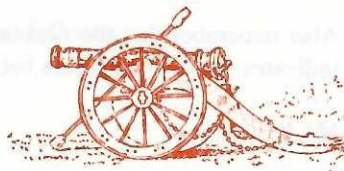


CASCABEL

Newsletter of



The ROYAL AUSTRALIAN ARTILLERY
ASSOCIATION (Victoria) INCORPORATED

Number 33

July 1992

The President Writes:

Hello again. Here we are with another issue of CASCABEL. I am reminded that this is the winter edition as I sit here on the shortest day, with the sun straining to penetrate the overcast, to review the past months. Ex El Alamein was bit of a fail on my part this year. There were restrictions on the allocation of tickets which we have not previously seen and I was therefore unable to make reservations. I will be sure to get in early next year and so satisfy the many members who were disappointed this time.

I was pleased to see many members at Batman Ave on Anzac Day. However there were fewer than usual and I wonder if some thought that the unit may already have moved as was earlier expected. We have now had the last Anzac Day at Batman Ave twice but I think it most unlikely that there will be a third time. We will ensure that members are notified about the location of next years activities as information comes to hand.

The saga of the vacation of the Batman Ave Depot drags on although there are more positive signs of the Regiments' imminent departure starting to appear. You will notice that the two 25 Pdr guns have been removed from the front lawn. I expect that the 2/10 Mdm Regt will be in its new home within a month or so. The Happy Hour at Baxter Depot on the 22 May was well attended and a good time was had by all. I understand there was some confusion about the start time and we will ensure that point is clarified on future occasions. Our thanks go to 22 Bty and all those who assisted in the arrangements. It is with sadness that I report the passing of two gunner characters in recent weeks. BRIG John NORTH and CAPT Len KEATCH. John North was CO of 4 Mdm Regt at the time when I was first commissioned and his leadership has had a significant influence on life. Len Keatch has been a tireless worker for his unit association (2 Aust Fd Regt AIF). Both were members of Legacy.

Functions to note from your program card are the Gunner Dinner on the 3 Jul for Officers and the Artillery Ball on the 7 Aug for All Ranks. The Ball is to be held at International Receptions once again and I look forward to seeing a packed house on that occasion. Despite what you may have read in our last issue, the convening officer for the ball is CAPTAIN David Edwardes who has all the arrangements well in hand.

Also remember that the Annual General Meeting will be on the 27 Aug. Your notice will indicates that we anticipate being in the Chapel St Depot for that meeting.

My best wishes

Merv Taggart

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In this issue we complete the article on Sound Ranging submitted by WO2 Craig Cook.

SOUND RANGING NOTES - PART 2

Accuracy and Source of Error.

A. Accuracy.

Under good conditions locations may be relied on as being within 50 yards, but under adverse conditions the error may be 200 yds.

B. Source of Error.

Of factors which affect the accuracy of sound ranging locations three act to give incorrect time intervals and they are:-

1. Temperature.
2. Timing error.
3. Wind.

1. Temperature.

The higher the temperature the greater is the velocity of sound in air, the formulae being given as :-

$$V_0/V_{10} = 273 + 0/283$$

where: V_0 = velocity temp 0 deg $^{\circ}\text{C}$

V_{10} = vel temp at 10 deg $^{\circ}\text{C}$

2. Timing Error.

This may be due to an error in the rate of the fork, which in turn be due to fatigue, temperature amplitude of vibration etc. The correction is determined periodically and applied as a percentage to all time intervals.

3. Wind.

The effect of a uniform wind is to shift the whole of the wave bodily in the direction of the wind so that by the time the sound reaches the microphones the apparent position of the gun has shifted downwind by the distance travelled by the wind in the time taken by sound to travel from gun to microphone.

The wind correction is determined by meteorological means and an effective wind velocity and direction is determined from which correction can be deduced. In addition to this the wind may be of such a nature to render work impossible. ie. if the wind is blowing from the microphones towards the gun, the wind gradient produced is such that the sound is deflected upwards and passes over the microphones high in the air. In this case no microphone however sensitive will serve to give an indication.

General Installation of Microphone positions. see fig 24

In actual practice it has been found that a set of six microphones or detectors are necessary to locate a source of sound with certainty. These microphones are connected electrically to HQ post where the times of arrival of the sound at each microphone are recorded.

The six detectors are marked M1 to M6 and are usually placed equally along the arc of a circle at intervals ranging from 1,200 to 2000 yards, the diameter of the circle ranging from 8000 to 10,000 yards.

Sound Ranging Apparatus in Practise.

The apparatus for the purpose of discussion will be divided into two sections.

THE MICROPHONES.

THE RECORDING INSTRUMENT.

THE MICROPHONES.

The type which has proved to be capable of giving outstanding satisfaction is the Tucker Hot wire type, and its operation depends upon the fact that when the temperature of a metallic conductor is altered, the electrical resistance also alters, increasing as the temperature increases and vice versa. The Tucker hot wire microphone, as fitted to the present type of S.Rg equipment consists essentially of three parts:-

1. The Grid.

2. The Holder.

3. The Resonator [case]

1. The MICROPHONE GRID consists of a disc of mica separating two rings of silver foil. On the centre of the disc is a square aperture across which is fastened a small porcelain rod. Threaded through this rod in loops is a length of 4.5 cms of Platinum wire of [0.0004" diameter], prepared by the Wallaston process, the silver being dissolved away with nitric acid after the wire is mounted. [These grids are made by the General Post Office laboratory in England]. The silver foil discs serve as terminals for the wire, the resistance of which is 150 ohms when heated to a dull red heat and 50 ohms at air temperature.

2. The HOLDER, consists of two metal rings, each fitted with a terminal, between which is clamped the grid so that the rings are in contact with the silver foil, one on each side. The rings are mounted on an ebonite base which in turn is mounted in a third metal ring which is fitted with an internally threaded projection to allow its attachment to the resonator. There is an area of space that allows free passage of air passing through the microphone and across the grid wires.

3. The RESONATOR. This consists of an empty cylindrical drum with conical ends, the drum being about 18" in length and 12" in diameter. The volume of the device is approx 6 gallons. The resonator is actually a form of the Helmholtz resonator with a single opening and with the dimensions given has a fundamental frequency in the range of gun wave frequencies and as a consequence of this it has the property of increasing the amplitude of the vibrations at the microphone.

To prevent undue prolongation of the vibration and to enable characteristics records to be obtained, the resonator is dampened by piercing a number of holes in the side. For a container of this size there are four at $1/32"$.

3a. Microphone EMPLACEMENT and OPERATION.

The complete microphone is installed in position and placed in a shallow excavation in the ground. A brushwood shelter built closely around the microphone effectively breaks up the wind eddies and prevents their interference with the record. Current is fed to the microphones by two wires connected to the two terminals of the holder, these wires connecting in turn to the HQ.

A current of 65 - 70 milliamps is found with this particular microphone to provide a safe working current and to give the whole a sensitivity suitable to circumstances. The mode of operation is best understood by considering the pressure variation at the point in question, due to the sound wave. This pressure wave as already, described, consists of a compression followed by a rarefaction of nearly equal extent, this in turn being followed by a slight compression. As this pressure wave passes over the resonator the pressure difference between the outside and the inside of the container gives rise to air flow in the neck, an inward flow occurring during the passage of the compression and an outward flow occurring during the passage of the rarefaction of the wave.

The variation of an air flow is followed by variation of resistance which is the condition required. As a flow of air in either direction cools the wire, thus lowering the resistance. The microphone cannot discriminate between compression or rarefaction pulses but acts a rectifier, this rectification being observable in any record taken with a hot wire instrument.

NB. See appendix 5 for a discussion of the relation between air velocity and change in resistance.

We have now seen how the microphone translates the impulse carried through the air from the gun into variations of electrical resistance of the grid of the microphone. The subsequent operations can now be described under the heading of the recording instrument.

2. THE RECORDING APPARATUS.

A. The Bridges.

There are two chief methods which have been used for recording the changes in resistance of the grid and they are namely:-

1. The Wheatstone Bridge
2. The Battery Bridge.

The Wheatstone bridge was employed in the earlier sound ranging sets but it was found that as the work done was of an indicating nature only, the precision and complexity of the Wheatstone bridge was not justified and a battery bridge was substituted (see figure no 13) and is used in the latest pattern of instrument.

The Battery Bridge is a modified Wheatstone and consists of the removal of the fixed ratio arms, reliance being placed upon a mid point battery tapping as a voltage dividing device. The connections used in actual recording apparatus as are shown by figure no 13.

In this case one terminal of the Galvanometer is connected to the mid point of the battery across the outer terminals of which are connected, in order to the lines of the field microphone M1, the field unit has a resistance of 150 ohms. The other side of the bridge is made by another microphone M2 that connects from the galvanometer and a balancing resistance R. In this arrangement the microphone M2 balances the field microphone M1, the resistance R balancing the resistance of the lines. The battery of 36 Volts EMF sends a current of 65 - 70 milliamps through the circuit described, heating the microphones to their correct working temperature. The components of this circuit, excepting the galvanometer, the field microphone, the battery and the lines, are all contained in the "Board Test & Balance" box. See fig no 13.

This board installed at HQ also contains M2 which is thus shielded from draughts and temperature changes and therefore the resistance remains constant.

The references for all diags may have been the British Armies drill manual for the No 5 Recorder Sound Ranging apparatus.

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ITEMS OF INTEREST

The Canberra RAA Association is holding an October Gunner Drinks which will coincide with the opening of the Vietnam Veterans' Memorial. The aim is to give Gunners visiting Canberra a chance to meet informally prior to that activity. Details are:

Date; Friday 2 Oct 92
Location; The Canberra Club 45 West Row CANBERRA CITY
Timings; From 1700 hr to 2000hr
RSVP; NLT 14 Sept 92 to Maj Sid Penhaligon MBE RL - phone
(06) 2883898 (AH)

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Calling all HAA Gunners

In the grounds of the Geelong Depot is a 3.7" HAA gun. Some members of the 2/2 HAA Regt 2nd AIF Association have approached the CO of 2/10 Mdm Regt for permission and some assistance to restore the gun and emplace it in an "In action" mode and the CO has agreed to this in principle. They would be pleased to hear from anyone who might be able to help. In particular if any ex cloud puncher has a workshop manual for the 3.7 it could be of assistance.

The contact man is; Harry SYMONS
13 Montague Street
HIGHTON 3216
Phone (052) 432220

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Legacy Badge Appeal

Legacy have written to advise that they are currently making arrangements for their Annual Badge Appeal scheduled for Friday 4th Sept (Legacy week commences Aug 30th and concludes on Sept 5th). They are requesting volunteers to assist with the selling during the appeal. Volunteers may only be required for an hour or so near their homes or convenient locations. If you feel you can help, then please contact:

Fund Raising Officer
Melbourne Legacy
Box 4312PP
GPO MELBOURNE 3001

indicating you are from the RAA Association.

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Defence Reserves Association

The AGM of this Association will be held at the Officers' Mess 'Grovenor' 55 Queens Road on Thursday 23rd July at 8.00pm. The Mess will open at 7.30pm. A light supper will follow the meeting. The guest speaker will be Senator D.J. Gibbon

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ACTIVITIES REPORT

FUTURE ACTIVITIES

Don't forget the AGM on the 27th AUGUST. Details are included in the agenda and nomination form enclosed.

The President has made mention also of the Artillery Ball in August. An acceptance return is also included.

Visits and Excursions

We have on several occasions canvassed the membership for ideas for visits and excursions. We would now like to test the interest that would be shown for a trip with bus transport provided and possibly an overnight weekend trip. Please let us know if this kind of activity is of interest and we will develop the idea further.

Two possibilities that have been discussed are:

a. A visit to Queenscliff to include a picnic lunch, a tour of the fort in the afternoon followed by the , "Beating the Retreat", ceremony in the evening.

b. A bus tour of the south west coast of Victoria to include particularly those locations with fortifications (Portland, Port Fairy, Warrnambool). This tour would need to be overnight and therefore the cost would need to include motel costs as well as the bus charter.

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PAST ACTIVITIES

Frankston Happy Hour

The happy hour at Frankston Depot on 22nd May started slowly, but about 40 past and present gunners attended on the night. It was great to see many of the younger serving members of the Regiment taking this opportunity for some time with their mates in the mess. Mess life seems to have suffered somewhat over the years, with increasing demands from training, fewer training days and seemingly busier non-military lives. Some reminiscing too by the older attendees, over a few drinks and with some more of Maris' fine finger food. A special thanks to Major Steve Venn (BC 22 Fd Bty) and LtCol David Forster (CO) for the use of their facilities, and to Maris and the Gunner's Club members who made it all happen.

Robin Smith
Secretary

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Reg Morrell attended the 15 FD Regt Reunion and sends this report.

On the 26th of March 1992, I was privileged to represent the RAA Association at the 15 Fd Regt reunion which was held at the Dandenong Artillery depot. A great social night was had by all who were in attendance (84 persons). There was a lot of reminiscencing about the good old days, which together with the excellent supper and music, turned the evening into a successful night.

Special thanks go to the organisers: Keith Bunnett, Dianne Briant, Tom & Sue McLean, Igor & Heather xox Eremin, Norm Cathie, Jock Galloway, Kenny Johnson and John Stewart. Let's hope it will become an annual event.

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MEMBERSHIP REPORT

Another year has finished for the Association, with total membership standing at 392. Unfortunately, the committee had the task of deleting 18 annual members at the last committee meeting for failure to respond to calls to pay their subscriptions. A warm welcome however to the following new members;

WO2 G. S. CECIL
SSGT K. FLINT
SGT J. F. KELLY
SGT J. OLNEY

WO2 J. A. CRUTCHFIELD
SGT K. GOEDEREE
2LT L. A. MEAGHER
SSGT R. D. RODERICK

SGT K. J. DANCEY
LCDR C. HEGGEN
SSGT A. T. NOBLE
SGT J. E. SHILLINGLAW

As at the 30th of June, the breakup of our membership was as follows:

Annual Members	155
Life Members	184
Affiliate Associations	<u>53</u>
	<u>392</u>

Thank you to those members who have taken the trouble to let me know of the new addresses of "lost" members in the past. I am appealing for your help again as mail is being returned for Lt J. Auchettl, formerly of Mulgrave. If you know of his whereabouts please contact me. Likewise, if you're about to move, you can drop me a line at PO Box 309 FRANKSTON 3199 or phone me at work on 781 2633 or at home on 787 7852.

David Osborne
Membership Secretary and Vice President.

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= From the Editor's Desk =

I have been collecting articles from a lot of members recently. Some are lengthy, some short but no matter they will all get into print at some time in the future because all are interesting and help to further our Gunner knowledge - thanks one and all. To allay some fears, we are not going "hi-tech" - all subjects are welcome. My Business Hours phone number and FAX have changed, I don't know for how long.

Editor:
Ross Peterken
2 Milan St.
WANTIRNA 3152
Phone:
720 1757 AH
670 6863 BH
670 6908 FAX

Et Ad Ultimus:

On Higher Education;

As I was laying on the green
A little book it chanced I seen,
Carlyle's *Essay on Burns* was the edition
I left it laying in the same position.

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