# Canberra Survey Corps Association

# Canberra Newsletter

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## From the Editor

Welcome to this May 2026 issue of the newsletter of our Canberra Survey Corps Association.

In this issue are two articles received as 'letters' responding to previous articles. Also a story about recognition that the Australian Survey Corps is the 'roots' of the present Australian Geospatial-Intelligence Organisation which celebrated its 25th Anniversary last November and a story about the Corps' 1937 geodetic survey in Tasmania which went on to be the state geodetic origin until the Australian Geodetic Datum 1966. Then a review of a book being mainly a collection of personal stories of the highly valued military mapping work of our Canadian colleagues over a century from 1903. Finally the Photo Gallery including photos asking for help to identify who some of the people are.

A special thank you to Bob Dikkenberg, Mark Heinrich, Peter Barrett, Dawn Laing, Alan Dean and Dave Carney for providing articles, photos and other information for the newsletter.

A special thank you also to Dennis Puniard who tried to get a golf game going, but unfortunately there were no starters this time.

Please please put pen to paper, and/or send photos, for future newsletters.

*Peter Jensen*

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## Anzac Day

***By: The Editor***

As far as I know this year was the first year since 1965 that our Association did not march as a group in the Canberra RSL Branch Veterans March on Anzac Day. By the cut-off date there was only one confirmed marcher although another possible, so I cancelled our registration. This was not unexpected as numbers for the last few years have only been a handful. I did receive a number of apologise including those absent from Canberra having moved out of town, making the most of the beautiful autumn weather to visit Sydney, the south-coast, the Snowy Mountains high country and family in Melbourne and others on the sick list, carer duties and mobility issues. We will try again next year. For that reason it is important to retain the entity Canberra Survey Corps Association as that is known by the RSL ACT for contingent registration. Otherwise we may be consigned to the back of the Order of March rather than our proper place by Corps seniority.

Lunch was a better roll call with five enjoying the fellowship and to honour and remember all who died and all who served.

*Anzac Day lunch diners from the left: Dawn Laing, Roger Rees, Len Kemp, Steve Cooper, Effie Rees (Photo: Roger Rees)*

## Corps Birthday Lunch – 1 July

*The Editor*

A reminder to put a big circle on your calendar on 1 July at 12.30pm for lunch at The Kingston Hotel to celebrate the formation of the Australian Survey Corps 111 years ago.

## Vale – we shall remember them

*The Editor: Commencing this issue the intention is that for those members who have died and were living in the ACT, or who had served in the ACT, I will endeavour to provide a summary of their service. For others for whom I have received a notification that they have died, a short notice of their service dates and date of death will be included.*

For every rule there are exceptions. Here Peter Barrett provided in January a summary of JEFF LYNCH'S service.

**43632 WO1 JEFFERY KEITH LYNCH** (served 3 Aug 64 – 2 Aug 89)

> *Jeffery Keith LYNCH passed away on December 12th aged 91. There was a notice in the Bendigo Advertiser on Saturday. He was living in Marong near Bendigo and up until recently had been in good health.*
>
> *My guess is he joined RA Inf from the British Army. He spent some time in Cyprus in the late 1950's.*
>
> *Think he joined RA Svy late 1960's as he was a Corporal at Fortuna in late 1970. My memory is that he was a letterpress printer maybe before he joined the British Army. Before joining RA Svy he was based in northern Australia maybe training.*
>
> *Jeff aka "Lynchy" spent most of his time in Lithographic Squadron and ended up WO1 Squadron Sergeant Major then Regimental Sergeant Major, Army Survey Regiment, before retirement.*

**313096 SSGT CLIFF WEBB** (served 18 Dec 68 - 27 Dec 88) passed away 12 Mar 26 in Brisbane.

**1202507 CPL GREG KNIGHT** (served 4 Feb 69 - 5 Oct 73) passed away 18 Mar 26 in Brisbane.

**45650 WO2 BOB GARRITY** (served 26 May 70 - 29 Apr 96) passed away Apr 26 in Bendigo.

## RA Svy Nominal Roll Version 2026 correction

*By: Peter Jensen*

A correction to the RA Svy Nominal Roll Version 2026 is that I omitted WO1 Cameron Gee's post nominal OAM which he was awarded in the King's Birthday Honours List 2024. That will be fixed in Version 2027. My apology to Cameron.

# Bob Brooker's teeth

***By: Bob Dikkenberg (Dikko)***

*The Editor: The December 2025 newsletter included a short summary of Bob Brooker's service after Bob passed away in August 2025. In 1973 Bob and Dikko served together as a survey team on Operation Plastic Flagon (4 Fd Svy Sqn) in Territory of Papua New Guinea. Dikko is renowned for his many cartoons, including for the Army Newspaper for more than 20 years and survey operation reports. He also enjoys writing poetry often illustrated with a cartoon.*

*In the jungles of New Guinea, we were making maps,*
*Not in their entirety, more filling in the gaps.*
*And we lived amongst the natives, where explorers had not been,*
*We were the first outsiders, who many tribes had seen.*

*They were filled with fascination and all filled with disbelief,*
*Our appearance made them fearful, but that was only brief.*
*We aroused their curiosity and we were followed everywhere,*
*Even in the shower, you could feel their icy stare.*

*They watched us during meal times and when we tried to sleep,*
*They were numbered in their hundreds, in rows of twenty deep.*
*They seemed to gasp at every move, or breath I was to take,*
*And prod me periodically, to ensure I was awake.*

*This happened to us every day, for many days on end,*
*Until it all became too much and drove us round the bend.*
*We hoped and prayed with all our might, that they might go away,*
*But it soon became apparent, that they were there to stay.*

*Then finally Bob Brooker, had simply had enough,*
*He strode outside to front the crowd, it was time for a rebuff.*
*He got everyone's attention, down to the smallest child,*
*Knowing that this single act, would drive the natives wild.*

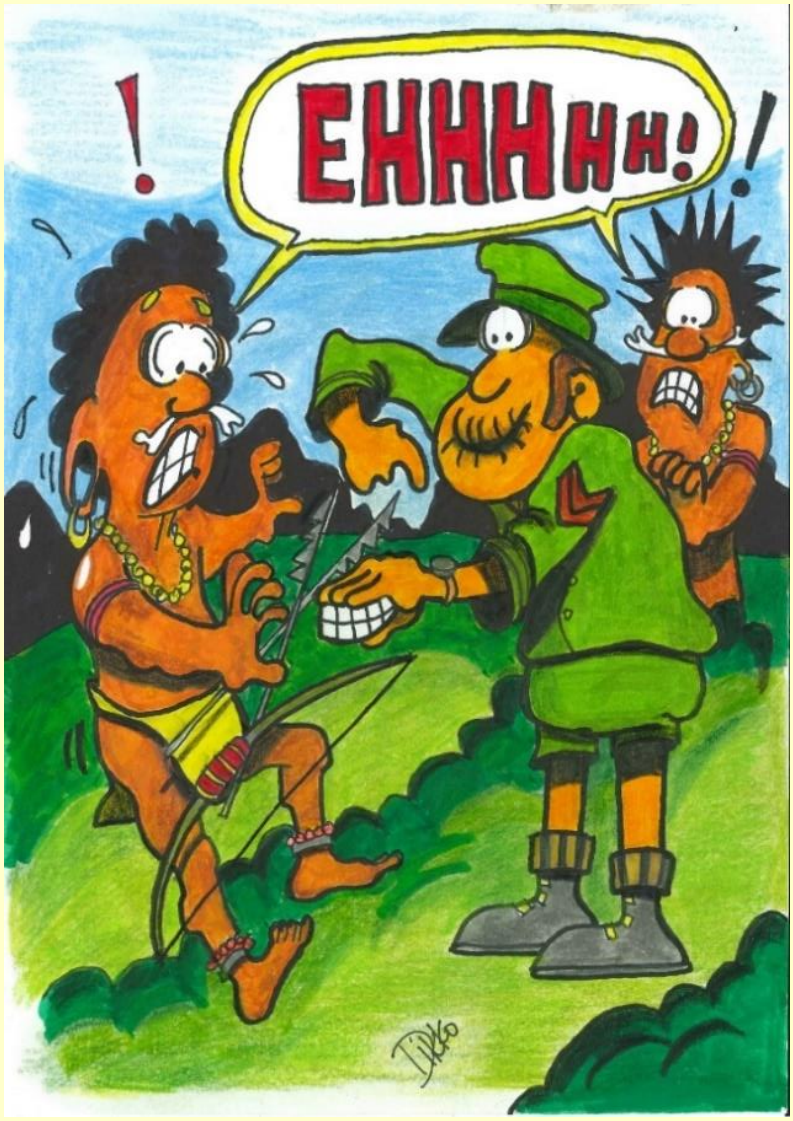
*He placed his fingers in his mouth and pulled his dentures out,*
*Then proudly held his teeth aloft and waved them all about.*
*And convinced that all had seen him, with an air of grace and style,*
*He calmly put his dentures back and gave them all a smile.*

*The native's eyes were out on stalks, their jaws were on the ground,*
*Their screams of terror filled the air, there was panic all around.*
*All the crowd had run away, not ever looking back,*
*We were feeling quite concerned, they'd have a heart attack.*

*Heaven knows just what they thought or what it was they feared,*
*But in a moment, maybe two, they had disappeared.*

*Though everyone recovered, things were not the same,*
*They didn't come so close to us, I don't think they were game.*

*I remember well Bob Brooker's teeth, like it was yesterday,*
*How the natives froze in mortal fear and how they ran away.*
*But Brooker did lament one night, how the joke could be improved,*
*If he'd had an artificial leg and it's that which he removed.*




## More about the 'great train stoppers'

***From: Mark Heinrich***

*I had to smile when I read the anecdote by Roger Rees on the OP NOTARIAL 4 Trans Continental Train incident in his recollections of Neil Jones's service. I recall that the Land Rover bottomed out as it crested the tracks, and without diff-locks, they couldn't get traction. Back then the Squadron (4 Field Survey) had a strong running culture and Fred Smalley was among the fittest. It was he who was able to make sufficient haste down the train line (fortunately in the correct direction) - I'm not*

*sure how many others in the Squadron would have been able to run fast enough to flag the train down, although adrenaline can do amazing things when you need it!*

*The letter from the railways was forwarded to the squadron and I recall it was passed to me as 2IC to draft the response. We assured the Railways that the actions of the culprits were highly unorthodox, in contravention of our normal operating procedures, and that suitable disciplinary action would be taken - which meant a good chuckle that they'd got off lightly and a robust roasting at the Squadron's end of year informal presentations. I recall I had tears running down my cheeks as I regaled the Squadron with the tale as reported to me - maybe with just a little theatrical embellishment.*

*I also particularly enjoyed the report by Bruce Keeley on his time in the GPS JPO. As SO3 OPS in DSVY-A, we were kept in the loop of the JPO's initiatives and the US program. At the time, the JPO was headed by WGCDR Jim Button, a colourful and very enthusiastic character. I recall him briefing us on the program at one stage, finishing with the US's vision of a Virginia Slims GPS receiver - one the size of a cigarette packet. At the time the Magnavox SATNAV MX1502 was state of the art, so this was barely imaginable. Of course we now have mobile phones with amazing positioning capabilities along with a myriad of other functions - you can even make phone calls!*

## Gone but not forgotten – Royal Australian Survey Corps

***By: Peter Jensen***

On 1 July this year it will be 30 years since the Royal Australian Survey Corps (RA Svy) returned to its roots in the Corps of Royal Australian Engineers (RAE). Founded in 1915 the Australian Survey Corps was the major military survey unit of the Army for 81 years.

But the Corps and its '*raison d'etre'* has not been forgotten. The recent booklet *Australian Geospatial-Intelligence Organisation (AGO) Strategy 2025-2027* notes (p4): "*The AGO traces its origins to 1915 with the establishment of the Australian Survey Corps, which provided military surveys of areas of Australia that were a priority to defend in World War 1."* On the occasion of the 25th Anniversary of the formation of AGOs immediate ancestor, the Defence Imagery and Geospatial Organisation, the Director AGO (Kathryn McMullan) spoke as a guest of the National Security Podcast produced by the Aust National Univ National Security College on 11 November 2025 https://www.youtube.com/watch?v=crV3Cbm9xaA&t=65 In her introduction the Director again mentioned that AGOs 'roots' are in the Australian Survey Corps.

Defence Imagery and Geospatial Organisation (DIGO) was founded as a Defence Intelligence agency by Government Cabinet Directive in November 2000. DIGO absorbed the Defence Topographic Agency (formerly the Army Topographic Support Establishment – Bendigo (ATSE)), the Directorate of Strategic Military Geographic Information (DSMGI) – Headquarters Australian Defence Force, and the Australian Imagery Organisation (AIO) – Canberra, which emerged from the Defence Intelligence Organisation – Imagery Exploitation Cell. The non-core tasking which was the original work of ATSE was largely outsourced in collaboration with Geosciences Australia. DIGO was retitled Australian Geospatial-Intelligence Organisation in 2013 to reflect its broader role to Government.

With the creation of DIGO in 2000, this was the final action of Army's 1993 vision of the future direction of the Army and Defence topographic/geographic capability. On 17 June 1993 Colonel Simon Lemon, Director of Survey – Army, briefed his superiors, Director-General Operations and Plans (Brigadier J Townley), and Deputy Chief of the General Staff (DCGS) (Major-General GD Carter AO DSM) on the progress of the Commercial Support Program (CSP) review of part of RA Svy activities. The result was Army's clear statement of the way ahead for the capability in the Army and direction for that in Defence. The future of the Survey Corps was not a consideration at that time. That was to come more than two years later. The three decision elements by DCGS (1993) were[1]:

- systematic standard topographic mapping of Australia was non-core and therefore was subject to the CSP. Non-core was defined by Defence as an activity not affecting ADF operational readiness ie short-term deployability. *CSP review outcomes were completed 1995/1996 with raising the Army Topographic Support Establishment – Bendigo on a five year contract. Provision of equipment was finalised in 1998.*
- with concurrence by Land Commander Australia, tactical topographic mapping for deployed land combat forces was a core activity and would be retained by Army in the combat force. Land Commander believed that the future non-core capability would not provide the required level of readiness nor the required flexibility and responsiveness and requested transfer of 4 Field Survey Squadron (then a sub-unit of Army Survey Regiment) from under command the General Staff Army Headquarters to Land Command. DCGS approved this augmentation of combat force topographic assets (mainly 1st Topographical Survey Squadron), but did not transfer the functions of 4 Field Survey Squadron (then the only field survey unit based in Australia with 8 Field Survey Squadron in Papua New Guinea) which were part of the CSP review. *This was completed by end-1993.*
- with concurrence by Director Defence Intelligence Organisation, strategic mapping to support military operations outside Australia was a core Defence Intelligence responsibility, but would be retained by Army to support contingencies until Defence assumed responsibility for this function. Army would achieve this through extant map exchange arrangements with major allies and nations in Australia's region and by maintaining a minimum capability at Bendigo throughout any transition that would result from CSP decisions. By definition, this core activity was then not included in the CSP.

The interim strategic mapping core functions of managing the Commercial Support Program contract, foreign liaison and map exchange arrangements remained with the General Staff until mid-1997. With the Directorate of Survey – Army to be disestablished and to ensure a smooth transition of strategic responsibilities to Defence, the Directorate of Military Geographic Information – Army (DMGI-A) was established on 6th May 1996 with Colonel Simon Lemon appointed as the Director. DMGI-A also exercised command of Army Survey Regiment through to its disbandment by 1st December 1996.

A few months later the 1997 Defence Efficiency Review recommended rationalisation of seven of the geographic organisations across Defence. This was only partially implemented. On 1

[1] Jensen, P.A. (1996) notes The RASvy Commercial Support Program Review 1992-95: The reasons, the process, the outcomes, copy on Department of Defence file A96-21042, Part 1

September 1997, the strategic mapping responsibilities of Army transferred to Defence exercised by the newly raised Directorate of Strategic Military Geographic Information (DSMGI) - Headquarters Australian Defence Force in the Directorate-General Information Strategic Concepts branch. DSMGI then exercised command of ATSE which was retitled the Defence Topographic Agency.

By May 1998 Vice-Chief of the Defence Force and Deputy Secretary Strategy and Intelligence agreed that strategic level imagery and geospatial information capabilities should come together but there was no clear way ahead. This was a period of much technological and capability improvement. With organisational matters resolved, the Cabinet agreed on 8th November 2000 to form the Defence Imagery and Geospatial Organisation as a Defence Intelligence agency.

Although the strategic 'one-agency' capability was new in 2000, what was not new was that for more than 30 years RA Svy soldiers and officers had played significant and important roles in operational and technical support (including printing and photogrammetry), capability development and procurement for the strategic intelligence community.

## Tasmania's geodetic origin 1937-1966 – Aust Survey Corps Astronomic Station Lochmaben

***By: Peter Jensen***

Since January I have had three enquiries about 'Army Survey' survey marks.

The first was a RA Svy bronze plaque found on a road reserve in the Roma QLD area. That was a part of survey control (1964) for scale 1:250,000 mapping.

The second was an enquiry about a surveyor's reference tree in the Churchill area of Victoria. The enquirer had been told that the Army had been blazing trees when they were surveying there in 1937. No. 2 Topographical Section, Aust Survey Corps was working with the geodetic network and topographic survey for the one-inch-to-one-mile (scale 1:63,360) Mirboo North map at the time. But it was suspected that the reference tree was related to a cadastral survey not a topographic survey. Survey sapper Gary Hunter, a Licensed Cadastral Surveyor in Victoria had lectured the history and practice of cadastral surveying in Victoria to surveying students at the University of Melbourne for 21 years, so he was perfectly placed to expertly answer that enquiry. Gary's advice was that it was a tree blazed by a Crown surveyor when the Crown allotments were first created in the 1870s.

In early-May I was contacted by Adrian Fairfield a Registered Land Surveyor in Tasmania and Director Cohen and Associates, Land and Aerial Surveyors. He is pursuing a project to recover historical trigonometric stations in Tasmania dating back to the original 1833-1858 trigonometric survey. One hundred years after that survey, in 1937, the Australian Survey Corps was tasked to produce a standard military 'one-mile' map (Evandale) of a Military Training Area between Longford (about 25km south of Launceston) in the north and about 60 km south to Campbell Town towards Hobart. Adrian had inherited a trove of documentation about the military survey passed down through generations of surveyors originating with the 1937 District Government Surveyor, Mr Joseph Wilks. Much of this collection was saved from final loss at the local tip.

The 1937 survey is mentioned briefly in the Corps history but its significance in Tasmanian and Australian geodetic history has been largely overlooked in Corps records. This is probably

because it was not known at the time that the origin of that survey (linked to the original triangulation), an Aust Survey Corps Laplace Astronomic Station named Lochmaben (near the village Nile – see the consequent Evandale map GR182717), would go on to become the chosen origin of the Tasmanian geodetic survey until that was replaced by the Australian Geodetic Datum in 1966.

The Aust Survey Corps survey party was the Officer Commanding Major Thomas Vance, Warrant Officer Class Two Topographer HA (Bill) Johnson and Survey Hand Mr Hicks. Adrian asked about any reports or documentation that I might be aware of. Apart from the brief mention in the Corps history, and what may be at the Engineer Museum, all that I had was mention in Bill Johnson's letters to Brigadier Macdonald in the 1980s of the immense personal value that he placed in that survey where he was able to practice for the first time all of the methods of geodetic and topographic survey and mathematical adjustments for a control survey framework for military mapping.

Adrian has sent to me his collection of information including the 1937 project report, survey observations, survey network adjustment and diagrams and letters from Bill Johnson to Surveyor Wilks. The letters include technical detail, which I do not believe is readily available elsewhere, of the Queensland-New South Wales-Victoria- South Australia geodetic survey which was then underway to link the eastern states. I will publish some of these in newsletters starting with the 1937 project report below.

I am very grateful to Adrian for saving and sharing all of this information and allowing me to publish it.

# REPORT ON THE SURVEY OF A TRAINING AREA IN TASMANIA BY O.C. AUSTRALIAN SURVEY CORPS

## Existing Surveys:

The Trigonometrical Survey of Tasmania was commenced in 1833 and continued intermittently until 1858 when it was discontinued.

The official records appear to be incomplete, and data was difficult to obtain. A tracing showing the computed lengths of the sides of the triangles was supplied by the Survey Dept. and other information was culled from a report, dated Jan. 1854, by Major Cotton, Deputy Surveyor General at that time.

Apparently no figure adjustments had been made, as lengths and geographical co-ordinates computed through one series of triangles would not agree with those computed through another series, a discrepancy of 05".06 in latitude being noted at Table Mt.

The latitude had been observed at Hobart, but apparently the longitude had not been determined. The latitude of "Hobart Town Semaphore" was given as 42°53'09".14 S. The values for latitude and longitude of the Hobart Semaphore (Fort Mulgrave) as given by Admiralty Chart No.105, are latitude 42°53'22" S., longitude 147°20'29" E., the latter being dependent on Sydney Observatory being in longitude 151°12' 26" E. (The latest value is 151°12'17".85.) There is no record to show if these points are identical.

The original base line was measured at Ralph's Bay and later a base of verification was measured at Longford, the computed and measured length of the latter agreeing very closely, indicating that the base measurements and intervening triangulation were of a fairly high standard.

## Preliminary Computations:

Major Cotton's report shows that the differences of latitude and the convergence had been computed on a figure of the earth of radius 20,887,527 feet. It was therefore necessary to reduce these to Clarke's 1858 spheroid.

A chain of triangles extending from Hobart Semaphore to Trig. Stations Millers Bluff and Ben Lomond was recomputed using the observed latitude at Hobart and the longitude of Hobart Semaphore as determined by the Admiralty. These values were then reduced to rectangular co-ordinates on the Transverse Mercator projection and a reconnaissance field sheet prepared at a scale of 2 miles to 1 inch.

## Locality:

The area allotted for survey comprising an area of 570 square miles is situated south of Launceston extending from Western Junction in the north to Campbell Town in the south, with a width of 20 miles. About 1/3rd of the area varies from flat to undulating, the remainder is hilly, rising to a maximum height of over 2,000 feet along the eastern and southern extremities. A large portion of the area is heavily timbered.

/Survey ....

Survey Personnel:

The O.C. Aust. Survey Corps, W/O H.A. Johnson, and Survey Hand Hicks arrived at Launceston on 17.2.37 to commence the Survey. A Ford V8 utility which had been hired for transport was taken delivery of, instruments and equipment consigned from Melbourne and Hobart were collected and a base camp established near Longford. This was later moved to Nile which was more central.

Reconnaissance:

Plane table reconnaissance was commenced on 18.2.37. Four of the original cairns were located. These were in a wonderful state of preservation considering that they had been built over 80 years previously. Ground marks were found under two only of these cairns. They consisted of a ⊕ cut into bedrock. The reconnaissance was rapidly extended and sites for trig. stations selected. An additional survey hand was engaged on 22.2.37 and the erection of beacons commenced.

Clearing and Beaconing:

A considerable amount of clearing was required on the majority of the hills and some very big trees had to be felled. In all, sixteen stations were cleared and beaconed.

The stations were marked with concrete blocks with central brass plugs sunk 12 to 18 inches below the surface. A cairn supporting a hardwood pole 12' x 4" x 4" carrying 3'6" iron discs was erected over each station mark. Heliographs and signal lamps were found to be necessary on some of the longer rays.

Observing:

The angles of the triangulation were observed with a 3½" Cooke, Troughton & Simms Tavistock theodolite reading to 1" arc. Each angle was repeated at least 16 times on an equal number of F.L. and F.R. and the observations arranged so that a check on the horizontal closure was obtained at each station. Owing to pressure of time it was not possible to wait for the most favourable conditions for observing; shots had to be taken whenever the stations were visible and much of it was done under adverse weather conditions. Even so the results came out very well; the average triangle misclosure for 22 2nd Order triangles was only 01".78, and for a further 16 3rd Order triangles the misclosure was 02".15. Vertical angles were observed at all stations.

Astronomical Observations:

As some doubt existed in regard to the accuracy of the geographical positions as determined by the original observations and computed through the network of triangles, it was decided to re-determine these values, in order that the survey would be on a sound foundation from which future surveys could be extended.

/An ....

An observation station was selected at our field headquarters near Lochmaben homestead, about two miles from Nile village. This was incorporated in the triangulation as one of our main geodetic stations. It was permanently marked with a concrete block sunk three feet below the surface, above which was placed a second block of the same material, as a surface mark. No beacon was erected over this mark as helios or lamps were used.

By the courtesy of the Australian Broadcasting Commission, time signals from the Melbourne Observatory were broadcast by 3 L.O. at 8 p.m. and 11 p.m. on each night that observations were taken.

The instruments used were a 6 inch micrometer theodolite by Troughton & Simms fitted with electrical illumination. Time signals were received on a 6 valve wireless set and loud speaker, kindly supplied by Major Kendall G.S. Signals. The set was very suitable for field work, as only one 6-volt battery was necessary to operate it. Signals were recorded on a tape chronograph in electrical circuit with a mean time chronometer, the latter recording every odd second on the chronograph. Comparisons were also made with three chronometer watches.

The chronometer, chronograph and two chronometer watches were kindly loaned by the Naval Board.

Longitude:

The almucanter method was used for determining local time; east and west stars being observed on the co-latitude circle and the transits across three wires recorded by push button on the chronograph side by side with the beats of the chronometer. Time signals were received by ear and recorded in the same manner. It is considered that as the methods of recording the star transits and time signals were similar, the only difference being that one was received visually and the other aurally, the lag should be about the same in each case, thus eliminating personal equation. The observer and recorder (Major Vance and W/O Johnson) changed places each night about halfway through the programme to ascertain if any variations due to personal equation could be detected. The differences between the results obtained by each observer were negligible.

From 20 to 30 stars were observed on each of four nights and time signals were received at 8 p.m. and 11 p.m. on each night.

The errors of the Melbourne Observatory time signals were kindly supplied by the Government Astronomer, Dr. J.M. Baldwin.

The longitude of the observation station as determined by the mean of four nights' observations was 9h. 49m. 11.315s. E. with a probable error of ±00.053s.

Latitude:

Latitude was determined by the method of Circum Meridian Altitudes, the times of transit of North and South Stars across the horizontal wire being observed at small hour angles east and west of the meridian. These transits are reduced to the meridian by computation, giving the zenith distance and consequently the latitude. From four to fourteen readings were taken on each star, half on each side of the meridian and an equal number on each face of the instrument. From three to five pairs of stars were observed on each of four nights, each pair having approximately equal zenith distances in order to eliminate uncertain refraction. The latitude as determined from the mean of four nights' observations was 41° 38 23.39S. with a probable error of ± 00".08.

/Azimuth ....

Azimuth:

Observations were taken to 6 Octantis. The observation consists of measuring the angle between a referring object and the star, noting the time of the star's intersection of the vertical wire, no vertical angles being required. In each set of observations the angle between the R.O. and star was measured on eight different arcs each arc consisting of one pointing on R.O. and star with circle left and one with circle right, the striding level being read and reversed after each pointing to the star. The referring mark was a light placed in the focus of a ½ inch lens plummed over Glen Stuart trig. station, about four miles distant. The azimuth of a side of one of the main figures thus being directly determined. The mean of four sets of observations taken on three nights was 53°00'56".31 with a probable error of ±00.09".

Grid Co-ordinates:

Rectangular co-ordinates were computed on the Transverse Mercator projection. As it is probable that Tasmania will be connected to the mainland, at some future date, by a chain of triangles through the intervening islands, it was decided to keep Tasmania on the same zone (No.7) as Victoria. Longitude 146°E. was therefore selected as the central meridian. In order to avoid minus quantities in the co-ordinates it was necessary to shift the false origin further south. This was done by adding1,000,000 yards to the southing of the standard F.O. bring the false origin 400,000 yards West and 1,800,000 yards South of the true origin, which is the intersection of the 146° meridian with latitude 34°S

Triangulation Computations:

The triangulation was adjusted by the method of Least Squares, the largest figure containing six angle and three side equations. It was intended to check the lengths of the old triangulation by measuring a base line. As time did not permit this being done, it was necessary to adopt the original values for our computations, the length of the line Hummocky-Mt. Arnon being used as our datum. It is unlikely that the old lengths would be in error, to such an extent as to be appreciable on the scale of the map, but if the triangulation is extended in the future a base line should be measured.

Latitudes, longitudes and grid co-ordinates were computed from our observed values at Lochmaben trigonometrical station.

The difference between the old and new values computed at Millers Bluff trig. being --

| | Latitude | Longitude (reduced to present Sydney Value) | Azimuth to Hummocky |
|---|---|---|---|
| Old State Triangulation | 41 55 59.640 | 147 10 35.930 | 12 36 00.10 |
| Computed from Lochmaben | 41 56 14.097 | 147 10 23.291 | 12 35 36.84 |
| Difference: | 14.457 | 12.639 | 23.26 |

/These ....

These differences are much greater than would be expected and cannot easily be accounted for. Although a different figure of the earth was used, this should not effect the result by more than a few seconds of arc. It is noted in Major Cotton's report of 1852 that the observed latitude and azimuth at Millers Bluff are much nearer our values than those computed from Hobart, the observed values being -- Latitude 41°56'18".2, Azimuth 12°35'45".6. It would appear that the original computations were not very accurate.

Photo Control:

Horizontal and vertical control for plotting from aerial photographs was obtained by instrumental resections and intersections, range-finder distances, vertical angles, aneroid heights and a theodolite and chain traverse. From each resection and from trig. stations horizontal and vertical angles and range-finder distances were taken to detail identifiable on the photographs. Horizontal distances were checked from the plotted positions and vertical heights computed.

Plotting from Aerial Photographs:

A departure from the usual procedure was made in that all plotting was done at Army Headquarters by draughtsman W/O Sarll, instead of by the field staff. Principal point traverses were made of all photo strips and these fitted to the control supplied by the field operations. Plotting was done at the approximate scale of the photographs by the radial line method, photo positions being adjusted to the control on a master grid, the final drawing being on "kodatrace". Contouring was done with a small Zeiss stereoscope, parallax measurements being taken to supplement the height control.

Datum for Heights:

No reliable information could be obtained in regard to railway levels or the datum to which they were referred. The Launceston City Council have accurate levels of the City area which are referred to low water mark at Launceston as determined by the Marine Board. Unfortunately no connection had been established between low water at Launceston and low water at the mouth of the river. Marine Board engineers estimated that the hydraulic gradient was about 1 inch per mile for the 38 miles to the river mouth; this would indicate that low water at the coast would be about three feet lower than at Launceston.

In order to fix an approximate value for mean sea level, which is the standard datum for our heights, an estimate of mean sea level at Launceston was arrived at by taking one half the difference between the average high and low water values and adding three feet to bring it to the open sea value.

Although this is only an approximation, it is the best that could be done under the circumstances, and it is considered that the value adopted should not be more than 12 to 18 inches in error, which will not effect the contours at the scale of the map.

The actual value for the datum of our levels is 3 feet above low water at spring tides as defined by City of Launceston datum.

A line of levels was run from a City Council bench mark (R.L. 223.028 feet) at junction of Hobart road with entrance to Carr Ville Cemetery (particulars of which were supplied by the courtesy of the City Engineer), to Cocked Hat Hill near Western Junction aerodrome, which was one of our trig. points. Reciprocal and simultaneous observations were made between Cocked Hat Hill and Hummocky Trig. Stations. The coefficient of refraction was computed from these observations and the heights extended in the ordinary way.

The height of Millers Bluff as determined by the State Survey = 3977.0 feet

Our value being -- -- 3974.7 feet.

*Lochmaben Astronomical Station found in 2025 - established by Aust Survey Corps in 1937. Station surface mark is 30cm below ground level as per original notes. A sub-surface mark was established about 1m below that (Photo: Adrian Fairfield)*

*Lochmaben Astronomical Station found in 2025 – the surface mark being a 30mm diam brass plug set in a square concrete block about 30cm x 30cm top. This is consistent with Standing Orders 1934 (Photo: Adrian Fairfield)*

*Lochmaben Astronomical Station in a cropping paddock - found in 2025 - established by Aust Survey Corps in 1937. GPS survey station (Photo: Adrian Fairfield)*

## Book review – One Hundred Years of Canadian Military Mapping 1903 - 2003

***By: Peter Jensen***

I am very grateful to Dave Carney, our Canadian member, for sending to me a copy of the book '*One Hundred Years of Canadian Military Mapping 1903-2003 An Ilustrated History*' published in 2008 by the Canadian Military Mapping Historical Committee.

The Canadian military mapping units, and their histories, were/are similar to Australia's but there are also significant differences. This article is not a review but is more a few highlights of the proud history of Canadian military mapping over 100 years from the formation of the first unit of the Permanent Forces.

An official and detailed history of the Canadian military mappers is included in the volumes of the history of the Corps of Royal Canadian Engineers (RCE). This book of 220 pages (A4 size) and more than 500 photographs is not that, nor is it a history written by a historian. It is a collection of articles assembled in a book by coordinating author Dave Carney (a Colonel Director) and edited by John C Sinclair[2] (a Commanding Officer Mapping and Charting Establishment) of personal stories, recollections and photographs by 66 soldiers and civilians who actually did the military mapping work. There are nearly 900 individuals mentioned some many times. Obviously earlier periods could not rely as heavily on individual's information unless that had been written or orally recorded.

[2] Not John M Sinclair who served in RA Svy 1973-1978 after serving as Canadian exchange RCE officer at Army Survey Regiment 1969-1970

The earliest military maps of Canada were produced by the French and British, being of large scale around their garrisons and places of strategic interest. Britain's Royal Engineers surveyed the boundary with the United States over three periods from 1843 to 1876. British forces departed in the late 1800s and military survey essentially stalled. In 1885 there was a Northwest Rebellion for a few months and the Dominion Land Surveyors Association raised an armed specialist unit (Dominion Land Surveyors Intelligence Corps) of about 40 men offering themselves as scouts. Named after their 'Captain' they were known as Dennis' Scouts. They did loose one man killed and two wounded.

The Canadian military mapping unit of the Permanent Forces was formed in 1903 under direction of the Intelligence Section of the General Staff, to provide maps and surveys for the defence of their homeland. Two Royal Canadian Engineers junior officers who served in the Boer War recognised the need and had the initiative and argument to get support to start the unit. The first military maps were one-mile-to-one-inch based on the British map design of the most important strategic areas and towns. For each summer, from 1906 to 1914, about six Royal Engineer non-commissioned officer topographers were loaned. It was soon realised that for the maps to be of military utility a contiguous trigonometric survey was needed rather than using town plans, land boundary surveys and other surveys not connected to each other as the spatial framework. In 1909 the Geodetic Survey of Canada, a Government civilian agency, was founded to provide the national geodetic framework for all uses. These matters were all useful for Australia when it came to establishing the Survey Section RAE(Permanent) in 1910.

In the First World War a topographic section was raised and attached to the British topographic battalion to support the Canadian Corps in France. By the end of the war the Canadian Corps Topographical Section of 177 all ranks was a highly commended unit. The Corps artillery commander noted that many of the soldiers who returned home owed their lives to the accurate maps of "*that efficient body of surveyors and mappers*". That Section worked in conjunction with the Australian Corps Topographical Section (an establishment of less than 35 all ranks) when the Australian Corps and Canadian Corps were adjacent in 1918.

For the times between the world wars it was often a period of turmoil for the Survey Division which became the Geographic Section of the General Staff (GSGS) in 1924. In a period of financial restraint the need for a separate military mapping organisation was challenged and it seemed a continuous battle to stop the urge to merge all federal government mapping services. At one point the senior GSGS officer preyed on the Chief of the General Staff (CGS) to reinstate a lost line of funding for the section. The CGS was the same officer who had commented on the essential value of mapping in the First World War (above) and he arranged funding not visible to those who objected to the need for a separate military section. In the latter part of the 1920s map compilation had advanced from plane-tabling to routinely using air photography.

At the beginning of the Second World War there were four RCE survey units. At the end of 1939 a field survey company (144 all ranks) was despatched to England where they prepared artillery fire plans for the defence of England. The Canadian Army was reorganised and likewise the supporting RCE field survey units into field survey, field (air) survey and field (reproduction) survey companies. GSGS remained in Canada staffed by civilians and attached RCE members. Key maps produced included the combat charts for the Normandy D-Day beach landings of the 3rd Canadian Infantry Division on Juno Beach, France, and for the following break-out and advance of the First Canadian Army (about 150,000 Canadian troops plus more

than 80,000 troops of other nations formations) through France into Belgium, the Netherlands and into Germany. Maps for the Allies fighting in Europe were mainly rapid revisions of existing maps, new tailored maps and printing large quantities of maps on the move.

After the war the mapping capability was concentrated in the GSGS located in the nation's capital Ottawa, Ontario. In 1946 the section became a separate agency of the National Defence Headquarters and retitled the Army Survey Establishment (ASE) with 203 RCE military (all ranks) and 13 permanent civil servants. With the start of the Cold War in 1947 and founding of the North Atlantic Treaty Organisation (NATO) in 1949 there arose a heightened need for military mapping of Canada, the US and Europe. The defence of homeland Canada was directly linked to the defence of homeland United States (US) as any Soviet air attack on the US, launched from the Soviet Union, would come over Canada. In the 1946 winter ASE survey teams started work in mapping for cold weather military training areas around Churchill, Manitoba, for Canadian, US and NATO forces. Winter ice froze solid the swampy ground moss (muskeg) which was the best time for overland travel and work although living conditions were very marginal. All forms of transport were used: dogs, pack-horses, over snow vehicles, small aircraft, helicopters including having at times to move them over snow on sleds. 1954-1957 ASE/RCE surveyed and mapped at scale 1:50,000 an east-west line across the middle of Canada, known as the Mid-Canada Line, for a radar based early warning system of a Soviet bomber attack. Airborne radar altimeter was used for vertical control. When the main threat changed to inter-continental ballistic missiles a network of radar stations known as the Distant Early Warning Line (DEW line) was moved north along the northern mainland coast.

In 1959 ASE commenced a program to produce special 1:25,000 maps (Military City Plans) of the 16 largest cities (covering a radius 32 km from the city centre), which were thought to be nuclear targets, to re-enter the cities and clean-up after a nuclear attack. Other cities complained that they were not on the list and the program was extended to cover all cities/towns with population over 50,000 people. These maps were also used for assistance to the civil powers during a prison uprising, the October 1970 crisis in Quebec (radical separatist group) and the Montreal Olympics (1976).

Field surveys were wide-spread including 22 operations from 1958 to 1985 covering the huge north-east Canadian Arctic (60–84 degs north latitude and 60-130 degs west longitude) for 1:250,000 and 1:50,000 mapping. Tellurometers replaced surveyors chains and Doppler satellite receivers replaced nearly everything. One traverse survey party of a surveyor and helicopter pilot were using their Sikorsky S-55 helicopter as an office and for camping in: "*They were awakened by a violent shaking of the helicopter. Bill peered out the window and yelled –There's a f****** great bear outside!. As the pilot scrambled into the cockpit in his underwear Bill was vainly trying to fumble a shotgun shell into the gun (the helicopter's starter assist was a blank shotgun cartridge). When the engine roared to life the bear bolted to high country*".

That there were Canadian survey marks in the ground in the Canadian Arctic supported the Government's policy and position when later sovereignty of lands around the North-West Passage was questioned.

In 1947 the first National Topographic Series (NTS) map coverage program at scale four-miles-to-one-inch (1:253,440) was approved by Government. There were a number of Government departments involved with good cooperation and collaboration often through wartime

personal relationships. Common specifications were agreed although this did take time. One key issue for Defence was the need for the military grid reference system. NATO mapping development influenced Canadian map characteristics and specifications including adopting decimal scales replacing the imperial scales (1948). The scale 1:50,000 and 1:25,000 maps produced by ASE were also later included in the NTS. ASE had wide-angle Multiplex photogrammetric map compilation equipment in 1948. In 1948 tri-metrogon aerial photography was used to complete country wide coverage, helicopters were used for the first time and a year later ASE productivity was ten times greater than 1939 for 1:50,000 and 1:250,000 maps. Shoran (radar based short-range navigation) developed during the war for precision bombing was used to control aerial photography.

Out of another review in the early-1960s, ASE became the Mapping and Charting Establishment (MCE) in 1966, including fixed base topographic, aeronautic, hydrographic production elements and deployable teams to provide expert survey/mapping support to all elements of Canadian Forces, United Nations operations and NATO operations, wherever they were in the world. From the formation of MCE all national mapping programs became the responsibility of other Government departments with MCE only involved in Defence requirements. Most of the base plant printing capability went to other Government agencies. By mid-1960s the first coverage of scale 1:250,000 maps of Canada was completed. There was partial integration, of some functions, with Department of Energy Mining and Resources in 1965.

Canada's importance geographically to the defence of North America and being a member of NATO meant that MCE had significant responsibilities requiring that their capability across all aspects of survey and mapping was consistent with its major Allies, the US and UK. MCE joined the burden sharing co-production efforts to produce the scale 1:250,000 Joint Operations Graphic (JOG) Air version which NATO members had elected to be the initial standardised common theatre wide map product for interoperability for joint and combined strategic and operational level planning and operations. To enable this, in part, MCE acquired a 'denied area' mapping capability in 1967 to use classified source materials to produce mapping products. This was the Special Work Centre behind 'the green door' (it was painted green) and which accounted for about 50 percent of the map compilation capability of MCE. In addition to producing JOG(A) of Canada, MCE produced JOG of Europe (for NATO) which would then be maintained by the UK. Other multinational co-production programs included: DTED (Digital Terrain Elevation Data) of Canada, commenced in 1977 using equipment of other Government mapping agencies after normal work hours; printing more than 1 million maps, in 1990, for the US for Operation Desert Storm in Iraq; Digital Chart of the World 1990-92 and production of the digital VMap Level 1 (Vector Smart Map) from JOG source material, commenced in 1993. Transition to a computer assisted map production system was approved by the Department of National Defence in 1976 with considerable supplementation in 1983 to expand and update the system including interfacing with the equipment of the Special Work Centre. With further technology updates a mostly digital production system was achieved by 1993.

To ensure interoperability with other Pacific Ocean major allies Australia and New Zealand, Canada was a member of the Five Nations Mapping, Charting and Geodesy Directors Conference which advised ABCA (Australia, Britain, Canada, America) Armies group. In most cases NATO standards and agreements became those agreed by ABCA. In addition to mention of cooperation between the Canadian and Australian Corps' Topographic Sections in the First World War, the Australian connection is noted a few other times; the personnel exchange

program of officers and soldiers noting the 'highly regarded' efforts of Captain Robyn Wilson (RA Svy) in the MCE map production area (1973-1975), and a Canadian visiting Australia to learn the lessons of A Section 1 Topographical Survey Troop, Vietnam, having refined silk screen printing under operational conditions.

In ASE and MCE (office) civil servants provided a steady-state and technical continuity, while the RCE officers and soldiers deployed on operations, were posted in and out on other RCE duties and were involved in the necessary technical and military training. MCE was/is the 'home' of the military mappers. They brought back to MCE valuable 'lessons learnt' from their worldwide operational attachments particularly with NATO and UN forces. In 1997 the RCE survey/mapper soldier trades were amalgamated and restructured as Geomatic[3] Technician. Traditionally officers were RCE, but of late they were all-Corps, and any Service. Most officers were trained at the Royal School of Military Survey, Hermitage, UK. The MCE personnel establishment increased, especially in the 1990s and 2000s, as the value of geomatic support to all operations was realised and efforts in multinational co-production increased. In 2003 the MCE establishment was 130 military and 164 civilian although actual numbers were less but increasing. MCE included a Geomatic Support Squadron which was the home of the Geomatic Support Teams tailored to whatever the deployment requirements were. The School of Military Mapping was also a sub-unit of MCE. Later, in 2007, there were more than 80 military members out-posted on operations and to various headquarters and units. MCE was/is commanded by a Lieutenant-Colonel. Military members coming-and-going at MCE meant that when the opportunity arose they were competitive for MCE civil servant positions so retaining the expert knowledge.

In personnel terms MCE strength (military and civilian) was less than half that of RA Svy with military numbers less than one-third.

Canada was involved in many military mapping research and trials projects much of it related to mapping in the vast and remote areas of northern and Arctic Canada. ASE/MCE funded mapping research through the National Research Council (NRC). This was especially so for advanced photogrammetric systems with officers seconded to NRC. One development which amused visitors was the vibrating slotted templet floor which effectively was a photogrammetric adjustment.

Organisationally the role that the mapping capability had within the Canadian Armed Forces is perhaps best illustrated in the changing functional titles of the 26 Directors who exercised overall responsibility to the Defence Headquarters for the capability. The most challenging period was the transition from ASE to MCE in the mid-late-1960s.

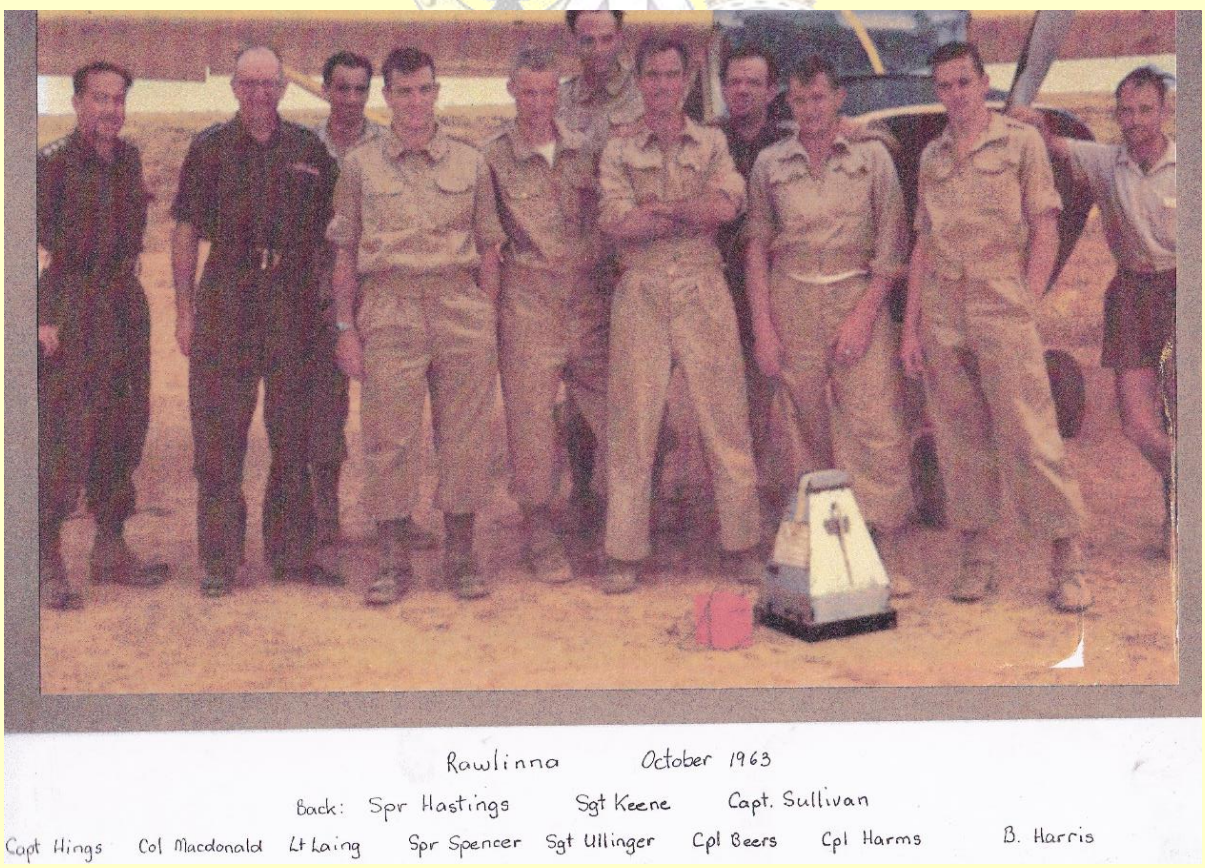
- 1906-1931 Assistant Deputy Director of Military Surveys
- 1931-1940 General Staff Officer Survey
- 1940-1946 Assistant Director of Military Surveys - a civilian on the General Staff.
- 1941-1945 Deputy Director Military Survey Canadian Army Overseas - the Director was the Chief Engineer
- 1945-1952 Director was the Chief Engineer
- 1952-1965 Director of Military Survey

[3] Geomatics, a term developed in Canada, is the sciences and disciplines geodesy, surveying, photogrammetry, remote sensing, cartography to collect, manipulate, store, fuse, analyse, visualise and disseminate geospatial-information/intelligence. 'Geospatial' is the adjective simply describing that the information/intelligence is related to a specific place on the earth.

- 1965-1967 Director of Operational Services and Survey
- 1967-1969 Director General of Environmental and Operational Services
- 1969 Director of Mapping and Charting
- 1969-1989 Director of Cartography
- 1990-1994 Director of Geographic Operations
- 1995-2001 J2 Geomatics (J2 is the joint intelligence staff)
- 2001-2003 J2 Geomatics Imagery and Counter Intelligence

Many things have changed in the more than 100 years since Captains Anderson and Caldwell formed the first Permanent Forces mapping unit and Captain Flewin commanded the Topographic Section of the Canadian Corps in France in the First World War. But what has not changed is the ability of today's 'Canuck geomatic sappers' to provide timely, accurate and relevant geospatial-information to planners, commanders and soldiers to greatly enhance the impact of their work wherever they are in the world. It is the people that make it work. This is obvious from all of the personal stories in this book of pride to be military mappers under the sapper motto '*ubique*'. From the back cover of the book "*Back in 1903 these intrepid mappers slapped mosquitoes and black flies in the swamps of Petawawa while painstakingly drawing a map on a plane table. Now they sit in front of computers in the dust and danger of Afghanistan combining good maps with timely information about the enemy for use by commanders. From the Preface to the last Chapter you will be convinced that these men and women are damned good at what they do!*"

## Photo Gallery




*Above and below: W Comd Fd Svy Unit at Rawlinna WA establishing survey control for 1:250,000 mapping 300km east of Kalgoorlie. Charter aircraft are from Helicopter Utilities (Photo: Dawn Laing)*

*Can you help to identify the unidentified people (?) in these seven photos (below) mainly the annual AHQ Svy Regt vs RAAF School of Radio sports competition – 'Bones of Contention' (Photos: Alan Dean)*


*Back row L to R: ? Mick Dempster Ken Jeffery ?*
*Front row: ? Alan Dean ? ?*


*Back row L to R: ? Mick Dempster Ken Jeffery ? 4 x RAAF*
*Front row L to R: ? Alan Dean ? ? 4 x RAAF*


*Back row L to R: ? ? Werner Kuhnle ? ? ?*
*Front row L to R: Alan Dean ? Bob Hayden Mick Dempster ?*


*Back row L to R: ? Werner Kuhnle, Alan Dean , Mick Dempster, ? 3 x RAAF*
*Middle row L to R: ? ? ? 4 x RAAF*
*Front row L to R: ? ? Bob Hayden 3 x RAAF*

*AHQ Svy Regt vs RAAF May 1970 Rifle team*
*Back row L to R: Ted Burgess Alan Dean Possibly Jeff Wasser ? ?*
*Front row: ? ? ?*

*School of Military Survey Rifle team vs AHQ Survey Regt 1969*
*Back row L to R: Mark Temme Jim Roberts ? Alan Dean Werner Kuhnle*
*Front row: Possibly Ray Lawson Possibly Bill Tewson Trevor Hann*


*1970*
*Back row L to R: ? ? Alan Dean ? Werner Kuhnle Jeff Wasser Mick Dempster*
*Front row: ? ? Possibly Jock Kay ?*

*MAJ Alex Laing and CAPT Tom Royle, 8 Fd Svy Sqn, Popondetta TPNG 1973 at wreckage of a USAAF Second World War aircraft near Popondetta. Remains of two airmen were recovered with identification tags (Photo: Dawn Laing)*

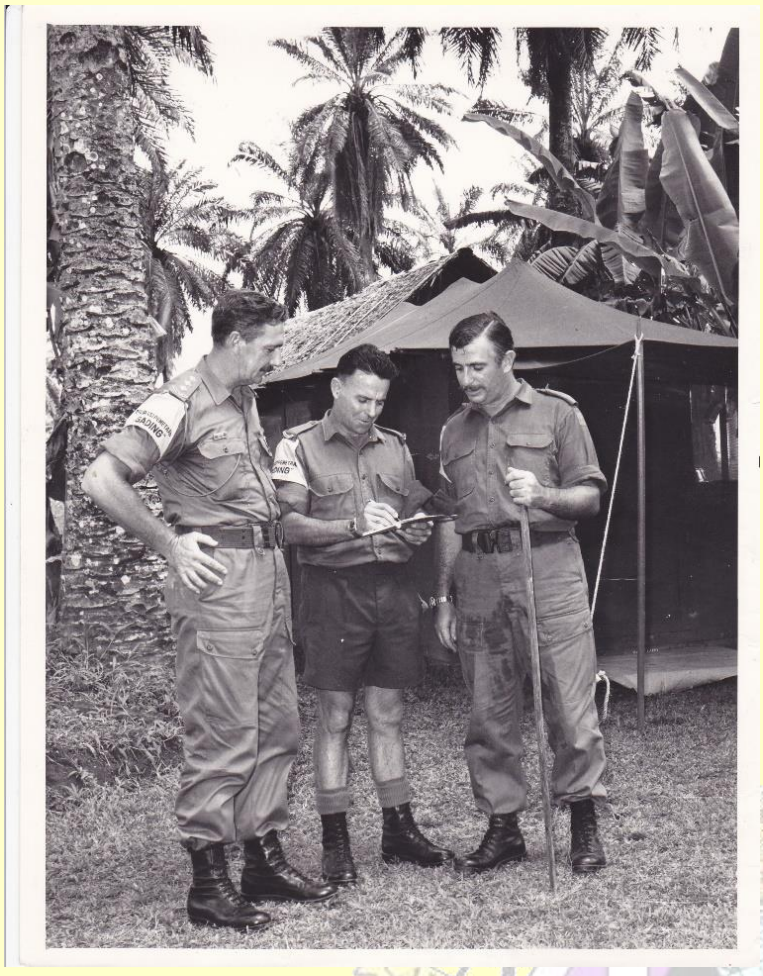
Survey Planning Conference 1974

Back: Maj E.J. Laker, Maj A.W. Laing, -, -, Maj G.O. Ricketts, -, Maj G. Gruska, Maj B.E. Dalton, Sqn Ldr E. McCormick, Maj Ian Porteous, Capt A. Strachan, -, Maj F.E. Thorogood, Lt Col E. Anderson, Sqn Ldr F. Heucke, Maj D. Presgrave, Capt R. Blackwell, -, Capt J. Tracey, Lt Col I "Digger" Campbell,

Front: Lt Col I.C. Sargent, Lt Col W. Childs, Maj A.W. Bewley, Lt Col J.L. Stedman, Brig B. Forward, Col J.K. Nolan, Sqn Ldr M. Robinson, Sqn Ldr B. Squires, Lt Col D. Ridge, Lt Col C. Wheeldon

*Op Gading 4 (5 Fd Svy Sqn – Perth) 1974, Main Base - Camp Belum, Medan, Sumatra (Photo: Dawn Laing)*

*L to R: Op Gading 4 (5 Fd Svy Sqn – Perth) 1974, Main Base Camp Belum, Medan, Sumatra; LTCOL Tavil, CAPT Soetrisno JANTOP, COL Moenanden, MAJ Laing, CAPT Bates-Brownsword, CAPT Sutrisno Air Force Liaison Offr (Photo: Dawn Laing)*



*Op Gading 4 (5 Fd Svy Sqn – Perth) 1974, Main Base Camp Belum, Medan, Sumatra, Indonesia – L to R CAPT Joe Lee – Admin Offr, WO2 Larry McGarry – Detachment Sergeant Major, MAJ Alex Laing – Officer Commanding, at the Regimental Aid Post (Photo: Dawn Laing)*


*Op Cenderawasih 1976 (2 Fd Svy Sqn - Sydney) at Main Base Biak, Irian Jaya, Indonesia (Photo: Dawn Laing)*

*1980 presentation of the atlas of RA Svy scale 1:100,000 topographic maps of Papua New Guinea to the Government of Papua New Guinea. From left: Prime Minister Mr Julius Chan,...., Major Pat Wood BEM OC 8 Fd Svy Sqn, Australian High Commissioner, Lieutenant-Colonel Alex Laing (later Colonel Director of Survey – Army), Brigadier John Coates MBE (later Lieutenant-General AC Chief of the General Staff) (Photo: Dawn Laing)*


*Five Nations (Australia, Canada, New Zealand, United Kingdom, United States) Mapping, Charting and Geodesy Directors Conference 1983 (Photo: Dawn Laing)*

experts to visit

The Fortuna Army Survey Regiment will next week show off its high technology mapping equipment to top military personnel from the United States, Britain, New Zealand and Canada.

The visit will occur after the Five Nations survey directors' conference in Perth — an international military mapping and survey conference.

Fortuna's digitalised equipment is among the most advanced in the world and it is the first time the regiment will host visitors from the conference.

Capt. John South said yesterday the visit was a clear recognition of the significance the Army Survey Regiment was accorded within the international military mapping and surveying community.

"It equally recognises the City of Bendigo as the location of a facility of international standing," he said.

Visitors to Fortuna will be US Defence Mapping Agency director Maj-Gen. Robert F. Durkin and Mrs Durkin; USDMA deputy director for management/technology, Mr Penman R. Gilliam and Mrs Gilliam; director general of Military Survey, UK, Maj-Gen. Patrick F. Fagan MBE; director of Survey Defence, NZ, Colonel William A. Robertson; and director of Cartography, Canada, Colonel David T. Carney and Mrs Carney.

The visitors will be given a civic reception by the Bendigo City Council next Tuesday at 5 pm.

go Advertiser, Tuesday, October 11, 1988

Fortuna maps out tour for guests

● The Fortuna Army Survey Regiment showed off its high technology mapping equipment to top overseas military personnel on the weekend. Fortuna's digitalised equipment is among the most advanced in the world.

Pictured (from left) are Col W.A. Robertson (NZ), Maj.-Gen. R.F. Durkin (US), (back to camera) Cpl Paul Trent (Fortuna), Col D.T Carney (Canada), Maj.-Gen. P.F. Fagan (UK), and Mr P Gillian (US).

*Five Nations (Australia, Canada, New Zealand, United Kingdom, United States) Mapping, Charting and Geodesy Directors Conference 1988 – visit to Army Survey Regiment (Bendigo), here AUTOMAP 2, after the conference in Perth. The 1990 conference was hosted by New Zealand in Bendigo (Photo: Dave Carney)*


*Five Nations (Australia, Canada, New Zealand, United Kingdom, United States) Mapping, Charting and Geodesy Directors Conference 1989 – Hawaii US, the Hawaiian Shaka hand sign of friendship (Photo: Dave Carney)*
*Back L to R: CA Hydro Mr Ross Douglas UK Hydro Mr P Gilliam US DMA ? US, RAN Hydro, RNZN Hydro*
*Front L to R: COL D Carney CA, MAJGEN P Fagan UKMil Svy, MAJGEN R Durkin US DMA, COL D Swiney RA Svy, COL Robertson NZ Army*

## Our Association Calendar 2026 – the fridge magnet

| | |
|---|---|
| Wed 1st July 2026 | Corps Birthday lunch |
| Wed 11th November 2026 | Remembrance Day lunch |
| Thurs 10th December 2026 | Christmas drinks |