

C.D.A.A.  
NEWSLETTER

# GUIDELINES

## N° 11

## CAVE DIVERS ASSOCIATION OF AUSTRALIA

(Incorporated in South Australia)

C.D.A.A.

P.O. Box 2161 T

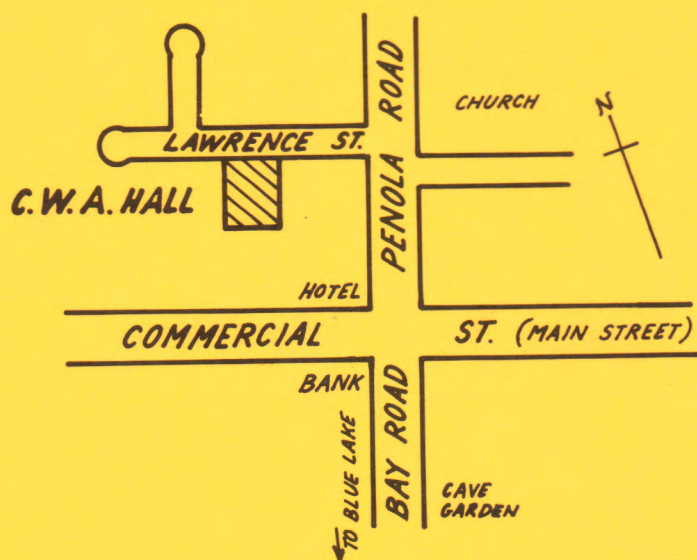
G.P.O. Melbourne. 3001

C.D.A.A.

P.O. Box 290

North Adelaide 5006

# A.G.M. LOCATION OF C.W.A. HALL



## GUIDELINES

NEWSLETTER OF THE

CAVE DIVERS ASSOCIATION OF AUSTRALIA.

No. 11 August 1982

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Editor.....Jenny Hiscock  
Assisted by.....Robin Garrad  
Other Contributors.....Brian Wagstaff, Peter Stace, Jenny Ploenges



## EDITORIAL

'Guidelines' is perhaps the only newsletter of its kind in the diving community in Australia. It is like a club newsletter in that it informs its members of oncoming events, reviews diving related topics (medical, decompression, etc.), provides technical and practical suggestions specific to the sport. Unlike a club however, the CDAA's major function is a regulatory one (perhaps more akin to professional bodies such as those that control the licensing of one thing or another) and thus 'Guidelines' conveys information and regulations on decisions and policies evolved that affect the activities of the members. This dual purpose of production is probably what makes it unique.



The carrying out of the production of this newsletter is done entirely on a voluntary basis. It relies on members spending time writing letters, reviewing information and producing diagrams as well as the Committee writing about its activities. There are also the people who help with the production - once every three months, 10 people or so, scurry at short notice for a night of collating, folding, stapling and letter sorting. This has led to the quality of 'Guidelines' that I think Cave Divers can be proud of. In South Australia the support has been very strong and I would like to thank and dedicate this issue to all those who have helped in the past.

For the future, I hope that continued support for this newsletter is as readily forthcoming, from Victorian divers as well as the South Australian - if fact from all Australian cave divers. There is plenty of room in this newsletter to provide a format for the interchange and discussion of issues pertinent to cave diving. Write to the South Australian Post Box soon.

Jenny Hiscock.

## DIVER'S ROLE

*Letter from S.A. Health Commission concerning dangers posed by diving to pregnant women addressed to:*

"Daves Divers' Association of Australia"

Who's Dave? For Clue see opposite page.

## CDAA NEWS • CDAA NEWS • CDAA NEWS • CDAA

### 1. SPECIAL STATE MEETINGS.

In 1981, the Constitution was changed with regard to the election of Committee members for each state. Previously, all elections took place at the Annual General Meeting which is held at Mt. Gambier. The new procedure, is to have a Special State Meeting, one in South Australia and one in Victoria, at which nominations for Committee members are taken and voted on. The four people who are elected at these meetings proceed to the Annual General Meeting for ratification as each State's Committee for the following year. This allows the State's Committee members to be chosen by as many members as possible since members do not have to travel to Mt. Gambier to have their say.

However, it must be remembered that if you have a particular issue that you wish the CDAA as a whole to vote on or discuss, it may be raised at the Special State Meetings but needs to go to the Annual General Meeting for ratification. Any resolution passed at a Special State Meeting cannot be guaranteed to be passed at the Annual General Meeting.

#### 1.1 SOUTH AUSTRALIAN SPECIAL STATE MEETING

Adelaide : Monday 6th September, 1982.  
7.30 pm.  
State Administration Centre Theatre  
Victoria Square, ADELAIDE

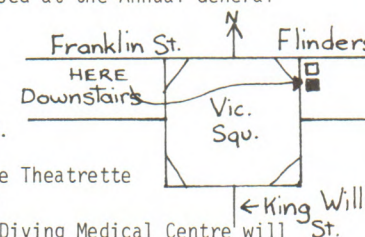
Dr. Tony Swain of the South Australian Diving Medical Centre will address the meeting on the subject of :

'Latest First Aid Techniques in the Treatment of Decompression Sickness'

This lecture will be the first item on the agenda so don't be late!

#### 1.2 VICTORIAN SPECIAL STATE MEETING

Melbourne : Thursday 9th September 1982,  
7.30pm.  
Y.W.C.A. Headquarters  
489 Elizabeth St.,  
MELBOURNE.



Please bring any questions you may have as to CDAA policy/implementation etc. to these meetings.

Who's Dave?

Clue # 1 : Membership No: 001

Enter the Great Dave Competition now. First correct entry accompanied by the sticky tape from around your tank valve from your last air fill will receive a free copy of the next 'Guidelines' autographed by 'Dave'. Only members who are:

- 1) under the age of 30
  - 2) not pregnant
- may enter.



1.3 PRESENT OFFICE BEARERS (1981 - 82) are :

Sth Aust. Ian Lewis (President)  
 Robin Garrad (National Secretary)  
 Steve Collett (S.A. Records Officer, Treasurer S.A.)  
 John Hansen

In Sth. Australia, the State Testing Officer position was supplied via election amongst the S.A. Examiners and was ably filled by Ron Allum.

Victoria John McCormick (Vice-President, Records Officer Vic., Treasurer Vic., Secretary Vic.)  
 Alan Joliffe (National Testing Officer)  
 Barrie Heard (State Testing Officer)  
 Andrew Wight

Mt. Gambier Representative : Jenny Ploenges.

2 DINNER AND ANNUAL GENERAL MEETING - 18th September 1982

We have booked the dining room in Mac's Hotel (corner Helen St. & Bay Rd.) between 6.00 pm and 8.00 pm (S.A. time) for a pre-AGM/post Cat. 3 test dinner. Since the AGM starts at 8.00 pm be at the Hotel before or by 6.00 pm. This is a great opportunity for S.A./Vic./Mt. G. divers to meet and talk; the last dinner at Mac's (March '82 Cat 3 test) was a great success, so we'll see you there.

The Annual General Meeting will be held in the usual location, the C.W.A. Hall (see map inside front cover) at 8.00 pm (S.A. time).

2.1 AGM AGENDA

1. Minutes of previous AGM
2. Presentation of Reports - President  
 - Vice-President (Vic.)  
 - National Secretary  
 - Victorian Secretary  
 - National Testing Officer  
 - State Testing Officers'  
 - Treasurer's Reports  
 - Records Officer's Reports  
 - Mt. Gambier Representative
3. Election of Office Bearers 1982-83  
 Victorian, South Australian, Mt. Gambier
4. General Business
5. Close

3 SEPTEMBER CATEGORY III TEST (18th September 1982)

To qualify for inclusion in the September Category 3 Test, a written application must be received by the State Testing Officer in your state c/o the CDAA post box by 18/08/82. The application must include a list of the prerequisite dives for Cat. 3 (ie. 20 freshwater dives to Category II standard with five (5) of these to 35 metres and eight (8) of these dives using a guideline reel and tether). The theory examination will be held on 25/08/82, the location and time to be advised after the close of all applications. Note that all candidates must achieve a satisfactory pass in theory before being able to proceed to the practical test. As numbers for the test are limited get your application in soon.

## In Summary :

September '82 Category 3 Test

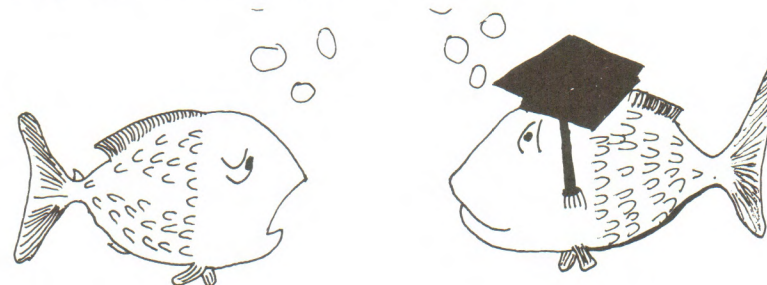
Close of Applications .....18th August 1982  
 Theory Examination .....25th August 1982  
 Practical Examination .....18th September 1982

The format for this test has been altered slightly ; to promote a smooth(er) start to proceedings the following timetable changes have been made:

08.30am (S.A. time)	Examiners assemble at Piccaninnie Ponds, Meeting of Examiners, Placement of fixed lines.
09.30am (S.A. time)	Candidates assemble at Piccaninnie Ponds, Candidates briefing by the National Testing Officer.

Fees for this test are : Theory paper \$5  
 Practical Test \$25

Note that the CDAA recommends that candidates undertake the Category III Test in their usual buddy pairs - not only the diver but his integration into a buddy system is on test.



"That school you travel with is really a big deal  
 with you isn't it ? "



4 PICCANINNIE PONDS PROCEDURE

The National Parks and Wildlife Service have changed the format of their Piccaninnie Ponds Permit as many of you are no doubt aware. Published below is the current procedure of obtaining all permits to Piccaninnie Ponds from the N.P. & W.S..

Issue of Scuba & Snorkel Diving

(L.C. Jolley)  
REGIONAL MANAGER  
SOUTH EAST REGION

Permits for Piccaninnie Ponds

The assistance of C.D.A.A. members in the issue of Piccaninnie Ponds Diving Permits over the last 20 months has been most appreciated.

Minor changes have been instigated due to staff alterations within the region. Therefore please note the following to assist members in the quick issue of permits from the South East Regional Office.

1. Scuba Diving Permits for Piccaninnie Ponds will only be issued to :
  - 1.1 Divers who hold a current C.D.A.A. Category 2 endorsement.
  - 1.2 Divers who are non C.D.A.A. members but hold current certificates of endorsement or (Temporary Permit) from C.D.A.A.
2. It is the responsibility of divers to obtain permits for Piccaninnie Ponds prior to entering the water. This can be arranged by either:-
  - 2.1 Forwarding a self-addressed envelope and appropriate mailing card to the :- Regional Manager, South East Region, National Parks and Wildlife Service, P.O. Box, 1046, MT. GAMBIER, S.A. 5290

two weeks prior to the dates required. N.B. - Self-Addressed Envelopes are required for all permits.

- 2.2 Contacting the South East Regional Office, S.G.I.C. Building, 3 Helen Street, MT. GAMBIER. S.A. 5290., during normal working hours. Those persons who because of special circumstances, are unable to obtain permits before reaching the Mt. Gambier area can contact the office by phone - (087 - 24 1511) for further assistance where possible.

Permits will no longer be issued from Dingley Dell Conservation Park without prior arrangement. Members are asked not to disturb staff at their residences as they are not on duty twenty-four hours a day or seven days a week.

Your continued support and co-operation is most appreciated by all staff.

5 'BARNOOLUT'

We ask that all divers remember that unless

- i) they are current financial members of the Association and this is clearly indicated on their CDAA card

and ii) they have their cards with them,

Mr. Watson will not allow them access to sinkholes on 'Barnoolut' whatever their membership status may be. This policy has been long endorsed by the Committee, and should be known to all divers.

If you do forget to take your card on a Mt Gambier trip we ask that Mr. Watson is not troubled, and the Association embarrassed because of your lack of organisation. Apparently he has seen an increase in the number of unfinancial cards - perhaps this is because it is the first re-occurrence of the two year membership pay-up since its introduction. Should the situation not improve, some disciplinary action could be considered against offenders.

The moral is : check your CDAA card (and Pics Permit) along with other essential diving gear such as your regulator when packing.

Should you find on the eve of your departure that you cannot locate your CDAA card, remember that a Temporary Permit can be issued to any financial CDAA member by any member of the Committee. (Best luck with finding one on Friday at 9.00pm!).

6 CDAA HISTORY

In September 1973, the first general meeting of the CDAA took place in the hall at Allendale East. Since that first meeting this Association has had a profound effect on cave diving and has dragged itself up by its own shoelaces (or fin straps if you like) to become a highly organised and reputable body. It is perhaps now time to look back at our past in detail and document it so that members of the future can fully appreciate the progress made and the reason for our existence as an organisation. To this end, and as an ten(10) year celebration project it is requested that every member fossick through the old photo album, scrap book etc. - or badger 'old time' diver associates to do so, and help reconstruct the history of cave diving in this country.

WANTED - Anything related to cave diving in Australia - old photos, slides, paper clippings, magazine articles, anything even diving gear !

Contact the CDAA at P.O. Box 290,  
NORTH ADELAIDE, 5006.  
or bring it along to the next meeting (Please).

Peter Stace

Ed. suggestion : Perhaps a sub-committee could be formed at the Annual General Meeting to look after this issue.



## 7 LANDOWNER CONTACT FOR "SWIM-THRU"

The land on which 'Swim-Thru' is located belongs to Mr. Earl but is currently being leased by Mr. David Easton. Members are asked to no longer contact Mr. Earl but to write or telephone Mr. Easton directly for permission to dive. He can be contacted by:

writing to : Mr. David Easton,  
3 Griffin St.,  
MT. GAMBIER, 5290.

telephone : (087) 25 1511.

Mr. Easton does not mind divers visiting the sinkhole provided that

- i) fences are not damaged
- ii) all coverings are returned to obscure the hole to prevent stock from entering the water
- iii) he is advised (preferably in writing) of when divers wish to visit.

## 8 TANTANOOLA LAKE CAVE

Over the last year or so the National Parks and Wildlife Service have developed a policy on access to Tantanoola Lake Cave. It was originally proposed that diving in the cave would not be allowed because of the potential damage that could be done to formations in the cave if heavy and irregularly shaped equipment was transported through the cave. Following representations from the CDAA concerning access to the cave, it has been agreed that diving requests for Lake Cave of a scientific or survey nature will be considered.

Any group of divers who wish to organise such an expedition must apply to the Association who will approach the Regional Manager of N.P. & W.S. if the nature of the project is appropriate.

Divers who would like to observe the cave for recreational reasons are advised to contact their State Speleological group or the Cave Exploration Group of S.A. and arrange to see the cave under their supervision.

ADDRESS : C.E.G.S.A., c/o S.A. Museum, North Terrace, ADELAIDE 5000.

## 9 NEXT PLASTICS COURSE?

The current Plastics course underway in Adelaide is progressing well. If members would like to participate in another course in third term, please indicate your interest by writing to the CDAA box NOW!!!! We would need another 10 people by about the 20th August.

### References - 'Underwater Communications'

- (1) Bill Silvester,  
"The Down Under S.C.U.B.A. Diver"
- (2) British Sub Aqua Club Manual, 1979  
10th Edition, Page 325
- (3) 'Guidelines', May 1982  
CDAA., No 10, Pge. 10.

# UNDERWATER COMMUNICATIONS

It goes almost without saying that the buddy system has been accepted by the diving community as an integral part of SCUBA diving.

Bill Silvester in 'The Down Under S.C.U.B.A. Diver' lists the five basic commandments of diving, the first being "never dive alone" (1). A more or less standard set of basic hand signals has evolved for communication between divers within sight of each other and buddy breathing is taught and practised during basic courses. Also in diving medical emergencies it is assumed that first aid will be administered by a buddy. In other words, the buddy system is reinforced in many aspects of diving.

The CDAA is no exception in the advocacy of the buddy system with its insistence on proficiency in buddy breathing for all categories of divers and the compulsory use of octopus regulators at Category 3 level and recommended for Categories 1 & 2. In other areas, it demands full understanding of the 1/3 rule for all categories and responsibility to one's buddy at all times during a dive. Simply, this means that all aspects of diving have as an underlying principle an insistence that no diver should enter the water alone, and that once in the water, should stay within close proximity of the other diver(s).

Unfortunately, in cave diving, situations arise when for a short time, buddies become knowingly separated. Usually this occurs in restricted and silty areas where there is not sufficient space to allow two divers to swim within communicable distance of each other with a consequent loss of both touch and visual communications.

In the knowledge that these situations do arise during some Category 3 dives there is a need for buddies to develop a 3rd means of communication. Short of spending huge sums of money on sophisticated oral underwater communication equipment the only viable alternative is signalling by using the guideline which is the only remaining contact between divers in these situations.

In part, the British Sub Aqua Club (B.S.A.C.) Manual, has come to grips with this in its chapter on diving techniques in the section on Rope Signals (2) (a system for a surface tendered diver).

Similar communications as suggested below, could be adapted for cave diving.

Signal	Diver 1	Diver 2
One pull	Are you O.K.	I am O.K.
Two pulls	Stay put	I am stationary
Three pulls	Move away from me	I am moving away
Four pulls	Come to me	I am coming
Continuous pulls	Emergency	Emergency

Not for one minute am I suggesting that this is the only answer. All I ask is that you give this some thought, and consider it as an extension of the buddy system where two divers work together for their mutual safety and remain "as lovers, inseparable and secure together" (3)

← REFERENCES

Karel Lengs.



# COLD WATER - A Potential Killer

In Category 1 and 2 training courses, much is made in preliminary theory of the fact that Mount Gambier sinkhole water is cold. The problems these causes are described and discussed with trainee cave divers - hypothermia, increased narcosis possibilities, severe sinus pain, reduction in manual dexterity (numb fingers), longer decompression times etc.. But there is another nasty and potentially fatal aspect of cold water - the effect of sudden impact on the face, and instantaneous distress. A near-fatal incident recently occurred at Ewens Ponds which illustrated:

- i) that cold water can kill
- ii) that even Ewens Ponds should be treated with some respect.

## THE INCIDENT

One Saturday afternoon in March 1982, a group of cave divers on a Category 1 and 2 cave diving course were training in Ewens Ponds under the direction of two CDAA Category 3 divers. The training covered buoyancy, line following with blackout masks, buddy breathing and guideline work, and pairs of divers were being trained on a rotation basis (as they are at West Lakes on cave diving courses). At one point, two experienced open-water divers who had been in the water on a training dive an hour previously, commenced swimming along a fixed line accompanied by one instructor for the buddy breathing practice. One diver had his air removed and both had masks removed while halfway along the line. After buddy breathing for a short time, the diver who still had his air supply showed signs of agitation and headed for the surface. (This sometimes occurs during buddy breathing training and in fact is a cause for failure during an official CDAA test). The instructor restored air and mask to the remaining diver, saw he was OK and headed for the surface to discuss the problem with the top diver.

At the surface, the diver was showing peculiar signs of stress. He had his mouth wide open and spoke in a croaky strangled voice, in one-word replies. He held the neck of his hood away from his throat and appeared to be having difficulty breathing in or out, as if he severely needed to burp or clear his throat. As the instructor and the two divers swam back towards the landing, the affected diver passed out in the water and his head fell forward. He was towed to the landing where some EAR (mouth-to-mouth) was attempted before he was lifted out of the water, laid on the landing with his wetsuit now cut down to his waist to ease pressure on the chest, and mouth-to-mouth was administered for at least 5 minutes before he began to recover. Until recovery, his appearance was colourless, with wide open eyes and fixed stare, blue lips, tongue and fingernails and no reactions - all the appearances of death. It was a cause of unutterable relief to the rescuers when he showed signs of life. After he was later discharged from Mt. Gambier hospital, he showed almost no effects from his ordeal.

## WHAT HAPPENED?

According to 'The Divers Medical Companion', the victim showed all the symptoms of Near Drowning (1) (Read Chapter 8; pages 30 to 32 cover the topic.) The two instructors showed presence of mind in their immediate attempts at revival, and in fact conducted their treatment procedures exactly as the authors of 'Divers Medical Companion' recommend - in particular:

- . instant commencement of E.A.R.
- . persistence with E.A.R.
- . quick notification of Mt. Gambier Hospital.

The result was that the victim was saved. Medical opinion after the event was to the effect that the diver suffered from intake of some cold water into the throat and bronchial tubes, causing a closing (protective) spasm of the airway. This was to such affect that he was unable to breathe even at the surface, and the spasm or spasms did not relax for over 5 minutes after initial cutoff. This, despite the fact that he had no predisposition to breathing problems, was healthy, had been diving for 12 months and had been in the water a short time before.

I would like to refer to the conclusion written by Peter Horne following discussion with medical personell in a report compiled for CDAA and submitted to Project Stickybeak. The final paragraph reads:

'Cold water aspiration has been long known to cause respiratory and other difficulties, and the Bronchial Tree, or selected areas such as the Larynx, can constrict violently in a spasm when subjected to sudden temperature changes. Even cold water on the face will immediately slow the heart rate, so much so that near-arrest of the circulation can occur. Bronchial spasms usually cease when blood oxygen gets low, and breathing will usually resume spontaneously, but if the irritant remains in place, a second spasm could cause brain damage through lack of oxygen. There is a good possibility, therefore, that the victim might have regained breathing by himself, but he might have drowned had it not been for the prompt action by his rescuers. The reported dilation of his pupils also indicates that his forward circulation had effectively ceased (although his heart might still have been beating) and he could have died if help had not been available.' (2)

Some final reflections. A re-reading of the cave diving death findings from Coroner's reports of the time shows that spasm of the throat was considered a cause of death in most of the 11 death cases (the reasons for the deaths were usually narcosis or silting with no guidelines) as air remained in those divers' tanks. It is extremely important to note that this near-tragedy could have occurred to ANYONE, ANYTIME, in ANY SINKHOLE - irrespective of your Category rating. If you lose your mask, the shock could have the same effect on anyone (wetting your face at the surface prior to descent may help), but remember that this happened at safe old predictable Ewens Ponds. What if it happened to you at the back of ten-eighty?

- (1) Dr. Robert Thomas & Dr. Bart McKenzie, 'The Diver's Medical Companion', A Diving Medical Centre Monograph.
- (2) Peter Horne, 20/6/82, 'Project Stickybeak Incident Report'.

(Note: Peter Horne is author of 'S.A. Diving Fatalities 1950 -1980', a comprehensive study of all case histories of fatal diving accidents since the inception of the sport in this State.)

Ian Lewis



# DON'T DROWN TWICE

by Dr. Charles Brown

Four year old Jimmie was pleased silly with his new air mattress. When he reached out for a floating candy wrapper, the thing tilted and he slid into Lake Elsinore. Sharon, eighteen, squealed when a fish struck her lure. Eight heads craned over the port gunnel and the small rented boat flipped. Eddie, lean and fit at 20, abruptly stopped swimming and sank beneath Lake Fulmore just ten yards from shore. Divers recovered the bodies.

What's drowning like? The conscious victim usually holds his breath as long as possible, then inhales water, coughs, loses consciousness, swallows lots of water, briefly continues automatic swimming movements, then - nothing. How long before death? You never know. Most likely just a few minutes, and yet survivals of 15, 22 and even 35 minutes have been reported. Diver's reflex, degree of activity, and water temperature may be factors. As a rule, small children last the longest.

Suppose rescue is timely. What then? Two year old Tim was pulled from the ocean unconscious and slapped on the back. He spluttered, fussed a while, napped, and resumed playing. Teen-aged Janet passed out at 90 feet, off Catalina. Brought to the boat, she was revived only to die several hours later at a hospital. Six year old Johnny was pulled from the family pool unconscious and treated with chest compressions. He reached the hospital awake, alert, and apparently healthy but ten minutes later turned blue and collapsed. Only expert medical care saved him.

Evidently the mechanism of drowning is complex. In fact, we now distinguish dry vs. wet lung, salt vs. fresh water, and immediate vs. delayed varieties. Let's analyse these.

Some ten to 15 percent of drownings are of the dry lung type. Presumably the first drops of water to hit the larynx trigger laryngospasm: the vocal cords clamp together and close the airway. Death is by simple asphyxia - oxygen lack and carbon dioxide retention. (Ed. *The Ewens Ponds case seems to fit this category.*)

When water is inhaled into the lungs, it's another story entirely. Powerful cough reflexes are set off, and coughing against the incompressible liquid ruptures delicate pulmonary tissues. Some water thus gains access directly into the blood stream. Diatoms (microscopic plankton) have been found in the blood of victims.

Another effect depends upon the concentration of salts in the water. To make this clear, a brief review of osmosis is in order. When a dilute solution is on one side of a membrane with tiny pores, and a concentrated solution is on the other side, water molecules diffuse from the dilute side across the membrane into the concentrated solution. This is because the dilute solution, having less dissolved material, actually has the greater concentration of water. Sea water is far more concentrated than blood, so when it occupies alveoli it in effect pulls water out of the capillaries into itself. The blood volume shrinks while the lungs become more flooded.

Fresh water in alveoli encounters the opposite osmotic gradient and moves into the capillaries, where it breaks down red cell membranes. Potassium leaking out of ruined red cells may cause heart rhythm disorders with sudden death, and haemoglobin may clog up the kidneys.

Fresh water packs another very special menace: it destroys (or inhibits the production of) something called pulmonary surfactant. Alveoli are always lined with a thin film of moisture, so like any bubbles they are subject to surface tension forces. The smaller the bubble, the greater the force. Surface tension would collapse the alveoli, were it not for pulmonary surfactant. The alveoli themselves manufacture this stuff in just the right amount to keep surface tension down to a safe level, but fresh water knocks it out, so some of the alveoli do collapse.

Now let's look at the implications for rescue and resuscitation. Alveoli that are either waterlogged or collapsed make a lung harder to inflate, and also reduce the membrane area available for gas exchange. Therefore initial ventilations should be rather more vigorous than for, say, an electric shock victim. Times precious, so start mouth to mouth resuscitation right in the water while towing the victim toward boat or shore. However, if the heart is not beating (pupils dilated and no sign of life) the effort is wasted, so postpone it till you reach a solid surface where cardiac massage can also begin.

At this stage, I believe it's worth investing several seconds of time in quickly upending the patient to drain his large upper airways. This is especially true for ocean victims because of the osmotic water gain effect described above. If you're on a beach, take advantage of the slope, and position the patient with his head downhill. Oxygen is an excellent aid, and should be more available.

You can avert a major cause of CPR (cardiopulmonary resuscitation) failure if you're constantly alert. The patient is almost certain to vomit, and will likely suck the vomitus into his windpipe if you don't get him, or at least his head, quickly rolled to one side. Your efforts should then continue until the victim recovers or help arrives.

Let's say the victim does recover, thanks you, and trots off for home. You're a hero. Then sometime later the ungrateful wretch turns blue and expires. What happened? What happened was that his damaged pulmonary capillaries leaked fluid and protein into the tissue spaces and alveoli, white blood cells accumulated, glands made excess mucous, and bronchial tubes went into spasm. It's called an inflammatory reaction. It's the body's response to injury, in this case irritation of lung tissue by water. It takes time to develop fully. When it does, the patient drowns in his own body fluids.

If the initial insult was by sea water, inflammation may get worse due to dissolved chemicals and plankton, and infection more likely. If it was by fresh water, the big danger will be recurrent collapse of alveoli deprived of adequate surfactant, and delayed drowning is apt to occur much earlier. Chlorine in the water would speed inflammation.

The message should be clear. Any near drowning victim, even if apparently recovered, should be sent off to a hospital for observation.

SUMMARY : stamp out drowning with adequate thermal protection and buoyancy control, due caution, and CPR skill. But if drowning does threaten, remember that a life may have to be saved twice.

REPRINTED from "Skindiver" magazine.



# SINKHOLE TEMPERATURE PROFILES

By Peter Horne

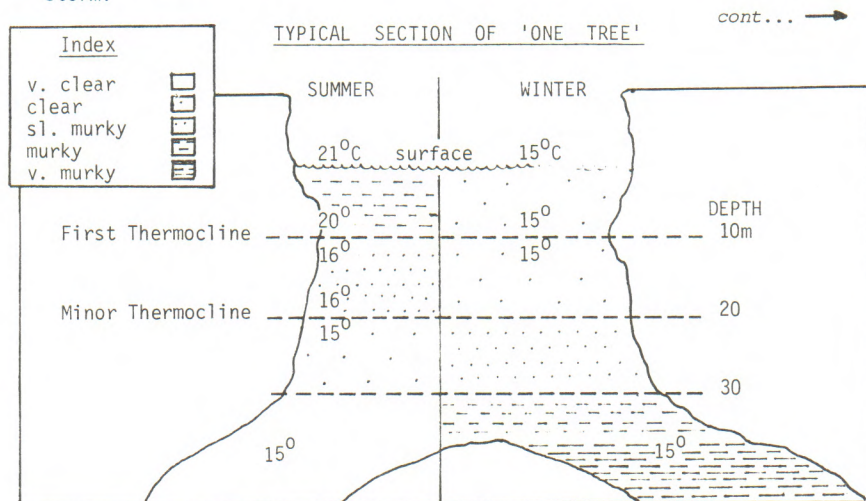
Four of the most popular sinkholes of the Lower South East were the subject of a temperature study by cave divers recently, using thermometers supplied by the Mount Gambier branch of the E. & W.S. Department.

During early March, June, September and December 1981 and March 1982, dives to 36m were repeatedly made to collect data on temperature changes at various depths.

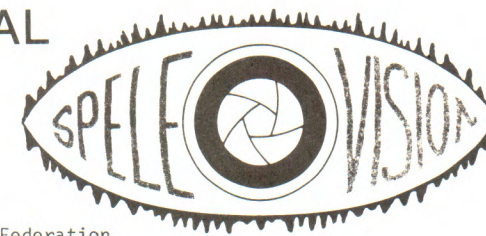
The holes chosen for study, namely 'One Tree', 'Ela Elap', 'Ten-Eighty' and the 'Black Hole', showed conclusively that layers of water at different temperatures (thermoclines) exist during the warmer months. Summer readings at the surface (which was almost always murky) were generally around 19-22 degrees centigrade, but 10-15m deep, the temperature often plunged by 5-6 degrees in less than 1m to 14-15°C, where it stayed to the greatest depth measured.

The single exception was 'the cold hole', good old Ela Elap, which just kept getting colder the deeper we went, to 11°C at 36m. Only 4 degrees colder than the others but what a painful difference! Visibility was also usually poorer here, as the other holes generally contained crystal-clear water in the cold depths.

For those divers who believe that winter is the best time for sinkhole diving, consider this: the warm surface water and thermoclines of the summer months are absent, and the temperature of the holes is constant, around 14°C throughout. (Ela Elap is 11°C throughout!) While this colder, clearer surface water presents a better view of the shallower regions of the sinkholes, the murky but warm surface water of summer is certainly more comfortable for decompression purposes. Few experiences can be worse than climbing out of a freezing sinkhole into a chilly winter South East rain-storm!



# 1 SPELEOLOGICAL CONFERENCE



The 14th Biennial Conference of the Australian Speleological Federation (ie. dry cavers) is to be held in Adelaide from the 3rd - 7th January, 1983 at Flinders University. The Cave Exploration Group of South Australia (C.E.G.S.A.) is hosting the Conference.

The conference co-ordinators are currently calling for volunteers to give papers at the event. Papers on any topic related to karst, caves and speleology are welcome, although they encourage papers on the theme which is:

1. Visual Aspects of Cave Recording
  - a. This theme will cover all aspects of cave recording. Topics will include photography, both in 2D and 3D and their application in mapping, scientific and navigational activities in caves.
  - b. Trends in cave mapping with the advent of computer plotting, alternative methods of depicting caves and holograms.
  - c. Use of information retrieval systems eg. microfiche, aperture cards and word processors.
2. Forecasting the Future of Australian Speleology
  - a. How advances in technology affect speleology
  - b. Cave access and management in the next decade. How past trends may affect the future.
  - c. Population - pressures on our natural cave resource.

cont.....

"SINKHOLE TEMPERATURE PROFILES" cont.....

It was also noted that the BOTTOM visibility in June and September was POOR, despite the clarity in the shallows. The exceptional rains of 1981 could have had some influence on this, however, considering how some of the sinkholes' water levels rose up to 1m in only a couple of weeks.

Although this study was merely a preliminary project, it did show that definite changes occur in our cave diving environments, and such information might be of value to divers by providing data on conditions during the year. This writer would be most interested in hearing from other divers who have undertaken research of any kind involving the sinkholes and caves in the Mount Gambier region of South Australia. Please write to: Peter Horne, 12 Addison Rd., HOVE, S.A. 5048.



SPELEOLOGICAL CONFERENCE cont.

Cave Divers have been approached to support the event and a list of suggested topics are as follows:

- Fossils from Sinkholes
- Sinkhole Formation
- Summary of research in Sinkholes  
eg. Water Temp. surveys, biological organisms
- Problems of survey and exploration
- Nullarbour Cave Diving
- Cave Diving as different to Dry Caving

Persons wishing to participate, please :

write to - 3 Harcourt Rd.,  
PAYNEHAM S.A. 5070

or telephone - Kevin Mott (08) 42 2441

for a copy of Notes for Authors of Papers.

Other contact numbers and personell are:

Meredith Reardon - (08) 263 4879  
John MacCormack - (08) 44 2900



Forkarst of caver density ~ Australia January 1983



FAUI REPRESENTATIVES FOR S.A. & VICTORIA

South Australia	- Eric Matson, c/o Magill Campus, S.A.C.A.E. 15 Lorne Ave.,	ph. (hm) 267 3806 (wk) 332 4711 ext. 231 MAGILL 5072
Victoria	- Steve Sinclair, 580 Victoria St, NTH MELBOURNE, 3094	ph. (wk) 328 3218

2 STEP BY STEP - FAUI ADVANCED DIVER MODULES

By Brian Wagstaff

Many divers in South Australia and Victoria follow up their basic diving qualification (for example the FAUI N.Q.S. Scuba Diver) with a test for combined Cat 1/2 cave diver, either with, but mostly without a period of prior instruction. The length and style of the courses currently depends purely on the Instructor concerned. As an examiner independantly testing some of those aspirants, its obvious they have tried to run befoe they can walk!

You'll be pleased to learn that an alternative is now available to novice divers with around 20 - 30 dives to their record.

FAUI has split up its 'Advanced Diver' award into a number of 'core' and optional modules, most of which are designed to be tackled over about a week of evening theory sessions and perhaps a weekend's practical.

The core units are :-  
Recovery Diver  
Equipment Specialist  
Boat Handler  
Diver Lifesaver  
Deep Diver

Speciality courses not required for Advanced Diver include a Cave Diving option - more of that in a moment.

I would particularly recommend the Deep Diver and Diver Lifesaver awards as being useful prior to cave diving certification - the physiological theory, especially decompression sickness, would be excellent background for Cat. 2 level tests. It goes without saying that the ability to recover and resuscitate a fellow diver is essential - the Lifesaver Award is an extention of 'Basic Level' requirements which may not be adequate for most cave diving situations. Recovery Diver, with its emphasis on navigation and zero visibility diving is also good background and being able to field repair minor equipment malfunctions could prevent disaster or disappointment at Mt Gambier.

Finally, a word on the speciality 'Cave Diver' course mentioned earlier. It does not of course guarantee an automatic Cat. 1 or 2. However, for the first time there is a clearly specified, logical breakdown of the knowledge and skills required for basic cave diver certification : a minimum 8 hours theory covering all necessary topics and six (6) hours practical, including surface skills such as ladder work.

This format is the minimum which must be followed by a FAUI Instructor running a Cave Diving course without inclusion of testing. FAUI have specified that the Instructor/Examiner should be approved by CDAA - the best of both worlds in fact.

If you would like further details of the above modules, or like to enrol in a course, please contact your local FAUI representative.



### 3 MEDIA WATCH

Cave Diving is obviously a popular topic at the moment if the following list of articles is anything to go by!

- 3.1 Caroline Sinkhole Clean-up,  
"Border Watch", Mon. June 28th 1982.
- 3.2 The View From Below - Kev Deacon,  
"Adventure Sports", page 84.
- 3.3 Cave Diving in Australia - R. Kitt  
"The Scuba Diver", Vol. 1, No. 4 June 1982.
- 3.4 a. Wonderland Underland - Reg. Lipson  
b. reprint 'Hells Hole', "Guidelines" No 9.  
"Skindiving in Aust. & N.Z.", Vol. 12, No. 2.
- 3.5 Colin Theile, 1979  
'Chadwick's Chimney'  
Methuen of Australia Pty. Ltd.

*A Review ..... Jenny Hiscock*

The inevitable has happened. An enterprising author, Colin Thiele in this instance, has realised the potential of scuba diving in the Mt. Gambier sinkholes as the basis for a book. The result is 'Chadwick's Chimney', a childrens story which draws on the adventure, danger and local history of cave diving in the area.

Ket is the son of a local farmer, onetime navy diver. He is taught the complexities and dangers of sinkhole diving by his father and warned never to venture into the holes without his supervision. But Ket's friends also dive and are lured to a local sinkhole called Chadwick's Chimney by the rumour of loot falling into the hole from the turnover of a criminal's vehicle. Ket goes with his friends who dive to recover the treasure, but only enters the water when they do not return in the agreed time. They become trapped in the Chimney when the ladder breaks and Ket takes a gamble that the cave has an underwater connection with another he has recently explored and swims with his friends in that direction - now their only chance of survival! Miraculously he is right and they make it to safety on the last gasp of air in their tanks! They also learn what the 'treasure' was all about.

It is a tidy adventure story for about 10 year olds I guess - lots of action and suspense and a good tale (I would not mind finding the sink hole they were diving in!). It is not exactly an advertisement for cave diving however, nor is it necessarily accurate with its diving terminology - 'oxygen bottles' for air cyclinders. Ket's father dives in the sinkholes but 'does not enjoy it'; the community attitude is of danger and fear. Perhaps a reflection of the sport ten years ago but certainly not of today. I felt it was sad that the story relied so heavily on the dangers and horrors of sinkhole diving.

But then, it is only a story.

- 3.6 I.D. Lewis & P.M. Stace, 1982  
'Cave Diving in Australia', 2nd Edition.

Perhaps you haven't seen this picture before?  
Probably not, as it is in fact the cover of the  
1982 Revised Edition of this book.

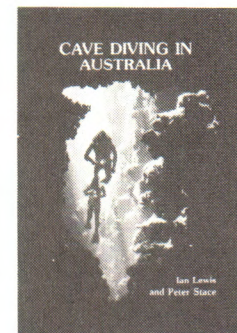
'What's new about the Revised Edition?' you ask -

- the text has been updated to account for changes in CDAA procedures and alterations to test requirements
- comprehensive descriptions of all sinkholes and caves including some historical information. Updated landowner contact addresses.
- an expanded and improved decompression section now includes RNPL Tables as well as Australian and U.S. Navy. A detailed comparison of all three has been made.
- an index
- a revised up-to-date summary of emergency procedures
- a new section covers ladder climbing, sinkhole access, knots, and safety rope techniques.
- all of this is wrapped up in a distinctive new GREEN cover!

The new book is 16 pages longer than its predecessor which was published in 1980 (1000 copies) and has now sold out. Fifteen hundred of the new edition have been published and are available from the authors at \$8.00 per copy (including postage) and \$8.00 from most dive shops. Bulk discounts are available by contacting the authors in person or in writing to :

Peter Stace, 21 Thames St., CLARENCE PARK, 5034.

Ian Lewis, P.O. Box 460, NTH. ADELAIDE, 5006 (ph. (08) 267 5917)





4 SCUBA DIVING AND PREGNANCY

Below is a copy of a South Australian Health Commission Bulletin that has recently been circulated to many diving organisations. It is presented here for your information. However, I would like to express some concern about the standard of the Bulletin. For example, the numbers do not add up. It is reported that 208 women were in the survey and that 109 dived during pregnancy and 69 did not ( $109 + 69 = 178$ ). What happened to the other 30 women? From my reading of other reviews of the same survey, 136 was the number of women quoted to have dived during pregnancy. Other figures given also vary from other reviews of the same article. Given the inaccuracies in the Bulletin, I wonder if we can really be happy with the conclusion they come to without further investigation of the available data on women who have dived during pregnancy.

The next 'Guidelines' will carry a more detailed article on this topic.

## HEALTH COMMISSION BULLETIN

### POTENTIAL RISKS OF DIVING TO THE UNBORN BABIES OF PREGNANT WOMEN

A survey has been reported of the pregnancy histories of 208 female scuba divers, 109 of whom dived during pregnancy and 69 did not. Of 20 women who dived to depths greater than 30 metres during the first three months of pregnancy, 2 gave birth to babies with congenital abnormalities which bear a general resemblance to those caused by thalidomide and 4 other women who dived to lesser depths had babies with other congenital malformations. No malformations were recorded in the babies born to mothers who did not dive during pregnancy.

In addition to the problem of congenital abnormalities, more than 6% of the babies in the diving group were "small for dates", a situation similar to that which occurs in babies born to smoking mothers.

It is advised that women who believe that they may be in the early stages of pregnancy should emphatically refrain from diving below 9 metres. A course of perfection would be to abandon diving for the duration of the pregnancy.

This information is provided to help those who undertake recreational diving to make an informed choice whether they should do so in this situation.

P M LAST, M.B., B.S., F.R.C.P.,  
F.R.A.C.P., F.R.A.C.M.A.  
MEDICAL CO-ORDINATOR  
(EXTENDED CARE)