HIGHLAND CAVING GROUP

CALCITE

Newsletter of the Highland Caving Group.

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E D I T O R I A L

Following the highly critical editorial of the last issue, I have been presented with some facts concerning the conduct of the S.U.S.S. trip to Cooleman. I have been assured by the S.U.S.S.trip leader that, to the best of his knowledge, members of the official trip did not indulge in any of the reported incidents. This I accept, the conclusions of S.U.S.S. involvement being based on the following observations: There were approx. 40 people camped together in the one area, and it was assumed that this party was an undirected one. I, some H. C. G. members, a few C.S.S. members, and a member of the Commonwealth Film Unit recognised some of these people as having belonged to S.U.S.S., a few of the people concerned loudly proclamed their S.U.S.S. membership status.

Accordingly, I now offer an apology to those S.U.S.S. members participating in the official trip who were not involved in the many incidents.

The second part of the editorial, referring to such matters as Jenolan, ASF, etc, was based on the assumption that the irresponsible element seen at Cooleman could have been involved in similar escapades at Jenolan, and that they could, in any way, dictate S.U.S.S. policies. I have been assured that this is not possible and I regret the possibility that doubts may have been cast regarding the efforts of many S.U.S.S. cavers and regarding the maturity of S.U.S.S. delegates.

Fortunately, those S.U.S.S. members that I personally know have joined in this condemnation of irresponsible behavour that damages speleos' public image and creates a hazard for cavers. A full account of the behaviour of irresponsible people at Cooleman at Easter, which has not and cannot be denied, highlights the need for all speleological societies to guard very carefully that their own members behave in a highly ethical manner at all times. And we must guard against contamination from fringe irresponsible people.

Evalt Crabb.

PRELIMINARY INVESTIGATION OF GRILLE CAVE COLLAPSE

In this issue there is mention of a dimensional check of a suspected collapsing near the entrance of the Grille Cave at Bungonia. In actual fact, this collapse has been under observation for some eighteen months, since minor changes were noticed in the relationship of the rocks comprising the floor near the entrance. Eight weeks ago, a dimension check was made between floor and roof at one point and since that time (i.e. a period of 6 weeks) this gap has decreased by exactly two inches.

Originally it was thought that the rock pile between the entrance and the daylight hole was settling; this was evidenced by splintering, etc., at the base. Now, evidence of splintering, opening

gaps, etc, suggests that the roof also is collapsing. Although further checks are being planned, a problem exists that a fixed datum point must be established.

Accordingly, help would be appreciated in survey methods sufficiently accurate to measure the collapse. It is considered that there is a completely stable area 30 feet from, and within sight of, the collapse area. It is not known if there is an instrument available within speleo societies capable of measuring this extent of collapse over the distance involved, relative to true horizontal, working from a fixed point.

Evalt Crabb

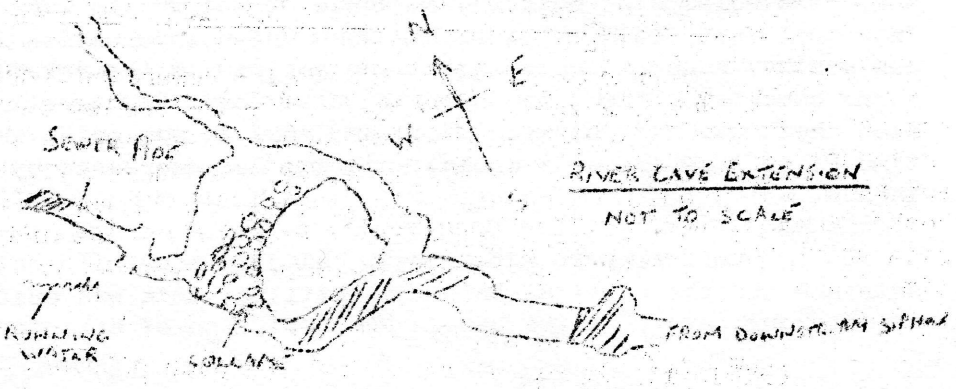
COOLEMAN TRIP EASTER 1966

Present: E. Craff (T/L) J. Crabb (V) A. Rose (M), K. Rose (M) E. Powell (M) R. Scheffer (M) K. Thompson (M) J. Kerr (M) J. Gibson (M) R. Smith (M) A. Moule (M) J. Allan (P) P. Newton (P) Mary ? (P) N. Poulter (P) G. Harrison (M) D. Smith (V) + M.S.S. + C.S.S.

Sleet and snow welcomed the party to Coolamen, and this, with the overnight driving, restricted the activity on Friday to setting up camp, short visits to the New Year cave and the Right Cooleman Cave.

Early on Saturday, a large party, which included the M.S.S. & C.S.S. members, went to the River Cave to attempt further diving in the downstream area. Simultaneously, the remainder of the party tackled the New Year Cave.

In the River Cave, the assistance of the many members was appreciated in transporting the gear through the muddy clefts to the downstream syphon, where Bob Smith, Allan Moule, John Allen and Peter Newton undertook the dive, while a few others tackled the "duckunder". Some five and a half hours later the party withdrew from the cave, cold as..... ! After extending the river passage aprox 400', through Three syphons. This river passage appears to terminate in a huge rock fall in a North Westerly direction from the entrance. It is not yet known if it is possible to negotiate beyond this rock fall.



On the return journey, the walkers were subjected to "Gibberology" near the Main Cooleman Cave, where two of our members narrowly missed serious injury.

The party from the New Year Cave reported business as usual narrow, muddy, running streams, unstable rock falls, and we're close to Frustration Cave.

At about 10.00 p.m. Saturday night, a C.S.S. member came to report that a fisherman was overdue. As this person was very well aquainted with the area, was aware of the hazards and was some four hours overdue, it was assured that he could be either injured or drowned. A fellow fisherman had, in fact, already gone as far down as the popular fishing area to no avail.

We immediately prepared ourselves, including picking up blankets, first aid gear and rope, and set off to search the river and gorge sides. Some of the M.S.S. members joined the H.C.G.team, but when contact was made with the S.U.S.S. and S. S. S. members camps, no support could be gained. However, some people from the S.U.S.S. camp had already departed. It was ascertained that the remaining person at the fishermans camp was keeping a tally of the people entering the gorge. Although the searchers, 28 in number, were well spread out, reasonable contact was maintained, particularly in the later groups methodically working down both sides of the gorge.

Fortunately, the search ended very suddenly when the fisherman was found slowly making his way back to camp. Apperently he had climbed too high near the wat rfall, had realised an error, and as it was a dark moonless night, had the commonsence to stop and light a fire, to stay warm. Refreshments were offered and taken, from a seemingly inexhaustable supply at the fisher's camp.

On Sunday, it was decided to investigate an efflux in the gorge downstream of the waterfall, following a rough description from a C.S.S. member of the location and volume of water flow. This time the gear had to be carried on foot, causing a slight drop-off in the number of volunteer sherpas. The remainder of the party visited Fish Cave, Barbers Cave and others.

Downstream, the efflux was located, it was ascertained that diving was possible and that the water flow rate was sufficient to warrant close attention. John Allen and Peter Newton undertook the dive, supported by the remainder of the party who had declared the water even colder than that in the River Cave. After about three hours preparation, diving, withdrawal, the divers emerged, reporting that after a tough upstream swim through a syphon, they had broken into a dry cave, with particularly fine decoration. Although the stream continued, the air consumption over the weekend dictated a stop to diving, as they were close to safety limits.

Following discussion with Neil Andderson (C.S.S.), it was decided to call the new discovery the Easter Cave, in the hope that it would rival the W. A. Effort.

Early Monday saw the departure of the battered vehicles to the battering journey home, where the perennial argument over the best route has not been resolved.

Comments: The weekend was marred somewhat by the extremely bad behaviour of a group of people - this has probably been sufficiently discussed.

Problems encountered by the divers were firstly, insufficient air for a sustained effort over a long weekend, starting some discussion re rebreathing gear; and secondly, the problem of transporting gear over long distances of rugged terrain.

Evalt Crabb

COOLEMAN - 23rd to 25th April, 1966.

Aim:- To finish off Easter Cave Dive.

Present:- R. Smith (L) Allen Moule.(M) John Allen (P)
N. Anderson (C.SS.) Caral Anderson (C.S.S.)
J. Jennings (C.SS.) San Nankivell (C.S.S.)

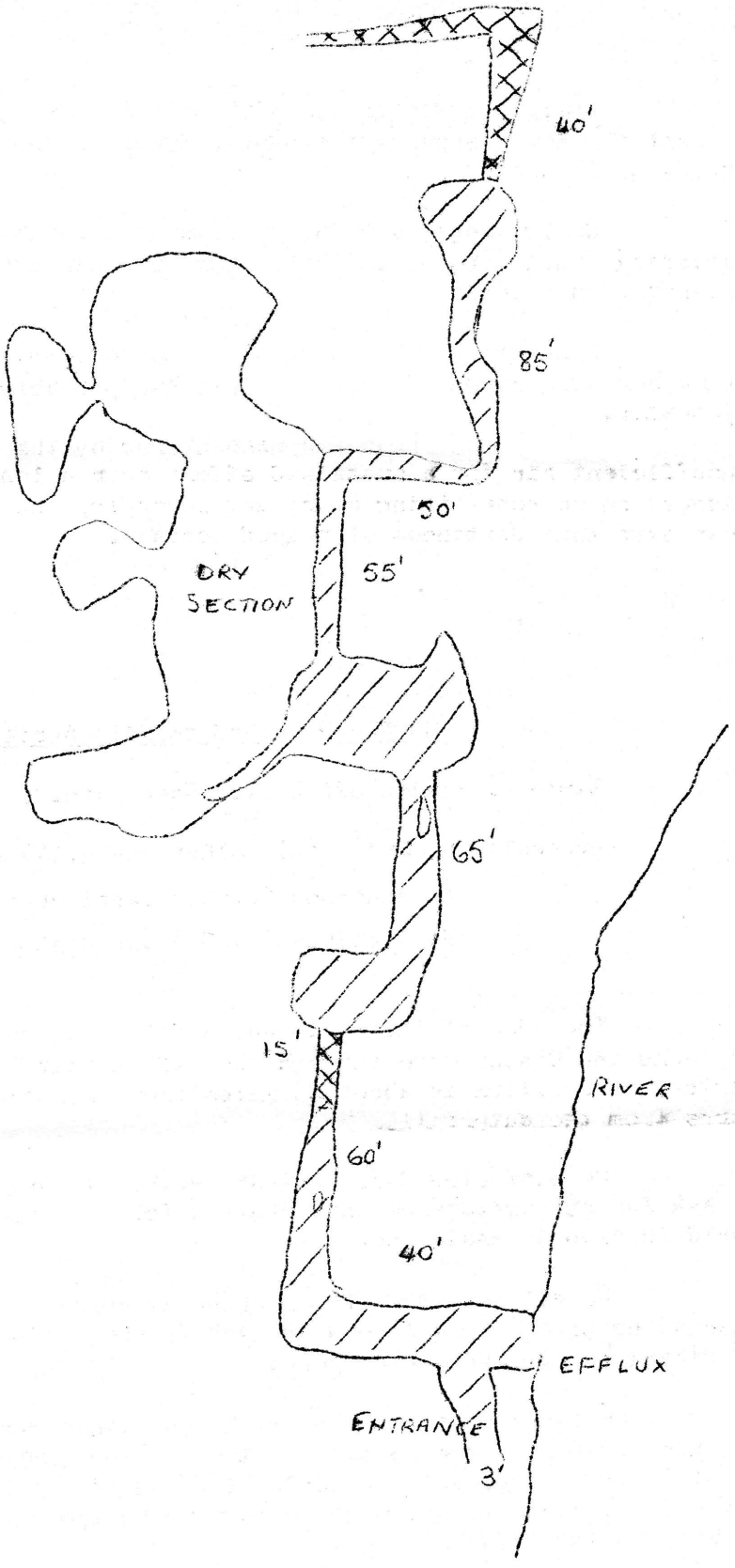
The idea of this trip was a follow up to the Easter trip, when we found the Easter Cave through the efflux that C.S.S. pointed out at Easter. The efflux is about 2½ miles downstream in the gorge about 200 yards from the waterfall.

We contacted Neil Anderson (C.S.S.) during the previous week to ask for any assistance they could offer. He replied saying that C.S.S. would be glad to assist us.

We all met at Cooleman saturday morning and after making and discuss ng plans set off dawn the gorge, each of us carrying about 50 lbs of diving gear, also caving gear.

On reaching the efflux we climbed into our gear (Allen, John & Bob) and proceeded into the cave. First under the duckunder was Bob followed by Allen then John, after reaching the end of the 15' duckunder, we swam along the river passage to the next chamber where the cave goes into a dry section as well as the river passage.

DISTANCES ARE ONLY APPROXIMATE. NO EXACT MEASUREMENTS WERE TAKEN.



RIVER PASSAGE

DIVING PASSAGES (NO AIR)

EASTER CAVE
COOLEMAN

We decided to explore the dry section so we left our scuba gear and proceeded along the chamber. The cave at this point goes into Three different directions. We followed them all as far as they went finding some unusual and beautiful decorations.

Some time later when we had covered all the possibilities we noticed we swam out of the cave shivering and decided to come back the next day to follow the river passage further. After a meal around the fire we started up the gorge to the camp leaving all the diving gear at the efflux to dry out.

Sunday morning at 10.00 found us back at the efflux. This time Allen decided that the fire was warmer than the water in the cave, so we persuaded Neil to come in with Allen's gear. Neil had never used scuba in a cave before but, followed under the duckunder like an expert. We then moved on to where we left the river passage the previous day.

The river passage went on about 200' around corners, where we had to wrestle with our gear finally we came to the next syphon. John then took the lead and with Neil & Bob on the safety line he followed it about 35' turned left 90° went a further 15', where the passage narrowed down to about 10" wide with the water and trout coming through at a good rate.

We then decided that was as far as we could go with our present equipment so we came out of the cave once again shivering and proceeded to lug all the gear up the gorge, back to camp.

We would like to thank Neil, Carol, Joe and Ian for all the valuable assistance they gave to make the weekend successful and possible.

Bob Smith

BUNGONIA - 21st to 22nd May, 1966

Present:- M. Kaye (FM) E. Kaye (FM) R. Kaye (A.M.) B.Smith(FM) A. Moule (FM) B. Race (FM) J. Birch (V) R. Ellis (P) J. Middleton (P) J. Morgan (V) G. Hughes (V) N. Hawkins (V) D. Falvey (V) Bruce ? (V) D. Pratt (SUSS)

The purpose of the trip was to gain practical experience in the use of RDF equipment, to obtain semi-quantatative information on the accuracy of various method s and the effective range, to determine the most efficient method of operation. General caving trips were also held in the Grill and in B4 to familiarise new members with these

caves. Examination of the area surrounding the Grill entrance was planned to determine whether these had been further collapse.

The Bungonia caves area was closed for the RDF work as it minimized the difficulties in contact between surface and sub surface groups and in access to transmitter positions. The low relief in the immediate vacinity of the caves, also minimised the problems of the surface work.

Three transmitter positions were chosen on the basis of mapping and surface diggings in the area , but time was available to examine only two of these.

Transmitter position 1. Location:-"Powells Pot"in B4. Transmitter set up 10' from end of extension leading off 15' down the main drop.

Transmitter position 11. Location:-"Kings Cross" in B4 Transmitter set up on highest level of Kings Cross.

Equipment:- As described in Interim Report on the HCG Radio Direction Finding Equipment" (This issue of Calcite).

Surface Techniques:- The point on the surface lying on the axis of the transmitting coil was found by the method set out in the interim Report and first established by SSS. Points of horizontal field were found by walking along radii from the "epicentre" in the direction, which minimized the gradient of the field, until the null position was reached. Several null positions were located in each case, their positions surveyed relative to the epicentre and relative to the survey point at the entrance of B4.

Results and Comments:- Points were located as in Diagram (over page) A possible elipticity of the surface nulls was noted for position 1 but insufficient points were found to either confirm or reject this. The apparent surface elipse is elongate perpendicular to strike. This would be consistant with a higher electrical conductivity along the bedding plane, or along a fault plane parallel to bedding, than horozontial to this plane. No elipse was found for position 11.

The time taken to locate the surface points was about 1 hour for the first position and 3 hours for the second. It was noted that with increased depth the null positions became harder to locate as the field was effectively horizontal over a larger surface distance. The accuracy of the method therefore decreased with depth.

In diagram 11 it is noted that the epicentre does not coincide with the geometric centre. This could be due to tilting of the transmitter axis about the vertical, or anisotropy of the limestone.

Scale 1" = 100'

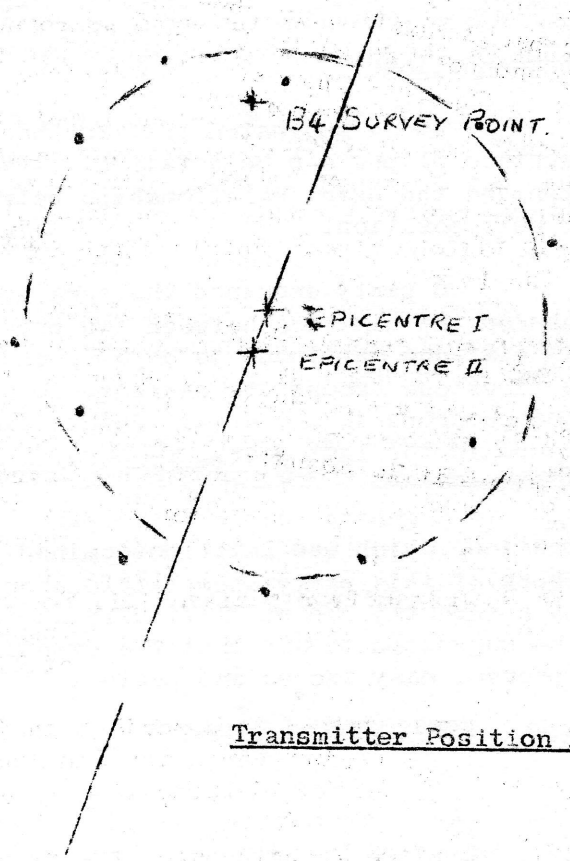
------ Trace of horizontal field on surface.

• Actual position obtained during survey.

_____ Geological strike

Date of Survey 22.5.66.

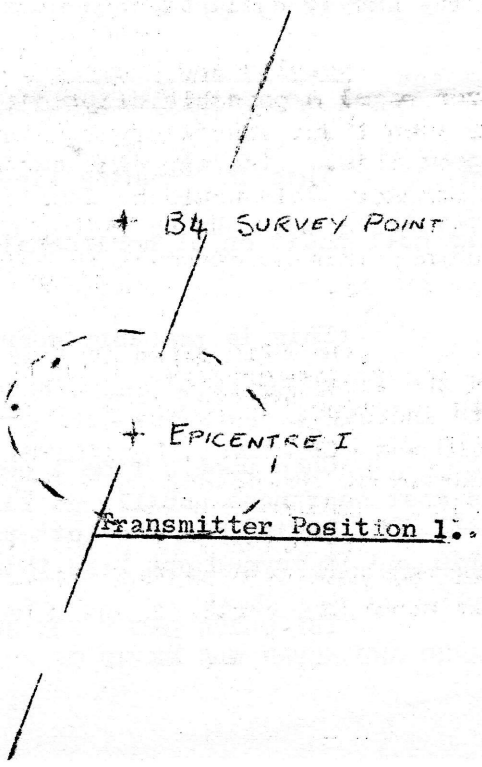
Surveyed by M.L.Kaye (HCG)
E. Kaye (HCG)



Transmitter Position 11.

__ possible elipse, elongale across strike.

Scale etc as above.



Transmitter Position 1.

Recommendations:-

It is suggested that further work be carried out to determine whether a surface elipse can be detailed. The equipment should be calibrated to determine the exact relationships between vertical and horizontal components of the null position.

A party examined the area around the entrance to the Grill Cave and measured the distance between Two previously marked points near the entrance. This distance was found to be 52", indicating a closing rate of 1/3" per week. The limestone around the entrance is highly jointed compared with other limestone outcrops in the area. Joints directly above the entrance appear to have widened in the last year.

A general exploration party in B4 "discovered" and explored an extension, which was later determined to be the SSS extension. Although the members of this party knew little about the cave and nothing about the extension they apparently had no difficulty in finding the extension. It is proposed that it be suggested to SSS that the extension be partically blocked at the entrance to prevent easy axcess and protect the formations.

Margaret L. Kaye

With reference to the Map on the previous page.

The actual depth cannot be calculated until we have calibrated the instrument but it is about:-

59' x 07 = 41° 3' for position 1.

and

137°6 x 07 = 96°3' for position 11.

NB. This is assuming linear relationship between x, y coordinates of the null position of horizontal field, and a calibration factor of 07.

This is probably correct to within about 5%.

Once upon a time a certain typist decided to try a new typwriter and as most sentances usually go like this:- THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG. háving all the letters of the alphabet in it. However there was a slip and it turned out like this:-

"THE QUICK BROWN FOX JUMPED OVER THE EVIL CRABB, BUT GOT LOST IN HIS BEARD AND NEVER WAS HEARD OF AGAIN." Well! it's ok for filling material.

INTERIM REPORT ON THE H.C.G. RADIO DIRECTION FINDING EQUIPMENT

Interest by the club in the construction of R.D.F. equipment for use in caves was aroused by an excellent report "Radio Direction Finding in Caves" by R. Zimic in the October 1965 issue of S.S.S. Communications. Work was started on vertually an identical transmitter and receiver, using germanium transistors and tests conducted on the completed gear. Field trials showed the following deficiencies in the equipment as made:-

1. Inadequate power in the transmitter.

2. Inadequate signal to noise ratio in the receiver at ranges exceeding about 100ft.

3. Insufficient gain in the receiver.

4. Excessive band pass in the receiver allowed considerable noise from power supply system.

5. Difficulty in detecting the C.W. transmitted signals by the receiver when operated on the threshold of instability.

Despite the above limitations, the equipment showed good promise. Improved gear has been developed by the club and the purpose of this report is to indicate the present state of development of the equipment, to report on field trials conducted to date and to future possible developments.

TRANSMITTER.

Following the theory set out by Mr. Zimic, great care was taken to produce a transmitting coil offering the gighest possible "Q" on a standard ½" x 8" ferrite rod, particular attention being paid to the symetry of the windings. The two power transistors were changed to type 2 N 442, biased to give 50 watts input to the coil, from a 12 volt supply at a frequency of 1 K.C.

The increased power brought new problems:-

A. The voltage across the ends of the coil were in excess of 1100 volts. Because at the low impedance of the source this voltage could be lethal.

B. The coil became excessively hot after about one hour of use.

The first of these problems was overcome by casting the transmitting coil in epoxy resin and the second by pulsing the output. This latter, in addit on to reducing the battery drain and the heating of the coil, offered the important advantage of enabling the receiver to be used on the threshold of instability, theoretically at infinite gain.

The transmitter is housed in a wooden box about 8" x 4" x 4"

THE PULSING UNIT.

This is an amplified solid state flip flop circuit with a mark space ratio of 1; 1 and a pulse lengh of 0.3 secs. For convenience this unit is mounted in the box containing the transmitter. After the type MM1711 output transistor had been burnt out on the bench trials, because of the high R.F. voltages in the supply, two Zener diodes were fitted to protect the unit.

RECEIVER.

The original receiver contained no feedback loops and used inherently noisy transistors. The O C 45 was replaced with a lower noise silicon transistor, D.C. and A. C. Feedback added, also an additional output stage. Despite these improvements no real success was achieved.

The receiver now in use is a six stage unit, employing N.P.N. silicon planar transistors with a designed gain of 80d B at 100 C.P.S. Response is flat from 700 C.P.S. to 1500 C.P.S. and is 35 d B down at 50 C.P.S. and 20 d. B. down at 20 K.C. Output is to a crystal earpiece.

The components and 9v. Battery are housed in a small metal box.

RECEIVING LOOP ANTENNA.

This is identical to that described by Mr. Zimic and is tuned to resonance at 1 K C by a suitable ceramic capacitor.

All equipment works well as a system and field trials have shown it to give five hours operation from an 11 A H Battery.

FIELD TRIALS.

Preliminary field trials were conducted at Hyde Park Sydney and at Cooleman. During the weekend, 21-22nd May, actual survey work was carried out at B 4 Bungonia. Results of these trials are sumarised as follows:-

A. Using a method established by S.S.S., dection of the spot vertically above the transmitter is as follows:- The coil is held with its axis horizontal and then turned in azimuth about a vertical axis. The unique position on the ground, giving uniform minimum received signal strength, is then a point on the axis of the transmitting coil. A number of tests, at two different positions and depths, in B4 (Powells Pot and Kings Cross), demonstrated that this point could be determined to an accuracy of $\pm$ 2 Ft.

B. Using the method set out by Mr. Zimic (Communications Page 4)for determining the depth of the transmitter from the surface a random error of ± 10 ft. was achieved. This may be due to inexperience with the equipment, but is more probably an inherrent limitation of the method. It is believed that the method set out on page 3 of the article, viz tilting the transmitting loop, should give a depth determination, of not lower accuracy than obtained for the vertical positions.

One of the tests indicate the existance of an elliptical field at the surface. No opportunity has existed yet to examine this phenomena in detail, however it was noted that the minor axis of the ellipse was along the geological strike. This would be consistent with the anisotropic resistivity of the media.

FUTURE DEVELOPMENTS.

It is hoped to extend the equipment to use it as a simple two way communication system from the point vertically above the transmitting coil. The proposed method of achieving this is to alter the pulsing unit to give a 1:3 mark space ratio and to operate a transmit,receiver switch. In the receive position of this switch, a pulse generated on the surface in the receiving loop, should alert the operator underground to switch off the transmitter. Then with maximum coupling between both coils a small signal strength should enable reliable morse communication. The original amplifier mentioned earlier will be used at the transmitting position to amplify the received signal. Provision will be made to mute this receiver by the T. R. switch when a pulse is being transmitted.

It is hoped that this system will enable the close cooperation between underground and surface operators mentioned by Mr. Zimic.

Limited copies of the circuits used in the equipment mentioned above are available on request. The author wishes to thank the many friends and club members who have assisted in the design construction and calibration of the equipment.

Eric Kaye

H E R E A N D T H E R E

Robbie Scheffer is now staying at Queenbeyan, and is caving with C.S.S.

Bob Russell has moved on to Melbourne from Tasmania and expects to be back by Xmas.

Congratulations to UNSWESS Pres. Bob Chapman, on his recent marriage.

Blayne Pearcey reports that he has settled in at Hong Kong, but misses Aussie Caving.

ANDFINALLY WELCOME TO FOUR NEW MEMBERS _ JOHN ALLEN
JOHN MIDDLETON
MARY PALMER
MARION BOOTH.

FUTURE TRIPS.

4th_5th June Tuglow. Contact. Bob Smith.
iith i2th and i3 June Bongonia Contact. E. Crabb
W. Bryant.

i9th June, Bongonia. Contact R. Smith, M. Kaye.