



ROYAL AUSTRALIAN SURVEY CORPS
ASSOCIATION
Queensland Branch
BULLETIN

PO Box 5784 Stafford Heights 4053
Website: www.rasurvey.org

EDITION – No 65

APRIL 2017

CALENDAR 2017

Anzac Day 2017 – Tue 25 April – City march 1000hrs;. Post march get-together at the RASVY Sacred Site (Greg’s term) – Alderley Arms Hotel (bar opens early this year – 1130h). Format of the march, FUP etc not expected to be different from previous years. More detailed information will be communicated by Greg separately when received from the march organizers.

Fellows: Let’s do better than last year!

Annual Reunion and AGM – Sat 9 September 2017 (2nd Saturday to avoid clash with ‘Father’s Day’). ‘Grey Nomaders’ and ‘International Jet Setters’ – please plan accordingly. It was an outstanding event in 2016’

COMMITTEE

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Note: Refer Veteran’s Affairs matters to Peter Bates-Brownsword and Barry Lutwyche

From the Editor

This issue of our Bulletin – No 65 – may well be my last. I am finding it increasingly difficult to find material that may be of interest to members and I often resort to lifting items from Facebook – from Websites, the Corps Association Website and others. Then I think – why bother? Anyone can do that and maybe ‘does anyone read our Bulletin anyhow?’ – I never receive any comment or direct input! I took on the task of producing our Bulletin three or four times a year when I retired from the Public Service in 2000 – hence 65 issues plus four or five ‘specials’ over 17 years. I enjoy it but perhaps it is a burden I could do without.

NOTICES

BERETS – BERETS – BERETS

Stocks are held at Christie’s in Sydney. Be distinctive in the RA Survey Association headdress.

Note: Christies can be contacted as follows:

Unit 4D; 1-7 Unwin Bridge Rd, St Peters, NSW 2044. Phone 02 9519 0784

RA SURVEY HISTORY by Dr Chris Coulthard Clark – copies are still available. Contact Secretary Greg Knight for details.

MAPMAKERS OF FORTUNA

Copies may be purchased from the Ex-Fortuna Survey Association (PO Box 865 Bendigo 3552) at \$60.00 plus postage of \$11.50 which includes cost of a padded postal bag.

ASSOCIATION BADGE

Association badges are still available from the Queensland Association, ONLY A FEW LEFT. Place your order with the Queensland Association. Phone or email Secretary Greg Knight

OUR HISTORY PROJECT – WHAT DID WE DO, 1946 – 1996?

Our ‘What Did We Do’ project remains open for further contributions. Have a look and see if you can fill a few of the gaps. Email your contribution direct to Bob Skitch bob@skitch.me or enter your data on our website –

www.rasurvey.org.

MEMBERSHIP

Keep your membership alive. Paid-up status for Ordinary Members terminates with the AGM on the first Saturday in September. Annual subscription is \$15.00 per year.

FACEBOOK GROUPS

Daryn Radford has set up a closed Facebook Group Royal Australian Survey Corps (RASvy) open to all to exchange information and photos. Anyone can find the Group and see who’s in it. Only members can see posts.

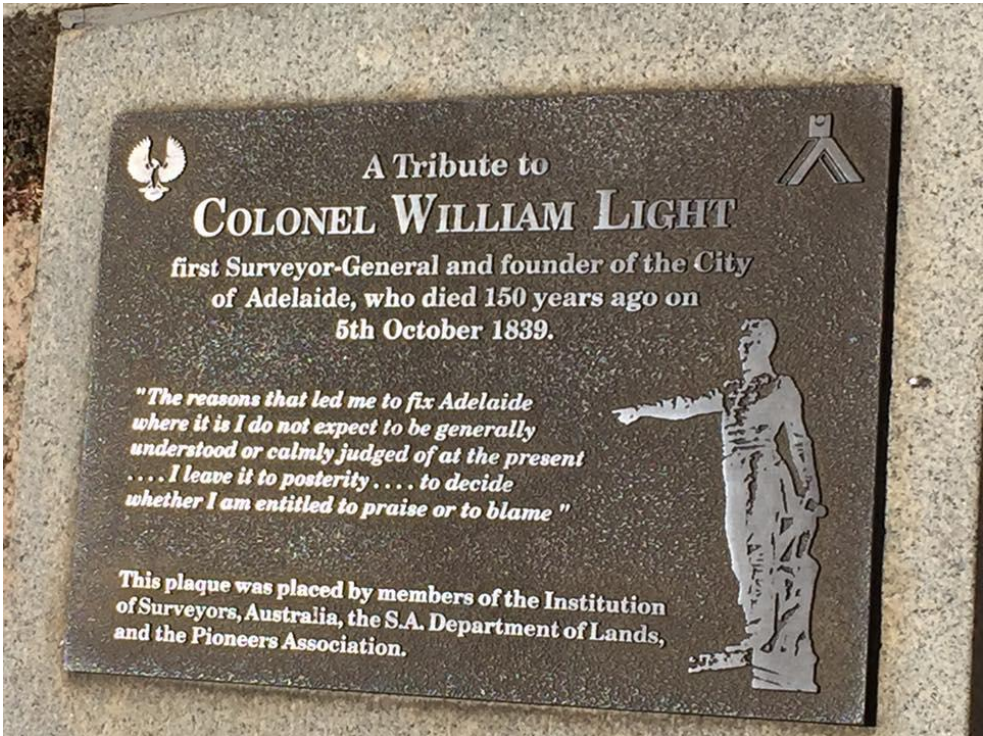
Dave Anderson our own Queensland member has set up another Facebook Group he calls ‘R.A. Survey Uncut’. It can be accessed through the hyperlink <https://www.facebook.com/groups/650449655017119/> or, by following steps suggested by Secretary Greg as follows: (1) *Navigate to Facebook in your browser,* (2) *In the ‘find friends’ bar at the top type in R.A. Survey Uncut,* (3) *Pres the search icon.*

Ed: I find the hyperlink connection the easiest but of course it needs to be copied out of the pdf environment. The website has good content similar to the Darren Radford website with some good sequences of the Anzac day parade.

ASSORTED BITS OF INTEREST culled from various unattributed sources

**A Tribute To Colonel William Light, Surveyor General and founder of the fair city of Adelaide
–From Bob Bousfield to Royal Australian Survey Corps (RASvy)**

At Light Square in the Adelaide CBD. Another tribute to a Surveyor!



Also from Bob Boustead – a plasma cut in steel on a hill in Tasmania



VIETNAM VETERANS COMMEMORATIVE WALK..... In Seymour, Victoria.

ED....In a Bulletin two or three years back I ran report on the creation of this unusual memorial to Vietnam Veterans at Seymour, Victoria. The following is an update from Carolynne Burgess Blackwell, one of its propitiators and initiators. It is not far from the the Hume highway so should you be driving past it would be worth you while to call in. Seymore has its own Military history

*Thought I'd touch base with an update for the **Vietnam Veterans Commemorative Walk** in Seymour, Victoria.*

The Walk's "rubber" trees and "rice paddies" have grown wonderfully in the last couple of years. I've attached a couple of photos so that you can see how much it has changed. If you haven't had the chance to drop in during the last year, and you are passing through Seymour, it is well worth another visit. Especially at night when the images on the Wall glow through the trees.

Stage 3 is now completed and we have in place a Bofors Gun, a Howitzer 105, a Huey, and an APC, having previously put in place the Centurion, Luscombe Bowl, our beautiful 80 metre long double-sided glass wall, the Remembrance Panel, Memorial Plinth to the services, and the storyboards and maps. The Stage 3 official opening is Friday 19 August at 1.30pm at the Luscombe Bowl. It's only a low key and small affair but if you are in the area, perhaps we might see you there.

Best wishes to all of you. Stay safe and happy!

Kind regards, Carolynne Burgess Blackwell



The Wall

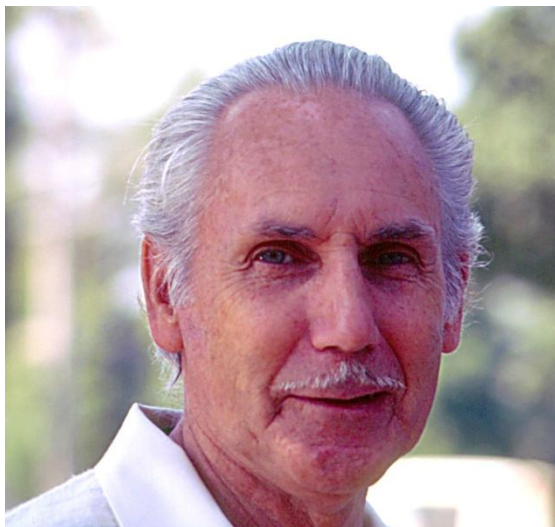


The Walk

'Fortuna' – the grand old lady looking great....



A 'lesser well known, member of RASVY.



This good looking gentleman is **Captain Geoff Hutchinson** who served as the OC of the ARES Increment of the Army Survey Regiment and its ARES and CMF predecessors of RASVY in Southern Command for thirty or more years. Geoff was remarkably consistent in his attendance at monthly parades and annual camps and finally retired in about 1979/80. Geoff's full-time civilian job was with the Division of National Mapping based in Melbourne. On retirement Geoff was regimentally paraded out at Fortuna and presented with the traditional RASVY polished ground mark surmounted by a RASVY badge, maybe something else as well.

Over the years RASVY had a number of CMF/ ARes units meeting the requirements of post National Service during the early years of National Service but none were more 'odd' than the 'Increment' On paper it comprise eleven officers of indeterminate rank and eleven senior NCOs. Why that one might well ask? Apparently it was a concept based on the premise that in the event of national mobilisation another major survey unit could be formed with already trained officers and NCOs. In practice for the sake of its ongoing training/deployment it resembled a field survey unit. There was only ever one officer and a normal structure of sappers, corporals and sergeants. Nearly all of these were surveyors or draughtsmen in private practice or government from all around Victoria. There may have been one or two Litho tradesmen but I am not sure about that. What did they do? About half their time was given to military training – sort of promotion stuff, lectures on current mapping technology and an ongoing field task of producing a 1:25,000 map of Castlemaine south of Bendigo using traditional techniques. The remarkable thing, at least to me, was the enthusiasm they all showed in being part of the Increment.

When Geoff retired, Bruce Key then a sergeant was 'field commissioned, and kept it going until the demise of the Corps in 1996. Bruce was the Senior Surveyor of the Albury/Wodonga Development Corporation.

On the platform at Albury Railway Station.... who should one meet??

Rick Gerhardt met **Heather and Ken Slater....**



Ken in 2015 was unable to attend the centennial celebration of the formation of RA Survey at Fortuna due to illness and it is great to see him with Heather looking so chipper. Ken Slater was my screen operator at Nui Dat in Vietnam 1966/67. Heather, of course a draughtswoman at Fortuna.

CHARTERS TOWERS TO TENNANT CREEK – The road trains.....Bob Skitch

In 1958 the first of the long Tellurometer Traverses was run from Charters Towers in Queensland to Tennant Creek in the Northern Territory. At that time the Corps had not thought to identify its annual major survey projects or operations with a name although the two conducted in TPNG in 1954 and 1956/57 had project names provided by the American army with whom the Corps were co-partners – Projects Xylon and Cutlass. But this account is not concerned with either of those undertakings nor with the detail of the Charters Towers – Tennant Creek traverse other than to say it took nearly eight months to complete and over half of the traverse stations were on Bilby Towers, certainly all those west of Camooweal. It was a 'straight line' traverse following the Barkley Highway with traverse stations no more than 50 or so metres south of the highway. The observation parties comprised Malachy Hayes and Bob Skitch observer and booker, Kev Moody and Don Gray forward station light keeping and remote Tellurometer and Dave Owens and Mick Symmons rear light keeping and remote Tellurometer.



Progressing west along the Barkley we all became watchers of the traffic travelling in both directions fairly sporadic, maybe no more than twenty or so private vehicles each day, maybe half a dozen large cattle trucks heading east to the rail head at Mount Isa and returning empty; then over a period two or three days, the Redex Round Australia road trial, or was it a race! But this account is not about the

Redex road trial; it is about the huge 'Vestey's' road trains. These massive road trains comprising the prime mover powered by a Rolls Royce diesel engine pulling two fully articulated trailers powered past

at intervals of a few days. There were two outfits transporting cattle from the vast Vestey's properties in the Northern Territory to the Mount Isa railhead. Remember, this was 1958 and if road trains of that configuration are common enough in central Australia today on the north-south Stuart Highway – not so in 1958.



To my surprise one day a Vestey's road train pulled up on the highway and the driver hopped out opposite our station (partly for a call of nature) but also to find out what we were about. He couldn't understand how on one passing the configuration of three towers would be in a 40 mile stretch of the highway and a couple of weeks later would have either disappeared or be elsewhere. We told him what we were doing but he left scratching his head.

The two articulated trailer configuration was not permitted under Queensland traffic regulations to travel east of Camooweal and hence one trailer load of cattle (80 or more) would be left at Camooweal while the prime mover with one trailer proceeded to Mount Isa, unloaded and then returned to Camooweal for the second trailer remaining parked with its full load of cattle, a practice I believe was discontinued a year or so later. Not good!

Confidant and diligent researcher Laurie McLean provided me with the following historical review of the Vestey's road trains.....

Vestey Bros' two Rotinoff Viscount road trains were imported from England in 1957, they were called Jackie and Julie. They were powered by 250hp Rolls Royce C6SFL six cylinder supercharged diesel engines of 710 lb/ft torque with 6 speed synchronised overdrive gearbox and 3 speed auxiliary box with Kirkstall hub-reduction bogie diffs of 10.18:1 giving a top speed with double overdrive of 75km per hour. These vehicles experienced gear box, differential and tail shaft problems.

Rotinoff Motors Ltd was a British commercial vehicle manufacturer based in Colnbrook, western London. The company was founded in 1952 by Belarusian emigré George Rotinoff. The Rotinoff company specialized in the production of ballast tractors and heavy transport vehicles. Rotinoff vehicles were used in Europe as tractors for tank transporters. In the Swiss Army the Rotinoff Atlantic GR 7 was used from 1958 to 1991 to haul a Centurion tank. More Rotinoff transporters were used as road trains in Australia for the transport of cattle. George Rotinoff died in 1959, and the brand name Rotinoff was then discontinued. Worldwide there are still Rotinoff vehicles in operation today and they are coveted collectibles.

One of the Vestey Bros Rotinoffs is restored in the Transport Museum at Alice Springs.

At one time when the Rolls Royce prime mover was parked for whatever reason near the cattle yard at Camooweal the driver asked me if I would like to inspect the engine. I accepted – one could actually climb into the engine compartment on either side of the engine, no doubt one did to work on the engine. I noticed also that the engine was spotlessly clean.....Bob

LASSETER – THE DEATH OF A TREASURED MYTH.....Bob Skitch

When I was a young bloke – pre-army days – I was a fascinated reader of the stories of Ion Idriess, a most prolific writer of *Australiana*. Idriess served in the Middle East in WW1 giving rise to some of his early stories such as *The Desert Column* and *Horrie the Wog Dog*. He travelled extensively over Australia (*Forty Fathoms Deep*, *Prospecting for Gold*, *Flynn of the Inland*) and New Guinea (*Gold Dust and Ashes*, *The Drums of Mer*) – these are the ones I remember reading – but there are many many

others. His stories are not history; perhaps they could be said to reflect history. His characters are all very real, very convincing. Perhaps most of his stories are forgotten. They read as something from a past literary age. But one certainly lived on – it is *Lasseter's Last Ride*, the story of the search for a fabulously rich gold bearing reef close to the Northern Territory/Western Australian border west of Alice Springs. Claimed by 'Harry' Lasseter he had seen the reef and to have had samples of gold from the reef assayed in Kalgoorlie in the late 1920s (no record of such action exists) he attempted to revisit the reef with **Surveyor Harding** – again no record that gentleman (surveyor or not) ever existed.

Was Lasseter such a charlatan as the story suggests he was? What did he have to gain from promoting something he knew was completely fictitious? Why was he prepared to risk his life and perhaps that of others in mounting an expedition to locate the 'reef'? For several decades from 1890 through to the end of the 1930s Australia was in the grip of gold fever. After Kalgoorlie and its 'Golden Mile' – there must be more, somewhere out there. It wasn't hard to believe Lasseter's story. And it took a number of later expeditions some post WW2 before the Lasseter myth faded and like Lassiter himself perished on his last ride in 1931. Lasseter himself at times also claimed he was a **surveyor** – he wasn't!

Military historian and author of our Corps history *'Australia's Military Map Makers*, Christopher Coulthard-Clark found he had a family connection with the Lasseter story through his grandfather Olaf Johanson which led him to research the Lasseter story and finally to publish another account - *'Olaf's Suitcase – Lasseter's Mystery Solved'*. It is a complicated story and inevitably thoroughly debunks the Lassiter claim. The fabulously rich reef simply does not exist. The Olaf Johanson connection is itself complicated and I make no attempt to explain or summarise it. Now why do I include this short account in our Association Bulletin? Apart from a personal fascination with the Lassiter story I recall an incident.

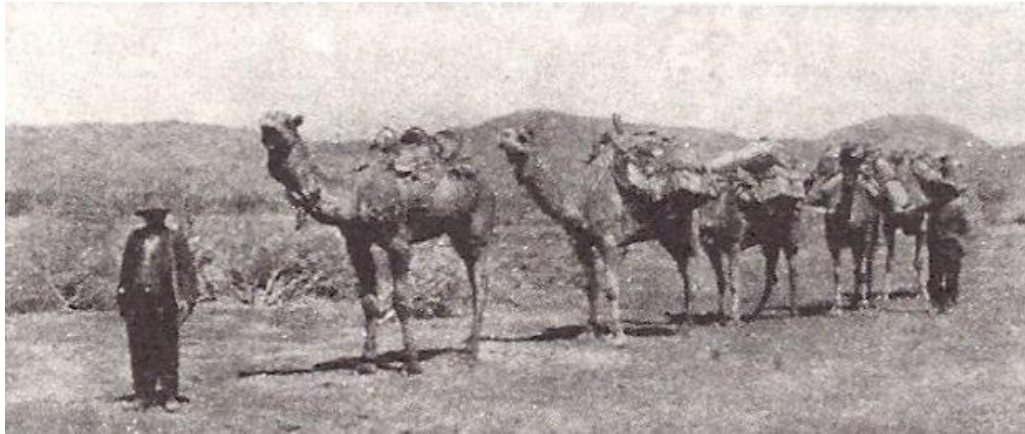
In 1960 in a Survey convoy heading to Camooweal from Bendigo we had stopped for a couple of days R&R at Alice Springs It was quite coincidentally the time of the Central Australian Games and those of us who had an interest spent some time watching the splendid athleticism of the young Aboriginal men. Then it was time for a beer or two at the Stuart Arms Hotel in the main street of Alice. We got to talking to a respectable looking local and he said 'see that old bloke over there' – yes, I could see him and he seemed vaguely familiar – that's Bob Buck we were told. I was immediately fascinated – but I did nothing; I wanted to meet him but as a young bloke I didn't quite have the panache. Buck finally got up and left with his mates. Maybe he would have been interested in what we army blokes were doing there. So who was Bob Buck? He was the bushman, large property owner, cattleman who was contracted to search for Lasseter and found and buried his remains in 1932. Bob Buck died later that same year(1960).

Both Lassiter and Bob Buck are well and I would believe factually treated in the Australian Dictionary of Biography – Lewis Hubert Lassiter 1880 – 1931 by G.P. Walsh <http://adb.anu.edu.au/biography/lasseter-lewis-hubert-7039>, Robert Buck 1881 - 1960 - <http://adb.anu.edu.au/biography/buck-robert-henry-bob-1621>. (To enter these websites copy the hyperlink into an active word doc)

The following page contains a number of relevant photographs kindly provided by Laurie McLean. Laurie travelled extensively the length and breadth of Australia working with the Division of National Mapping establishing a regular network of Aerodist stations, a somewhat different approach to 1,250,000 map control to that undertaken by RA Survey.

In retirement Laurie researches and contributes with others to the story of the Division of National Mapping..

RELATED LASSETER PHOTOGRAPHS – supplied by Laurie Mclean



Lasseter and his camels departing Alice Springs – 1931 – on his ‘last ride



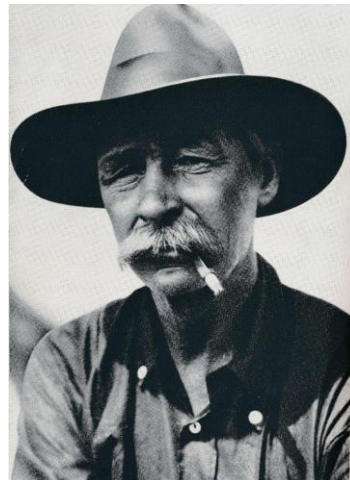
The plaque reads: Lewis Harold Bell Lasseter sheltered in this cave for approximately 25 days during January 1931. He was stranded without food after his camels bolted at a point 15 kms east of here. Although weak from starvation he set out about 25 January to walk the 140 kilometres to Mount Olga hoping to meet up with his relief party. Carrying 1.7 litres of water and assisted by a friendly aboriginal family he reached Irving Creek in the Pottoyu Hills a distance of 35 kilometres where he died about 28 January 1931.

*Erected by Docker River Social Club Inc for Mr R Lasseter
44 April 1974*



Bob Lasseter – son of Harry Lasseter

Taken During the filming of ‘Lasseter’s Bones’ Bob Lasseter inspecting a desert boundary marker said to have been placed by Lennie Beadell (Iron Man of the Inland and RA Survey member). I have no knowledge of its purpose – refer to Bulletin No 12. I am told that Bob Lasseter forever believed his father’s claim that the reef existed. The Lasseter family is wide-spread. ...RFS



- Robert Buck

Bill Mitchell - Colin Cuskelly reported the passing, in Darwin on 28 Feb 2017, of Bill Mitchell who served in RASvy late 40's to mid 50's. *He had recently celebrated his 87th birthday and had been doing poorly for some time. There was a big celebration of his life held on last Tuesday. He was the brother in law of Steve and Pat McConnachie having married Pat's sister Irene. Bill and Rene had eight children, more than 30 grandchildren and more than 40 great grandchildren (and counting).*

Bill's son Rex reported

Dad (Bill), was very proud of his time in the Army Trekking across the Top End doing topographic surveys, putting in trig stations and photo control points using the latest equipment available to the army at that time. I am sure the days were endless to Mum and her growing tribe while Dad was away for months at a time over many years. The topo maps of the day carry the work of the Survey Corps right through and I used them endlessly during my time in the bush. I always looked for the Survey Corps mark on the bottom of every map I used and owned. Talk about leaving a mark on the place. Will try to find photo's of Dad in a very different age on the job with the Survey Corps in the Territory and across the top of Australia

Geoff Wasser Peter Barrett reported the passing of Geoff Wasser. Peter reports..... Found out tonight that Geoff Wasser passed away just before Australia Day. Wass' spent most of his early days at the Regiment. Well known for his swimming. He lived in Canberra for more than 30 years.

Bob Ballard: Steve Hinic reports...sadly the passing of Bob Ballard overnight at his home in Goolwa from cancer. Bob served in 4 Field Survey Squadron in the 1970s. Any further information on Bob's service would be appreciated.

John Lafferty: John's son reported (10 Dec) with great sadness the passing of my father William John Lafferty. He was a proud member of Survey Corps until 1962.

Bob Love: Stevo Hinic reported the passing of Bob Love on 14 December 2016 at the Strathalbyn Hospital. Bob was a WW2 man. He is missed by all.

Peter Curtis: Peter Barrett reports with sadness the passing of Peter Curtis. Peter was ex RAR and RAOC. Worked at the Fortuna Q Store. He and his wife Annette Curtis were a proud military family.

Alf Till: Peter Bowen reports.... It is with sincere regret that I inform you of the passing yesterday afternoon of our esteemed member, friend and colleague Alf Till. He was a strong supporter of our Association for many years, including being our auditor for most years, and participated in our events for as long as he was able. Alf was RAINF, but served with 5 FD SVY SQN for a considerable period around 1970 as the Admin Officer. He was a great bloke with a sharp sense of humour and was also a extremely professional officer. Our deepest sympathies are extended to Alf's wife Leslie and their families.

Alex Munro: John Phillips reports the passing of Alex Munro on Boxing Day. John comments 'I have always considered Darby as one of my great mentors. RIP Alex'
Patrick Miller adds....'it took me some growing up (I was a very young 17 then) to appreciate Darby. He was super dedicated to turning out good topo surveyors. Darby left a big impression.
Noel Sproles reports: I went to Alex Munro's funeral today and it was a packed house. Large numbers came from interstate, including from Bendigo, Tasmania and Brisbane. Three ex RASvy members spoke of Alex as well as his three daughters, son in law and one granddaughter.
Alex's coffin was adorned with the Australian flag, slouch hat and medals Noel was asked by Alex's wife Joan to recite the 'Ode'. Noel further comments.. Alex was well liked and respected as was apparent by the numbers attending.

COLONEL SIR CHARLES CLOSE – KBE, CB, CMG, ScD, FRS....Surveyor
Edited from 'The Ranger Journal' by Bob Skitch

The 'Winter 2016' issue of 'The Ranger' journal of the Defence Surveyors' Association (Vol 4 No 3) outlines the life and times of this doyen of British military surveying. Born in 1865, the son of a Major General completing his education at the Royal Military College he was commissioned into Royal Engineers at Chatham. He followed a surveying career initially in Burma and then in West Africa surveying the boundary between the Niger Coast Protectorate and the German Cameroons. In 1898 he



Colonel Charles Close

And why would I mention that publication? Because I recall two copies of 'Close' at our own School of Survey then at Balcombe in 1955/56. They were both in a somewhat diapidated condition but the text and the numerous well executed diagrams were in tact.

was appointed to the British Ordnance Survey and continued survey work in Central Africa and Northern Rhodesia. During 1902 to 05 he was chief instructor in surveying at the School of Military Engineering (SME) at Chatham. In 1905 he was appointed head of the Topographical (later Geographical) Section of the General Staff of the War office. In 1911 Close was appointed Director General of the Ordnance Survey, retiring in 1922

Close served on the Council of the Royal Geographic Society from 1904 to 1940 and many other international societies throughout Europe including Belgium, Russia, Holland, Germany and Spain; received the Belgium Order of Leopold and the Afghan Order of Astaur. He was President of the Royal Geographical Society in 1947 and died in Winchester on 19th December 1952.

Perhaps Close is remembered mostly for his African work and his several publications. I will only mention one – *The Textbook of Topographical and Geographical Surveying* published in 1905.



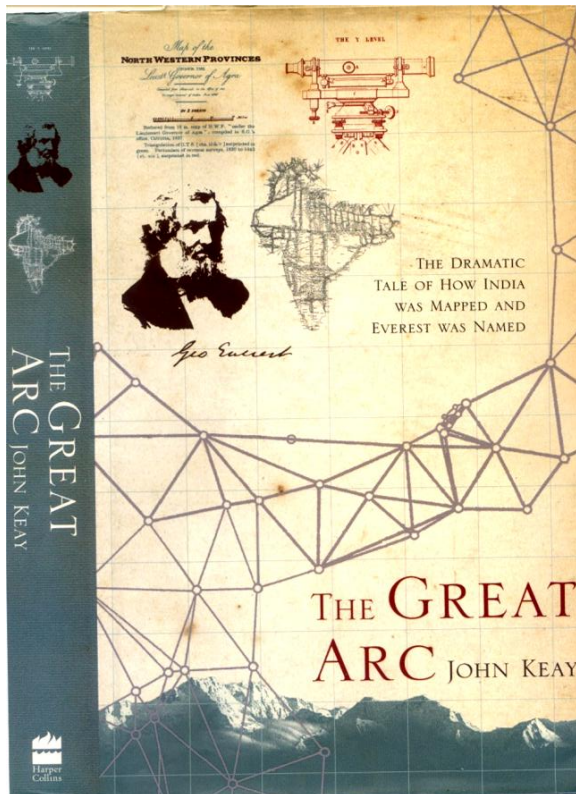
What really caught my eye was the frontispiece picture on one of them (I think it had been purloined from the other) of Colonel Close crossing the Manini River on horseback followed by a line of maybe fifty or more native bearers porting all manner of gear. (My good friend Mike Nolan informs me Close was engaged on the *Yols-Cross Rive Boundary Commission Survey*)

The Defence Surveyor's Association has resurrected Colonel Close or at least his memory. The Close medals and several decoration have been acquired and appropriately mounted and are to be displayed prominently in the Royal Engineers Museum at Chatham.....Bob Skitch

Sweating our way up hills in north Queensland a couple of years later I often thought of Colonel Close and the way it used to be done although it may not have been all that different in New Ireland when we may have had ten or fifteen local villagers to provide a similar service in reaching a jungle covered hill-top.

'THE GREAT ARC' – by John Keay

reviewed by **Noel Sproles**



While idly browsing through a local bookstore the other day, I came across something that you rarely get to see – a book about survey for the general reader so I thought that I might share it with you all. *'The Great Arc'* by John Keay discusses the Great Trigonometrical Survey of India in general and the establishment of the Great Indian Arc of the Meridian in particular. As this suggests, it is about the Survey of India that not only provided a basis for many modern survey techniques but was arguably the great scientific achievement of its time.

The story tells us about trigonometric surveying and surveyors struggling against great odds to reconnoitre lines, establish stations, and observe under the worst possible conditions. During the first half of the 19th century these surveyors battled both monsoonal heat and cold so intense that it froze the ink in the nibs of their pens. They fought bandits and rebellious Indian tribesmen. They died in large numbers from disease, accident, scorpion bites, and attacks by marauding tigers. Although derided as 'compass wallahs' they often served as the thin edge of the wedge for British imperialism as they tied the far corners of the sub-continent together with their web of carefully balanced triangles. Not for them the niceties of cultural and natural conservation as they cut

ten metre swathes through the countryside, desecrated ancient monuments, and even razed entire villages in their quest for clear lines of sight. At one point they got so desperate as to shave nearly seven metres off a ridgeline in order to ensure a line from one station to another. Apparently the disadvantages of grazing lines were not considered to be of great consequence. I do not know if this also fits into the category of cultural vandalism or not but they even used Lord's Cricket Ground to test some newly acquired base line measuring equipment before sending it out to India. Puts a new connotation on 'line and length'.

The Great Arc itself, which is the main topic of the story, commenced at the observatory in Madras and approximated the 78th meridian from the southern tip of India all the way to the Himalayan foothills and was later extended by secondary chains into the Himalayas themselves. The heroes of the story are the leaders of the survey, William Lambton and his successor Sir George Everest both Royal Engineer officers. These men led teams that not only performed the survey but did the vast amount of calculation needed. When the coordinates of the Madras observatory were refined and again when the British government redefined the foot (unit of measure), the whole survey had to be recalculated. In the days before mechanical calculators let alone computers this must have been a herculean task. Their prized instrument was the half ton 'Great Theodolite' with its 36 inch circle. And to think that we complained when we had to back-pack a mere 5 inch Tavistock up a hill! Other theodolites used in the survey had

circles of 24 and 18 inches but the grand-daddy of them all must have been the 'zenith sectors' with their five foot circles for astronomical observations for latitude.

The book describes how many of the techniques that we practiced in RASvy were developed empirically as the surveyors learnt how to reduce the chances of observational errors and how to contend with the poorly understood phenomena of refraction and the deflection of plumb lines. The techniques employed during the survey are of interest as they initially used flags, bonfires, and even flares made from a mixture of gunpowder and indigo to observe to. These were replaced eventually by terracotta lamps for night observation and heliographs for daytime observation. In the days before Bilby Towers it was necessary to proceed across the Great Plains between Delhi and the Himalayas using specially constructed masonry towers. These, like the Bilby towers, provided a support for the theodolite separate from the support provided for the observing team with all their other equipment. In spite of the difficulties experienced with man and nature they were able to establish a world class survey. The difference between the measured length of the baseline at Bangalore and its computed length brought over 200 miles from Madras through the triangulation chain was just 3.17 inches.

The discovery that refraction could make distant stations visible at night struck a chord with me as we experienced the same conditions on the Charleville to Bourke first order traverse in 1963. While I could observe the horizontal angles between two particular stations at night we could not see these same two stations during the day when trying to observe vertical angles. Fortunately for us, Cpl Paddy Strunks was able to find a site from where both stations were always visible – perhaps the only one – after a full day searching along a low flat and long ridgeline.

Problems of seeing through the haze of smoke and dust over the teeming villages and farm areas struck a further chord. Anyone who has tried to observe at night in North Queensland as the sugar cane was being burnt will know.

The book also describes early efforts at determining the heights of the Himalayan peaks and how the Great Triangulation Survey enabled the measurements that finally proved that they were the world's highest mountains. Everest never laid eyes on the mountain bearing his name and evinced no real interest in establishing the heights of the peaks. Lambton, who initiated the survey and ensured its continuation had no great peak named after him and lies in a forgotten grave in what is now a squatters camp. However, the Survey of India apparently still exists in Dera Dun where Everest established it and there resides still the Great Theodolite as well as other mementoes of the project. Along with the instruments, in Dera Dun at least the users of the instruments are still fondly remembered.

While the book is written for the general reader and so does not go into great technical detail, there is enough to whet the appetite of anyone who has had any experience in first order surveying in the field. You will be able to imagine yourself back on the hills again shining lights or observing angles or even digging holes for ground marks. If you have even had a whiff of geodetic surveying then this is a book for you! It is great stuff and is a rare gem for anyone interested in any way with what I for one consider was the best part of field surveying. Do yourself a favour, get hold of a copy and have a good read.

The Great Arc by John Keay, 2000, Harper Collins, my copy purchased from Angus & Robertson, \$19.95

Editor's further comment: As Noel points out Colonel Everest had little interest in the peak that bears his name and had returned to England in ill health before the peak was connected to the Great Arc. His 2iC Andrew Scott Waugh who took over after Everest's departure established the height of the mountain as 29,002 feet above sea level and that height was sustained in school geography books well into the 1950s its height these days is accepted as 29,029 feet. Everest and his family pronounced their name as 'Eve-erest' a long 'ee'. The survey of the Great Arc commenced in 1803 reaching the Himalayas about 1855.....RFS