not believe that the Cotter had hydro-electric potential. He wanted the Queanbeyan-Molonglo system to be harnessed for additional domestic supply (even if this would require considerable filtration) and for power generation. The Advisory Board by the time it made its June report, was confident that the Cotter offered a supply of 'perennially clear and pure water'<sup>2</sup> for a projected population of around 250,000 at 100 gallons (455 litres) per day per head for domestic and civic purposes. But the Board calculated that if the river was to be used for power as well then a population of only 50,000 could be satisfied.

The question of the Cotter occupied Scrivener's mind. On 19 April while in camp he wrote to his daughter Ethel and enclosed the following entertaining poem. It reflects his scepticism about those who saw the Cotter as fulfilling all of the capital's water needs:

*I met a lean and hoary man who said  
Don't you hear the Cotter roaring in its bed  
What! You hear a kind of humming?  
That's the Cotter he's a hummer  
In the midst of driest summer*

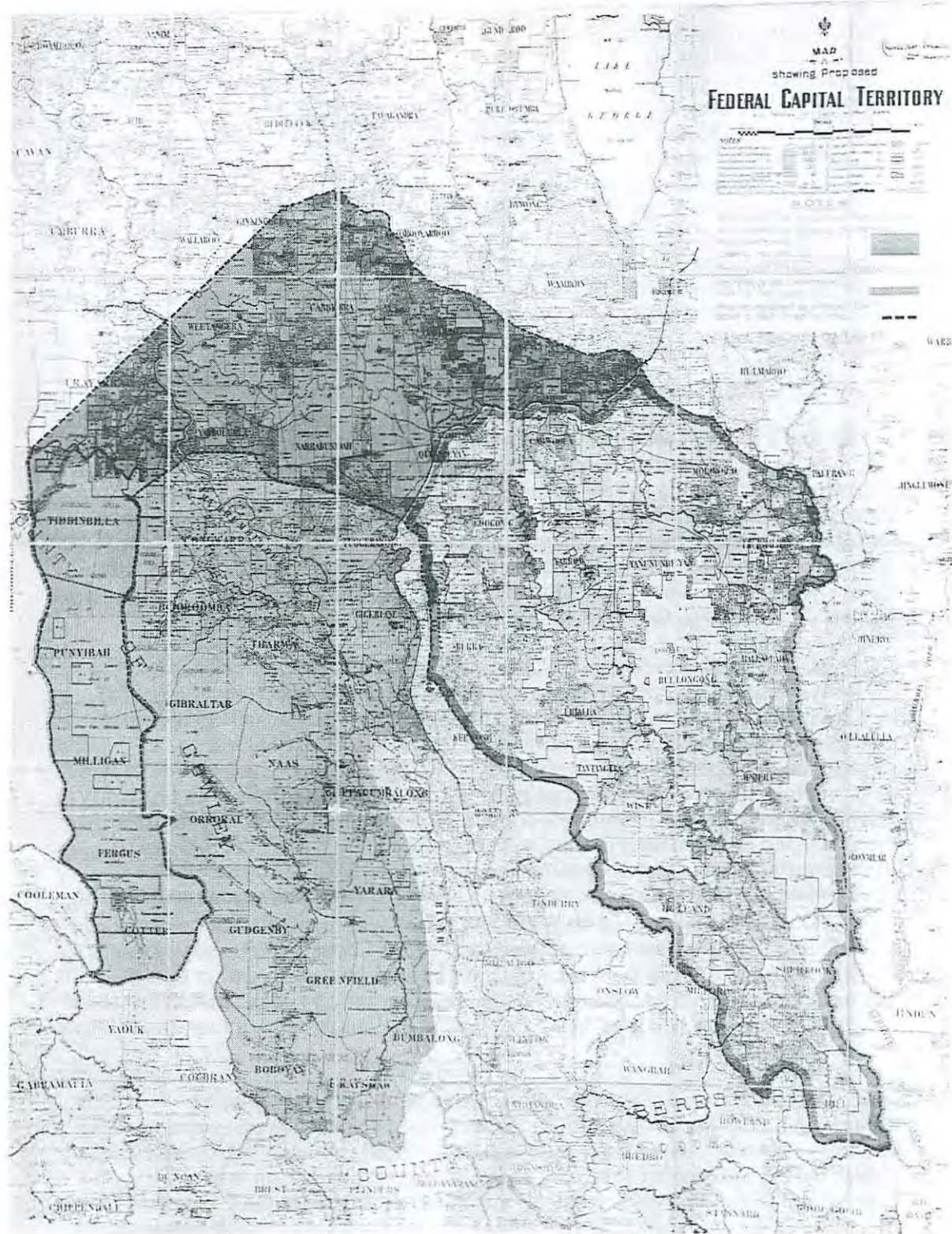
*But when with winter's snows he's fed  
He proudly climbs his watershed  
Seeking with each rising wave  
Tidbinbilla's crest to lave.  
Here — I left this ancient man to rave  
And wondered whether later in his grave  
His spirit thoughts would turn to babbling streams  
Or whether with the mind's decay his dreams  
Would still be of the Cotter, or if gleams  
Of reason, struggling through the mist  
Would mend his estimate or still insist  
That of the rivers whether East or West  
The Cotter was by far the very best.<sup>3</sup>*

Just who the 'lean and hoary man' actually was remains unknown.

Scrivener and the Board also wanted the Molonglo and Queanbeyan Rivers. As mentioned, Scrivener wanted them as an additional source of domestic supply, but their real value, particularly in the eyes of the Board as a whole, was more for other reasons. Because the Queanbeyan-Molonglo system flowed through the capital site, and because the Molonglo would be used for ornamental purposes in the city, these rivers needed to be controlled by the Commonwealth so that flow could be regulated at the city site, pollution might be prevented, turbidity could be minimised, and floods might be regulated. Additionally, they offered an auxiliary source of water power.

NSW Premier Wade received Prime Minister Deakin's July correspondence and the matter was considered by the NSW Government. NSW was happy to let go of the Cotter but it did not want to hand over the Molonglo-Queanbeyan valleys above the Goulburn-Cooma railway line, nor did it want to lose the town of Queanbeyan. In state parliament on 16 September, Wade spoke of how Commonwealth acquisition of these valleys would dispossess 2000 rural people in order to reduce pollution and turbidity in the rivers, whereas the Cotter valley's population was only 50. Much of Wade's speech focussed on the virtues of the Cotter catchment. He rightly emphasised its purity in contrast to the Queanbeyan-Molonglo system, even if his geography was a little out when he said the Cotter was 'largely snow-fed from the various spurs on the outlying points of the Kosciusko Range'<sup>4</sup>. Attention was drawn to more recent figures from de Burgh (de Burgh was a great proponent of the Cotter) which showed that a scheme to bring water from the river would not be as expensive as earlier thought. Wade went on to cite recent records from the gauging station which showed that so far in 1909 the Cotter flow had been nearly 53 million gallons per day or four times that of the Sydney catchment.

Wanting to settle the matter as expeditiously as possible, Wade offered the Commonwealth the catchment of the Gudgenby-Naas-Paddys Rivers (population 50; headwaters apparently in the Kosciusko-Kiandra region!) in lieu of the Queanbeyan-Molonglo. This catchment too offered an abundant source of clean water. The Commonwealth, he said, might need these additional supplies in the future for power generation or purposes yet unknown. A dam could be built near the Gudgenby River-Orroral River junction to feed water by gravity to the capital, and another gravity site was on the Naas. In offering these areas Wade was also trying to abide by the *Seat of Government Act* which stated the territory had to be not less than 900 square miles — the Queanbeyan-Molonglo catchment accounted for 64% of that area. His government's new territorial boundary, said Wade, had advantages in being more compact than the horseshoe-shaped area proposed by Scrivener and the Advisory Board.



How the ACT might have looked. The horseshoe-shaped area surrounded by the heavy dotted line is the area proposed by Scrivener and the Advisory Board. The right-hand section of the horseshoe, containing the catchments of the Queanbeyan and Molonglo Rivers, was not ceded by NSW which instead offered the catchments of the Gudgenby, Naas and Paddys Rivers (the shaded area between the two arms of the horseshoe). And so the federal territory as we know it came into being. Scrivener's signature and the date of 22 May 1909 are visible in the top right-hand corner. (Copied from original held by Canberra and District Historical Society)



NSW indicated that it was agreeable to the Commonwealth having certain water rights in the Queanbeyan-Molonglo catchment, and this matter was one of several that were further discussed by Wade and federal ministers later in September. Although the Advisory Board and the Commonwealth were not overly enamoured with the Naas River-Paddys River area (they could see advantages of the Gudgenby River), the spirit of compromise was in the air. Finally agreement was reached on 18 October.

Accordingly, both governments prepared the necessary legislation to enable the transfer of land to occur. The Commonwealth's *Seat of Government Acceptance Act* was assented to on 13 December, and NSW's *Seat of Government Surrender Act* received assent the following day. In the Commonwealth's Act, apart from paragraphs dealing with Jervis Bay, railway access, land ownership, and jurisdiction matters, there were clauses which gave the federal government paramount water rights in the Queanbeyan-Molonglo catchment and required the state to reserve from sale Crown lands in the catchment and to prevent pollution of the two rivers upstream from the territorial boundary. The Commonwealth also obtained the right to free use of the Snowy River for hydro-electric purposes connected with the territory. Most importantly, the Act described the territory, and therefore the boundary which was shortly to be surveyed:

*Counties of Murray and Cowley, area about nine hundred square miles: Commencing on the Goulburn-Cooma Railway at its intersection with the Queanbeyan River at Queanbeyan, and bounded thence by that railway generally southerly to the south-eastern corner of portion 177, Parish Keewong, County of Murray, by the southern boundaries of that portion and portions 218, 211, 36, and 38 generally westerly to the Murrumbidgee River, by that river downwards to a point east of the south-east corner of portion 68, Parish of Cuppacumbalong, County of Cowley, by a line partly forming the southern boundary of that portion west to the eastern watershed of Gudgenby River; by that watershed, and the eastern and southern watersheds of Naas Creek, by part of the western watershed of Gudgenby River, generally southerly, westerly, and northerly to the southern watershed of Cotter River, by that watershed and the western watershed of that river, passing through Mount Murray and through Bimberi Trigonometrical Station, generally northerly to Coree Trigonometrical Station, thence by a line bearing north-easterly to One-Tree Trigonometrical Station, thence by the watershed of Molonglo River north-easterly and generally south-easterly to the Goulburn-Cooma Railway aforesaid, and thence by that railway generally south-westerly to the point of commencement.<sup>5</sup>*

The Act stated that upon a day to be proclaimed by the Governor-General, the territory would be vested in the Commonwealth. In due course the proclamation was made and on 1 January 1911 the Federal Capital Territory (from 1938 called the Australian Capital Territory) came into being.

Even before the official Canberra naming ceremony in March 1913, construction had begun on the Cotter Dam system (which relied on a pumping station to get its water to Canberra). Yet for years afterwards the supply of water to the national capital continued to exercise the minds of those responsible for the city's development. Surveyors (including two of those engaged on the territory border survey) were sent out to survey the Cotter valley and to report on potential sites for future gravitational storages during this decade, and water supply came up during the 1916 Royal Commission on Federal Capital Administration. The subject of water, which played such a big part in the fundamental question of what shape the territory might take, remained on the agenda. But the choice of the Cotter as the domestic supply was a wise one. Scrivener in 1911 (seemingly by now to have accepted the choice) wrote to the Secretary of Home Affairs that the Cotter's daily flow was greater than the daily quantity of water used in Sydney or Melbourne. In 1914 Acting Commonwealth Geologist Griffith Taylor wrote 'rising in mountains over 6000 feet high, there is no

doubt that [the Cotter's] head is in a region receiving 60 inches of rainfall a year; while the character of the valley — a gorge 30 miles long without a single tributary — ensures freedom from pollution to a marked degree'<sup>6</sup>. Seven years later de Burgh, in a report reviewing Canberra's water supply, unequivocally stated, 'it is impossible to imagine a catchment from which a purer supply could be obtained'<sup>7</sup>. Gauging records, said de Burgh, indicated that since 1908 the average daily flow had been 70 million gallons which, if sufficient storages were built, could supply a population of 700,000 at 100 gallons per head per day. He could see no need to raise the Cotter Dam's then 60-foot-high (18 metres) wall for many years to come (it was raised eventually in the early 1950s). The facts that today 85% of Canberra and Queanbeyan's domestic supply comes from the Cotter and that there are proposals for the ACT to supply water to surrounding NSW areas, illustrate the degree to which the Territory is endowed with water resources.

With the territory and city site approved, survey work began in earnest. Scrivener returned (on loan again from NSW) and on 18 January 1910 a new camp was established near the 1909 camp site. Two days later the boss was joined by Surveyors Percy Sheaffe (apparently not related to the earlier Sheaffe; some commentators have written that he was the same man) and Arthur Percival. Clerk W.G. Chapman and draftsman Felix Broinowski arrived shortly after, and Surveyors Martin, Rain and Marshall joined the group over the coming weeks. The main job at hand was a comprehensive contour survey of the 12-square-mile city site which was a vital prerequisite for both the international design competition for the national capital and for the design of works in the city area. A timber and malthoid office building was erected by 2 May and became the drawing office, but staff continued to live in tents in the exposed Molonglo River valley. A fireproof concrete and steel plan room was shortly after erected and marks the camp site today. New administrative offices were built over the river at Acton in 1912, and while some staff by then had roofs over their heads, numbers of single and married staff continued to live under calico for another five years or more.

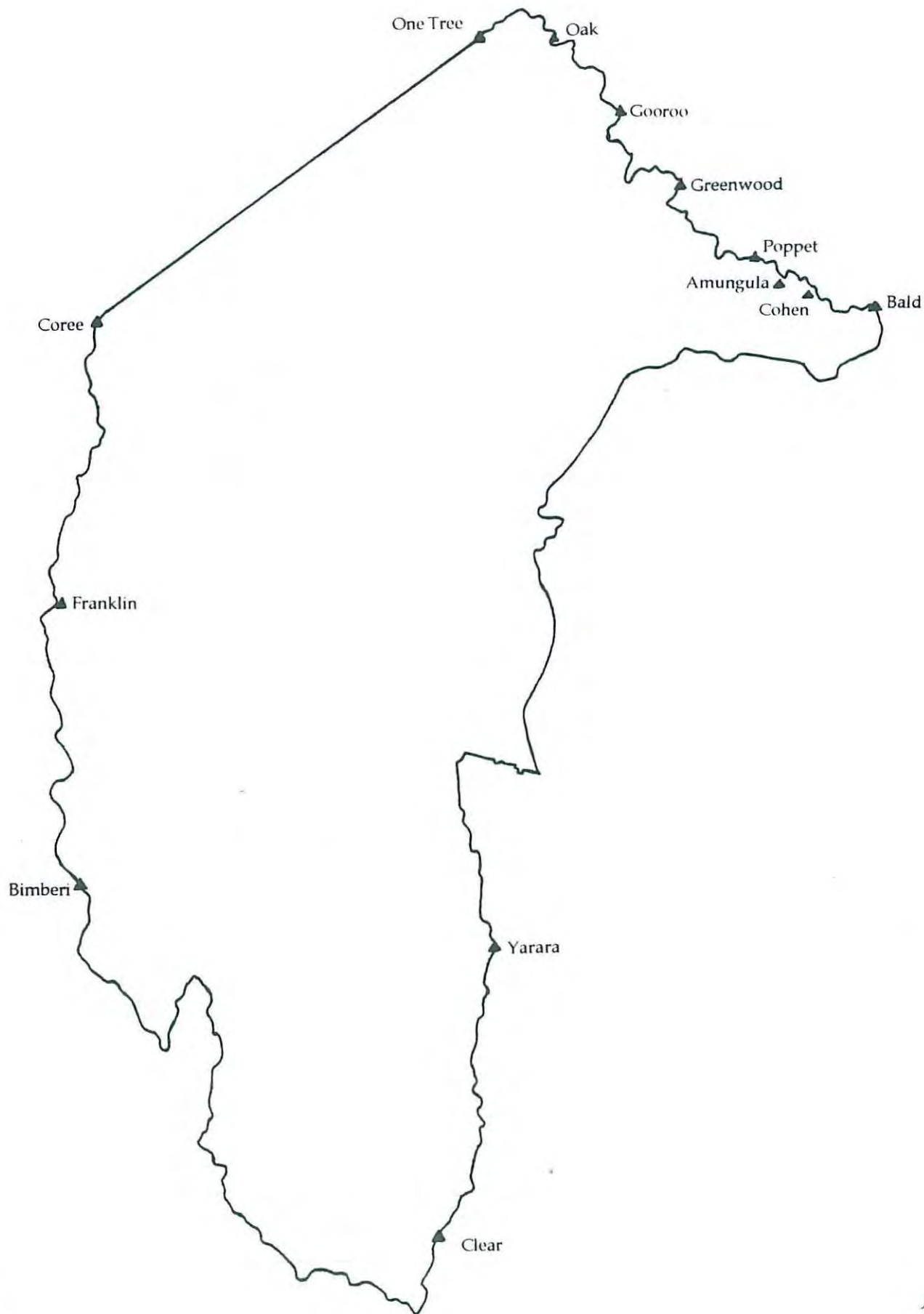
Fieldwork for the contour survey was completed during May 1910. Then commenced a whole range of other survey tasks: water supply and sewerage contour surveys, surveys of the Royal Military College and Mt Stromlo sites, detail surveys relating to construction works in progress, road and rail surveys. And, of course, there was the territorial boundary survey.

### **Pre-existing trigonometrical stations**

By the time that the survey of the ACT-NSW border got underway in 1910, surveyors had been periodically working in the region for 81 years. Particularly during the second half of the nineteenth century, numbers of trigonometrical stations were erected through the area that would become the federal territory. Trig stations enabled precise bearings to be read between stations and by virtue of these a system of triangles was able to be spread across the colony. Using the principles of trigonometry, surveyors were able to calculate from these triangles ever increasing distances across the ground and so were able to draw accurate maps. With this data property boundaries could then be accurately plotted. Given NSW's increasing population and particularly the increased demand for land and the improved access to land achieved through land legislation reforms from the 1860s to the 1880s, surveyors were now defining such property boundaries as never before.

An appreciable number of trig stations were located on (or very closely adjacent to) what was to become the ACT border, and were to be important reference points for the border surveyors. Below are brief details of each one.

# PRE-EXISTING NSW TRIG STATIONS ON THE ACT BORDER



Four border trigs — as they once were



Surveyor Astley Pulver on Coree, 1926.  
(From Pulver, *A Surveyor's Story*)



Franklin family members on Franklin,  
turn of the century. (Lach and Audrey Maxwell)



Skiers at the Gingera trig pole, early 1940s. (Mary Cumpston)

Two shots of Cumpston family members on Bimberi in the early 1930s. (Mary Cumpston)



247  
P.O.

No 250

Overseer of Piling Party; to The Surveyor General  
reporting erection of 1<sup>st</sup> class S, Mt Townsend.

Word "CLEAR" T.S

Camp, Swanbeyan

1<sup>st</sup> June 1877

Sir/

I beg to report having finished clearing  
and erection of 1<sup>st</sup> class S, at Mt Townsend <sup>on 29<sup>th</sup> ultimo</sup>

I had to erect the station upon a large mass  
of granite; building a buttress against one side to  
form a platform for observatory, leveling the top  
with cement for the instrument, and setting four  
iron "hold-fasts" into the rock for observatory  
legs, as at Lindery S.

Area cleared two acres. Time occupied in  
clearing hill and erecting S, seven days.

The most convenient way of getting to Mt  
Townsend is to cross the Merrumbidgee River oppo-  
-site Collinton to Mt Teden's station, "Bumbalong";  
thence with pack-horses through a gap in the ranges  
to the Naas Valley Creek, at foot of Mt Townsend.

I am

Sir

Yours Respectfully  
Edw. H. Taylor

Mt Coree was the point from which the border survey began. Originally known as Pabral or Pabral Peak, this mountain is shown on Surveyor General T.L. Mitchell's 1834 map of NSW. According to the legend on the map, the peak could have had a trig by that time, or was otherwise a 'principal point in the general survey' (the legend does not distinguish between the two)<sup>8</sup>. If Pabral did have a trig, it may not necessarily have been a cairn with mast and vanes, for Mitchell also used as trigs single trees which were left standing on summits after the others around them were felled. By 1877 there was certainly a trig in the proper sense of the term on Coree, for on 17 March Piling Overseer Edward H. Taylor saw the vanes of the trig from Mt Tennent. Taylor was in charge of the party responsible for the erection of numerous trigs in this part of NSW at the time; presumably the team was called a piling party (and Taylor a piling overseer) because a major task in erecting trigs was the piling of rocks to form the trig cairn. On 28 April 1877 Taylor and his men completed six days work in replacing the Coree Trig with a 'first class' trig, which incorporated cement as well as stones. On 9 December 1899 Trig Reserve 30271 was declared around the station.

Nine days before the Coree work, Taylor erected a 'first class' trig on Mt Bimberi to the south. The Bimberi Trig required three days work. His party approached Bimberi (the highest peak on what became the ACT-NSW border) from Tidbinbilla, having first to cut a track 'through dense scrub on the falls to the Cotter River'<sup>9</sup>. On coming away from the mountain he found a better route, via 'Mr McKeahnies Aroral [Orroral] Station', 'Barrumba [Booroomba]' and Lanyon; drays could get from Lanyon to Booroomba, from whence it was packhorses on up to Bimberi. A trig reserve was declared at Bimberi on 2 December 1893.

In December 1877 Taylor replaced the old stations at One Tree and Oak by setting in new metal plugs (the actual survey mark which is underneath a trig station) and erecting temporary 'third class' trigs. Ten months later he returned and carried out additional clearing on the two hills and erected 'second class' stations. When he came back in 1887, Taylor found that the One Tree vanes had been vandalised, so he repaired them and replaced the rotting bush-timber mast with a sawn-timber one. On 2 June the following year a 36 acre trig reserve was declared at One Tree.

Taylor's team in October 1878 erected a 'second class' trig at Gooroo; no previous station had stood there. The trig, wrote Taylor, was accessible by dray.

An old station stood at Greenwood, and Taylor replaced it with a temporary 'third class' station in December 1877. In February 1880 his men did more clearing and erected a 'second class' station, the pole of which was replaced in 1887. The reserve here was notified in June the following year.

Taylor had been camped at Poppet Trig when he did the 1877 work on Greenwood. At Poppet he and his team erected a 'second class' station on the site of the old staff and did additional clearing; the work took one-and-a-half days. Poppet Trig Reserve was notified on 7 October 1893.

At Amungula Trig the old station was replaced with a temporary 'third class' one in December 1877. In August 1879 Taylor put in a 'second class' station and did some extra clearing. Eleven years later the vanes had been found wrenched off the mast and were replaced with 37" diameter vanes; eleven acres of clearing was also done. The reserve here was probably notified in March 1889.

Cohen Trig ('second class') was erected by Taylor's men in a day in August 1879. The reserve followed nine years later. Bald Trig was built in August 1878.

Further south, on the ridge between the Gudgenby and Murrumbidgee Rivers, Taylor and his men erected Yarara Trig ('second class') in January 1880 after clearing the site.

The packhorse route to the trig ran from 'Micaligo', crossing the Murrumbidgee at Cotter's Crossing. Trig Reserve 19656 was notified here on 10 February 1894.

Mt Clear was at first officially known as Mt Townsend (perhaps the name was later changed to avoid confusion with the Mt Townsend near Kosciusko; Clear may or may not have been a pre-existing local name). Taylor erected the 'Townsend' Trig (a 'first class' station) on 29 May 1877, after crossing the Murrumbidgee at Peden's Bumbalong property and travelling on by packhorse. As can be seen on the accompanying copy of Taylor's report, the laborious job took a week. Clear Trig Reserve was declared on 28 October 1893.

The last of the trigs to be erected prior to 1910 on the line that would become the border was Franklin, built not by Taylor but by R.C.Gordon and party in 1898. Gordon established a 'third class' station, consisting of plug, 12' 1" (3.6 metres) mast, vanes painted black and white, and a cairn of stones no less than 7' (2.1 metres) high. Gordon's approach to the mountain was from Queanbeyan via Uriarra to Brindabella Station — and then the going got tough. His description of the remaining route is worth quoting at length:

*The last ten miles very steep and rough but road formed as far as Mr Reads [sic, Reid's] Brindabella Mines. Follow road on in direction of Peppercorn for about 1 mile past Reads to foot of hill a cutting will be seen in bank of Cooradigbee [Goodradigbee] River, through which dray track goes over river, and up spur, follow this track and blazed line to the trig, for packhorses only. Dray road up spur is exceedingly steep 4 miles east to the trig. I camped on Cooradigbee River about 4 miles west of trig and about 3200 feet below. A pack horse camp was taken to gully about 1 1/2 miles north west of the trig where there is a spring of water. It is a rough track any way you go but my blazed line is the best way up.* 10

Original trig stations still possessing their stone piles are now fairly rare in the ACT, having been superseded with the steel-framed quadropod trigs. For example, Coree was replaced with a quadropod in March 1970, Franklin in June the same year, Bimberi and Clear in 1971. Although less aesthetically pleasing, the new trigs are easier to see and to sight to (providing that the vegetation around them is kept down), and, more importantly, they allow a surveyor to set up his theodolite right over the survey mark. Previously a surveyor had to either dismantle the cairn in order to get to the mark (which, as shall be seen in a later chapter, is what Astley Pulver did at Coree in 1926), or take his bearings from beside the trig and then allow for this 'eccentric' reading (which is what border surveyor Harry Mouat did at Franklin in 1914).

### **The three border surveyors: Sheaffe, Mouat and Johnston**

Three surveyors (and their parties of field assistants and labourers) were responsible for the five-year survey of the ACT border: Percy Sheaffe, Harry Mouat and Freddie Johnston.

Percy Lempriere Sheaffe was born on 1 October 1883 at River Terrace, Kangaroo Point, Brisbane. His father, Roger Hale Sheaffe, was a Queensland parliamentarian who had gold-mining interests; he died when Percy was twelve. Percy surveyed in Queensland, and from 1907 to 1910 was with the NSW Department of Lands. As mentioned above, he commenced on Scrivener's staff in January 1910 on a temporary basis — he was actually working at Hillston when he got the word from Scrivener. By the time he became a permanent surveyor with the Commonwealth on 14 June 1913 his salary was 432 pounds per annum plus allowances (Scrivener's annual salary, as



Scrivener and Sheaffe are seen in this early 1910 photo of the federal capital survey staff with some of their equipment. Rear: J.Morgan (field assistant), W.G.Chapman (clerk); front: F.J.Broinowski (draughtsman), Arthur Percival (surveyor), C.R.Scrivener (Director of Lands and Surveys), Percy Sheaffe (surveyor). (Australian Archives, series M14 item 3)





Percy and Katie Sheaffe in later life, photographed outside their Forrest home in the 1940s. (Jean and Isabel Sheaffe)

Sheaffe's signature from sheet 4 of the FC 18 series of border charts which was drawn following the survey. (ACT Land Information Office)

*This Survey was made by me personally and completed on the 30<sup>th</sup>  
day of July, 1912 in accordance with Instruction No. 1911/3 of 22<sup>nd</sup> February*

*P. J. Sheaffe* ..... Licensed Surveyor.  
(Under Real Property Act)



Harry Mouat. (Althea De Salis)

The signature page from one of Mouat's border fieldbooks. (Fieldbook 1012, ACT Land Information Office)

FIELD NOTES OF SURVEYS

from the 30<sup>th</sup> Dec 1913 to the 31<sup>st</sup> March 1914

Transmitted to the Director of Commonwealth Lands and Surveys at \_\_\_\_\_

Canberra with my letter dated 31. 3. 14

(Signature) Harry Mouat



Freddie Johnston, later in life. (Johnston, *Knights and Theodolites*)

The signature page from one of Johnston's border fieldbooks. (Fieldbook 1089, ACT Land Information Office)

FIELD NOTES OF SURVEYS

from the April 29<sup>th</sup> to the 28<sup>th</sup> May 1915

Transmitted to the Director of Commonwealth Lands and Surveys at \_\_\_\_\_

\_\_\_\_\_ with my letter dated \_\_\_\_\_

(Signature) Freddie Johnston  
L.S.

22300

T.B.S. 58

Director of Commonwealth Lands and Surveys, was 900 pounds in 1912). Remembered as a placid man, and one inspired by the opportunity to be involved in the foundations of the national capital, Percy was to find the border job one of the great experiences of his career. He surveyed the biggest part of the border, covering about 96 miles (154 kilometres).

Harry Playfair Mouat was born in Ravensbourne, Dunedin, New Zealand on 31 May 1880, son of barrister John Mouat and his wife Theresa nee Macnamara. An unhealthy boy, Harry was sent by his parents to elder brother John and wife Hannah at Gisborne. Working with John (who was a surveyor) gave Harry an interest in this outdoor profession and he subsequently studied surveying at Auckland University. He worked in Tonga and then at Newcastle. On 16 September 1913 he was appointed to Scrivener's staff on a salary of 336 pounds annually plus allowances. Dedicated to his profession, and perhaps having inherited something of a dour nature from his Scottish father, Mouat was known among colleagues as 'Happy Harry' — because he seldom smiled. Harry surveyed around 57 miles or 92 kilometres of the border.

Frederick Marshall Johnston was born on 19 October 1885 in Perth, Western Australia. His father, H.F. Johnston, was a WA Surveyor General. Freddie (as he was known to his contemporaries) attended Scotch College and Perth Technical School. Appointed a cadet in the WA Department of Lands in 1901, he studied through Adelaide University, did outback rural subdivision work and in 1912 was surveying in the Kimberley. The following year (now with the Commonwealth) Johnston worked on the trans-continental railway survey at Kalgoorlie. On an annual salary of 336 pounds plus allowances as at 1 September 1913, he was in Canberra by January 1914 to work under Scrivener following suspension of the railway survey. A confident and dapper man, Freddie surveyed approximately 16 miles (26 kilometres) of the ACT border.

Other members of Scrivener's staff went onto the border at various times. John Drury Reid (who was later killed during the First World War) did portion surveys adjoining the boundary and surveyed a possible road route through Murrays Gap. T.A. Vance (later Colonel Vance, CO of the Australian Survey Corps) conducted triangulation surveys from trigs like One Tree, Poppet and Bimberi on the border. But neither man was involved in surveying the border line itself.

### **Out there: defining the line**

Before the survey could begin, the Commonwealth and NSW Governments had to agree on the means of demarcating the border. Accordingly on 6 December 1909 Minister for Home Affairs George Fuller wrote to Prime Minister Deakin 'with a view to giving effect' to the Seat of Government legislation, for it was 'necessary that the territorial boundaries shall be accurately determined on the ground'. Fuller had arranged for Scrivener to again be loaned from NSW (as mentioned above) 'with the object — amongst other matters — of carrying out such survey and marking on the ground the boundary of the Territory' (and also the boundaries of the Molonglo and Queanbeyan River catchments, in view of the water rights clause in the Act). Fuller continued, 'it is desirable that the Premier of New South Wales should concur with the suggestion that the demarcation of the boundaries of the Territory...as determined by Mr Scrivener, will be accepted by the State'. Fuller then asked Deakin to write to Wade on the subject, 'as thereby the question of the allocation of these most important boundaries will be practically settled. I may add that I have no hesitation in advising that the Commonwealth shall accept Mr Scrivener's surveys, which will be carried out under my own special instructions, in which connection the method to be adopted in executing and marking the surveys will receive my personal attention'.<sup>11</sup>

Deakin wrote to Wade nine days later, asking the Premier if he would accept the demarcation of the boundaries as determined on the ground by Scrivener. Wade replied on 22 December that the NSW Government would accept Scrivener's marking of the border.

NSW was then asked for all survey information relating to areas through which the border was to pass. Tracings relevant to the Mt Coree-One Tree Hill section were with Scrivener by 20 June 1910, and the following day he wrote the instructions for that first part of the border survey, addressing them to 'Mr Surveyor Sheaffe'. Percy Sheaffe replied that the survey would commence on 27 June. How Sheaffe felt, being sent up to Mt Coree as winter was tightening its grip on the Brindabellas, is unknown. Scrivener, it's only fair to say, had surveyed in snow back in 1904, so he was not asking the 26-year-old Queenslander to do something he himself would not have done.

Scrivener's instructions to Sheaffe (see Appendix 1) began with a preface stating that sufficient connections had to be made 'with all previous measurements intersected', and this was particularly important in regard to severed portions lying within the Territory. He also asked Sheaffe to cut down all the young timber around Coree Trig that had grown since the trig was last occupied; this would enable the trig to be sighted from other points.

The bulk of the memorandum was concerned with the marking of the border, which was to be of a permanent nature. Hardwood pegs, 4"x4", were to be inserted at every ten chains (about 202 metres), 'and either locks pitted or having stones packed on either side in the direction of the boundary'. (A lockspit is a trench dug either side of a survey mark to indicate the direction of the bearings at the mark; commonly an alternative, as allowed here by Scrivener, is to place a line of stones either side of the mark. Surveyors today call these lines of stones either lockspits, stone lockspits, or rockspits; in this report the latter term is used. On the western and southern borders, Mouat's fieldbooks sometimes referred to cairns, but during fieldwork many of these were found to be rockspits, though the term 'heavily cairned' in the fieldbooks was usually found to mean a true cairn.) At half mile points Sheaffe was to use 1" diameter galvanised iron gas pipes as well as timber posts nearby (the pipe being covered by mounds of earth or stone cairns), and at mile points he was to install concrete blocks as well as 9" timber posts nearby. Reference trees were to be marked, and Scrivener pointed out that the Commonwealth survey symbol for use on these trees and on some of the timber posts differed from the State symbol in that the traditional survey arrow was underlined by a bar (see appendix 1 and front cover of this report). This symbol was to be accompanied by the inscription 'CT', (which stood for Commonwealth Territory). Sheaffe was also required to describe the nature of the country through which he passed.

Sheaffe's first task on arrival at Coree's summit (after doing whatever clearing was necessary) was to take various bearings to trig stations before commencing his traverse to One Tree. He continued to observe trigs during the survey (as did the other border surveyors), for Scrivener had instructed that 'every effort should be made to check the survey by the observation of Trigonometrical Stations near the line', and indeed these observations were an important means of ensuring the accuracy of the border survey.<sup>12</sup>

Only a short distance north-east from Coree's rocky, bare top a series of rugged cliffs is encountered. Sheaffe and his team had to negotiate these rockfaces just after beginning their mammoth task. Members of the team clambered on all fours down the face. The subsequent 20-chains-to-an-inch ACT feature map (evidently produced from Sheaffe's fieldbooks) contains descriptions here like 'precipitous rocks, PRECIPICE, rock face vertical'. Descending into and out of Coree Creek the party took the line over Blue Range, and the going continued to be hard. The feature map reads 'rocky bluff', 'waterall', 'very steep rough mountain slopes', etc. The weather left something to be



The distinctive straight-line section of the north-western ACT border runs for over thirty kilometres from Mt Coree (above, just right of centre), to One Tree Hill (below, just right of centre). In the lower photo, just to the right of the base of the fence post can be seen a timber border marker installed by Sheaffe's party in 1911 — it is among the northernmost markers on the whole territory boundary.



desired too. Scrivener reported on 3 August that 'this work is proceeding under very unfavourable conditions since though no great amount of rain has fallen, there are frequent showery days with occasional falls of snow'<sup>13</sup>. But the experience, challenging though it was, was to remain favourably imprinted on Percy Sheaffe's memory for the rest of his life. After a time signs of civilization began to appear — a wire fence, ringbarking and cleared areas. By October the party had descended from 1421 metre Mt Coree to the Murrumbidgee River which at under 440 metres is the lowest point on the ACT border.

From the river the surveyor and his men took the border line over the undulating hills and cleared farming country to One Tree Trig, which they reached early in 1911, about 31 kilometres from their starting point. From One Tree the nature of the survey changed. From here the border followed not an arbitrary bearing but the natural line of the northern watershed of the Molonglo River; the surveyed line here became a series of short, straight lines following that natural course. At each 'corner' or change of bearing of the line, timber posts were installed. Iron pipes, and concrete blocks at mile points, continued to be used as well, and reference trees continued to be marked. It was from One Tree too that the corners or stations were given a number in an alpha-numeric sequence that was used right through to the completion of the border survey. This sequence began at A and ran to Z, then began again at A1 and ran to Z1, then A2 to Z2, etc (Harry Mouat's last border marker in 1915 was R87). From One Tree the line went north-east and then south-east toward the Goulburn-Cooma railway line, passing through country variously steep and stony, undulating, forested and ringbarked; country always quite a bit tamer than the wilds up near Coree.

The job was not without its frustrations. It was particularly important that the portions severed by the border be accurately plotted, for the land inside the Territory would be subject to a different system of administration, rates and, in time, title. No doubt landowners anxious to see which side of the boundary they were on visited Sheaffe's party in the field with some frequency. In July 1910 Scrivener had had to write to the Secretary for Home Affairs rejecting a new proposal that the border follow portion boundaries rather than the course already set. Such a proposal, wrote Scrivener, would lead to a 'tortuous boundary' difficult to establish, and anyway some miles of the border had by now been surveyed, and besides that the boundary was set in legislation.<sup>14</sup>

But it was not visitors so much that caused delay and annoyance to Sheaffe, rather it was the shortcomings of the work of some previous State surveyors. Scrivener reported in September 1910 of the work on the Coree-One Tree section that it was 'very tedious because of the indifferent character of old surveys intersected by the line, thus each of the old measured portions must be practically re-surveyed in order that the demands of the Land Titles Office may be complied with'.<sup>15</sup> More work was being necessitated by these portion re-surveys than by the border survey itself. When Scrivener asked Sheaffe when he might reach the Cooma-Goulburn railway, Sheaffe wrote that it would be about August 1912, for 'owing to the poor class of survey work effected by the Lands Department years ago, the old measurements are causing considerable trouble and delay'.<sup>16</sup>

It is little wonder then that in May 1912 when Scrivener wanted Sheaffe to come in to the Acton office to spend two days checking some figures, Sheaffe failed to reply to Scrivener's letter and had to be reminded three weeks later. Sheaffe responded that it was 'highly inadvisable' for him to leave camp for several days and he asked Scrivener to send the material to him for checking in camp.<sup>17</sup> Scrivener replied that Sheaffe really should come into the office. Sheaffe, understandably, was also occasionally riled by delays in receiving from NSW authorities, via Acton, copies of portion plans necessary to the work. As time went on another task that he had to attend to was the checking of the FC18 plans of the border that were progressively being drafted from

his field notes; he had to deal with various anomalies that the Acton staff found between the draft plans and his fieldbooks.

By about July 1912 Sheaffe had proceeded past Bald Trig and south along what might be called the southern end of the Lake George Range and on to the railway. The ACT border follows the rail line for about 52 kilometres, through Queanbeyan and on southward, finally leaving it beyond Williamsdale. It is easy to imagine that the crews of the steam trains travelling on the line between Goulburn and Cooma came to regard Sheaffe and his party as a regular feature on the route, and perhaps they blew the high-pitched locomotive whistle in salutation as they went by. In the steep-walled, cypress-timbered Molonglo Gorge upstream of Queanbeyan, the trains would have been an impressive sight — and sound — to the survey team as they thundered through, smoke and steam billowing up the walls of the gorge.

Sheaffe and his fiancée Katie (about whom more will be said later in this chapter) were invited to the 12 March 1913 ceremony at which the foundation stones of the commencement column were laid and Lady Denman named the capital 'Canberra'. But then it was back onto the border. While one might anticipate that the railway section of the border should have been a straightforward survey task, it was not. Again Sheaffe found problems with earlier survey work. There were apparent discrepancies in the boundaries of lands acquired in connection with the construction of the railway (the land had been acquired under an 1884 proclamation). Accordingly Sheaffe visited Sydney in January 1914 to see railway officials, the Surveyor-General's office and the Land Titles Office. NSW delays in responding to various matters held up the permanent marking of part of the border for some months. Along the railway section of the border Sheaffe had to redefine numerous portions.

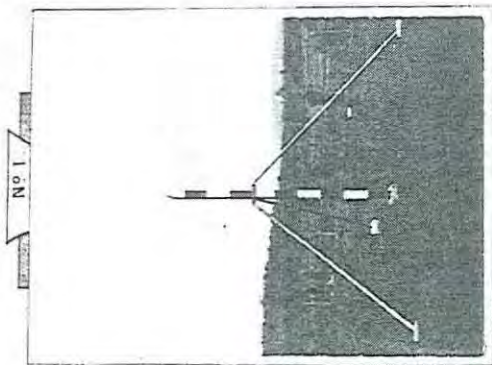
The border surveyors generally travelled by horse, and whether a vehicle was drawn by the horses, or whether packhorses were used, depended on the terrain. The surveyors received an allowance for providing their own horses and vehicles. Of the three surveyors involved with the territorial boundary, Sheaffe received the highest transport allowance. With six horses and three vehicles (two wagonettes and a buggy), besides harness and packhorse equipment, he received an annual allowance of 180 pounds. While some in the Home Affairs bureaucracy thought the transport allowances high, the amounts were quite fair considering the terrain over which the surveyors travelled, the lack of storage for vehicles, the constant use made of horses and vehicles and the sometimes poor grazing for the horses. Scrivener said in October 1913 that because Sheaffe had so many horses and vehicles 'that officer is used where distant and urgent work is required, and he has been almost continuously engaged on surveys requiring a considerable amount of travelling and is still so engaged'.<sup>18</sup> Meanwhile Scrivener himself rode a motorbike. On 8 November 1911 he wrote how he and his wife were going to visit Sheaffe's camp the next day and that 'I trust it will be a better day than this or it will not be a very enjoyable drive, we have a quite hot and s[omewhat] strong wind which means dust on the beaten tracks'.<sup>19</sup>

Survey equipment had to be provided by the surveyors themselves, for which they received an annual allowance of 35 pounds (if they used a departmental theodolite they were charged for its hire). The following list shows the equipment needed by a surveyor before the full allowance would be paid; it dates from around 1921 and presumably is accurate for the time of the border survey:

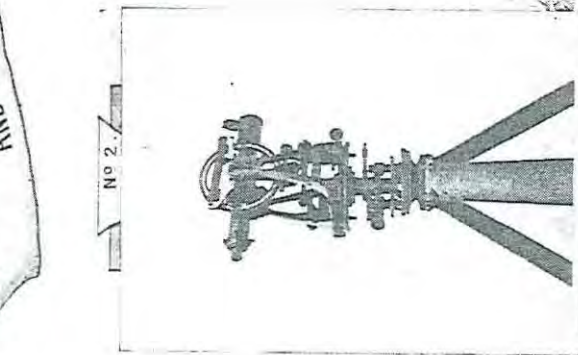
- 1 tacheometer and 1 theodolite, or 2 theodolites, one of which is 6", fitted with stadia wires and bubble on telescope. 1 level 14" or 16" and staff.
- 1 clinometer, 1 prismatic compass, 1 aneroid barometer, 1 thermometer, 1 spring balance.
- 1 standard wire with graduations at 66' and 100'.
- Tacheometer staves as required.



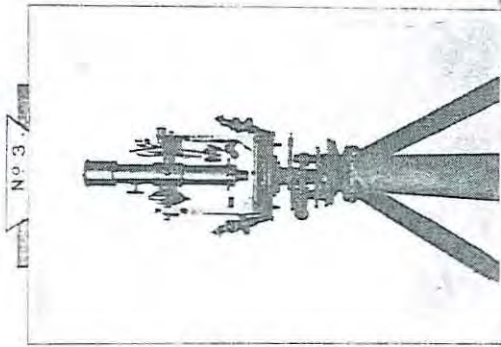
TYPES OF INSTRUMENTS USED IN COMMONWEALTH SURVEYS  
AND CHARACTER OF PERMANENT MARKS.



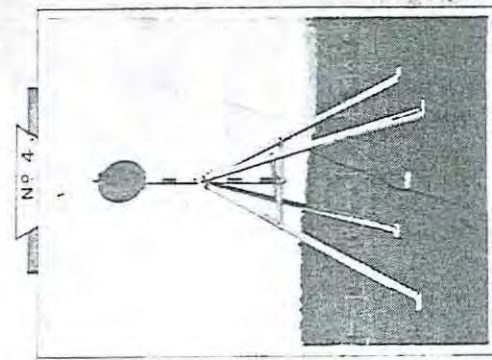
**No. 1**  
Signal for Subsidiary Trigonometrical Stations. Galvanized iron pipe, secured to masonry blocks, and bolted to an iron casting, the top which fits pole passes, hole in bottom of pole, its cap, bolt in Station block, and the pole is readily removed.



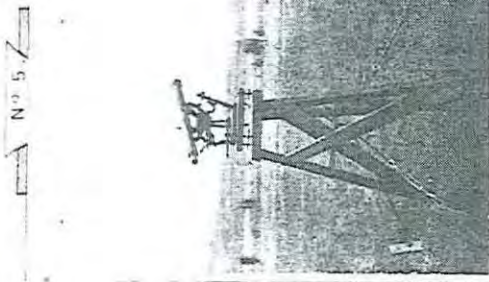
**No. 2**  
5 INCH TROUGHTON & SIMMS MICROMETER THEODOLITE



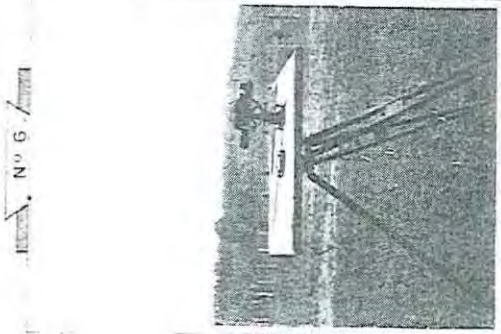
**No. 3**  
5 INCH TROUGHTON & SIMMS MICROMETER THEODOLITE



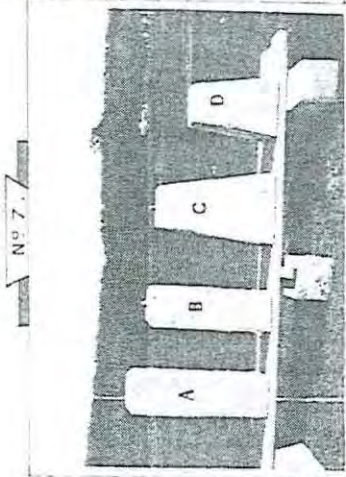
**No. 4**  
Primary Trigonometrical Stations. Frame work is bolted to concrete blocks, and instrument may be set over the station without disturbing the level. Anchor blocks are usually at ground level, station block about 12 inches below surface.



**No. 5**  
8 INCH BAMBERG THEODOLITE



**No. 6**  
Telescope Plane table for topographic field work.

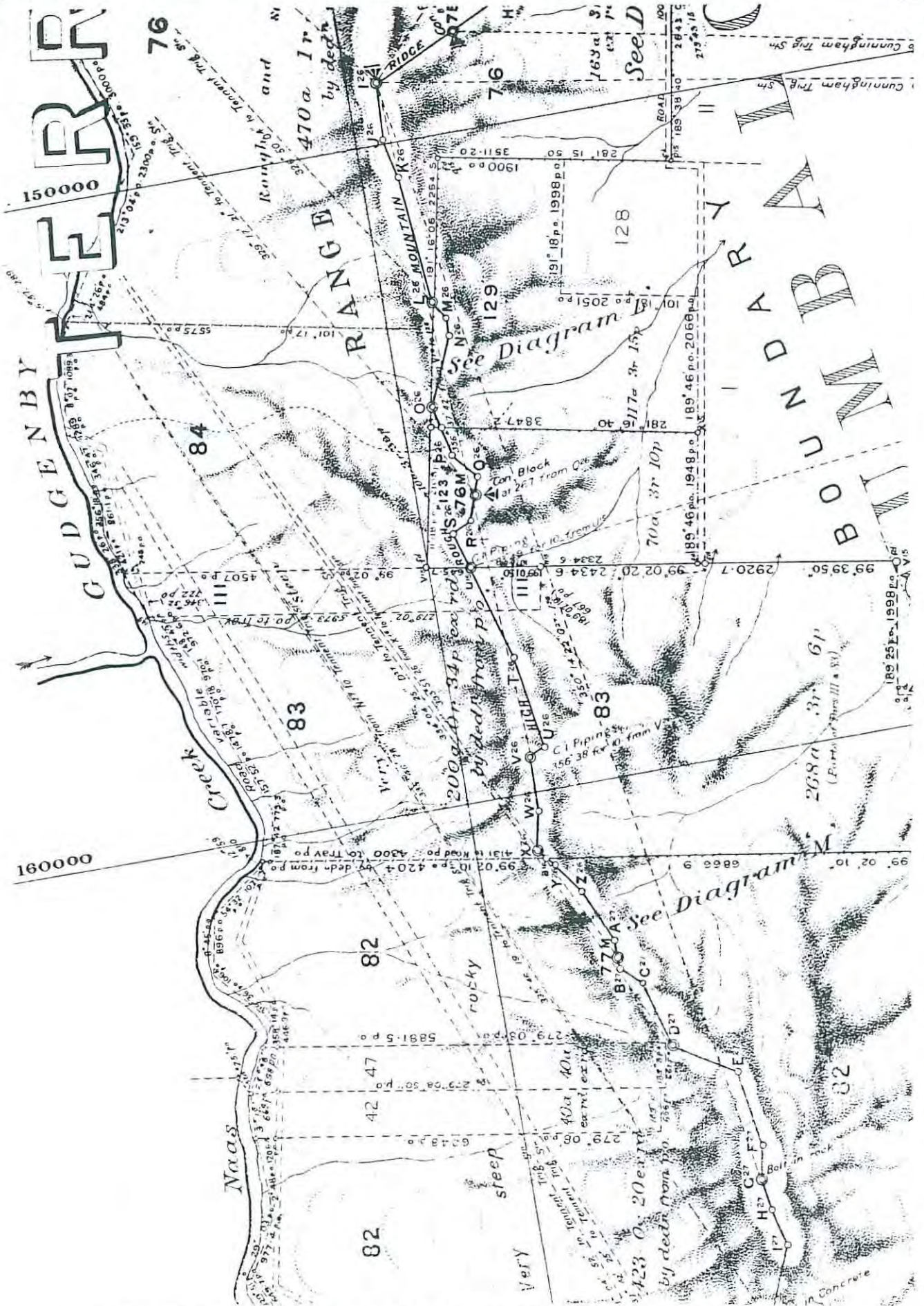


**No. 7**  
CONCRETE BLOCKS FOR PERMANENT MARKING

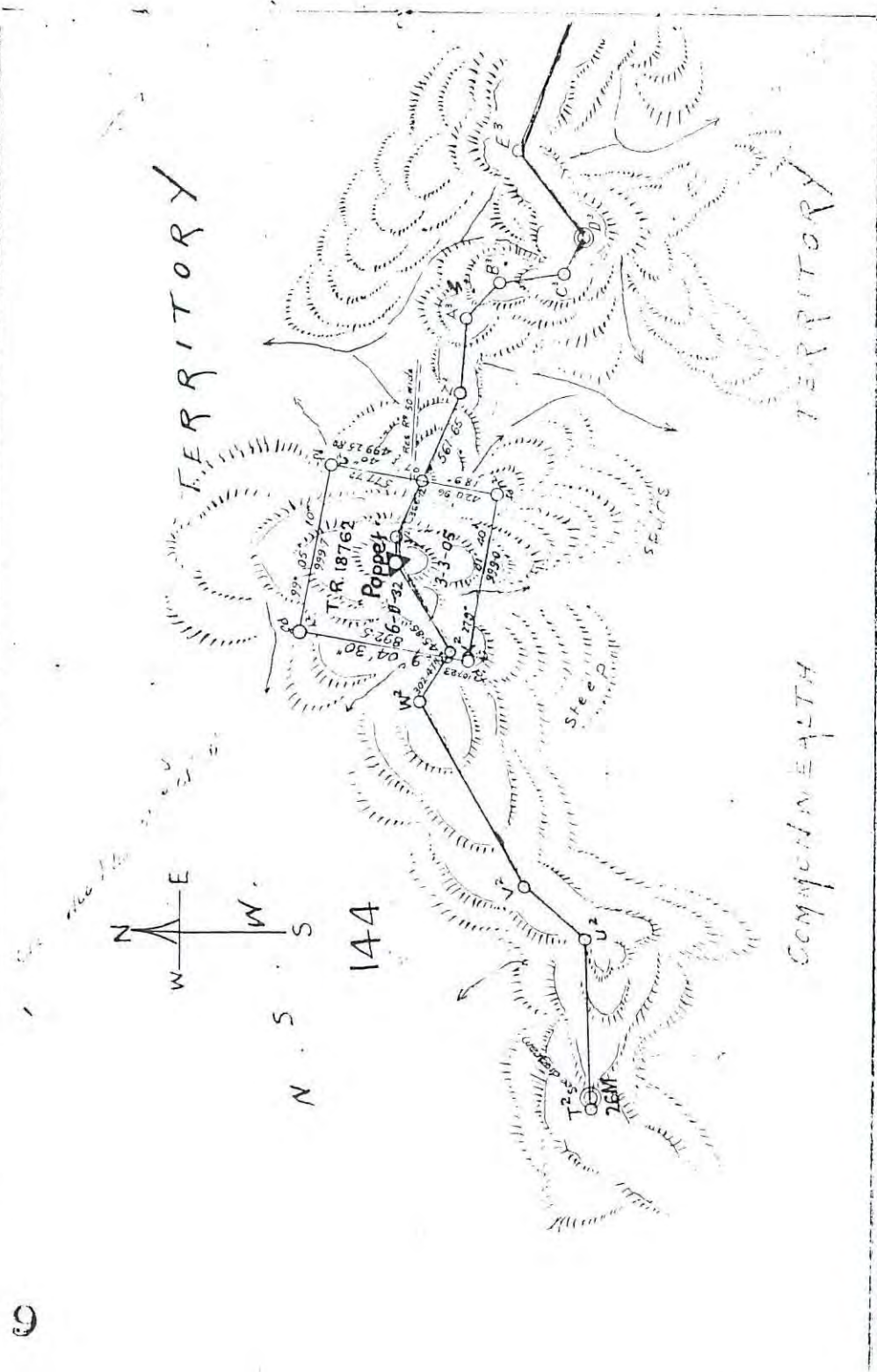
**A** Block 30 inches long and 8 inches square with rounded bolt in centre cup, incised by number at the top and a brass plate upon which, name or number of station is stamped, as well as reduced level.  
**B** Block 8 inches square and 8 inches square long.  
Block 24 to 30 inches long used as anchor. Stations minor trigonometrical.

**C** Block 8 inches square at top and set for 5 to 10 inches square and set for 5 to 10 inches square and set for 5 to 10 inches square base 12 inches length, 1/2 inch thick, 1/2 inch from top. Block marking projects about 1/2 inch from top of top of top, although one type special tubing form. This combined with tubing form of 8, organized from block set below line D.  
**D** Block 8 inches square at top and set for 5 to 10 inches square and set for 5 to 10 inches square base 12 inches length, 1/2 inch thick, 1/2 inch from top. Block marking projects about 1/2 inch from top of top of top, although one type special tubing form. This combined with tubing form of 8, organized from block set below line D.

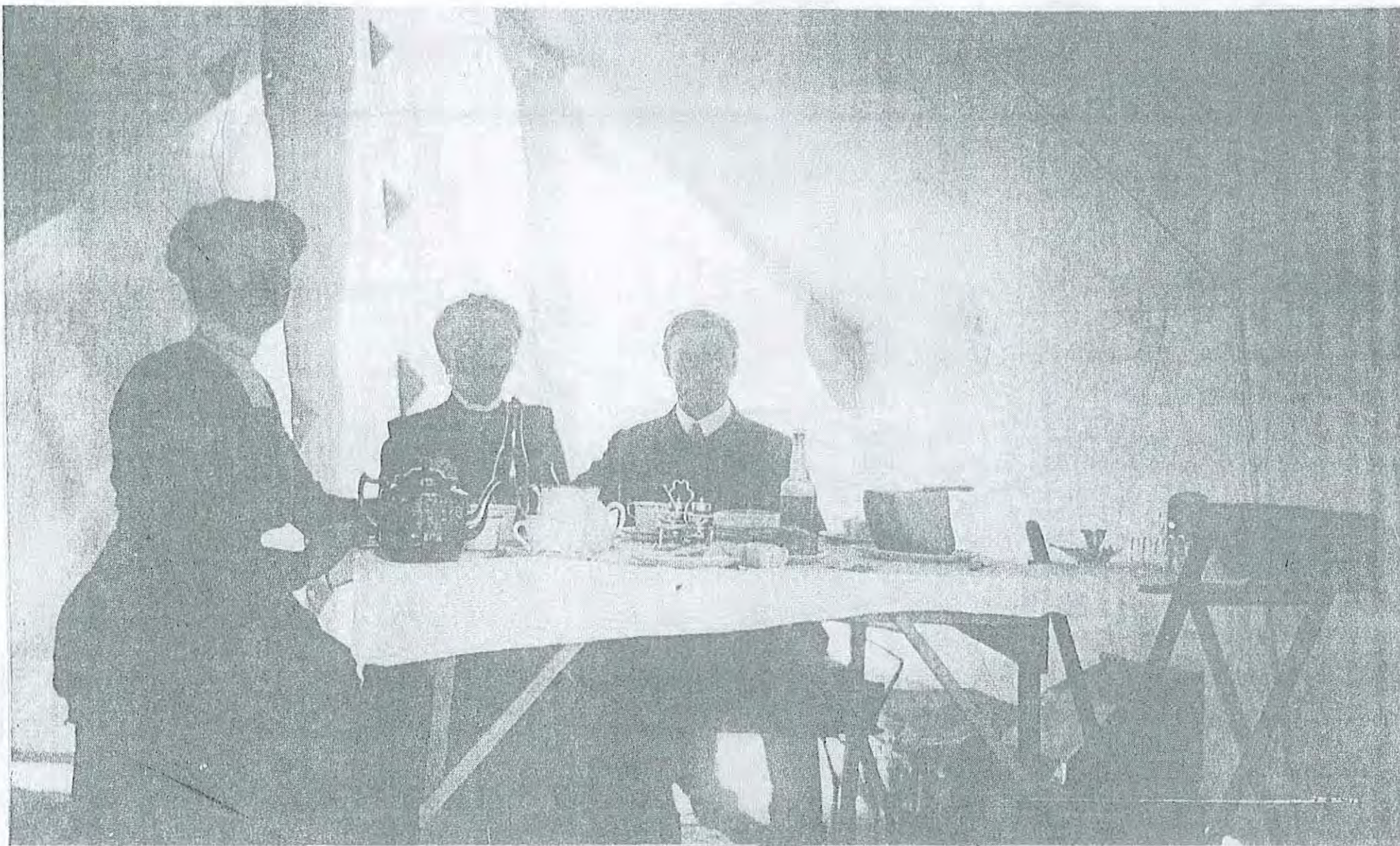
Some of the equipment displayed here was undoubtedly used in the border survey. The permanent markers on the border were mostly quite different from the concrete blocks seen here. (From the Lands and Surveys Annual Report, 1914.)



As seen in this section of the border in the Parish of Cuppacumbalong, the border bisected numerous portions of land, no doubt a cause of concern to the local graziers who owned them. Sheaffe surveyed this part of the territorial boundary in 1914. The map reflects the fine quality of draughtsmanship seen in many of the border charts. (FC 18 sheet 7, ACT Land Information Office)



Page from one of Sheaffe's fieldbooks relating to the northeastern border survey in 1912. Poppet trig is shown. (Fieldbook 291, ACT Land Information Office)



View inside Sheaffe's survey tent; Percy is on the right, with wife Katie at left and Percy's mother Isabel in the middle. An idea of how well appointed some of the camps were can be gained, although conditions in the more remote border camps were undoubtedly less comfortable. The cruet set on the table is still in the Sheaffe family's possession. (Australian Archives series 1971/658/1 item box 3)

Drawing materials sufficient for preparation of necessary rough plans, tracings etc.<sup>20</sup>

Although a tacheometer measures distance, the main means of measuring distance during the border work was wires (also called bands). In September 1913 Scrivener sent both Sheaffe and Mouat instructions on how to calculate sag in these wires. Wires were steel, or invar, a kind of steel which expanded and contracted less than steel (this quality may have led to the name — *invariable*). The old 100-link Gunters chain, which had given rise to the term 'chainman' and to the link as a unit of measurement, was not used and was really obsolete by the late nineteenth century. Johnston in 1915 sent in to Canberra his '500 link Invar working chain' and spring balance so that any standard error could be applied to his boundary work, but his use of 'chain' here was figurative.<sup>21</sup> The verb 'chained' appears in some of the fieldbooks too, but this also was a figurative measurement term in the same way that 'chainman' is still in use today long after the demise of Gunters chains. Spring balances were used in relation to tensioning the wire. The clinometer measured slope.

By mid-1914 Sheaffe and his party, having now left the railway, were again crossing the Murrumbidgee — this time where the river flows into the Territory. As the men surveyed across the river (on the only section of the ACT border which follows portion boundaries alone), no doubt all of them reflected on the work done since they had crossed the Murrumbidgee further downstream nearly four years earlier. By now, though, they were not alone on the territorial boundary. The previous October had seen Harry Mouat and party begin the survey of the western border.

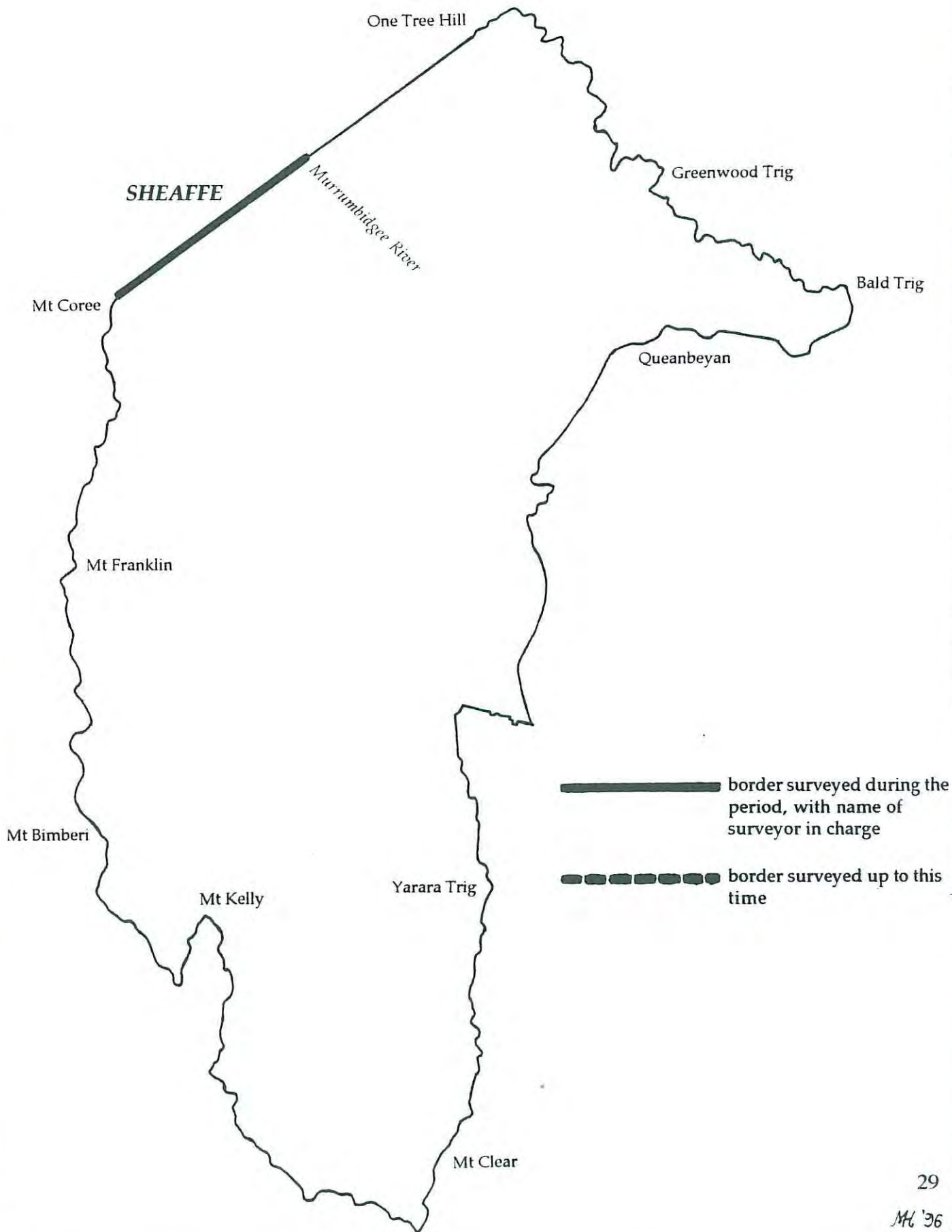
The federal government seems to have become impatient with the border survey at times, judging by correspondence written by Scrivener explaining the delays encountered. By July 1912 the Department of Home Affairs appears to have been asking why only one survey party was engaged on the job, and would not another one or two teams accelerate the work. On the 22nd Scrivener replied to the department's Secretary, 'the completion of the [border] survey might be expedited by employing two or three different parties but the better result will be attained by having only the one party accustomed to the work engaged in this survey'.<sup>22</sup> Scrivener clearly intended that Sheaffe should do the whole border. After another twelve months however he changed his mind (whether due to ministerial pressure or not is unknown). Scrivener decided to deploy a second boundary party and on 7 October 1913 Harry Mouat was on Coree commencing to head south down the Territory's western frontier.

A frontier indeed it was. Mouat must have truly wondered what he was heading into, for the Cotter watershed was then *terraincognita* to the outside world. Maps of the time showed the position of ranges to his south as 'approximate only', and Scrivener himself told Home Affairs that it would be 'hopeless' (his word) to determine the true positions of the Cotter and also the Gudgenby and Naas watersheds until proper survey had been undertaken. Griffith Taylor stated (with a little exaggeration), 'the upper valley of the Cotter is so rugged and far from all settlement that only one or two people have ever traversed it, and the map simply indicates it by a broken line in a perfectly blank strip of territory!'. The 1911 *Official Year Book* read, 'the upper reaches of the Cotter are still practically unknown. Only one or two surveyors and an occasional settler have ever been along the valley, which is completely uncharted'.<sup>23</sup> Mouat would be at over (and usually well over) 1100 metres elevation for the whole of his survey. Indeed, more than half the Territory's boundary is at over 1000 metres.

Undaunted, Harry Mouat proceeded. High cliffs form Coree's south-western ramparts, though fortunately for Mouat and his men (and for we who followed in their footsteps during fieldwork for this project), the boundary line just skirts the southern edge of these volcanic rockfaces. As Mouat made his way south, in addition to surveying the border line he also did quite a number of contour surveys along the ACT

# SURVEY OF THE ACT BORDER

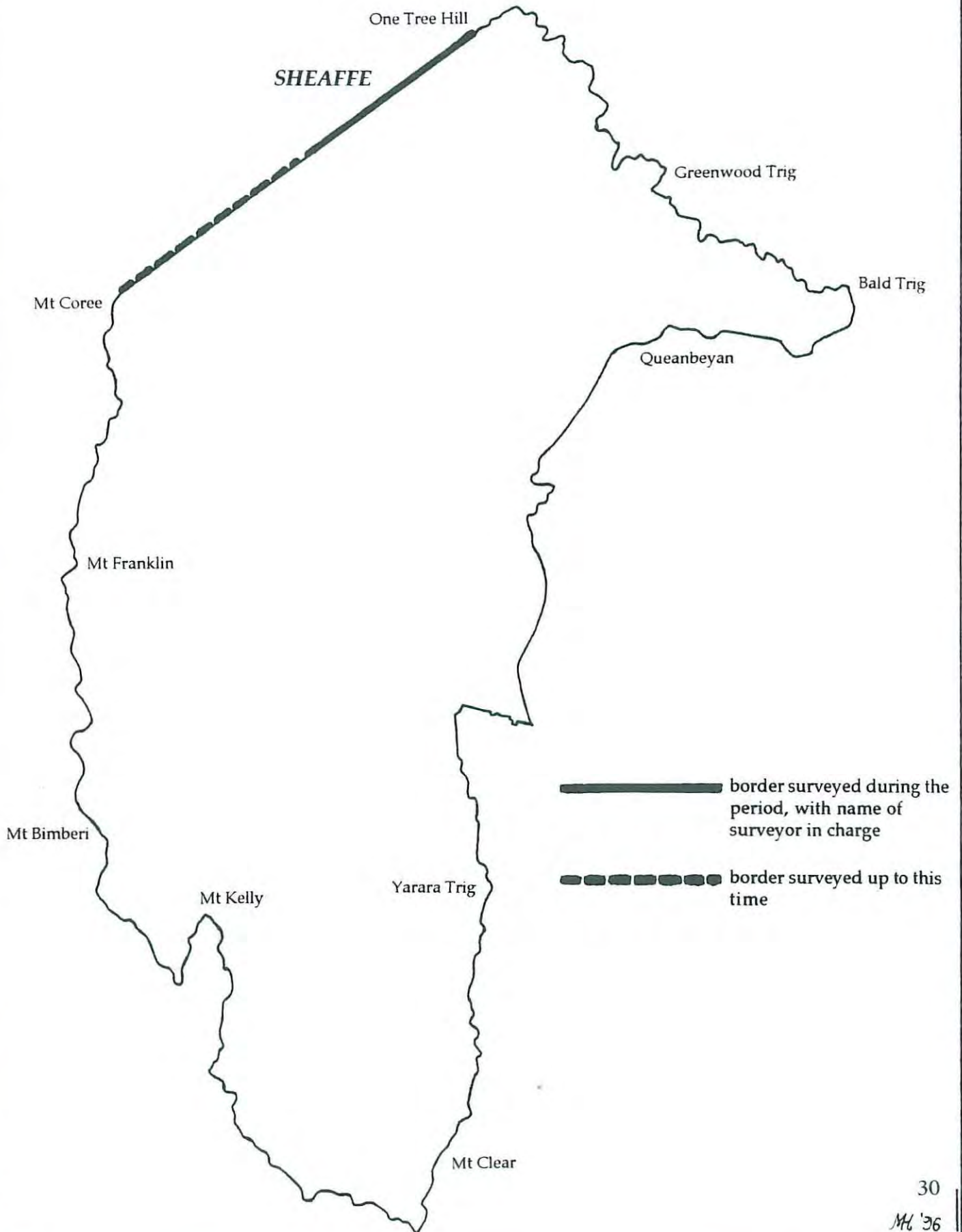
1: June-October 1910



— border surveyed during the period, with name of surveyor in charge  
- - - border surveyed up to this time

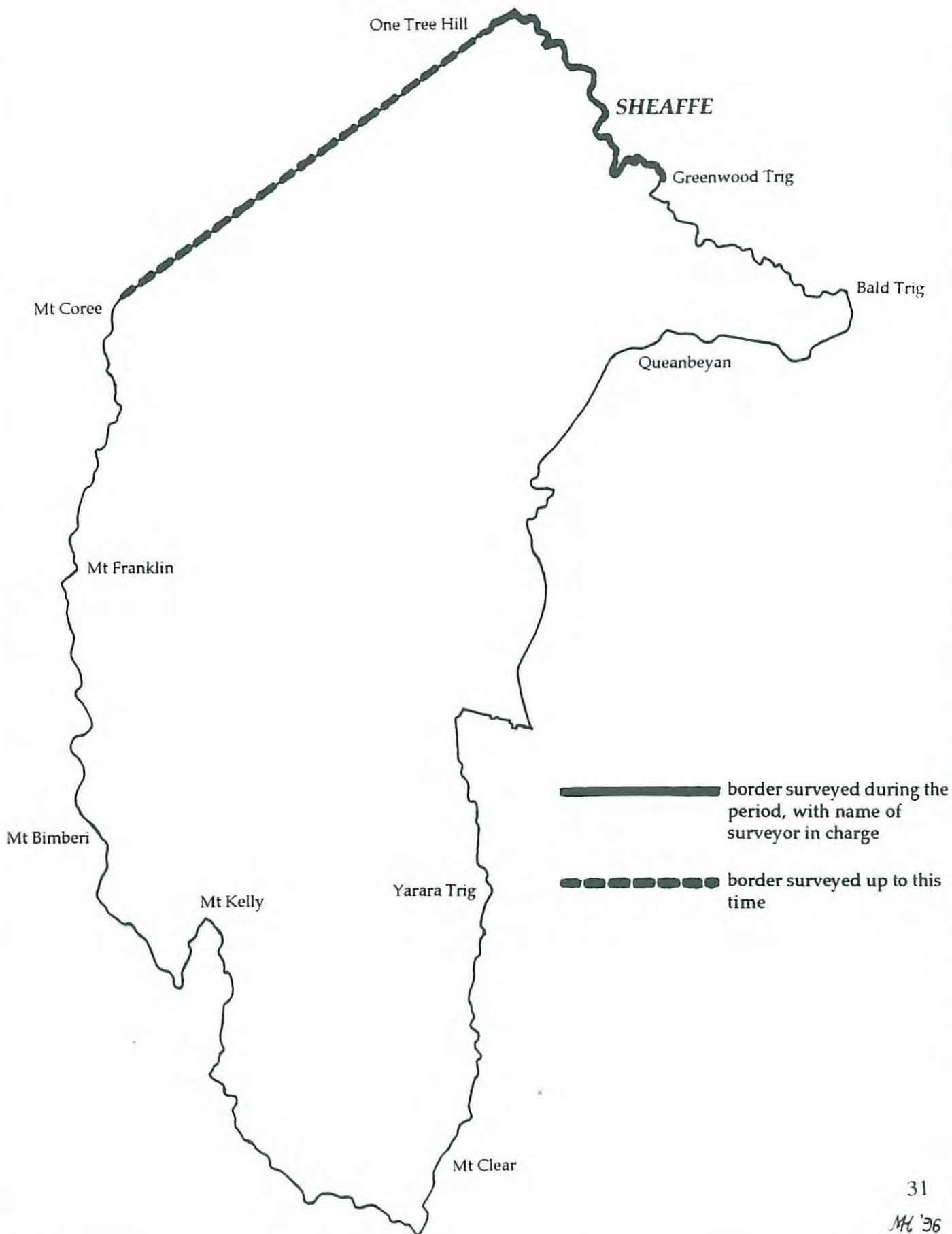
# SURVEY OF THE ACT BORDER

2: October 1910-February 1911



# SURVEY OF THE ACT BORDER

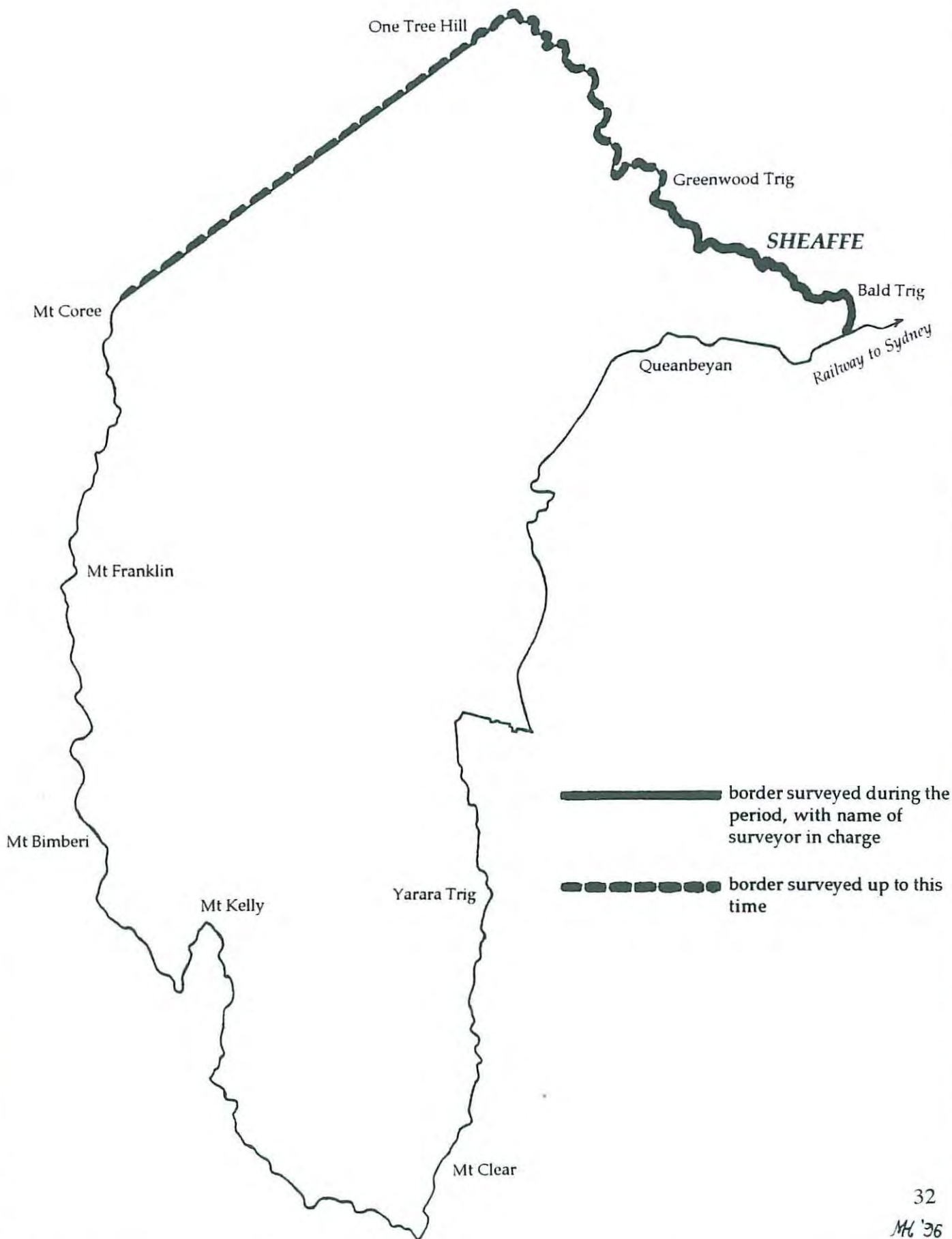
3: February 1911-November 1911





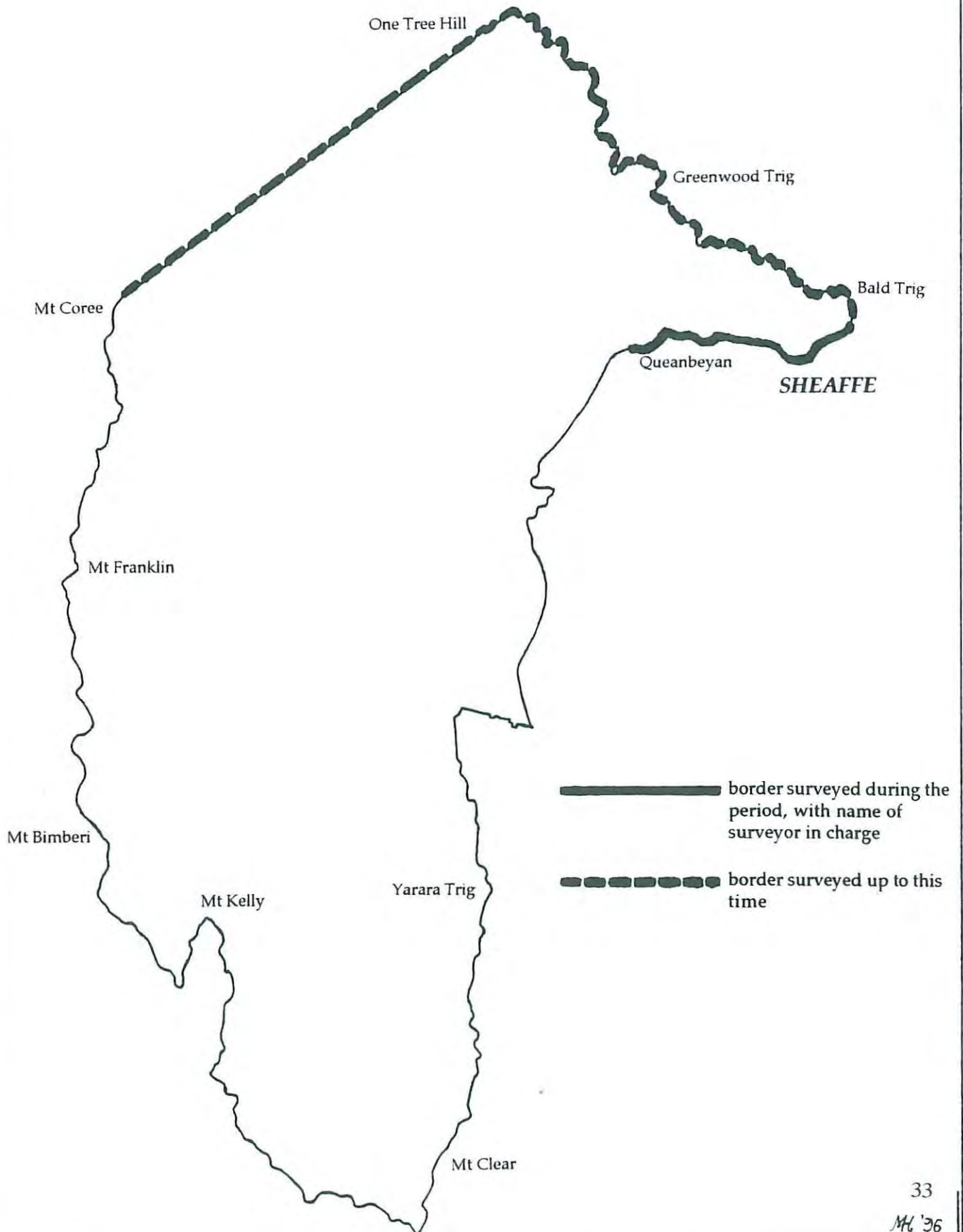
# SURVEY OF THE ACT BORDER

4: November 1911-July 1912



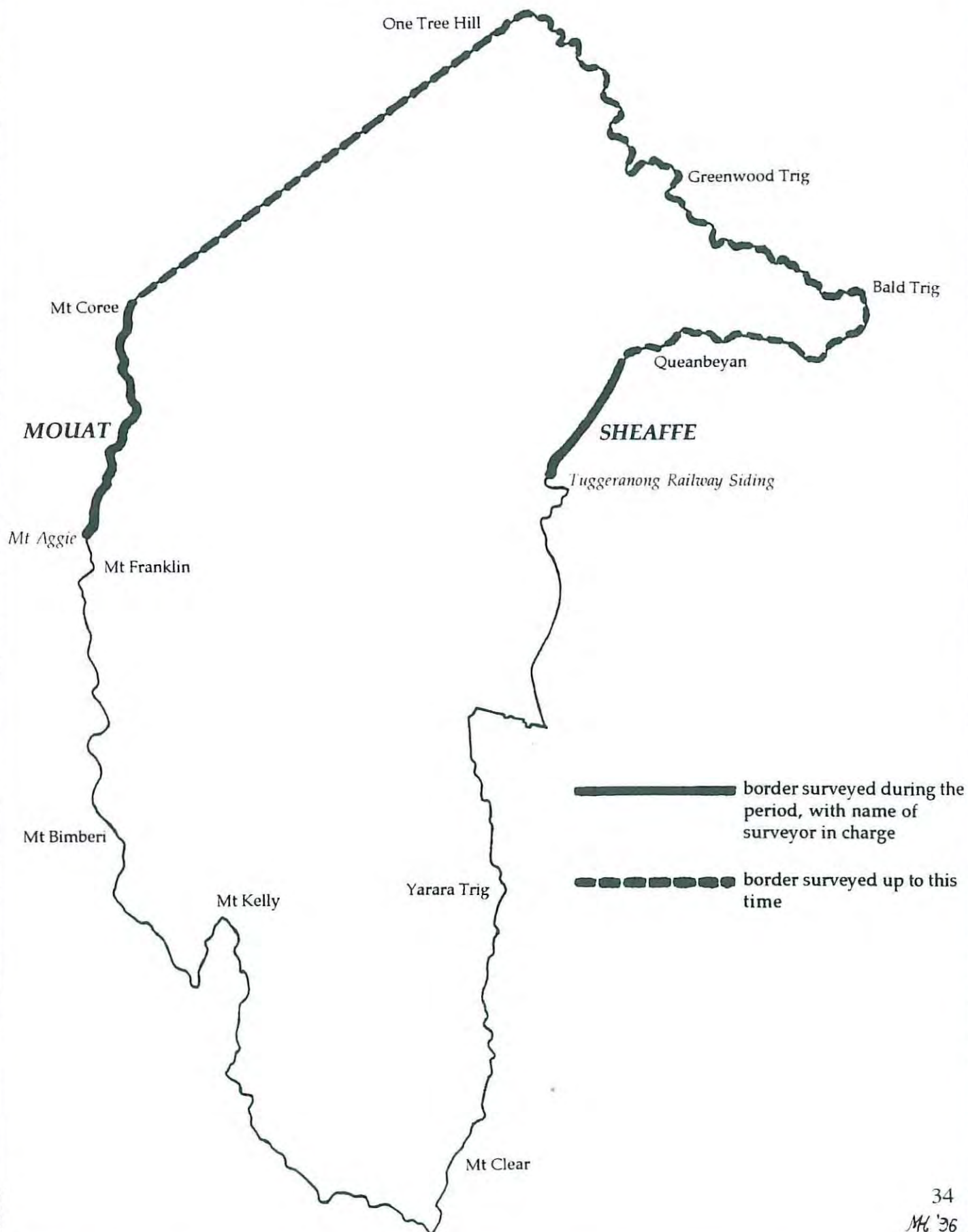
# SURVEY OF THE ACT BORDER

5: July 1912-February 1913



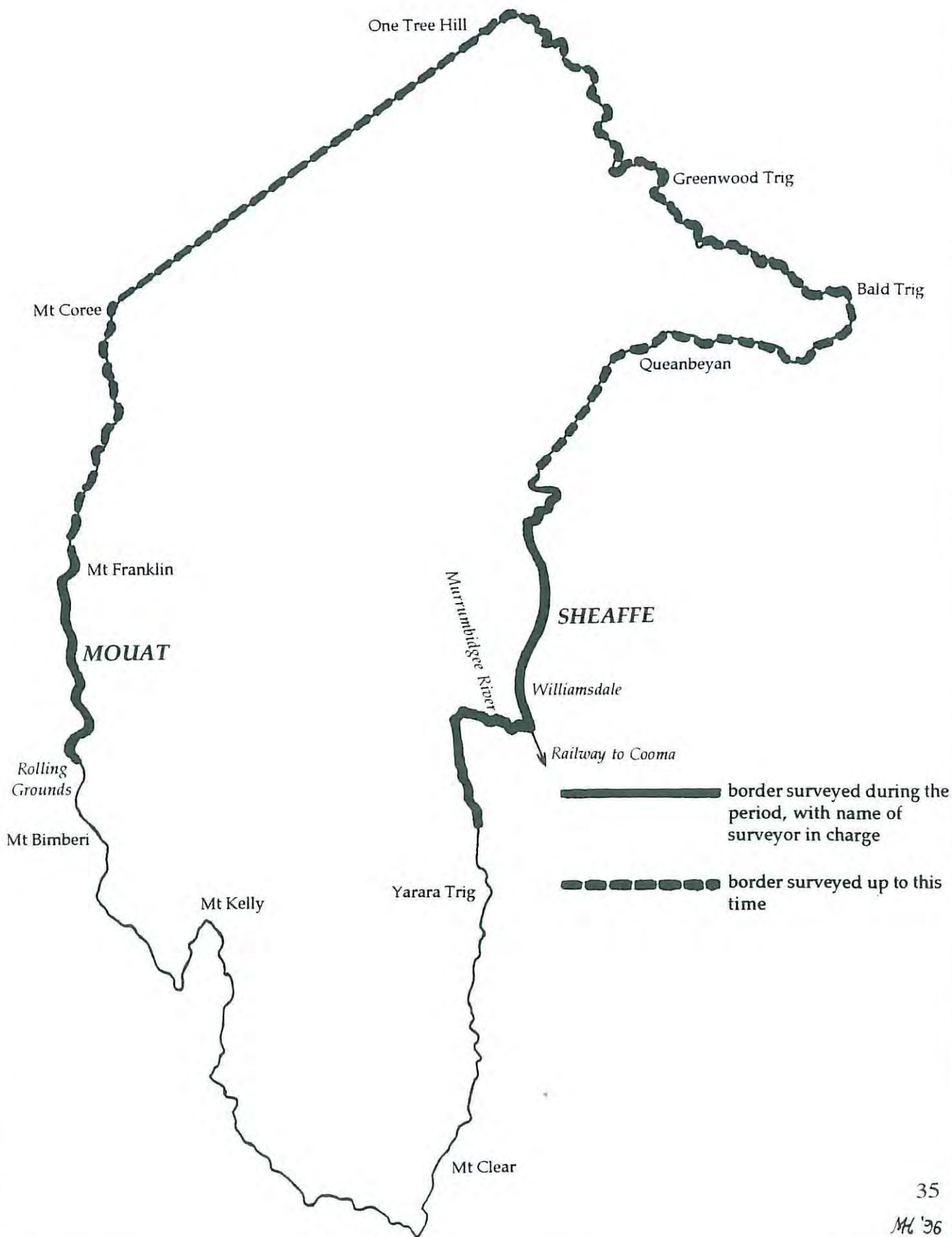
# SURVEY OF THE ACT BORDER

6: October 1913-December 1913



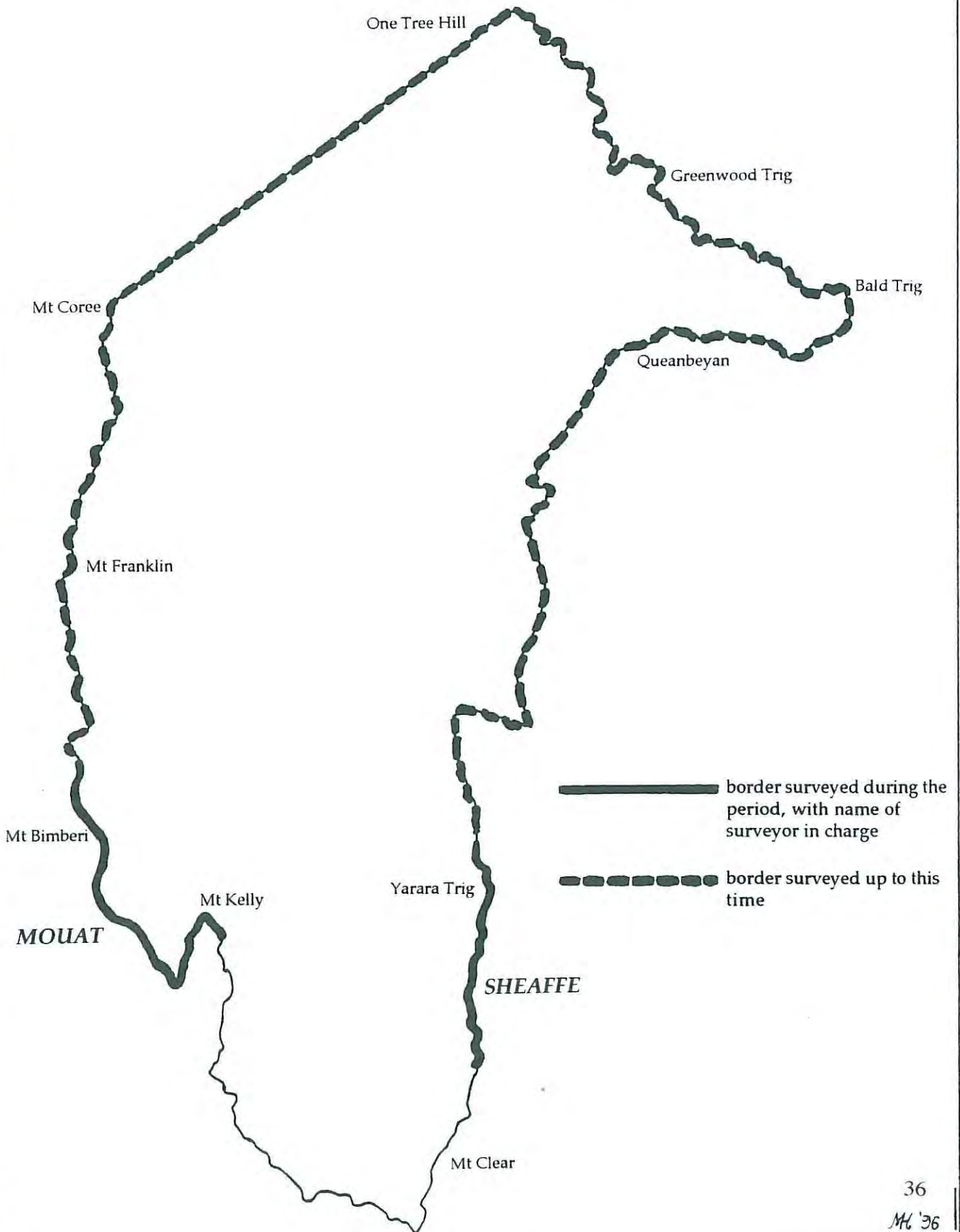
# SURVEY OF THE ACT BORDER

7: December 1913-mid 1914



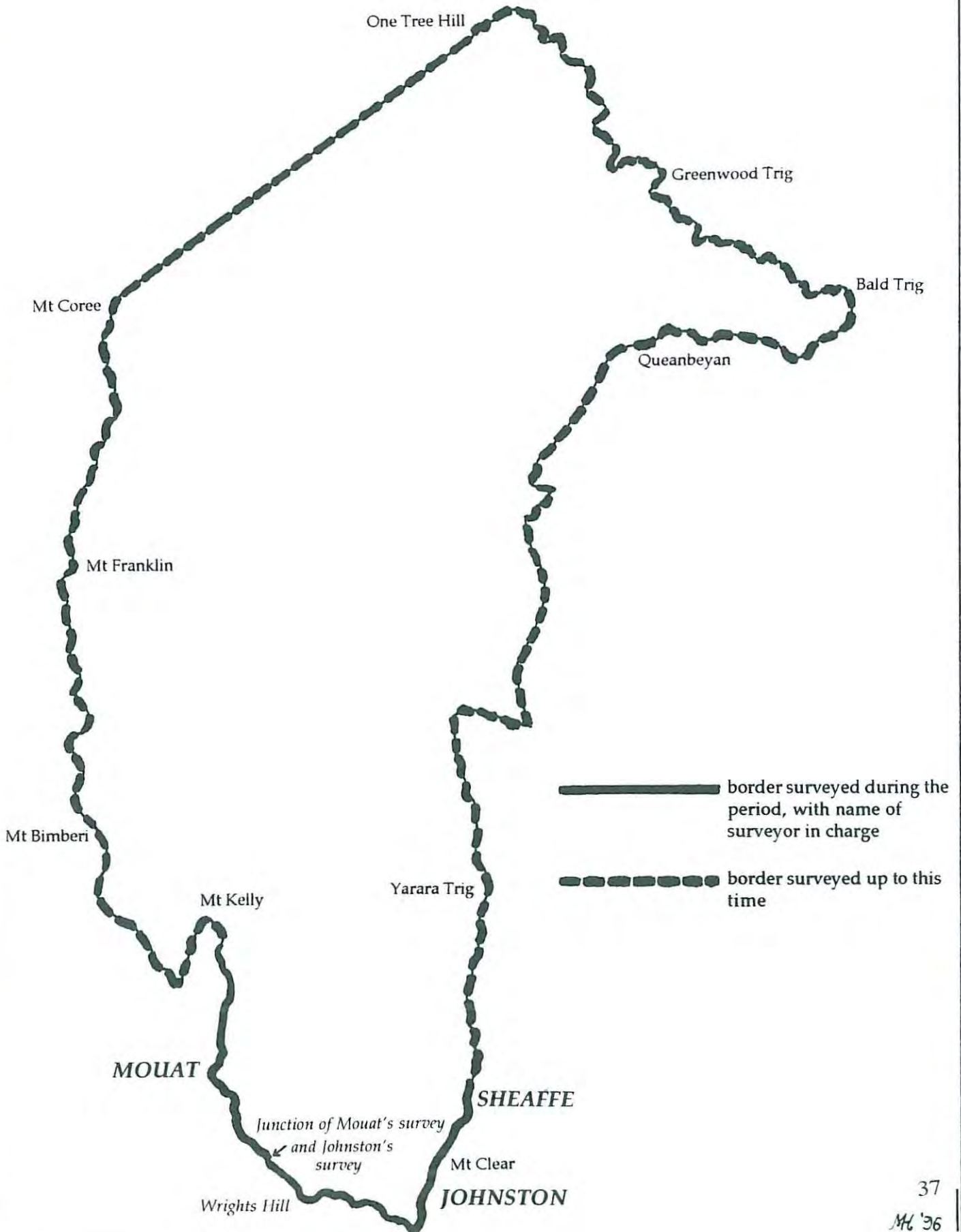
# SURVEY OF THE ACT BORDER

8: October 1914-February 1915



# SURVEY OF THE ACT BORDER

9: February 1915-May 1915



side of the range, adding to knowledge of that most important watershed. Unlike Sheaffe, Mouat encountered no ringbarking, for his route led through forests much less disturbed by grazing activity. Due to timber and topography, in surveying his section of the border Mouat would have had to reconnoitre ahead to first of all determine just which way the watershed ran, for although some of this sort of information could have been gleaned from local bushmen he would have had to walk or ride almost each part of the range himself before he even looked through his instrument or had his team install a station.

The border markers built by Mouat's party were initially mainly 8" (20.3 cm) square timber posts, with concrete blocks at mile points. As he got further south, Mouat's use of 1" (2.54 cm) diameter galvanised iron pipes increased so that before he reached Bimberi he had stopped using timber markers altogether (reference trees continued to be marked). Metal markers were more resistant to bushfire than timber posts and were also less bulky to carry on packhorses, and although they had to be filled with concrete this was probably less time-consuming than the squaring and marking of timber posts. Numbers of 3" (7.62 cm) diameter, concrete-filled downpipes were also used, particularly for mile markers though also for some of the ordinary stations. On the southern border Mouat also used concrete cylinders which were made with a tin can as the formwork. These were useful in granite slab country where it would have been very difficult to sink a length of pipe into the rock — the cylinder could simply be stuck on top of the granite. The use of the cans is not stated in the fieldbooks, so maybe it was assumed that the cans would rust away faster than they have done. Nails and railway spikes set in concrete were other types of stations in the south, all with the ubiquitous rockspit. Each of these latter types of marker used less metal, and Mouat may have been rationing his use of pipes owing to First World War metal shortages by 1915, although Johnston seems to have used pipes pretty freely during the same period. One cryptic aspect of Mouat's markers is the reference trees at his mile points on the western boundary. In addition to the distance and the other normal markings on these trees, Mouat also had the code 'R45' inscribed. Unfortunately Scrivener's initial instructions to Mouat have not been found and so the meaning of this inscription remains a mystery.

The surveyors recorded in their fieldbooks the lay of the land and also man-made features along the border. At the point now called Piccadilly Circus Mouat noted the road running over the range from Queanbeyan to Brindabella, and also the old track which ran higher up the side of Brindabella Mountain. He mentioned the Lee's Springs watering point and old stock and horse yards. Along the range he used descriptions including 'open timber, snow grass, scrub in patches', 'heavily timbered, scrub on ridges' and 'rough and steep'. Reaching Mt Aggie just before Christmas, Mouat found an old survey peg on the peak. Climbing to the trig on 1644 metre Mt Franklin early in 1914 he wrote 'bush growth becomes stunted towards top'. During February Mouat and party camped at Ginini Flats and made a feature survey (by compass) of the flats.

They continued the border line and reached 1857 metre Mt Gingera. Here Mouat wrote in his field notes 'massive granite boulders, white gum [ie snow gum] timber, stunted and snow-broken'. At border marker V57 on the peak there was no tree available so Mouat had the reference mark painted on an adjacent boulder. But that boulder faces south-west and the paint would have been worn off after only a few winters of blizzard-blast — there is no sign of the paint today. The fieldbook shows a trig on Gingera; it had not been installed during the NSW period and was probably erected by Vance who by the time Mouat arrived already had bearings to the trig from Mt Tennent Trig. A most interesting discovery during the fieldwork for this project was that the Gingera Trig has moved since Mouat's time. Whereas he showed it to be at border marker W57, it is now at X57. The trig's change in position does not seem to have been known of by the ACT survey community. An explanation for the move is given by Russell Wenzholz (who was with me that day in the field) in an article currently in

press for *Collimate*, the journal of the Canberra Division of the Institution of Surveyors, Australia.

Mouat's fieldbooks do not necessarily show all of the party's camp sites, but they do show that in April the party was camped at The Rolling Grounds, between Gingera and Bimberi and at an elevation of 1520 metres. A bridle trail ran right along the range from Lees Springs and here it met that coming out of the upper Cotter from the Oldfield family's Cotter Hut, and crossed the range, heading west to Cooleman. The camp was close to the track and on the south side of the head of the creek running west from the gap. Surveyors had to provide the camping equipment for themselves and their men, for which they received an allowance of 15 pounds per annum. A vivid picture of the camps on the ranges is painted by the following list which shows Mouat's camping gear in 1921. Judging from little things like the paucity of cutlery and cups, Mouat's gear had by then seen hard times out in the field during his border and other work:

#### *Tents*

- 2 10'x12' tents with flies
- 1 special surveyors tent with fly by Walder, Sydney
- 1 special surveyors tent without fly
- 1 10x12 tent without fly
- 1 10x12 galley tent

#### *Cooking etc*

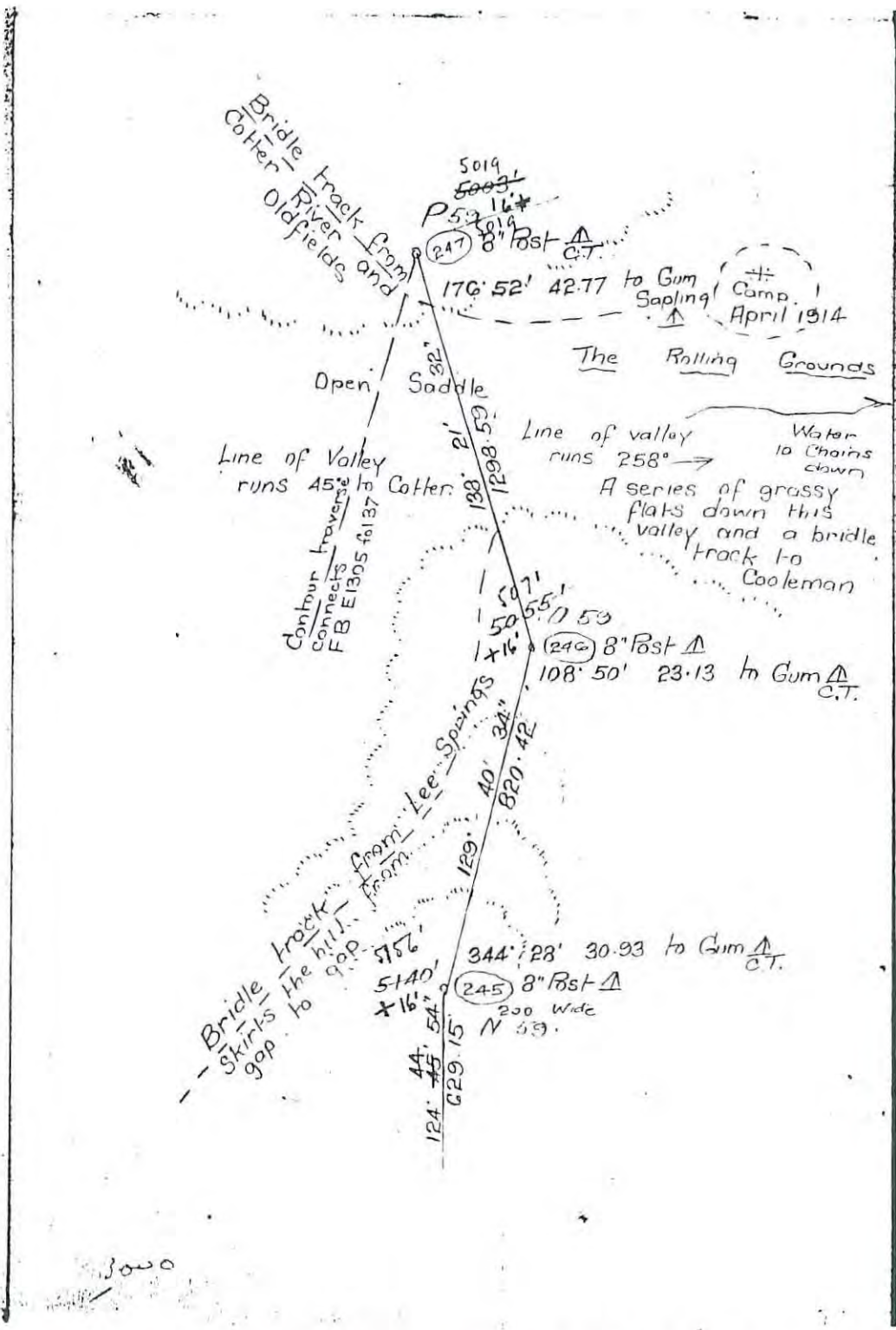
- 1 medium camp oven
- 2 frying pans
- 1 grid iron
- 2 round baking dishes
- 1 mincer
- 1 steamer
- 2 enamel mugs
- 12 enamel plates
- 2 knives, 5 spoons, 1 fork
- 2 hurricane lamps
- 1 enamel pie dish
- 1 enamel saucepan
- 1 camp stretcher bed
- 1 small soldering iron
- 1 small pair pliers
- 1 meat chopper

#### *Tools*

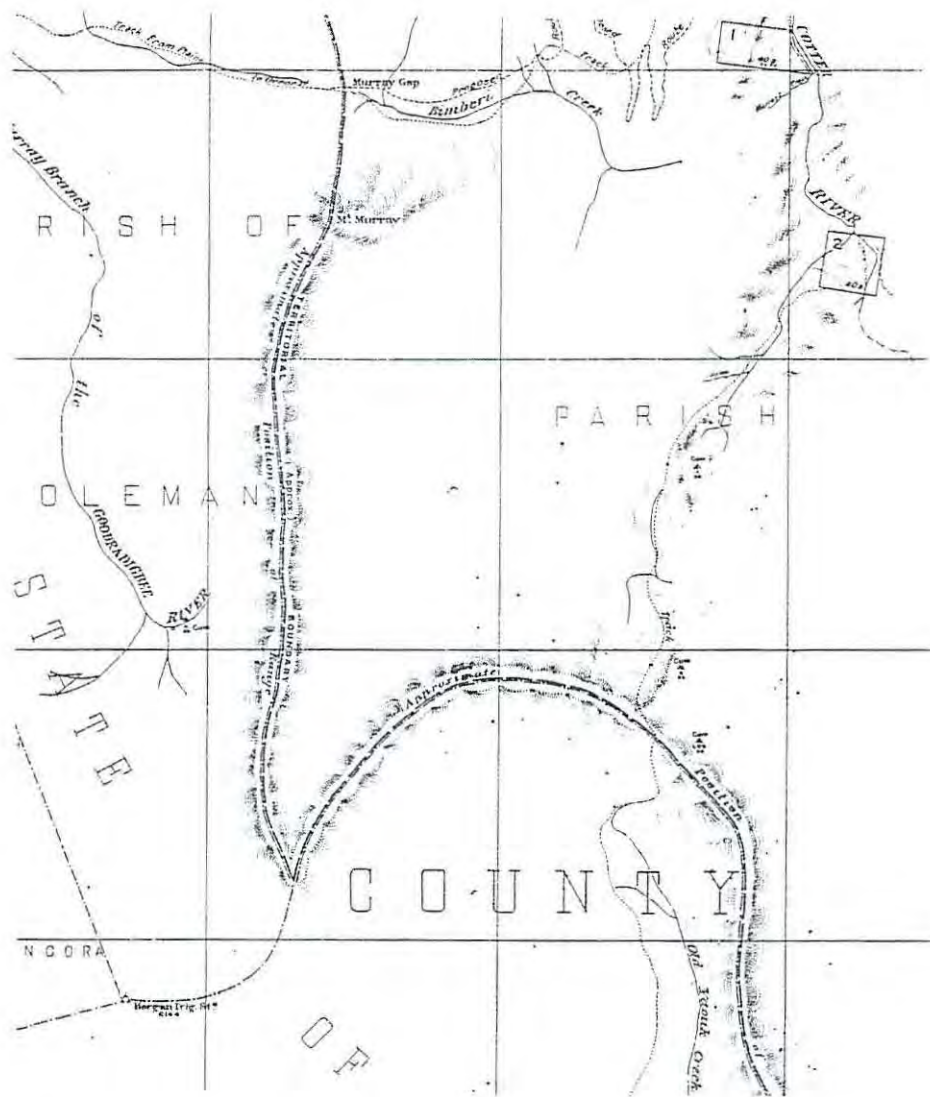
- 2 hand saws
- 2 claw hammers
- 1 one man cross-cut saw
- 1 adze
- 1 spade
- 1 crowbar 5' octagonal steel
- 1 axe
- 1 pair tin snips
- 1 1/4" chisel
- 1 pick
- 1 set brass stencil letters and numbers
- 1 set stamping numbers<sup>24</sup>

Many of the tools listed would have not only been used around the camp but would have played a big part in the marking of the border. The axe and cross-cut would have been used to clear lines of sight, and the pick, spade and crowbar were wielded by Mouat's labourers to excavate the holes for the markers. The stencils and chisel would





Moaut's party camped at The Rolling Grounds in April 1914. Shortly after this the party was forced off the Brindabellas by heavy snowfalls. The tracks from Lee's Springs and Oldfields' hut crossed the range to Coleman Plain at this point. (Fieldbook 1024, ACT Land Information Office)



(Above) Maps of the ACT drawn prior to the completion of the survey followed the old parish maps and showed the south-western corner of the territory reaching out toward Mt Morgan. Mouat's survey demonstrated that the watershed, south of Mt Murray, instead turned south-east to Yaouk Gap. (Fed. Terr. 40ch:1in, 1914, sheet 7, NLA) (Below) The area in question, photographed from near border marker D75 on Mt Bimberri. Mt Murray is in the centre, with Morgan right rear, and the ridge from Yaouk Gap rising to Mt Scabby at left (Yaouk Bill Range in distance).



have been for the markings inscribed on reference trees and timber posts (a 1/4" chisel seems a little narrow; perhaps a bigger chisel had been lost from Harry's kit by this time).

As for actual survey equipment, Mouat like Sheaffe and Johnston was paid the equipment allowance, although in Mouat's case he had to hire one of his theodolites from the department and was charged nine pounds (more than a week's wage) annually. Regarding transport, when Mouat began his survey his horses came from Scrivener on loan. By April 1914 he had one of his own packhorses and by 1915 had three. Mouat may also have had a buggy, judging by the 35 pound transport allowance being paid to him in January 1915.

The western border survey was soon to be interrupted. The cause was not human as had been the case up on the northern and over on the eastern boundaries, but natural. Heavy snow began to fall at the end of May and Mouat's party was forced off the Brindabellas. It was impossible to continue the border work in these conditions, but Scrivener made the most of Mouat's geographical position and had him conduct a survey of a considerable length of the Cotter River. Scrivener reported to the Territory's resident Administrator, Colonel David Miller (who, it will be remembered, was on the Advisory Board with Scrivener), that Mouat was surveying the river and its principal tributaries 'about which very little is known as no survey of any kind of this river has been made'.<sup>25</sup> Although portion and lease surveys had been carried out in the upper Cotter late last century, the river itself had not been charted for any distance.

So Mouat and his men spent the winter months crunching along the frosty banks of the stream installing survey marks (which were incorporated into the border alpha-numeric numbering system). As well as describing the geology, vegetation and topography, the surveyor was also on the lookout for future gravitational dam sites. At one point on the resulting map are the words 'offers possibilities of weir construction'. That spot is only a short distance downstream from today's Corin Dam. Whether the survey party stayed in the by now vacant Cotter Hut formerly owned by the Oldfields is not known, but the party certainly camped at other points along the valley. Today a place upstream of the site of Cotter Hut is still locally known as Mouat's Camp. Having completed this work, Mouat took a well deserved 18 days leave in September.

With the retreat of snow from the range Mouat returned to the border. The line was continued and during the summer camp was pitched in the shallow valley just a little north-west of Mt Bimberi's 1911 metre summit. (It was not the first time Mouat had been on this highest ACT mountain, for he had come forward to the peak back in April in order to take bearings to other trigs.) At Murrays Gap Mouat saw the marks made by Surveyor John Drury Reid in his survey of a proposed road from the Territory through to Yarrangobilly, following the bullock dray road to Cooleman. Heading south, over and beyond Mt Murray, Mouat made a major contribution to the knowledge then available of the shape of the Territory. Maps then in use followed the old parish maps in showing the south-western corner of the Territory extending out in a point towards Mt Morgan (Half Moon Peak) in NSW. Mouat found that the watershed did not run in that direction but pursued a south-easterly course toward Yaouk Gap.

Numbers of times while on the western boundary Mouat wrote how the watershed was not well defined. Indeed the rounded tops of the Brindabellas do not possess many sharp ridges. Now on the southern boundary Mouat found the topography better defined as he ascended Mt Scabby and proceeded over Mt Kelly and beyond. Masses of exposed granite characterise this part of the border. A field description of the country near Kelly (reached in February 1915) reads 'stunted gum, massive granite outcrops and boulders, steep and rough, precipitous in places'. Just past Kelly, where a gap runs down to Rotten Swamp, Mouat noted the watershed running 'to Gudgenby River'; actually this is still just inside the Cotter watershed, and a later hand has crossed

out Mouat's notation and correctly written 'to Licking Hole Creek' (a Cotter tributary). The granite slabs and boulders further along the border must have demanded considerable dexterity of the surveyor and his party, for some of the markers (as found during fieldwork) were installed in difficult positions, many requiring the climbing of boulders and one at least necessitating the men to jump across a small chasm. Was there any thought of mutiny amongst the labourers here, one wonders?

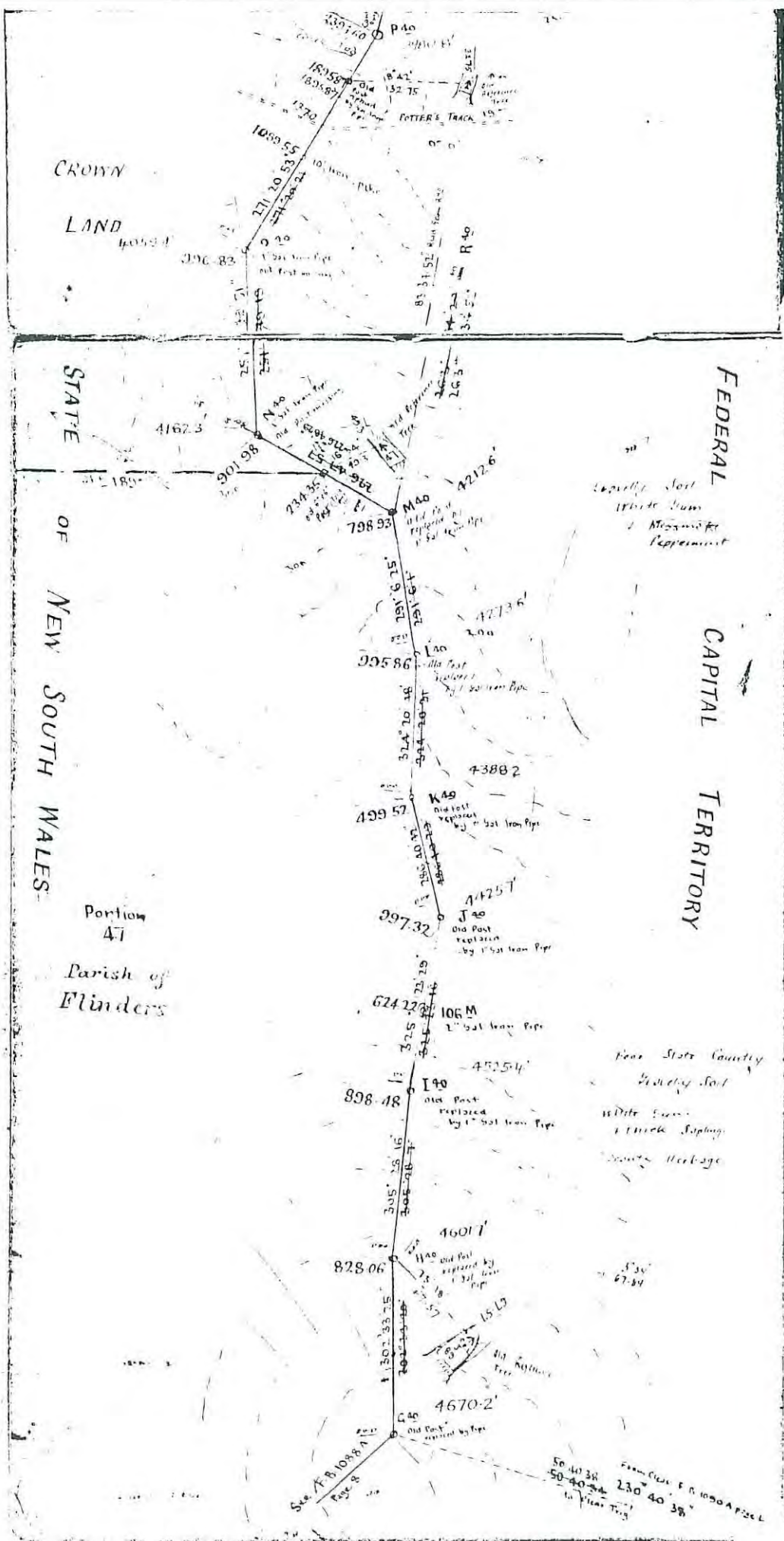
Running southerly, Mouat followed the range down towards Sams River. Here the border crossed the Sams River-Bobeyan bridle track underneath Mt Gudgenby. From the fieldbook it can be determined that that track was a few hundred metres north of today's firetrail which passes through this gap at the head of Naas Creek. Some distance further on the border crossed the trail between Bobeyan and Yaouk and today's firetrail runs on exactly the same line, right next to marker L84. Mouat then climbed Sentry Box with its distinctive granite boulder which gives the peak its name. At the south-eastern end of the mountain he noted the 'precipitous sideling' which drops into the head of Grassy Creek, and which his party would have been relieved to find they did not have to directly descend.

C.R.Scrivener retired as Director of Commonwealth Lands and Surveys in 1915 (he was awarded the Imperial Service Order two years earlier). He moved to 'Taihoa', a distinctively designed house at Mt Irvine in the Blue Mountains where he led an active retirement until his death in 1923. With Scrivener's impending departure in 1915 someone had to take over the local supervision of survey work from Acton. Accordingly, Percy Sheaffe's duties were enlarged and he clearly could not remain out on the border. Freddie Johnston would take over from Sheaffe on the south-eastern territorial boundary.

After arriving from Western Australia Johnston in 1914 conducted a contour survey in what is now the Deakin-Yarralumla area of Canberra, followed by a feature and detail survey in the north-east of the Territory, camping at Mulligans Flat. He heard of the war's outbreak while at 'Mons' hotel (the Cricketers Arms, between Ginnindera and Hall, run by Mons Lazarus) and was tempted to enlist. Just before beginning on the border, Johnston bought a T Model Ford. Cars were few in the district and the Queanbeyan policeman who examined Johnston for his driver's licence had not ridden in a car before and was petrified!

Johnston joined Sheaffe in February 1915 near the headwaters of Left Hand Creek where Sheaffe showed the newcomer the ropes before departing for Acton. The work here on the divide between the Murrumbidgee and the Naas was in rugged timbered country running over 1603 metre Mt Clear. When Johnston got to Clear he found that the trig erected by Taylor in 1877 was by now an 'old pole without vanes supported with stone cairn on top high granite boulder', and there was a new dogproof fence running through the trig reserve.<sup>26</sup> Johnston made his main camp at Long Flat in the very southernmost part of the Territory and then had a 'flying camp' closer to the scene of work (presumably Mouat and Sheaffe also used these light camps when necessary).

Johnston had driven down in the Model T, going via Cooma owing to the rough roads inside the Territory, and he also had a horse and sulky which he had bought in January 1914. On 22 February 1915 he wrote to Acting Director of Commonwealth Lands and Surveys (subsequently Commonwealth Surveyor General) Colonel J.T.H.Goodwin in Melbourne, saying that owing to the need to have supplies transported from Cooma to both his main camp and to the advanced camp, and the high cost of fodder, transport costs were estimated at three pounds ten shillings a week. He also requested an allowance so that he could purchase a packsaddle (four pounds) 'by aid of which my cook would occasionally be able to carry supplies to the advance party on my sulky horse'. The Acting Director replied, saying the estimate seemed high, that 'it is essential that all expenses in this respect be curtailed as much as possible' (it was not



A page from one of Johnston's southern border fieldbooks. Note the many old NSW survey marks and reference trees found by Johnston in this area, and Potter's Track, one of a number of bridle and other tracks shown in the surveyors' fieldbooks to have crossed the border at this time. (Fieldbook 1089, ACT Land Information Office)



Freddie Johnston's survey camp near Westermans' homestead, on the southern border, in autumn 1915. Note his Model T Ford, and the middle tent with stove, flue and plume of smoke. Johnston is probably the figure on the left, while the man at right appears to be Field Assistant Kenneth Stretch. (Australian Archives, CRS M1483, item 17 (portion))

the first time that the border surveyors had been reminded of the cost of the border exercise), and that Johnston should provide further details. Freddie wrote back on 27 March saying transport for that month was fourteen pounds. These heavy costs were due, he said, to his camps being in inaccessible places. 'I have been unable to utilize my sulky, and all supplies, marking material etc, have had to be carried to both camps by pack horses. All labour for the above transport has been provided by the persons from whom the pack horses were hired — hence there has been no interference with the field work of my party.'<sup>27</sup>

A local stockman was enlisted as guide to lead the way to the flying camp. Johnston found the locals quaint and a source of humour. The Ford was a novelty and he wrote how a local woman 'used to delight in sitting in the stationary car and entertain her cronies by blowing its raucous horn. She surreptitiously smoked a clay pipe'.<sup>28</sup> At the same time that the surveyor was painting the locals as hicks, he was a source of entertainment for the mountain people themselves. In his autobiography published many years later, Johnston swallowed their tales of testing a cooked damper by touching it to the nose, and of kneading damper dough on a mate's back in the absence of a board. The locals saw Freddie coming.

Between Mt Clear and the Bobeyan Road Johnston repeatedly found old survey marks along the border watershed. So inquiries were made to the NSW Lands Department in Sydney which identified the marks as having been put in by Surveyor Martin back in 1889 during a survey from Sentry Box to the Murrumbidgee near Bumbalong. It is possible that some of Martin's marks still exist and two or three may have been located during fieldwork (see site inventory, sites 247-249). The fieldwork located survey marks parallel to numbers of Mouat's border markers on either side of Sentry Box; whether these pre- or post-date Mouat's time is not definitely known at this stage. An interesting feature of Johnston's border marking is his reference trees. As well as inscribing the Commonwealth survey symbol and 'CT', Johnston's men also included the number of the border marker itself which was very useful to later attempts to find the marks (which, after all, is the purpose of reference trees). For some distance north-west of Wrights Hill Johnston's survey followed a drop-log fence. That fence is still there today, though of course in deteriorated condition.

The identities of some of the people who accompanied the three border surveyors are known. For Sheaffe and Mouat the most important individuals with them were their wives, for both men were accompanied by their spouses for a lengthy part of the work. Percy Sheaffe married Catherine (Katie) McKellar at Rushcutters Bay on 26 March 1913; his best man was fellow surveyor R.J.Rain. Katie (born 1886) was from Wooyeo Station near Lake Cargelligo. She was with Percy for just about all of the border work from 1913 on, living under canvas with him in the midst of the tents of the other men in the party. Harry Mouat married before coming to Canberra. In Newcastle he met Iris Friend Winchester and they married in 1912. Some of the time while Harry was out in the mountains Iris lived with her sister Mabel in a house in Queanbeyan. She later joined Harry on the border and understandably found the life fairly hard as she wasn't used to roughing it. In the winter she and Mabel boarded at a local homestead, probably either Yaouk or Brindabella. Johnston was single at the time of the border survey, unlike all the other Canberra staff surveyors. When asked by a grazier down in the south why this was so, Freddie evasively replied it was because girls were so particular. To this the 'cockie' replied, 'you ought to come around our way — *my gals ain't partikalar*'. Johnston affirms in his memoir, 'I did *not* call'.<sup>29</sup>

The men in each border survey party usually numbered six. In addition to the surveyor there was a field assistant and four labourers (including the chainman and the cook). Sheaffe's assistant's identity is not available from the records. The names of Mouat's and Johnston's, from piecing together various bits of evidence, were Reg Kelly and Kenneth Stretch respectively. The surveyors were paid an allowance for tutoring their

assistants in the field. A chainman's wage was less than half that of a surveyor. Johnston's chainman, right at the end of the border work in April 1915, was Fred Griffiths who Johnston took on from Vance's party; Griffiths was also groom. Sheaffe's chainman may have been Tom Ryan, and Mouat's was apparently James Callaghan. In May 1912 Sheaffe took on John L. Simpson as cook; Johnston's cook was a man named Sid; Mouat's cook is unidentified. Cooks were paid even less than chainmen. Adaminaby's Cecil Luton is remembered as having been an axeman on survey parties at the turn of the century and is said to have been on the southern border job too. Just whose party he was in was suggested by the vanes of the old Bimberi Trig. Luton wrote his name on the trig first on 2 August 1902, then again on 31 January 1915 — at the very time Mouat was camped just below the trig station.

For a few years the Commonwealth encouraged university students to get field experience by working with federal surveyors over the uni summer vacation. In Canberra Scrivener would ask his staff whether they were willing to take on a student. Some surveyors, like Arthur Percival and especially John Drury Reid, readily agreed. Others, like Percy Sheaffe, had to be cajoled. After declining to take a student in late 1912, Sheaffe was asked by the boss to reconsider. He agreed but warned that his movements in the new year would be uncertain. The student assigned to Sheaffe was E.F. Rowntree of Montpellier Street, Hobart, who arrived at Acton on 10 January 1913 and was conveyed to Percy's camp out on the border (which at that time would have been somewhere near the railway, east of Queanbeyan). For almost three months the young Tasmanian worked with Sheaffe on the border and in the city area. Sheaffe was able to report at the end of March that Rowntree had been energetic, had 'made good use of his opportunities' and had showed 'exemplary' conduct.<sup>30</sup> So perhaps for Percy, having a student around his heels wasn't so bad after all.

There was a marked degree of social stratification within survey parties, as might be guessed from the wide gaps in pay rates. Period photographs portray the surveyors as very well dressed in the field, as were their field assistants, but the labourers wore labouring clothes. The surveyor was always referred to in correspondence as 'Mr Surveyor', but the title of Mr was not always applied to the rest of the team. A poem dating from November 1926 — only eleven years after the completion of the border survey — gives an idea of the way a party was ordered. It was written during Surveyor Pulver's survey near Coree (referred to again in a later chapter). Apart from Astley Pulver, there was Clem Marsh (foreman), Jack Shumack (evidently the cook and known as Old George) and Reg Brogan as chainman. The poem, written by Shumack, may not have great literary claims but it is useful for the picture it presents:

*Here we are on Mt Coree  
And all around us we can see  
Hills as blue as blue can be  
And pretty valleys o'er the lea*

*We only have four weeks you know  
Then to the city we will go  
And with our roll we'll make a splash  
Until we spend our hard earned cash*

*Reg Brogan has been very sick  
Clem Marsh he is a box of tricks  
Old George the cook has got the huff  
Because we wouldn't eat his duff*

*Mr Pulver's seat has fallen in half  
Of course the chainmen had to laugh  
But he to let us know the trade*





The federal survey camp at the national capital site in 1910. In addition to the tents and timber huts, a concrete and steel building was constructed for fireproof storage of plans and it remains today near State Circle. (Johnston, *Knights and Theodolites*)

The stratification in survey parties is reflected by dress alone in this photo of Sheaffe (right), his field assistants and his labourers. Note the axes being carried, and that the labourer at left carries a wire (also called a band), used for measuring distance. There is a famous photo of Home Affairs Minister King O'Malley driving in 'the first peg' of the federal capital plan on 21 February 1913. The picture seen here was taken just beforehand when Sheaffe was setting the peg. The clue is the tree in the background (besides, Percy can be seen in the background of some of the O'Malley shots). Like many of the photos taken at the Canberra site at this time, there is very little grass, indicating either bad drought conditions or extensive overgrazing. (Sheaffe Collection)

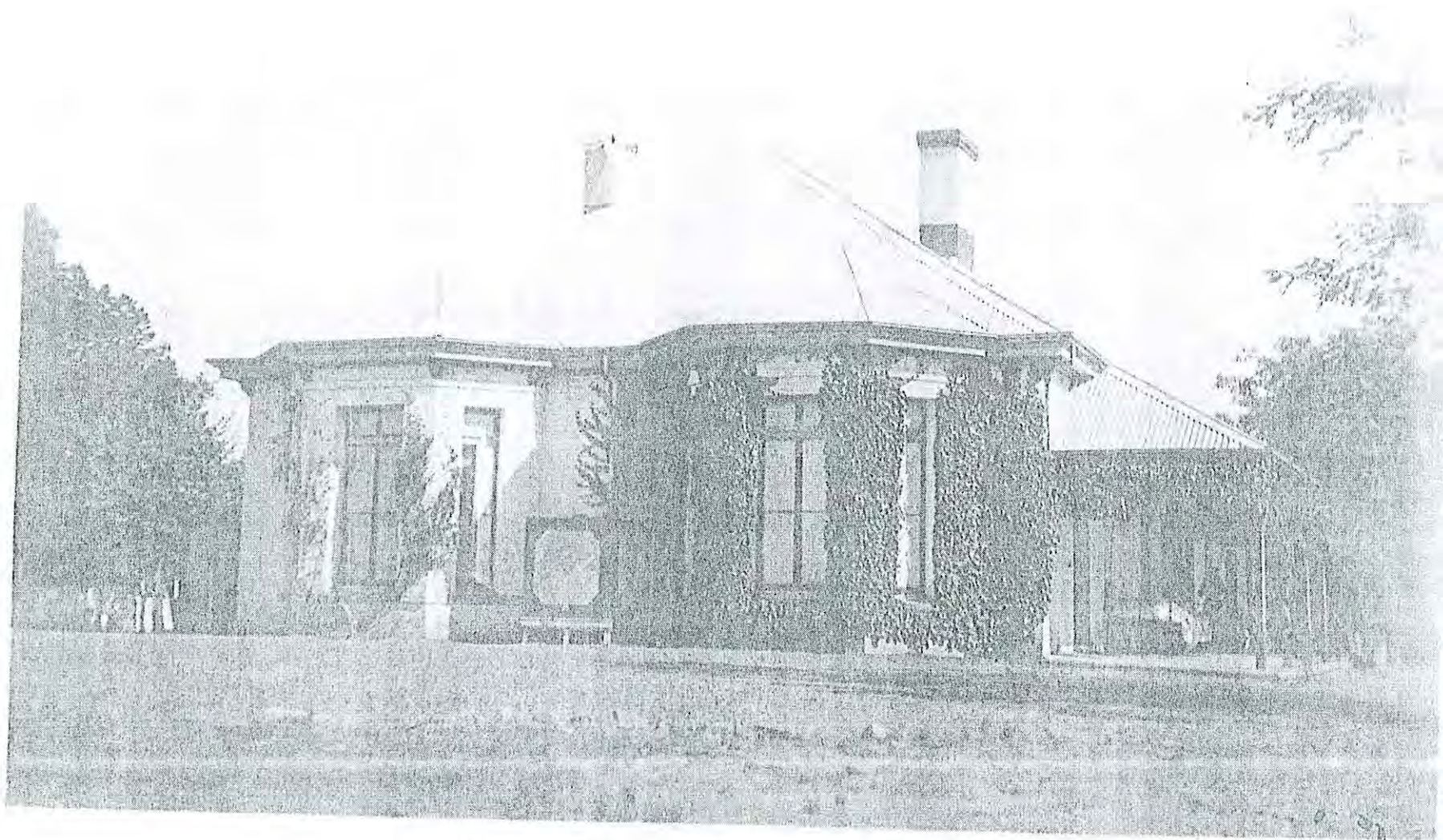




Following the modest canvas camp era of the early years, the survey staff subsequently occupied offices in this Home Affairs Department building at Acton. (Australian Archives series M83 item NN, photo no.47)

Surveyor John Stevens sets up his theodolite at Coree trig at the commencement of fieldwork for the project on 25 March 1996. Percy Sheaffe began the border survey at this spot in 1910, and Harry Mouat commenced the survey of the western boundary here three years later. The original trig was replaced by the current quadropod in 1970.





Historic Acton House, the home of the Scriveners, was the scene of many convivial weekend get-togethers for the survey staff, and the place must have been a respite from the rigours of the ranges for the border surveyors when they were in 'town'. After the Scriveners' departure during 1915 the Sheaffe family moved in. (Australian Archives series M1483 item 16)

*A solid seat of gumtrees made.*<sup>31</sup>

During the years of the border survey there was much other survey work going on closer to the capital site, and some of the border surveyors were involved. Sheaffe for example had other tasks besides his border work. During 1913 he conducted a survey of the Queanbeyan-Canberra rail route, surveys of various roads, a traverse from Canberra to Tharwa, trigonometrical surveys, and surveys of elements of the city design including the power house site, hospital site and other work.

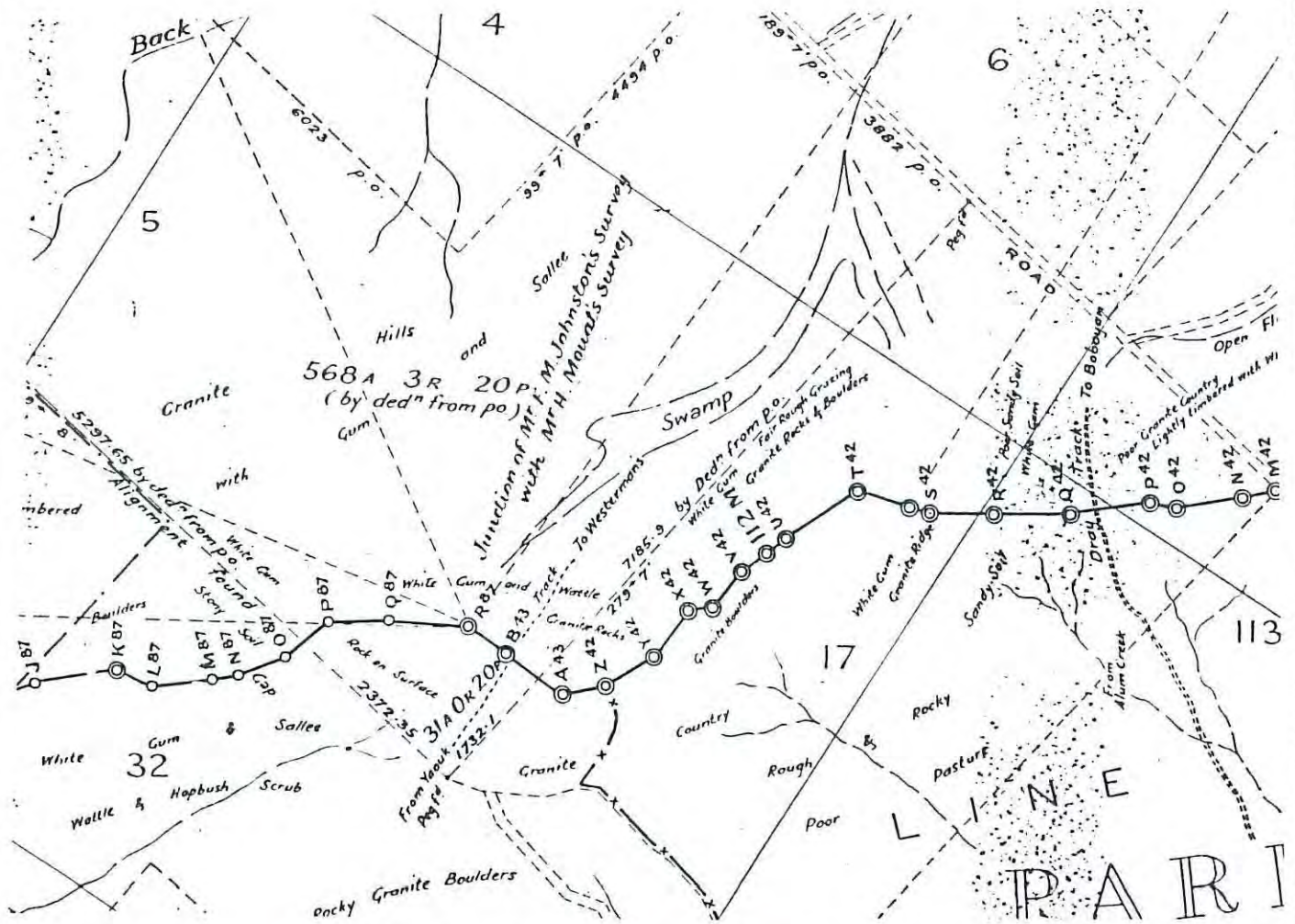
One place to relax at weekends was historic Acton House, the residence of the Scriveners. The Canberra survey staff, including hopefully all three border surveyors when they were able to get away from the rigours of the ranges (and hopefully also the overworked Canberra draftsmen who were flat out preparing the FC18 border plans as well as all the other Canberra plans), enjoyed tennis matches and other social functions hosted by Scrivener and his wife until their departure in 1915. Johnston wrote that these convivial occasions were a real highlight of his early Canberra sojourn. In appreciation of this hospitality he wrote the following poem (the first two lines refer to Cotter River surveys he conducted after the border work):

*Whilst toiling on my stony way  
Where Cotter's silvery waters play,  
An image in my heart held sway,  
It was of Acton.  
From One Tree Hill to Coiree cold  
From Mt Clear to Bimberi bold,  
No brighter vista does unfold,  
Than that at Acton.*<sup>32</sup>

The spelling of Coiree with an 'i' must be a typographical error for Johnston would surely have known how to spell this most trigonometrically important peak. After the Scriveners' departure, Percy and Katie Sheaffe had the good fortune to move into Acton House in July 1915.

If the Commonwealth Government was at times impatient with the necessarily time-intensive process of surveying the territorial boundary, so was Administrator Miller. Late in 1914 he asked Scrivener for an update 'as to the present position' of the work. Scrivener told him of the parties' relative locations and stated 'unless some unusual difficulty is experienced the two survey parties will meet before the winter of 1915'.<sup>33</sup>

Scrivener's forecast was accurate. Mouat, moving south-east from Sentry Box, and Johnston, heading towards him from Wrights Hill, met during the autumn. Annoyingly, it is difficult to establish the actual date of the junction, but it would seem certainly to have been in late April 1915. The permanent marking of the border, always behind the actual surveying of the line, still had to be completed however. In fact during May the installation of two mile markers back on Mt Kelly had to be abandoned because of heavy snow on the mountain. Nevertheless the junction was a major event and cause for celebration. The two teams had a combined dinner party at Johnston's camp (somewhere on the border near Westermans Homestead). Freddie's cook Sid, as a mark of the importance of the occasion, made not his usual dessert of spotted dog, but a speciality — half orange skins hollowed out and filled with jelly. Whether there was any liquid refreshment appropriate to the evening may have been thwarted by Home Affairs Minister King O'Malley's prohibition of what he called 'stagger juice' within the Territory, and responsible officers like surveyors would have had to obey. But it is hard to imagine the other members of the parties not arranging for something potent from the pub at Adaminaby or Cooma. Or perhaps everyone who wanted to indulge simply took a step sideways and enjoyed their drinks in NSW.



Detail from sheet 10 of the FC 18 border chart series, showing the junction of Mouat's and Johnston's surveys and thus the completion of the job in autumn 1915. (ACT Land Information Office)

This photograph is understood to have been taken at the time of the completion of the border survey, and appears to be at Johnston's camp. L-r: Harry Mouat, Freddie Johnston, Reg Kelly, Kenneth Stretch, with Iris Mouat seated in front. (Althea De Salis)



With the job now completed the one thing remaining was to check the survey. This was done by tying in the border work with the trigonometrical survey of the Territory. The trig survey results themselves had to be broken down and all of this took time. The checking process was still going on in 1921.

### **Aspects of nomenclature on the western and southern border**

A study of the survey of the ACT border yields some interesting information about the process of naming of physical features, and the way that names are used and abused over time. This is particularly the case with the section surveyed by Harry Mouat's party.

When Mouat began in 1913, his commencement point was by then well known as Coree. The old name of Pabral had almost disappeared from the official maps. It was Pabral back in Mitchell's time, but by 1871 when a map of the County of Cowley was produced the old name was starting to be challenged for that map shows, in smaller type below the original name, the words 'or Coree'.

A few kilometres south Mouat noted 'Peter's Camp' up on top of the Brindabella Range (just who Peter was is not known; was he a shepherd or an Aborigine perhaps?). In time that name has been wrongly transposed to a point lower on the range, and today the name is associated with a hut ruin just off the Two Sticks Road, a site that is much more recent and unrelated to the original Peter.

A little south of the top of Bendora Hill (a name that came in a couple of decades after Mouat's time), the surveyor found a small yard and so (according to the FC18 chart of the border) he called the little flat 'Stock Yard Flat'. That name has not survived.

It is at Mt Aggie that we are given an insight into how surveyors picked up local names and how these come to be officially recognised. W.P. Bluett, owner of Koorabri in the Brindabella Valley, recorded how Mouat came to learn of the peak's name:

*Back some thirty years, not long after I settled in this Brindabella Valley a party of surveyors came out to chart the Brindabella range which is the western boundary of the ACT, at that time this range was ...by the hand of man. No roads existed. The transport of the surveyors party with its equipment had to be by saddle and pack horse. Two young Reid's who lived at the old mine were engaged for this work. As the survey progressed the head man was particular in having charted on their maps the salient features of the surrounding topography. The surveyors round the camp fire at night made a practice of getting the Reid boys to give the district names of the hills and creeks and any outstanding features come across in the days work. They plied the boys also for any stories attached to those names. The Reid father had been sixty years in this district and their grandfather and his family had been on the other side of the range for 100. One night a rocky hill on the line had been noted which the boys on questioning told them was Mount Agnes. The Chief Surveyor pricked up his ears. "Mt Agnes", he remarked, "that sounds romantic, I am sure it must have some story". The boys were diffident. "Come on", he said, "out with it".<sup>34</sup>*

(Bluett then goes on to give some details of how a party including Agnes climbed the peak, which had earlier been called the Toll Bar. Bluett does not mention that the 'Agnes' was Agnes Franklin of the Franklin family of Brindabella.) One can easily imagine Mouat's associations with local landholders, like the Reids and others of the Brindabella Valley, for in his fieldbook at marker X54 near the summit of 'Mount Agnes' he wrote 'leading spur to Brindabella about 2 hours walk'. Mouat wrote down

the mountain's name as Mt 'Agnes', but when the FC18 border chart came out the name had been changed to Mt 'Aggie', an alteration which evidently displeased Bluett.

Further south Mouat reached an officially unnamed peak to which he gave the title Ginini. This and the flats below he spelt as both Gininie and Ginini. The name was a local one and the local bush pronunciation was 'Ginninna' (with the emphasis firmly on the first syllable and hardly any on the second and third), but the surveyor must have heard it a little differently from his sources, and so today we put all the emphasis on that second syllable. He also gave the name to the flats below Mt Gingera, though these have since been named on maps Snowy Flats which may well have been a pre-existing local name.

Gingera was shown on the 1871 Cowley map as 'Long Bimberi', but this name did not survive on the official charts for long and no name is given on early twentieth century parish maps. The locals called the peak 'Big Ginninna', yet when leading NSW mines surveyor R.H.Cabbage visited the upper Cotter in early 1912 and photographed the Oldfields' Cotter Hut with the peak in the background, he called it 'Gingera'. Where he got this from is hard to know, for it's unlikely the Oldfields would have said it that way. Anyway, Mouat got the name onto ACT maps. The gap at the northern foot of Gingera was rendered by Mouat, Dead Timber Gap, a name still used on some maps in the 1950s but now gone. It should be re-instated, even if the timber is live today.

The name Blackfellows Gap was not picked up by Mouat, but at the next gap south he applied the local name, The Rolling Grounds. This name has moved around a bit (see the 1929 Territory feature map, for example), but today is applied at the correct spot as Rolling Ground Gap. The next gap south, Leura, got its name about twenty years after Mouat and his party went through, and was left unnamed by Mouat.

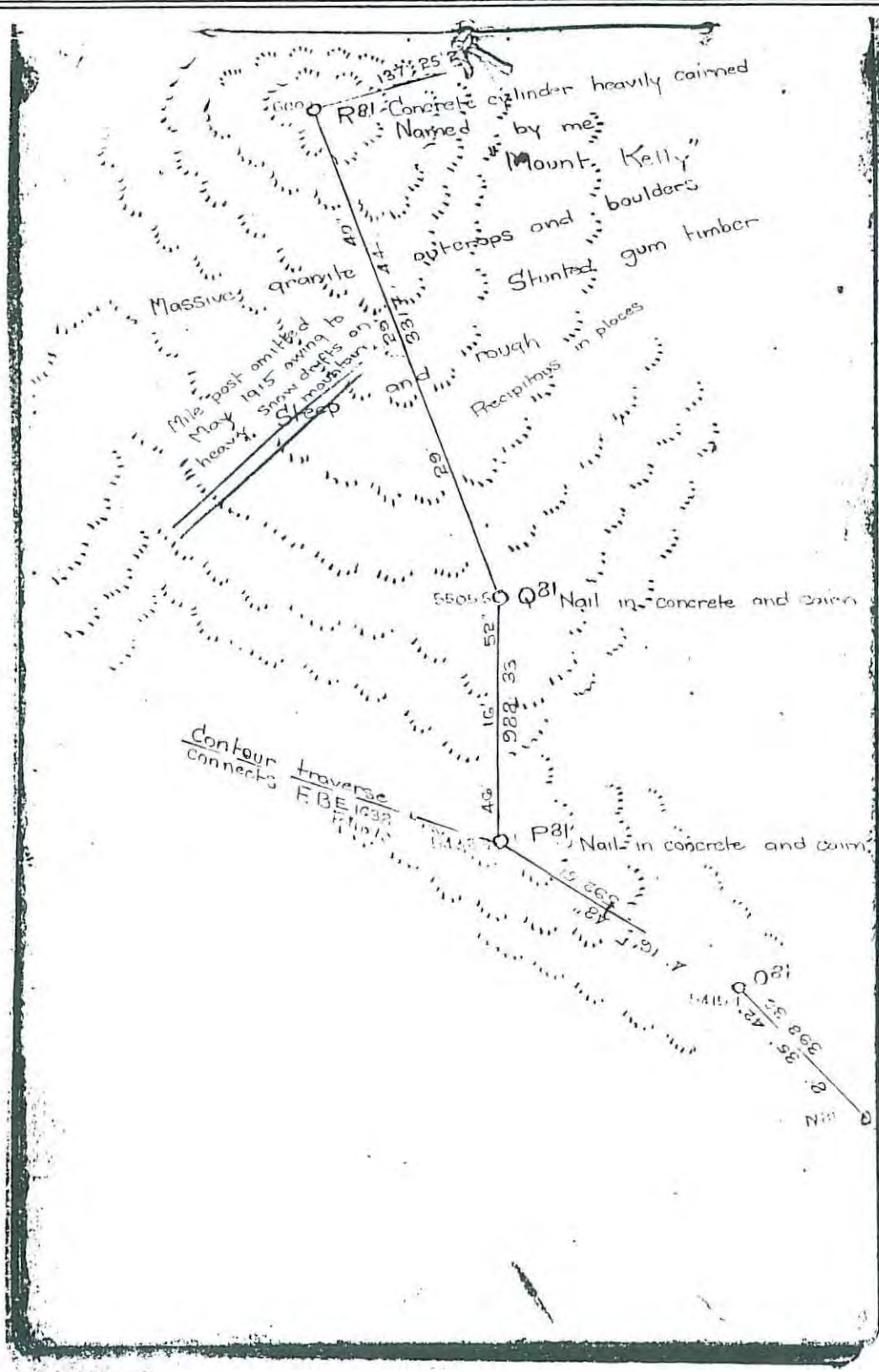
The names of both Bimberi and Murray had been officially recognised well back in the nineteenth century.

On the southern border Mouat gave the name Cotter Gap to Yaouk Gap. As there is another Cotter Gap between the upper Orroral Valley and the Cotter Valley, Mouat's name here has been dropped, for good reason.

Mt Scabby was anonymous to Mouat and he obviously did not pick up from the local people their name for the mountain which we use today. Scabby took some time to be officially acknowledged, for the 1920 Territory sketch map is a blank, and it's not until the 1929 feature map that the name is shown. It is from Scabby that the true head of the Cotter flows northward, but Mouat curiously did not identify the stream as such in his notes, although further on toward Kelly he did show the watershed as dipping off into the Cotter.

It is at Mt Kelly that the surveyor left his greatest legacy. His fieldbook here records the words 'named by me Mount Kelly'. Nowhere else did he write 'named by me', for at all the other points where he placed names where there had been no earlier official ones he was using pre-existing local names. At Kelly he obviously thought up the name himself. Why Kelly? About the only explanation is that if, as has been said earlier, his field assistant was Reg Kelly, then the peak is named after him. Whether Mouat's action commemorated Kelly's service over many months or one particular event will probably never be known. It has been felt for some time that the mountain might have been named after the Kellys of Michelago, but this is now revealed as just surmise.

People in the Yaouk Valley today get angry about the way that Sams River has in recent decades been reduced to Sams Creek. The former title is the one they have always used. Proof of the earlier and grander name is in the border documents. Repeatedly



As is recorded on this page from one of Mouat's fieldbooks, it was Mouat who named Mt Kelly, one of the ACT's highest peaks. The notation 'Mile post omitted May 1915 owing to heavy snow drifts on mountain' gives an indication of some of the conditions endured by the survey parties engaged on the border work. (Fieldbook 1057, ACT Land Information Office)



and consistently the stream is referred to as Sams River. This name too should be officially reinstated. It's only a small matter — but it is important.

At Sentry Box Mouat identified the big boulder atop the range as just that — The Sentry Box. This name had been around for a good while and is shown on the 1871 Cowley chart as Sentry Box Hill.

### **A bearing of 54 degrees and a Cotter catchment conundrum**

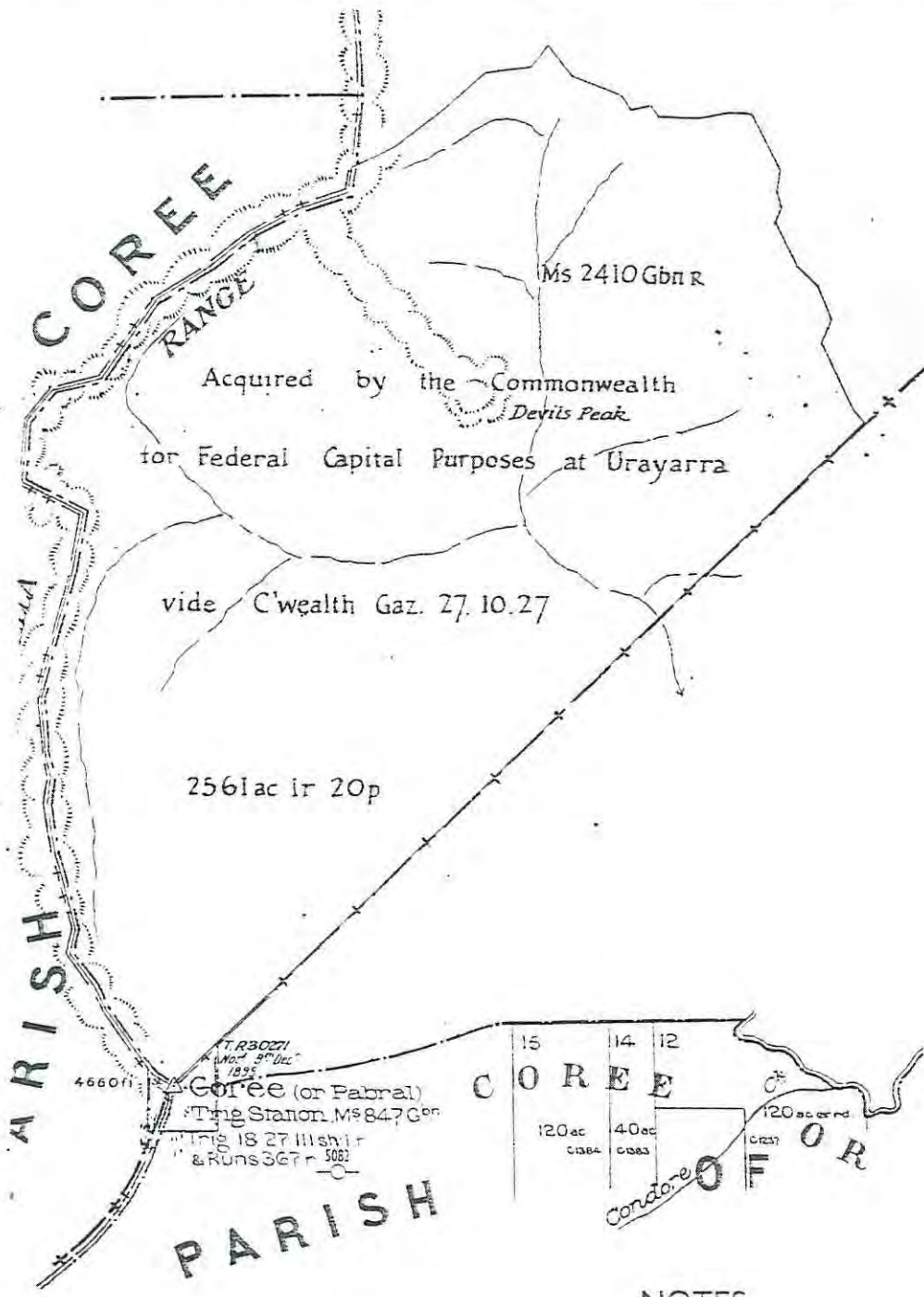
The north-western ACT border's straight line from Coree to One Tree runs at a grid bearing of 54 degrees 20 minutes 19 seconds. When Percy Sheaffe commenced his survey of this line on Mt Coree in 1910 he was not expecting to cross any streams running toward the Cotter, for the full watershed was supposed to be incorporated inside the line. Not so far from Coree, however, Sheaffe would have experienced a severe shock when he found a creek running from left to right across the line. Here was a stream running to the Cotter but whose head was outside the border. Here was a part of the sacrosanct Cotter catchment cut off by the *Seat of Government Acceptance Act*, the Act designed to safeguard that very catchment. The stream in question is Coree Creek (a bit of Musk Creek is also cut off by the line).

Over the years a very plausible story has been circulating about this catchment puzzle. It goes like this. When the border was surveyed, towards the end of the job when the surveyors got to Coree the government was getting short of time and money so it instructed them to short-circuit the actual watershed and simply run the line direct to One Tree. It makes a good story but it is totally false. This part of the border was not surveyed last, but first.

The explanation lies more in the standard of maps available at the time the Act was framed. Scrivener had been instructed to do a reconnaissance of the proposed Territory water catchment, but it could not have been expected that he would personally explore all of it and besides he could not have done so in the time available. He would have had to rely on maps for some of the catchment at least. The maps of the time showed the creek near Coree as flowing not from the flats to the peak's north as it in fact does, but from the top of the mountain. Therefore the bearing to One Tree, on the basis of these maps, would have included all of the creek.

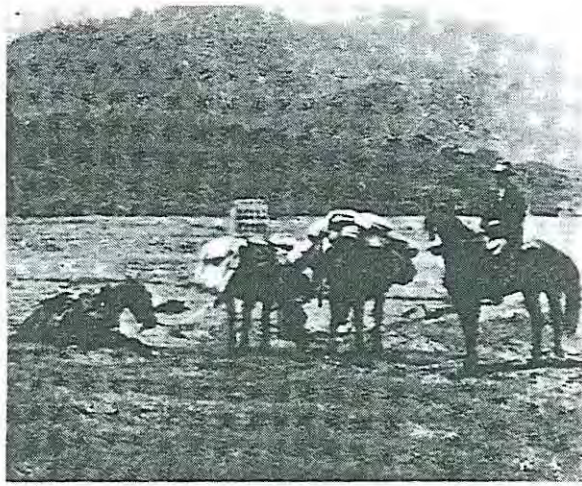
Something had to be done, for the watershed of Coree and Musk Creeks outside the line was over 2000 acres in extent. In 1917 the area was reserved from lease or occupation, but the Commonwealth wanted a firmer form of control. Accordingly in 1926 Surveyor Astley Pulver was instructed (probably by Sheaffe) to survey the creeks' watershed boundary. Astley with a team of three (whose names have been given earlier) set out in November, and eventhough it was summer, some snow fell on the party during the work. The party's gear was trucked in past Uriarra Station and then conveyed by packhorse to a camp at about 1100 or 1200 metres elevation.

'After pitching camp', Pulver wrote, 'we set out a five chain standard across a shallow gully using an invar band supported on forked saplings. The steel bands were regularly checked on this improvised standard base line.' He also pointed out (in reference, it would seem, to the then difficulties of accurately measuring distance on steep inclines), 'as expected in such mountainous country, the differences in height involved "weighting" of measurements to obtain an accurate result'.<sup>35</sup> After identifying the border line (which, according to Pulver's memoir, may have been re-marked by the party), Pulver and his men ascended to Coree trig where they dismantled the trig cairn so that Pulver could set his theodolite directly over the plug. The photo of Pulver standing on the cairn, found earlier in this report, gives an idea of how laborious this would have been. The watershed was duly surveyed during the month that the



NOTES

(Above) Following the survey of the Coree Creek catchment by Surveyor Pulver's party in 1926, the Commonwealth acquired the area the following year. (Parish of Urayarra map, NLA) (Below) Heavily laden packhorses used by Pulver's party. (Pulver, *A Surveyor's Story*)



party was on the job. Supplies and mail were brought up to the group each Saturday by packhorses led by a member of the numerous Blundell clan. Included in the supplies was fresh meat from Uriarra which was very welcome.

The poem by Shumack quoted earlier was left in a bottle in the Coree trig cairn. Over forty years later it was found by another surveyor, reported in the *Canberra Times*, then acquired by Australian Archives at Mitchell. Today, after all that time in a simple bottle on the storm-swept summit of one of the ACT's higher peaks, the poem resides at the Mitchell repository in a special packet made by Archives' conservation staff.

Following completion of the survey the Commonwealth was in a position to acquire the watershed which lay outside the Territory border. This was done the following year when on 27 October 1927, 2561 acres 1 rood and 20 perches of land was acquired 'for Federal Capital Purposes'.<sup>36</sup>

### **On coming down from the ranges**

Each of the border surveyors went on to pursue their careers after the end of the border job. Freddie Johnston, like the other two, was immediately put onto other work. He took over from Vance in the trigonometrical survey of the Territory and worked on Bimberi and Clear. Then he was sent into the Cotter Valley to do a contour survey, part of the task of seeking gravitational dam sites. He established Cotter Trig during this time. In July 1915 he was transferred back to WA and the following year enlisted in the Australian Imperial Force. While in Britain he met Eileen Richardson of Chelsea and they married. After the war Johnston returned to Australia, working in Perth, Canberra and Sydney. During 1941-42 he was the President of the Institution of Surveyors NSW. In 1944 he was back in Canberra, having been appointed Commonwealth Surveyor General, a position he held until retirement in 1949. Freddie was also the first Director of National Mapping and he served on the ACT Advisory Council during his time in Canberra. Later he moved to Sydney where he died at Newport Beach on Christmas Eve 1963. He was survived by Eileen and two children, Sonia and Marshall. In 1965 the Johnston Geodetic Survey Station was named in his honour near the northern South Australian border.

Within a very brief time of coming in from the border, Harry Mouat (with R.J.Rain) conducted a feature survey of the Tuggeranong area, the Murrumbidgee and Gigerline. Later he surveyed the Cuppacumbalong Estate, and then part of the Molonglo with Arthur Percival. By October 1915 he was back in the Cotter doing further surveys for dam sites. In 1916 Mouat surveyed the site of the proposed (but later aborted) arsenal at Tuggeranong. One of his major tasks was his survey of Walter Burley Griffin's axial avenues in 1917. Also that year, Iris gave birth to a daughter, Althea (their only child), at Newcastle and Althea at two weeks of age was brought 'home' to the Mouats' camp at the foot of Capital Hill. The family recalls today that Harry and Iris's tolerance of tent living gave out soon after for either ants or rats were biting little Althea. So they got a cottage at Acton (Cottage no.6) on 26 May 1917.

In 1920 the family moved to Brisbane for some months while Harry was engaged in work connected with War Service Homes. Back in Canberra, Mouat played a leading role during the Federal Capital Commission years of the latter twenties, being in charge of staff carrying out developmental surveys. He was also in control of hydrometric survey work in the Territory for many years. In 1933 the family moved to the suburb of Forrest. Harry enjoyed golf and was on the first committee of the Royal Canberra Golf Club in 1926. In 1931 and 1939 he chaired the Institution of Engineers. The family moved to Sydney in 1944 (Iris never really liked Canberra and visited Sydney on holidays whenever she could) and Mouat took up the position of Commonwealth Property Officer which he held for two years before retiring. What he thought of his

experiences on the border are not known for he rarely talked about the border years to his family.

Harry Mouat died in tragic circumstances in 1952. He had been in St Luke's Private Hospital, Darlinghurst, for an operation. While leaving the hospital grounds on 8 October he was involved in an accident (the precise details of which are obscure) and received fatal fractures. Today Mouat Street, Lyneham, commemorates his name. As is detailed in the Conservation chapter later in this report, it would seem appropriate to name one of the many unnamed border peaks after him as well.

Percy Sheaffe was appointed District Surveyor soon after coming in from the border in early 1915. As such he was in charge of surveys in the Territory (under Goodwin in Melbourne) and while his title changed over the years his senior role did not diminish. Following the departure on military duties of Administrator Miller, Sheaffe also had to take over land and lease administration work. In addition to all of this, during the 1919 influenza epidemic Sheaffe administered the Infectious Diseases Ordinance. Historian Jim Gibbney has called Percy the 'virtual mayor' of Canberra during this period.<sup>37</sup> When Sheaffe retired in 1948 he was Canberra's Chief Surveyor and Property Officer. He was made a life member of the Institution of Surveyors.

When the Prince of Wales arrived in 1920 to lay a foundation stone, Percy and Katie helped organise the visit. Owing to a lack of furniture in the fledgling capital the Sheaffes had to loan one of their armchairs so that the Prince could have somewhere to sit during the formalities! Sheaffe was a warden of Canberra Cemetery (which he had surveyed himself) and in 1918 was President of the Federal Territory Bush Fire Association (he had to step down because his department didn't like him going off to fight fires in work time). Percy and Katie both were involved in Anglican church and school matters. Percy was a warden at St John's Church, was on the church council for 36 years and was a life member of the church's Mens Society. He helped choose the site of Canberra Grammar School and volunteered to survey the site of the school oval in 1935. Workparties of students levelled the oval site under Percy's supervision and Katie later ceremoniously sowed the first grass seed. Percy was on the school board for 30 years. In 1953 when the first dayboy house was built it was named in his honour.

The Sheaffes had four children while they were at Acton House, Isabel (1916), Jean (1919), Robertson (1920) and Gordon (1921). The family moved to Forrest in the late 1920s and in 1960 a new home was purchased in Deakin. Jean recalls that her father would talk to just about anyone about the border survey, and her boyfriends when visiting would often be regaled. The Coree-One Tree section left a deep impression on Sheaffe. When the *Sydney Morning Herald* published a special Canberra supplement to coincide with the opening of the provisional Parliament House in May 1927, Percy wrote in an article that:

*The territorial boundary traversed for the greater part rough mountain ranges. In places the country encountered was so rough that the party carrying out the survey had to crawl on all fours, measure over precipices, and descend in one mile about 1500 feet. Nevertheless in a length of 19 1/2 miles [i.e. Coree-One Tree] the measured length of the boundary differed by only six inches — less than one-third inch per mile — from the length determined subsequently from a trigonometrical survey.*<sup>38</sup>

When the *Canberra Times* reported on Sheaffe's retirement in September 1948, it reviewed his career and went on to say, 'the job of which he is most proud, however, is the survey of the territorial boundary', which Sheaffe believed to be 'one of the most accurate of its type carried out in Australia'.<sup>39</sup>

Katie died in June 1962, and after a long illness Percy followed her on 24 January the following year. A survey mark known as a resection point, near Cunningham Trig in the vicinity of Williamsdale near the border, was for a time named after Sheaffe. Today a survey point on Isaacs Ridge bears his name, as does a street in suburban Holder.

Perhaps the most lasting memorials to all three men are the border markers themselves.

**Endnotes** (used for quotations within the text; a full bibliography may be found at the end of the report).

1. *The Surveyor* , 30 1 1915.
2. *Canberra*, Commonwealth of Australia, 1913.
3. Australian Archives (hereafter AA) series M1 item 1.
4. AA A110 FC1911/738 pt2.
5. File 93/08049 Heritage Objects Register: Nominations Collection of 13 Border Survey Plans with Reference Map.
6. AA 149 Box 1.
7. AA A192 FCL 1921/517.
8. T.L.Mitchell, Map of NSW 1834.
9. Piling Overseers Journals, 1877, 77:1633.
10. *Ibid* 1898, 98:9738.
11. AA A110 FC1911/3575.
12. AA A657 DS1912/833.
13. AA A110 FC1911/3575.
14. AA A657 DS1912/833.
15. AA A110 FC1911/3575.
16. AA A657 DS1912/833.
17. AA A657 DS1914/1949.
18. AA A657 DS1913/3280.
19. AA M1 1.
20. AA A361 DSG1922/69.
21. AA A657 DS1916/755.
22. AA A657 DS1914/3820.
23. *Ibid*, and AA M149 Box 1.
24. AA A361 DSG1922/69.
25. AA A657 DS1914/3820.
26. Fieldbook 1087.
27. AA A657 DS1916/755.
28. F.M.Johnston, *Knights and Theodolites*, Sydney 1962, p.206.
29. *Ibid*, p.207.
30. AA A657 DS1914/67.
31. AA AA1969/345 Box 1.
32. Johnston, *op cit*, p.208.
33. AA A657 DS1914/3820.
34. W.P.Bluett papers, NLA MS 7343 Box 1.
35. A.Pulver, *A Surveyor's Story of Canberra*, Canberra 1981, p.27.
36. Parish of Urayarra Map, 10.11.1965.
37. H.J.Gibbney, *Canberra 1913-1953*, Canberra 1988, p.268.
38. *Sydney Morning Herald* 9.5.27, in AA AA1971/658/1 Box 1.
39. *Canberra Times* 28.9.48, in *ibid*.

## Significance

In determining the cultural significance of the border markers located during this study, the term 'cultural significance' has been defined as aesthetic, historic, scientific or social value for past, present or future generations, which is the definition given in the *Burra Charter*. Assessment of cultural significance was carried out through analysis of the documentary, physical and oral evidence relating to the markers, together with the significance criteria used by the Australian Heritage Commission and the criteria for the assessment of heritage places as listed in the *ACT Land (Planning and Environment Act) 1991*. These ACT criteria (i.e. those relating to cultural heritage places) are as follows:

- (1) a place which demonstrates a high degree of technical and/or creative achievement, by showing qualities of innovation or departure or representing a new achievement of its time;
- (2) a place which exhibits outstanding design or aesthetic qualities valued by the community or a cultural group;
- (3) a place which demonstrates a distinctive way of life, taste, tradition, religion, land use, custom, process, design or function which is no longer practised, is in danger of being lost, or is of exceptional interest;
- (4) a place which is highly valued by the community or a cultural group for reasons of strong or special religious, spiritual, cultural, educational or social associations;
- (5) a place which is the only known or comparatively intact example of its type;
- (6) a place which is a notable example of a class of natural or cultural places or landscapes and which demonstrates the principal characteristics of that class;
- (7) a place which has strong or special associations with a person, group, event, development or cultural phase which played a significant part in local or national history;
- (11) a place which demonstrates a likelihood of providing information which will contribute significantly to a wider understanding of natural or cultural history, by virtue of its use as a research site, teaching site, type locality or benchmark site.

The markers relate to a number of the above criteria:

The markers located during the study are historically highly significant for their association with Federation, the choice of the Canberra site, and the establishment of the national capital and its surrounding territory. They were installed between 1913 and 1915 to officially define the territorial boundary as specified in the *Seat of Government Acceptance Act 1909* and have continued to define the border on the ground ever since. They are among the earliest surviving structures in the ACT erected after the birth of the Territory. The NSW survey marks located during the project, some of which may pre-date the border survey, are also potentially very significant for their association with early surveys in the region. (Criterion 7)

Most of the markers are directly associated with surveyor Harry Mouat who played an important role in the survey of Canberra and the ACT. He subsequently held a senior position in the Commonwealth service in Sydney. Some of the markers are directly associated with Freddie Johnston who also rose to prominence in his career, being Commonwealth Surveyor-General 1944-49. By association the markers also relate to Percy Sheaffe who surveyed the greater part of the border and was prominent in the Canberra administration and community for many years. (Criterion 7)

The group of markers contains numerous good examples of many of the different types of boundary stations erected by surveyors during the survey of the ACT's border. These range from timber posts to concreted galvanised pipes, concrete cylinders and other metal and concrete markers, and marked trees. (Criterion 6)

Particularly important for their rarity value and the quality of their engraved markings are the 'mile' trees which referenced the markers recording the distance travelled from the commencement of the survey. (Criterion 5)

The markers reflect surveying techniques and technology of the period. Laid out in the days when surveying was dependent on measuring-wires and early twentieth-century theodolites and other equipment, they reflect an era far removed from today's electronic and satellite assisted surveying methods. It is noteworthy too that the surveyors erecting the markers had means of access and transport markedly different from that available for official purposes today. (Criterion 3)

## Conservation

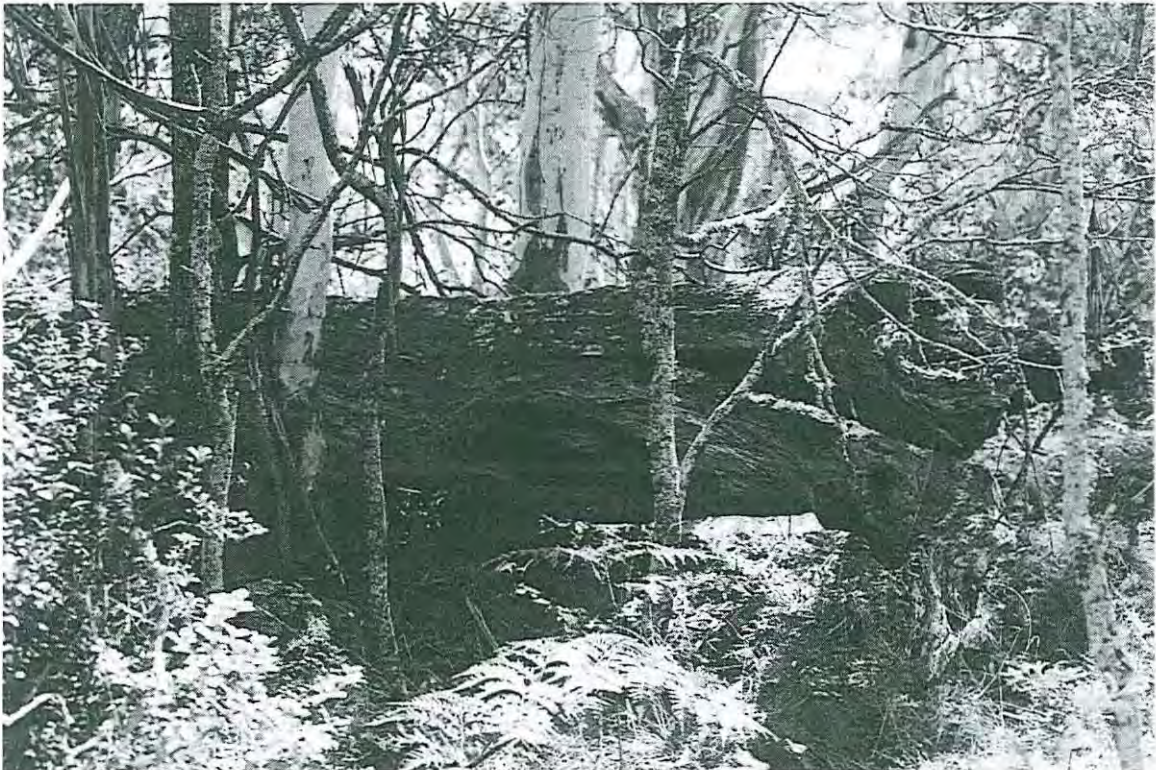
Given the markers' cultural significance, the question of their conservation for the future should be addressed. The many metal, concrete and stone marker stations are probably fairly safe anyway and should last a good many more years. Nevertheless they are vulnerable to human disturbance; given that many of the markers are in a relatively wild mountain area some visitors to these places do not always appreciate discovering evidence of past human activity. The timber markers (posts, and both live and dead trees) are more at risk as they could easily be destroyed by bushfire. Below are some points aimed at assisting the markers' conservation.

- The bodies actually responsible for the markers are the ACT Land Information Office and, apparently, the Surveyor General of NSW (while no documentary evidence for the NSW body's responsibility for the markers has been seen, the ACT Land Information Office has advised that there is at least in principle agreement on joint responsibility for the markers). The markers identified under the study are all on the edge of Namadgi National Park, and so the Park too has a role in helping to conserve them. A number of the markers are also on the edge of nature reserves (i.e. Bimberi, Scabby Range) administered by the NSW National Parks and Wildlife Service's Queanbeyan Office, and on the edge of Kosciusko National Park administered by the NPWS's Sawpit Creek and Tumut offices. Clearly, conservation measures will be more effective if all these organisations can liaise with each other and co-ordinate their activities, especially as none of these bodies have a superfluity of staff or other resources. It should also be noted that not all fences along the borders are accurately placed, with the result, for example, that there are southern markers which are on de facto private property on the 'NSW side' of the fence.
- Were resources to permit, survey staff from the ACT Land Information Office (and NSW Surveyor General's office/Land Information Centre) could undertake field trips along sections of the border from time to time to maintain updated information on the condition of markers. Similarly Namadgi (and NPWS) staff could do similar work in the course of their normal duties, visiting markers while undertaking other work on the ranges.
- Education of park users and park staff about the markers would help to avoid damage to the sites; this could be done through staff being briefed on the sites and through reference to the presence of the markers being included in park literature (e.g. walks pamphlets, inclusion in displays at Visitor Centres etc). Similarly the ACT Land Information Office could undertake public education campaigns through displays, presentations during Heritage Festivals etc. The role of the border surveyors could also be commemorated by naming border features after them. There are very many unnamed peaks along the western and southern boundary, and it is recommended that one be named after Harry Mouat. A candidate for Mount Mouat (unless an Aboriginal name can be proved to have existed for it) is the border peak south-east of Mt Kelly at grid reference 715418 (CMA Yaouk 1:25000 map).



- As was demonstrated through the destruction of markers when the border firebreak was bulldozed along part of the Brindabellas around 1950, it is important for all government and private agencies undertaking works along the border to be briefed beforehand about the markers and their precise locations.
- In the case of bushfire, fire-fighting crews could be briefed on any timber markers or marked trees in their area of responsibility so that an attempt can be made to save the markers just like any other significant cultural features. This is particularly important in the case of the rarer 'mile' trees. It is recognised that in the physical and emotional heat of a fire a border marker is probably not going to rank highly in the minds of people doing the fighting, but a briefing could well be worthwhile.
- In the case of timber posts, natural decay of the posts can be averted or retarded by the application of clear wood-preserving fluids, if the resources (human and financial, human particularly) are available. The more intact and accessible markers as listed in the inventory could be selected for this sort of treatment.
- In keeping with modern conservation practices, it is very important to retain significant fabric at each site. Thus original fabric should not be replaced with new materials unless absolutely necessary.
- The question of whether any interpretative signage should be erected should be discussed by the relevant authorities mentioned above (together with the ACT Heritage Section). If any such signs are installed at any of the markers, they must be small, discrete and should not be mounted on the marker in any way. Interpretation of the markers may best be done by the off-site educational methods mentioned above.

Markers additional to the ones listed in the inventory may continue to be found. These new discoveries should be reported to either/both Namadgi National Park and the ACT Land Information Office so that a complete register of extant markers can be maintained. *Note that it is very important for finders to accurately identify the markers' location in order to enable the original station number to be verified.*



Bulldozed and burnt reference tree on the edge of the firebreak in the northern Brindabellas. See site 8 in the inventory.

## Acknowledgements

I was assisted by many people, without whose help the project would have been much more difficult and the results less worthwhile. Surveyor and long-time friend John Stevens (of the Lithgow firm Craven, Elliston & Hayes Pty Limited) worked with me for nine days during the fieldwork and I appreciate his skills and ability. Brett McNamara of Namadgi National Park kindly made available accommodation during the initial fieldwork. I would like to thank Edwin Hyde, Russell Wenzholz, Kevin Freund, Richard Hulanicki, Carlos Cote, and Ray Griffiths, all of the ACT Land Information Office who variously helped with access to records, gave advice on many occasions and assisted with fieldwork; Russell Wenzholz in particular gave me much moral support and his friendship is valued. Col Fuller (Institution of Surveyors Australia) also helped. Others who assisted with information or records were Pamela Fabricius (ACT Museums and Galleries Section), Jean and Isabel Sheaffe, Althea De Salis (nee Mouat), Adrienne Bradley (daughter of Althea), Claire Lewis, Reg Alder, Innes Brett, Philip Allpress, Audrey Maxwell, Noel Luton, Maura O'Connor and staff (Map Section, National Library of Australia), Bill Little (Canberra and District Historical Society), Paul Harcombe (Land Information Centre, Bathurst) and John Hutchison, a retired officer of that organisation, who helped me find my way through its valuable archives (additionally the Centre also gave permission for CMA maps to be copied and used in this report). The following courteous and efficient staff at Australian Archives assisted my access to that repository's rich holdings: Tim Jagers, Deanne Zeller, Nicola Appleyard and Andrew McEvoy. The fieldwork was assisted in important ways by Stephanie Haygarth (who found several markers and drove many kilometres), Ian McLeod and David Cregan (whose companionship and assistance in the field was highly appreciated), and Stan and Barbara Goodhew (who kindly assisted with transport particularly).

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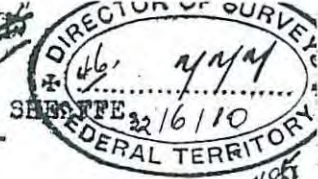
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Jean Sheaffe  
Isabel Sheaffe

## Appendices

- (i) Scrivener's instructions to Sheaffe at the commencement of the border survey, 1910. (Australian Archives A657 DS1912/833)
- (ii) Miscellaneous survey marks found during the fieldwork.



Instruction No. 1

In connection with the demarcation of the boundaries of the Federal Territory, Mr. Sheaffe is instructed to run the line connecting Coree Trigonometrical Station with One Tree Trigonometrical Station, which forms the north-western boundary of the Territory. In running this line sufficient connections are to be made with all previous measurements intersected, to admit of descriptions being prepared of the parts of the areas on each side of the boundary; this is particularly necessary with respect to the severed areas that lie within State Territory. When observing from Coree the mountain should be cleared so that all young timber that has grown up since the station was originally occupied for observation should be cut down in order that this station may be available for observation from other points.

Angles of elevation and depression are to be taken along the line as the work progresses; these will supply a rough profile of the country passed over.

#### MARKING.

The marking of the line is to be of a permanent character. - pegs 2 feet long of split hardwood not less than 4 x 4 inches are to be inserted at intervals of about ten chains, and either locks pitted or having stones packed on either side in the direction of the boundary. The pegs should be sunk in the ground from 18 to 20 inches.

At each half-mile a 12 inch length of 1 inch galvanised iron gas piping is to be sunk 6 inches below the surface of the ground and 10 links beyond the pipe; a post 3 feet long and not less than 2 feet in the ground is to be inserted. A trench with a radius of 5 links is to be cut round the pipe, which will be covered either by a mound of earth or a cairn. At every mile a hole

2 feet

-42-

2 feet deep and 9 inches square will be sunk, and this will be filled with concrete to within 4 inches of the ground surface, and a 6 inch iron spike centred in the concrete, leaving only the head projecting above it; this spike indicates the exact distance, and will be truly aligned. At 10 links beyond the concrete block a post 4 feet long squared for 2 feet and sunk not less than 2 feet 6 inches in the ground will be placed, marked thus  $\begin{array}{c} \triangle \\ \text{C.T.} \\ | \\ \text{1 MILE} \\ | \\ \triangle \end{array}$ . At the half mile points a reference tree should be marked thus  $\begin{array}{c} \triangle \\ \text{C.T.} \end{array}$ ; at the mile points two reference trees should be established where possible, and similarly marked.

The recognised mark for Commonwealth Surveys is  $\begin{array}{c} \triangle \\ | \\ \triangle \end{array}$  which is to be used in order to distinguish from State surveys marked by  $\begin{array}{c} \uparrow \\ | \\ \uparrow \end{array}$ ; the intersection of the boundaries should be marked  $\begin{array}{c} \triangle \\ | \\ \triangle \end{array}$ .

Tracings of all portions intersected by the boundary or adjacent to it are forwarded for Mr. Sheaffe's information, as well as a mounted map of the Federal Territory. Observations from One Tree Station and from Cooree to  $\triangle$  Ainslie should be made.

A full description of the character of the country formation and timber should be given in the report.

The bearings supplied are true on the meridian of the future Observatory on Stromlow Trigonometrical Station; a variation of  $9^{\circ} 30'$  should be adopted in the Survey.

All mile posts should be painted white and should square not less than 9 inches.

21. 6. 10.

*Noted  
W.G.S.  
23/1/10*



Instructions - P. L. Sheaffe - Acknowledgment

777/490  
DIRECTOR OF SURVEYS  
46- 485  
24/6/10  
FEDERAL TERRITORY  
816  
807



COMMONWEALTH OF AUSTRALIA.

IN YOUR REPLY PLEASE

QUOTE THIS NUMBER.

DEPARTMENT OF HOME AFFAIRS.

Melbourne, Queensland 24<sup>th</sup> June 1910

Sir,

I have the honour to acknowledge the receipt of your communication of 21<sup>st</sup> instant - Instruction No 1 on the subject mentioned below, and to inform you that the same will receive due <sup>attention</sup> consideration. Survey will be commenced on 27<sup>th</sup> inst

I have the honour to be,

Sir,

Your obedient Servant,

P. L. Sheaffe  
Surveyor  
Secretary.

M<sup>r</sup> Dist. Sur. Scrivener  
Federal Camp

Subject: - To survey that part of Federal Territory bounding between "Coree" and "One Tree" Trigonometrical Stations



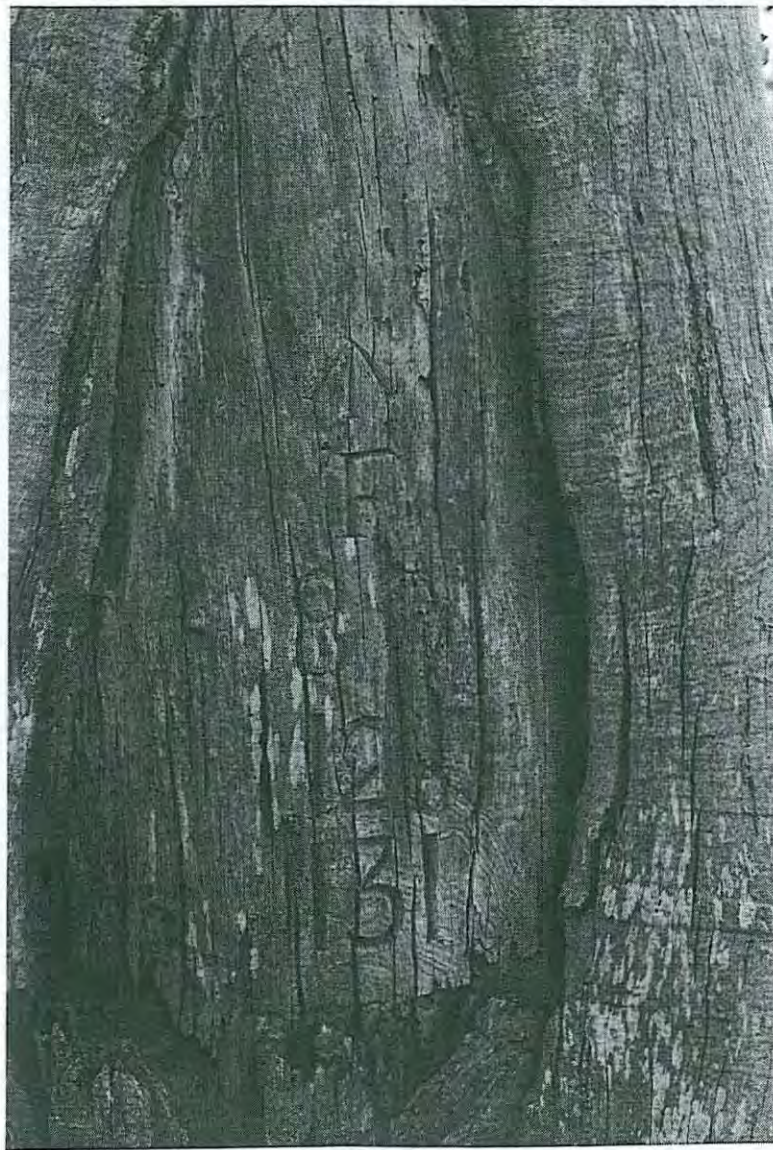
These are believed to be mile blazes (showing the distance from Piccadilly Circus) dating from or just after the survey of the Mt Franklin Road in the mid 1930s. The 7 1/2 mile tree (which has remnants of paint on the blaze) faces the old Franklin Road at the southern end of Bendora Hill, confirming that it is related to the original road (by the 1960s that section of road was bypassed). The 9 mile tree is near Snowgum Arboretum.



Blazed trees adjacent to the Mt Franklin Road near Bulls Head



A NSW survey mark on the border between Yaouk Gap and Mt Scabby



Reference tree marked during the 4 February 1910 survey of Portion 48, Parish of Boboyan, for James Westerman by Surveyor Harold Chauncy; the position of the tree is circled on the portion plan below. The tree stands near the site of border marker D42.

