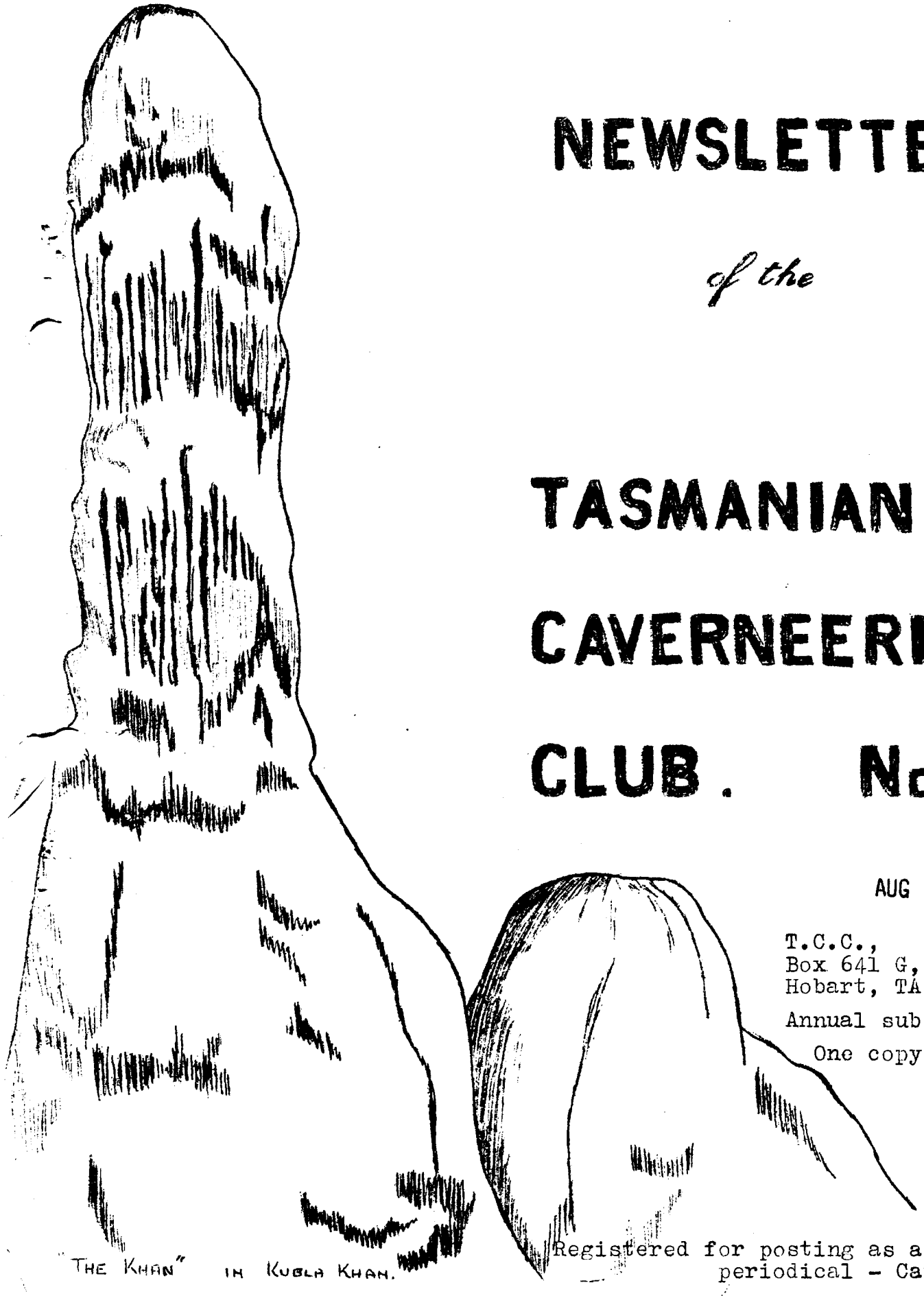
SPELEO — SPIEL

NEWSLETTER

of the

TASMANIAN CAVERNEERING CLUB. No. 82



"THE KHAN" IN KUBLA KHAN.

AUG 1973

T.C.C.,
Box 641 G, G.P.O.,
Hobart, TAS. 7001.

Annual sub. $ 2.00

One copy 20 cents.

Registered for posting as a periodical - Category "B"

Editor: Andrew Skinner.

FORWARD PROGRAMME.

Aug. 10-12	-	Mole Creek. Fri: Croesus(photography,rubbish removal.) Sat: Kubla Khan (photography) Andrew Skinner. Sat: Pyramid-Cow Cave through trip. R.Mansfield. Sun: Georgies Hall-Wet Cave. Andrew Skinner.
Aug.14-17	-	Exit Cave. Extended mid-week trip for photography and surveying. Andrew Skinner.
Aug.18,19	-	Junee-Florentine. Sat: Track marking in Welcome Stranger. Sun: Surface walking around swallets (KD, Cauldron Pot) and Junee Cave. Andrew Skinner.
Aug.25,26	-	Hastings. Sat: Complete survey of Wolf Hole. Sun: King George V and/or Newdegate(easy tourist type day) Andrew Skinner.
Sept. 2	-	Florentine. Day trip to Frankcombe Cave. Lots of crawling. Noel White.
Sept. 5	-	General meeting. Simon and Janet Stephens', 43 Seaview Ave., Taroona. 8 p.m.
Sept.9-10	-	Maria Island. Date tentative. Mike Jagoe's boat. Sea caves in north of island. A.Skinner.
Sept.15	-	ANNUAL DINNER. Black Buffalo Hotel,opp. Hobart Matric.Coll. Bookings with $ 2.50 deposit p.hd. to Therese Goede by the 5th of Sept. Balance of $ 2.00 per.head to be paid before the 12th Sept. Cheques should be made payable to Tas Caverneering Club. Full payment may be made when booking if preferred.
Mid November	-	Surprise Bay(Walking trip). Andrew Skinner.
PICTON RIVER	-	Track-cutting most weekends. Contact Bill Lehmann or Brian Collin on Wednesday nights at 66 Wentworth Street, Sth.Hobart.

Editorial.

Once again the mighty Exit Cave is in the limelight. Club activities seem to have turned from the watery depths of Junee to the'friendly' atmosphere of Ida Bay. Since January this year ten trips have been to the area and many more are planned. Activities have included track marking, exploration in Loons Cave, photography, an abortive dig, investigation for road access, surface exploration and numbering on the northern side of Marble Hill, and the preparation of a detailed map of the section before the talus. BUT there are literally years of work to be done - at least two miles are unsurveyed and there must be many undescended pots on Marble Hill.

Lately TCC has had an influx of new members and prospectives. Ida Bay is certainly the area where their energy and enthusiasm might be absorbed. Urgent priorities are:

- completion of mapping and surveying
- SRT training
- descent of potholes on Marble Hill - those avens must lead somewhere.

On the conservation/tourism side interest has been correspondingly high. Active lobbying has continued on the Scenic Reserve proposal, first submitted by TCC in 1971. A local group is most interested in opening the first section of the cave for tourism but have been unable to obtain government approval for their plans. A detailed management/development plan is being prepared for the area and should be completed in early November.

Andrew Skinner.

Letters to the Editor.

" Andrew,

Noted in the last Spiel two articles wherein grid references to caves at Maria Island and in the Florentine Valley were

published.

I suggest this practice is undesirable and should be discontinued immediately. Journals of caving groups can readily find their way into the hands of non-conservation oriented people. Although in the present cases doubtless little damage could be done, difficulties as to where one must draw the line emerge.

I would request that all locational information be therefore restricted to a distribution no wider than the average file drawer.

Cheers,

Kevin Kiernan.

MISCELLANEOUS.

A warm welcome is extended to the following new members who were elected at the August general meeting.

Laurie Moody, 13 Mason Street, Claremont, 7011.
Glen Pinnington(Junior member), 20 Leighland Road, Claremont, 7011.
Wendy Mold, Jane Franklin Hall, Davey Street. Wendy is a former member of the Northern Branch.
Michelle Farrell, 1B/19 French Street, Dynnyrne, 7005.
Mike Jagoe, Springvale Hostel, 2 Midwood St., New Town, 7008.
Greg Strickland, c/o Dept.of Enviromental Design, TCAE, Mt.Nelson.
Leonie Smith, 23 Mt.Stuart Road, Mt.Stuart.

TCC(Northern Branch) have formed a new group, Northern Caverneers. They are to apply to ASF at the Melbourne committee meeting for full membership. Best wishes for active caving in the north.

This month we lose two of our most active members. Albert Goede is leaving for the ANZAAS Conference in Perth and a trip to the Kimberleys(W.A.). Philip Robinson is leaving for England, via New Guinea. Phil was Vice-President last year and has been a dominant factor in our recent successes at Junee. We will miss his enthusiasm and energy for the next six months. Our loss will be England's gain (caving wise).

State Liason Council.

At a meeting held at the SCS clubrooms the following charter was drawn up and has been subsequently accepted at the TCC general meeting. A.Skinner and W.Lehmann were elected as delegates and S.Stephens will attend while Albert Goede is away.

CHARTER FOR THE TASMANIAN COUNCIL OF SPELEOLOGY.

1. The Council shall be know as the Tasmanian Council of Speleology.
2. Membership of the Council shall be open to all Federation member societies within the state of Tasmania.
3. Each member society shall be represented on council by its President and two additional delegates who shall act as its spokesmen and shall between them exercise a single vote on behalf of their society.
4. The purposes of the Council shall be:
   a) where appropriate, to speak on behalf of or to represent the interests of all member societies.
   b) to arrange such joint activities or integration of society activities as may be agreed by the member soocieties.
   c) to provide a forum for discussion of issues of concern to member societies, and when agreed by the Council, to take action on such issues.
   d) to provide a clearing house for the exchange of information or other communication between member societies.
   e) to undertake any other action or functions agreed by member societies.

   provided that no actions of the Council shall conflict with the general policies of the Federation, and that no actions shall be taken in respect of matters outside of the geographical area covered by the Council's membership.
5. The Council shall elect from amongst delegates its own chairman, secretary and treasurer.
6. Levies may be charged upon member societies in order to finance

activities of the Council, provided that any such levy must be approved by all member societies. In the event of such a levy being charged, an audited financial statement shall be prepared and circulated once in each calender year.

(It was decided by the member societies that their share of the profit from the ASF Convention in 1970 be made available to the Council.)

7. Meetings shall be convened by the chairman either on his own decision, as determined by the Council, or at the request of any two member societies, provided that a meeting must be held at least twice in each calendar year. No decisions shall be taken without representation from all member societies.
8. The chairman shall furnish a report to the Committee of the Federation at each meeting of that Committee.

Rules:

Ad Hoc Committees will be chaired by an existing Council delegate.
Ad Hoc Committees may be formed for particular functions and as such shall contain representatives from each Society but not necessarily Council delegates.

(Three Ad Hoc Committees were suggested; Cave Documentation, Conservation, and Search and Rescue).

DON'T SCRUFF OUR BLUFF, is the tilte of the latest Precipitous Bluff car sticker. In case you missed the public forum at the Town Hall the Government is preparing a management plan for the area. The Club has been advised by correspondence from the Minister for the Environment that this is to be released soon. The forum was attended by some 400 who listened to several speakers, including Mr.Bruce Champion who presented a very persuasive argument on the uneconomic nature of mining in the area. Pat Wessing, a foundation member of TCC, received media coverage when she spoke of the poor economic conditions in Esperance and the need for zoning in the area. The Journal of the Sydney Speleological Society devotes almost its entire issue this month to an editorial and trip report on Precipitous Bluff. The Journal can be borrowed from the Secretary, as well as car stickers and other information.

Correction: Speleo Spiel, No.81: The article on Maria Is. was written by Andrew Skinner. Another trip to the area is planned for the school holidays.

TCC is preparing a Submission for the Enquiry into the National Estate, mainly concerning Exit, Croesus and Kubla Khan Caves. Our atitudes to the sale of speleothems, zoning in cave areas. Ideas and slides of Kubla Khan and Croesus to Andrew Skinner.

+++ Some help in addressing wrappers, stamping covers and collating the Spiel would be appreciated. Anyone with an ambition to wield a rubber stamp or punch in staples please see Therese at 8 Bath St., Battery Point. +++

Next issue, article on Hastings by Roy Skinner.

FIRST AUSTRALIAN CONFERENCE ON CAVE TOURISM.

The First Australasian Conference on Cave Tourism, sponsored by the Australian Speleological Federation, was held at Jenolan Caves House, NSW on July 10-13, 1973. This was attended by approx. forty speleologists and representatives from Tourist and National Parks organisations in all states, the Northern Territory and ACT.

Matters of interest to tourist cave operators and administrators were discussed from steam cleaning of the Orient Cave, Jenolan to a proposal for a three day seminar for cave guides at the College of Advanced Education, Canberra.

Of particular interest was the declared belief that the demand for recreational areas in Australia will certaily increase greatly

in the near future, and that careful planning for this increase should be undertaken at the present time. Caves must play a vital role in this planning, with Western Australia and Tasmania playing the major roles as the states with the highest potential for future developments.

It was suggested that a follow-up conference could be held in Tasmania in 1975.

R.K. Skinner.

TRIP REPORTS.

Sphinx Rock - Climbing Practice, 22/7/73.
Party: Phil Robinson, Ros Bell, Albert Goede, Andrew Skinner, Laurie Moody, Glen Pinnington, and brother Sean, Ruben ?, Richard Schmidt, Bill Hardemann, and Atilla Vrana.

Albert and Philip spent the morning on SRT whilst Ros and I introduced the others to ladder work. Glen and Laurie proved to be quite profficient but the other two need some more practice before attempting serious climbing underground. In the afternoon I did some SRT whilst the others continued laddering. Richard and Bill dropped in for a quick look before departing for Launceston. Late in the afternoon Philip and Atilla decided to go up to the Organ Pipes.

Andrew Skinner.

Exit Cave - 28,29/7/73.
Party: Andrew Skinner(L), Laurie Moody(P), Glen Pinnington(P), Ruben ? and two other prospectives.

The aim of this trip was to draw in the detail on the traverse which was surveyed a fortnight before. The traverse had been plotted on three large sheets. These sheets were taken into the cave and the detail mapped. On Saturday the section from the talus to Camp 1(including the high level side passages) was completed. Laurie took the others into the section behind the Pendulum, but nothing new was found. I took several B&W photos with multiple flash. On Sunday morning a watch was kept at the entrance for Nick Gould who was to walk in for a day trip but did not arrive. As it was late (or were we simply lazy) we abandoned plans to collect the bag of rubbish at Camp 2. Laurie and the others investigated the two passages leading east near the entrance whilst I completed the map and took more photos. After a quick lunch outside we reached the cars before 3 p.m.

Andrew Skinner.

Climbing practice ?? - July 7, 1973.
Bruce Chetwynd, Andrew Skinner, Greg Strickland and John Bluhdorn.

Scene: National Fitness Camp, Esperance.
Event: Dept. of Environmental Design Orientation Day.

The morning was spent looking for a suitable tree for rigging a rope from. A likely specimen was found and the afternoon was spent abseiling.

Andrew Skinner.

Wolf Hole - 8/7/73.
Party: Andrew Skinner(L), Michelle Farrell(P), Bruce Chetwynd(P) and Ross Mansfield.

After a rather late start the party assembled at the entrance of the collapse doline at noon. Ross and I abseiled in and started to take photos of Michelle's descent when she accidently dislodged some rocks, but they missed the camera! None of us had been to the cave before and it took some time to find the way to Lake Pluto. Deciding that some respectable speleology had to be done, a Grade 5 survey was commenced and extended as far as the Lake. Several side passages remain unsurveyed, but a trip is planned to complete the project and a map plus cave description should appear in the next Speleo Spiel.

Andrew Skinner.

Exit Cave - 14,15 July, 1973.
Party: Andrew Skinner(L), Ros Skinner(nee Bell), Laurie Moody, Wendy Mold and Glen Pinnington.

After a 5 a.m. start we were on the track at first light. After a splendid sunrise over Mt.La Perouse we reached Reece's Bog, which was under a couple of inches of ice. Before entering the cave we decided to light a fire and after much effort, fossil fuel and Wendy's toilet paper, coffee and toast were served. After depositing our rucksacks at Camp 1 Ros and I started surveying whilst the others photographed and found their way around the first section of the cave. A passage opposite Camp 1 was investigated and a squeeze was pushed for 100 metres. Sunday was spent surveying in the Hammer Passage and back to the entrance.

WARNING: Lights can fail, we reached daylight with only one accummulator still working and with the aid of several candles. Wendy had not charged her accummulator and mine was on the blink. The three carbide lamps ran out of fuel or water and the hand torches had flat batteries. It can happen to you! We left the camp with little light and were fortunate enough that somebody had candles near the top of their pack. Nevertheless, the Grade 5 survey was completed from the talus to the entrance.

Andrew Skinner.

• •

Exit Cave Road.

A road will be built to Exit Cave. It is not possible to say when or by whom, but one day a road will be built. From an aesthetic and expedient point of view, the logical route to follow is from a point immediately north of the crossing of the D'Entrecasteaux River by the South Cape forestry road, then follow the course of the stream to its confluence with Exit Creek, and parallel to the creek to the cave entrance. However,from a road-maker's point of view this could be unsuitable owing to the low-lying terrain and consequent areas of water saturation creating difficulties with stabilisation of a road foundation.

With this in mind, myself and Stuart Gamble made a reconnoitering trip around the north side of the alluvial plain(Reece's Bog) on Saturday, July 28th. We left the South Cape road at a point approximately one mile from the Cockle Creek road and traversed around Sugarloaf, endeavouring to maintain an elevation of about three to four hundred feet above sea level, to a point approx. half a mile from the saddle between Sugarloaf and Marble Hill. Here from a vantage point, it was obvious that a road could follow this route and maintain a constant elevation to Exit Cave except for the area immediately below the saddle. It was judged that the distance for the two alternative routes would be similar, the main difference being a change in course on the higher route once Marble Hill was reached. The higher route appeared suitable for road making over the area traversed despite dense, tangled vegetation due to repeated burning. Loose metal along the route indicated that extensive cartage of road surface material would not be necessary. Aesthetically the route is quite satisfactory. Fine views of Mt. La Perouse, The Hippo, Table-top and Moonlight Ridge were obtained on the inward journey, and Southport Lagoon and South Bruny Island were clearly visible on the return journey.

In a proposal to the Government to open a half mile section of Exit Cave to the public by local interests, it is intended to transport all visitors by bus from the South Cape road. Disadvantages with the higher route are apparent; (a) it conflicts with APPM leases currently being worked, and (b) the abscence of a suitable area for car parking and a mustering point at the commencement of the new road.

Mr.J.Casey, of Dover, who has had extensive experience in road making problems has indicated that he proposes to walk to the cave along the river route and return via the higher route within the next few weeks. From his observations it should be resolved whether the D'Entrecasteaux route is practicable or not.

Roy Skinner.

More Abseiling and Prussiking

by Peter Shaw.

This article is a follow-up to my article in the Nov.1972 Spiel, in which basic techniques and items of equipment were discussed. The intervening six months has seen a stabilisation of equipment and systems.

Rope: Future rope purchases will be of the American Blue Water II caving rope. For a discussion of the rope, see the Decenber, 1972 Spiel.

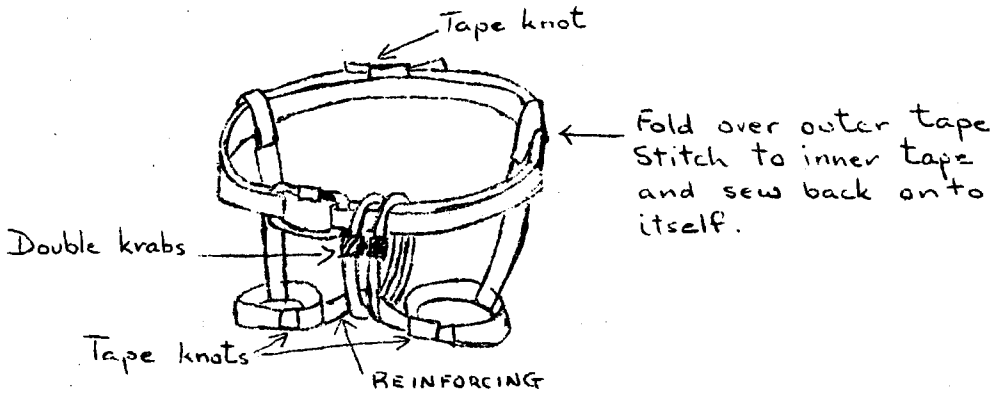
Rope Protectors: Rope protection is still unsatisfactory. At the top of pitches, tackle bags are being used and are satisfactory. However, the slit plastic tubing is unsatisfactory and substitute methods of protection are desirable. It should have the following properties:

1. Lightweight,
2. Compact,
3. Easy to place and remove,
4. Will not allow the rope to slide out of position.

Several lines of enquiry are open at present. One is to fasten canvas pads to the rock using pitons, small bolts or natural anchorages. Another is to wrap canvas around the rope and fasten it using bulldog clips, press studs or something similar. Another idea yet to be tried, is to rivet sections of split tubing to a piece of matting, thereby combining the advantages of the matting and the split tubing. The matting would prevent the tubing from turning over which is the main disadvantage.

The Shaw Mark II Sit Harness.

This harness has the advantage that it can be made using an ordinary sewing machine. None of the sewn joints are of crucial importance. Firstly, make up a comfortable swami seat using two inch terylene webbing tied with tape knots. Next, make a waist loop of the same webbing, such that, when doubled and passed around your waist, the two ends can just be clipped together using a krab. With two short pieces of webbing, sew connecting straps, as in the diagram. These straps should not be right behind you, but slightly towards the sides. Two krabs, in parallel, should be clipped from the swami seat around both sections of the waist-loop. The purpose of the two krabs is to facilitate any manouvres such as changing ropes, changing from abseil to prussik or knot passing. If desired the centre of the swami seat can be re-inforced by stitching an extra piece of tape to it. The connecting straps are sewn so as to allow the outer tape to move. The waist-loop can than be adjusted by adjusting the tape knot at the back.

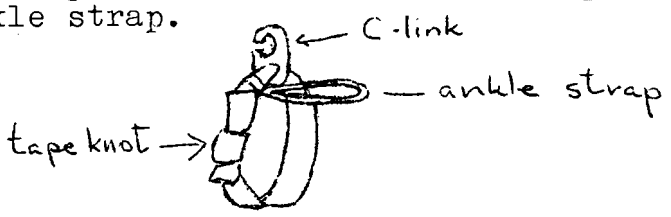


Chest Harness:

A chest harness can be made by sewing the adjusting part of a seat belt to a piece of two inch webbing. Shoulder straps can be made using one inch webbing. If these are tied in loops and then threaded on the chest-loop rather than sewn to it, the chest junar can be removed.

Foot Loops:

Foot loops are used in conjunction with C-links, so that you have foot loops which are comfortable when prussiking, but which need not be removed at the top of each pitch. They are worn either for the full time spent underground or only for the vertical section. A C-link is threaded onto a piece of two inch webbing, which is then tied with a tape knot so that it fits comfortably onto the foot. Either a piece of perlon or cord or something elastic is tied to the loop as an ankle strap.



Abseiling Devices:

For the last six months rappel racks have been used by members of the club. Whaletails have just been purchased and a detailed valuation should soon be possible. At first glance, tha whaletail appears to be the better of the two. It is a better heat-sink, spreads the wear over more bars and is faster to put on the rope. It is more difficult to lock up than the rappel rack. When the whaletail wears out it must be replaced, whereas individual bars can be replaced on the rappel rack. Although mainlanders claim that the whaletail wears less, I don't think this will be substantial until the whaletail has been tested in Tasmanian conditions, where the ropes appear to get much dirtier than do those of the Sydneyites although I don't know what New Zealand conditions are like.

The Shaw Three Jumar Four Phase Super-Duper, Whizz-Bang Prussiking System: (accept no substitutes).

This system, as well as allowing four separate prussiking methods to be used, is all that is necessary to change ropes, pass knots, change from abseil to prussik and vice-versa. It's disadvantage is that it requires three jumars. The principal advantage is that the four prussiking methods can be speedily interchanged in the course of the one pitch; thereby allowing the technique to be adapted to suit the changing nature of the pitch. This system work-well on the eighty metre pitch in Tassy Pot, where you have a free section, a sloping wall, a steep wall and then a broken sloping wall. If you ever find while interchanging systems, that you're tied up and can't move your arms, or that you are not attached to to the rope, I can accept no responsibility.

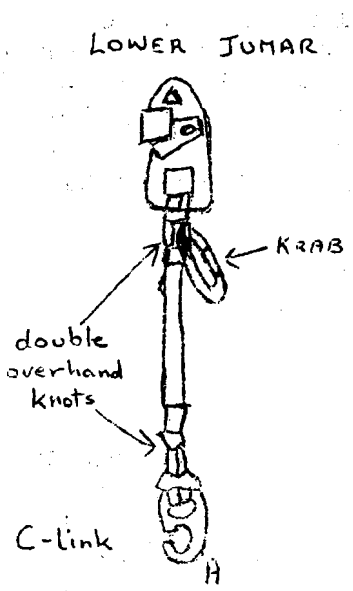
The basis of the system is the chest jumar, which is threaded onto the chest harness at the top, and clipped into one of the two sit harness krabs at the bottom. This is very uncomfortable to walk in, but gives the best results when prussiking. Unclip the jumar from the bottom krab when moving between pitches. There are two objects in keeping the chest jumar tight - it keeps your body vertical, ensuring that no energy is wasted in coming to a vertical position before moving up; it also ensures that, when moving up, you do not have to take up any slack, before the jumar moves up also.

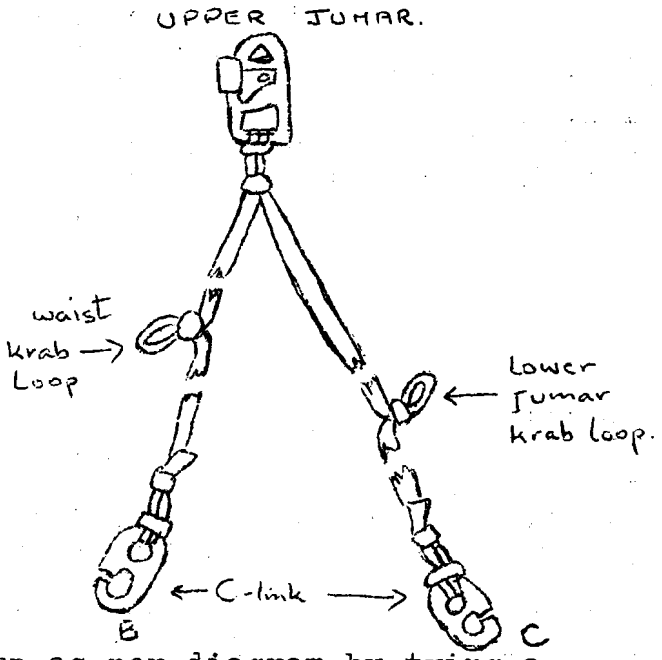
While the second object could be achieved by using an elastic shock cord looped around the neck, the chest harness is still necessary to keep your body vertical on free pitches. If all pitches are against the wall or have only short free sections, it would be more comfortable to use the elastic neck cord and dispense with the chest harness.

The two remaining jumars I am going to designate as upper and lower. The foot tapes can be attached to your feet in whichever order you prefer.

The lower jumar tape is made by tying a double overhand knot in each end of a piece of one inch webbing. One end is attached to a jumar and the other to a C-link. The tape should be long enough such that, when the C-link is clipped into one of your foot loops,

the jumar is just comfortably within reach. Clip a krab without a screw-lock through the loop formed just below the jumar.





The upper jumar tape is made up as per diagram by tying a double overhand knot in the centre of a piece of tape and attaching it to the jumar. Further loops are then formed for the waist krab and the lower jumar krab. C-links are attached to the ends for connection to the foot loops. The lengths of the respective sections are extremely important. When the waist krab loop is clipped into one of the krabs on your sit harness, the jumar should be at arms length. When the lower jumar krab loop is clipped into the lower jumar krab, and a downwards force is exerted on C-links A and C, the two C-links should be parallel. When a downwards force is exerted on C-links B and C, the two C-links should be parallel. When C-links B and C are clipped into your foot loops, the upper jumar should reach to just above the chest jumar. When making up the tapes remember that the knots will tighten up and the tapes will stretch slightly when a load is applied to them.

1. Inchworm System.

For free drops only. Clip C-link B and the upper Jumar onto a spare krab as they are not used. Clip the waist krab onto your spare sit harness krab, the one not attached to your chset jumar. Clip the lower jumar krab loop onto the lower jumar krab and C-links A and C onto each of your foot loops. While one hand steadies you on the rope above your chest jumar, stand up on the lower jumar. As your weight is taken by your chest jumar, pull up the lower jumar with your lower hand and repeat the process. The main rope should be inside the lower jumar, within the circle formed by your legs and the two foot tapes. If one arm gets tired change hands.

2. Leapfrog System.

For free drops only. The lower jumar is not used. Clip C-links B and C to each of your foot loops and the jumar onto the rope above your chest jumar. Sit back on your chest jumar and push the upper jumar up the rope with both hands. Stand up on your feet, allowing the chest jumar to slide up, and then repeat the process.

3. Walk-up System.

For 80-90 degree smooth walls. Clip C-link B to a spare krab and the waist krab loop onto your spare sit harness krab. Clip C-links A and C to your foot loops and use a walk-up technique, stepping up onto each jumar in turn. This is a very fast technique if you can get a rhythm going, and the lower jumar runs properly.

4. Semi Leapfrog System.

For all pitches against the wall, except as above. The lower jumar is not used. Clip the waist krab loop onto your spare sit harness krab and C-link B onto a spare krab. Clip C-link C onto one

of your foot loops and the uppwr jumar onto the rope above your chest jumar. Sit back on the chest jumar and push the upper jumar up the rope. Either use two hands on the upper jumar if the wall is very steep, or use the hand on the opposite side to whichever foot is being used. The spare hand and foot are used to fend you off the wall. Stand up on your foot and then repeat the process.

Changing Ropes.

If the waist krab loop is not attached to your spare sit harness krab, do so. Attach the upper jumar to the new rope. Unclip C-links B and C and the lower jumar krab as necessary. Prussik down the old rope using the lower jumar until all your weight is on the upper jumar. Transfer your chest jumar and then the lower jumar to the new rope and prussik up slightly, so that the chest jumar is taking the weight. Reset which ever system you are using and keep going.

Passing Knots Upwards.

Prussik up until your chest jumar is just below the knot. Attach the waist krab loop, if it is not already so. Unclip C-links B and C and the lower jumar krab loop as necessary. Push the upper jumar as far up the rope above the knot as possible. Pull the lower jumar up. Remove your chest jumar from the rope and stand up on the lower jumar, at the same time pushing the upper jumar up the rope. Replace the chest jumar and carry on.

Passing Knots Downwards.

When several feet above the knot, attach the waist krab loop and clip the upper jumar onto the rope. Abseil down until your weight is taken by the jumar and remove your abseiling device from the rope. Prussik down the rope using the lower jumar, until the upper jumar is just above the knot. Thread the abseiling device onto the rope, immediately below the knot. Stand up on the lower jumar and clip the abseil device onto your sit harness, thereby taking your weight on the abseil device. Remove both jumars from the rope and continue abseiling.

Changing from Abseil to Prussik.

Attach the waist krab loop and clip the upper jumar onto the rope. Abseil down until your weight is taken by the jumar and remove your abseiling device from the rope. Attach your chest jumar and set up a prussiking system.

At All Times.

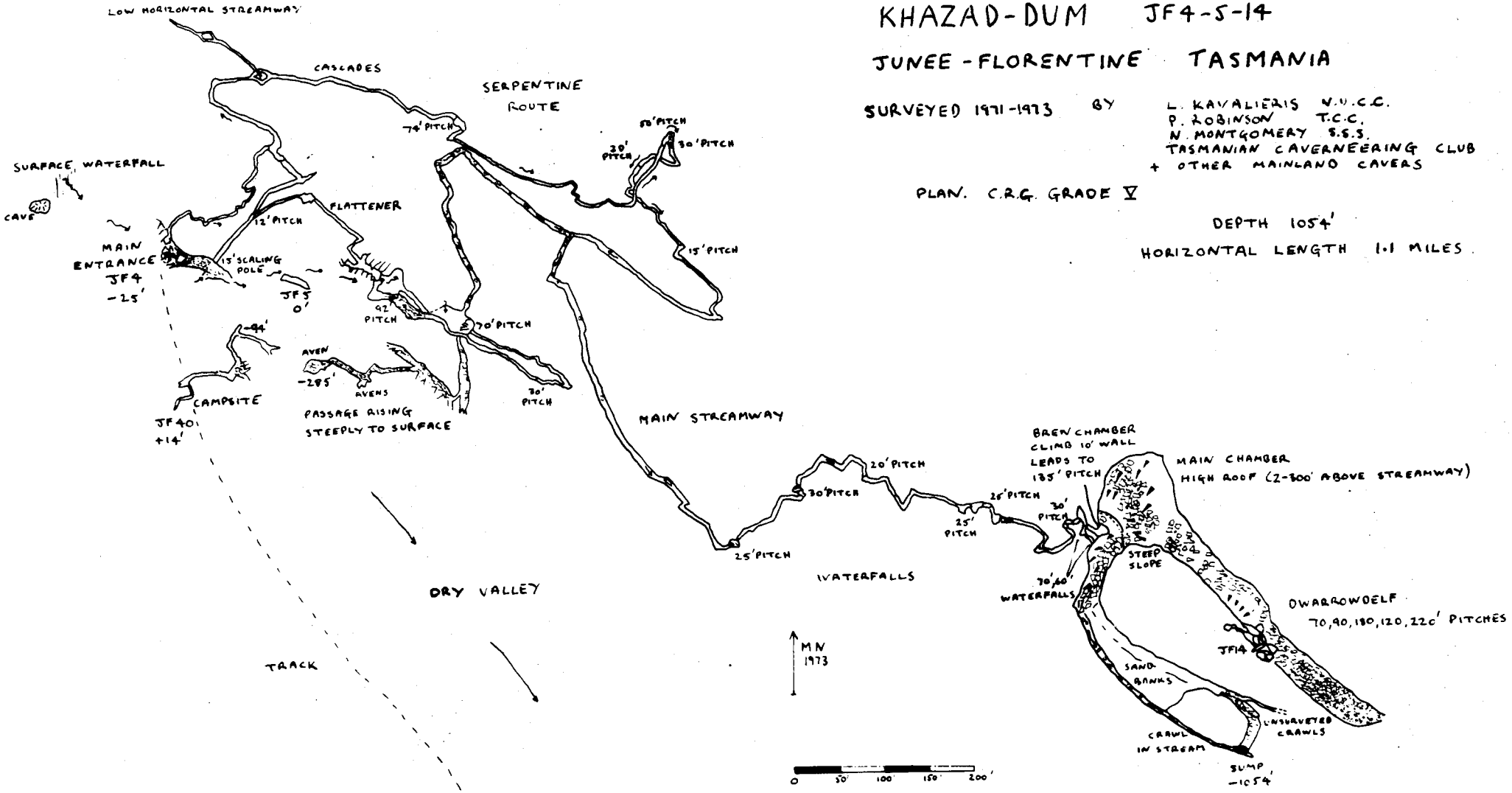
Never unscrew a sit harness krab if it is being used to attach you to the rope. That's why two parallel krabs are used on the sit harness.

. . . . . .

Congratulations to Judy and Tony Sprent on the birth of their daughter.

Sincere best wishes also go to Delia Maloney and Mike Cole on their engagement.

+++ The August issue of "Walkabout" has an excellent article in it about caves in New Guinea. Obtainable from most Newsagents for 60 cents.


KHAZAD-DÛM JF4-5-14
JUNEE-FLORENTINE TASMANIA
SURVEYED 1971-1973 BY L. KAVALIERIS V.U.C.C.
P. ROBINSON T.C.C.
N. MONTGOMERY S.S.S.
TASMANIAN CAVERNEERING CLUB
+ OTHER MAINLAND CAVERS
PLAN. C.R.G. GRADE V
DEPTH 1054'
HORIZONTAL LENGTH 1.1 MILES.
LOW HORIZONTAL STREAMWAY
CASCADES
SERPENTINE ROUTE
-74' PITCH
50' PITCH
20' PITCH
30' PITCH
15' PITCH
SURFACE WATERFALL
CAVE
FLATTENER
12' PITCH
MAIN ENTRANCE JF4 -25'
15' SCALING POLE
JF5 0'
92' PITCH
70' PITCH
-94'
AVEN -285'
AVENS
30' PITCH
CAMPSITE
JF40 +14'
PASSAGE RISING STEEPLY TO SURFACE
MAIN STREAMWAY
BRENCHAMBER CLIMB 10' WALL LEADS TO 135' PITCH
MAIN CHAMBER HIGH ROOF (2-300' ABOVE STREAMWAY)
20' PITCH
30' PITCH
25' PITCH
30' PITCH
25' PITCH
25' PITCH
STEEP SLOPE
WATERFALLS
70'/60' WATERFALLS
DWARROWDELF
70, 90, 180, 120, 220' PITCHES
DRY VALLEY
TRACK
MN 1973
JF14
SAND BANKS
UNSURVEYED CRAWLS
CRAWL IN STREAM
SUMP -1054'
0 50' 100' 150' 200'