

# FATHOMS

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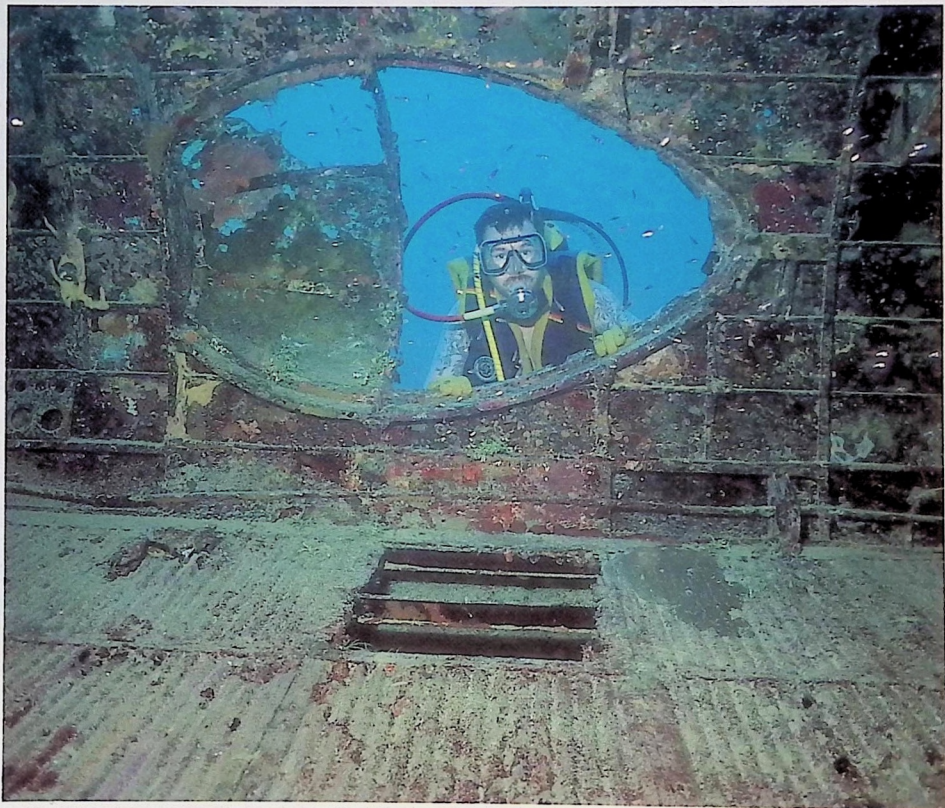
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Safety in Diving

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Victorian Sub Aqua Group,  
Box 2526W,  
GPO Melbourne 3001*



# VSAG

**AUG-SEP 93**

**VICTORIAN SUB-AQUA GROUP**

# VSAG

Victorian Sub-Aqua Group. Box 2526W, G.P.O., Melbourne. 3001 Australia

These magnificent photographs are all examples of Des Williams' work taken on the VSAG trip to Truk Lagoon 1990.

I am sure you will agree that they are all outstanding, so good in fact that I couldn't decide what to keep or reject, so I've used the back cover as well and reproduced them all.

*Yours in Diving,  
Alex Talay*



#### Front Cover:

Chris Llewellyn at Port-Side Gun Port. Betty Bomber Wreck. Truk Lagoon.

#### Back Cover:

1. Alex Talay with Ships Telegraph inside bridge of "Nippo Maru" Truk Lagoon.
2. Chris Llewellyn with lamp on "Nippo Maru" Truk Lagoon.

3. Chris Llewellyn on bridge of "Nippo Maru" Truk Lagoon.
4. Stern of "Gosei Maru" Truk Lagoon, divers from left to right: Neil Medhurst, Justin Liddy, Pat Reynolds & Bob Scott (standing), Ross Luxford, Andy Mastrowicz (back)
5. Alex Talay inside fuselage of Betty Bomber Truk Lagoon.
6. Stern mast of "Gosei Maru". Truk Lagoon divers left to right Chris Llewellyn, Alex Talay, Justin Liddy, Pat Reynolds and Neil Medhurst.

The Victorian Sub-Aqua Group was founded in 1954 and has continued as a strong and active diving club since that time. It is incorporated as a non profit company and has no commercial affiliation with any organisation.

VSAG is committed to the preservation of independant diving freedom. It believes that divers must take a responsible attitude toward the protection and preservation of the marine environment but as a general rule is opposed to legislative measures that place prohibitive limitations and restrictions in diving activities.

Local diving is organised on a bi-monthly basis, generally out of participating member's boats. This is supported by weekend camps, charters to more remote locations and annual overseas trips. The club has a considerable investment in diving equipment. Regular functions provide an opportunity for members, friends and families to socialise. Each month VSAG meets at North Melbourne Football Club where bar facilities are available prior to and after the General Meetings. Visitors are very welcome - smart casual wear essential.

# FATHOMS

Official journal of the *Victorian Sub - Aqua Group*

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### Next General Meetings:

Thursday 19th August 8.00pm  
Thursday 16th September 8.00pm  
North Melbourne Football Club  
Fogarty Street, North Melbourne  
Meet beforehand at club for dinner

### Next Committee Meetings:

24th August - A. Mastrowicz's place  
21th September - D. Abell's place

### Editorial submissions to:

John Goulding  
Qantas Australia  
4th Floor  
50 Franklin St.,  
MELBOURNE, VIC. 3000  
Tel: 274 2213 Fax: 274 2505  
A.H. 899 3468

## V.S.A.G. COMMITTEE MEMBERS

A.C.N. 004 591 575

PRESIDENT:

Don Abell  
80 Liston Street,  
Burwood, 3125.  
Telephone: 889 4415 (H)  
288 6548 (W)

SECRETARY:

Sani Khan  
36 Belmont Ave,  
Kew, 3101.  
Telephone: 817 3214 (H)  
276 3150 (W)

NEWSLETTER EDITOR:

John Goulding  
3/29 Barkly st  
Box Hill, 3128  
Telephone: 899 3468 (H)  
274 2213 (W)

SAFETY OFFICER &  
ASSISTANT EDITOR:

John Lawler  
1 Katrina Avenue,  
Murrumbidgee, 3163.  
Telephone: 569 9851 (H)  
794 8611 (W)  
(018) 39 5428 (Mobile)

POINTS SCORER:

Andy Mastrowicz  
15 Soudan Road,  
West Footscray, 3012.  
Telephone: 318 3986 (H)  
420 2425 (W)

ASSISTANT TREASURER:

Mick Jeacle

ASSISTANT SECRETARY:

Charlie Brincat

COMMITTEE MEMBER:

Bob Scott  
21 Eildon Parade,  
Rowville, 3178.  
Telephone: 763 6872 (H)  
706 7100 (W)

VICE PRESIDENT:

Mick Jeacle  
5 Donn Close,  
Frankston, 3199.  
Telephone: (059) 71 2786 (H)  
541 1880 (W)

TREASURER:

Doug Catherall  
33 Patterson Av,  
Burwood, 3125.  
Telephone: 888 7774 (H)

PROPERTY OFFICER:

Pai Reynolds  
14 Nurla Court,  
Frankston, 3199.  
Telephone: 789 1092 (H)

PUBLIC RELATIONS OFFICER:

Alex Talay  
1/56 Leopold Street,  
South Yarra, 3141.  
Telephone: 867 8492 (H)  
585 0277 (W)

SOCIAL SECRETARY:

Charlie Brincat  
57 Wellington Park Drive,  
Warren Wood, 3134.  
Telephone: 876 3395

S.D.F. DELEGATES:

Don Abell  
John Lawler

MEMBERSHIP DEVELOPMENT OFFICER:

Alex Talay  
1/56 Leopold Street,  
South Yarra, 3141.  
Telephone: 867 8492 (H)  
585 0277 (W)

## EDITORIAL



In the last issue of *Fathoms*, I went to some lengths in putting the case of defence for the White Pointer shark that attacked and killed a diver off Tasmania's north coast.

Despite the myths about sharks, attacks are very rare but when they happen they always produce a wave of hysteria, particularly in the media.

But who would have thought that less than a week later another diver would also be taken, and then only a few weeks later our own president Don Abell would be confronted by a large shark, which Don believes was probably a bronze whaler..... or could it have been a whitey!!! As Reg Lipson quoted to us

recently during his presentation to the club,..."the taste bite of a great white will certainly spoil your day".

Yet on the same day as Don's encounter with the shark, the club also encountered 2 great humpback whales off Flinders.....What a day! The sea is always full of surprises and the risk of danger from its inhabitants is indeed miniscule compared to its beauty.

In this issue of *fathoms* I have taken a number of articles from other club's diving magazines, as well as articles from our own members. Please keep the articles coming so that we can keep members up to date and informed about the Club.

The July General Meeting saw a dismal turnout of only about a dozen members. Fortunately we did not have a guest speaker arranged for July, but even so just because it was cold, raining and there was a great show on television, there's no reason to stay away.

Remember - the 3rd Thursday of every month.

1994 will mark V.S.A.G's 40th anniversary. This is quite a milestone as there are

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## ***EDITORIAL CONT.***

only 2 or 3 other diving clubs in Victoria that were started in the 1950's and are still going. The committee would like to plan a number of special activities next year, so if you have any ideas please contact Don Abell.

Don't forget the Annual General Meeting and Committee Elections on 16 September. This is a very important meeting and as I am not standing again for election there will certainly be at least one vacancy.

John. Goulding  
Editor

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## ***ANNUAL GENERAL MEETING AND SUPPER***

16 SEPTEMBER

NORTH MELBOURNE FOOTBALL CLUB

The VSAG Annual General Meeting and Committee elections will be held on Thursday 16 September. In accordance with the terms of the clubs constitution, the 4 longest serving committee members will stand down, but may offer themselves for re-election.

They are: Don Abell, Sant Khan, Mick Jeacle, and John Goulding. John Goulding will not be renominating for the committee membership.

Re-election details will be advised at the August General Meeting and also in the mail.

All members are requested to attend the Annual General Meeting.

At the conclusion of the meeting supper will be served.

**BEHIND THE PLAY**  
**CARLTON COURTHOUSE**  
349 DRUMMOND ST, CARLTON

Club member Marita Wilcox's production of "Behind the Play" will commence at the Carlton Courthouse Theatre on 17 August and runs through until 4 September. Behind the Play examines the myth that a women's role in football is passive, supportive and decorative.... Yet behind the scenes is a different story.

Seven very different women "behind the play" endure the pressures associated with being part of the club. Some succeed, some fail, some grow, some withdraw. But through them all is the universal journey that many women endure;... being the backbone behind their men.

This play is based on true life experiences and delves into a side of football that most of the players never admit.

Marita has spent 2 years in the research and writing of this play and brings together a wealth of acting talent from stage and television.

A special V.S.A.G. night is scheduled for Friday 3 September.

Bookings through

Marita Wilcox 8039262

John Goulding 274 2213 Bus.

899 3468 AH

**1994 VSAG**  
**40 YEARS**

# DOLPHINS DOLPHINS DOLPHINS DOLPHINS SPECIAL GUEST SPEAKERS

## AUGUST 19TH MEETING

Alison Dodds, the President of the Port Phillip Bay Dolphin Research Project together with Phil Tubbs the executive will join us to present an informative and interesting brief on the purpose of research behind the Port Phillip Bay Dolphins and related issues.

A slide presentation will also be given on the night.

Don't miss this informative night on the most intelligent of species which inhabit our bay.

Diary this special event now!

## FOR SALE

Sonar Wetsuit 7ml black  
(womens normal size 8-10)

Oceanic BC

Weight belt & weights

Seasuit Boots

Flag & bouy

Oceanic regulators

Sea Harn Cylinder (Pink)

Tusa Fins Mask & Snorkel

Oceanic Gauges

Stemling gloves

Oceanic Data Max Sport

Daylight torch

Cost over \$3,000

# Sell \$1,500

Ring Trish 305 3809



## ***CLOSE ENCOUNTERS OF THE BITING KIND***

DON ABELL

Sunday 27 June was set for Flinders with hope of doing a short dive on a cold day and maybe returning with a seafood dinner. It turned out to be the most awesome dive I have ever done.

When I hit 50 ft just off the Flinders Point the conditions were comfortable. Not too cold with visibility about 20-25 feet. In the first 5 minutes I found a cray but it was too deep in its ledge for my arm to reach. Since John Lawler has longer arms than me I indicated to him to follow me. John did not understand my signal and didn't follow. I got to the ledge and looked back but John was not there. No problem. I played around for 1 minute and then turned to go back to J.L.

I was less than impressed to see a shark heading directly toward me. In truth I froze. He was about 20 feet away when I saw him and there was no mistaking his direction or the subject of his interest.

One second is a long time in that situation and that is how long it took to decide that he was not in attack mode. He was cruising slowly but still in a direction I was not happy about.

Determined to work out what I was he cruised past me close enough to touch. I can assure all readers that touching did not enter my head. He was not in-attack mode and I had no desire to change his mind. There was always the chance that he had experienced a bad day.

As he cruised past I noticed the small marks on his skin. I remember noticing that there were no stripes so I concluded that it was not a tiger shark. I also remember his size. I kept telling myself that everything is magnified 50 per cent under water. Unfortunately another voice told me to take note that this shark was considerably longer than the diver it was eyeballing. In the end I estimate it was about 8 feet long, but lets call it 20 feet for the purpose of this article.

After it passed it started to turn left and away from me. This was my clearest memory. This is also when I turned to my religious roots. I did not want this shark to turn and come back for a second look. If he did I was convinced I was in REAL trouble.

But he cruised into the abyss. Some of you will appreciate that I then found it very difficult to concentrate on looking under ledges. I had this incredible urge to look around me all the time.

After pottering nervously for another five minutes I realised that my bouy rope had detached and I was no longer connected to the surface. Should I stay down for a while longer or get to the surface while my bouy and the boat were near. Not wanting to bob on the surface for longer than necessary I went up.

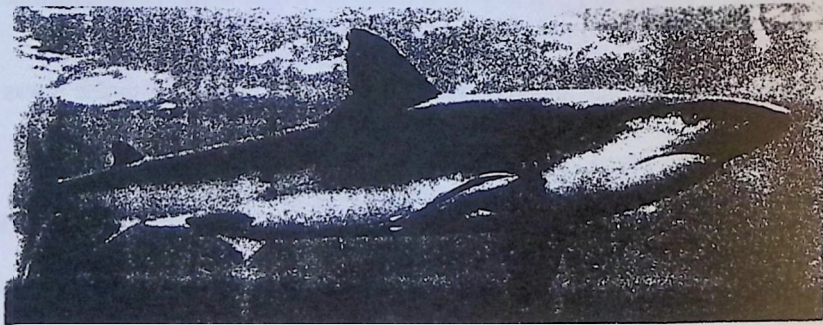
I spiralled all the way with my knife drawn. Perhaps that seems optimistic but you can only do what you can do.

On the surface I told Charlie to get the boat to me with haste. Charlie sensing my tone was next to me quickly. Once on the boat I decided to pass on the second dive.

For those of you that want more detail I have spent some time looking at shark photographs to determine what type of shark I encountered. I have concluded that it was most likely a whaler shark.

I think I would have realised if it was a white pointer. It looked a lot like a tiger but I could clearly tell that there were no stripes. It did not resemble a grey nurse or any of the other common varieties. So whaler it is. For those that think a whaler is not too scary I would have liked you to have been between me and it's mouth.

I also have a new appreciation of the buddy system of diving. Suspect I will stick like glue for the next year or two.



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## ***NEW MEMBERS***

V.S.A.G. welcomes new members

Dave Machen Tel: 337 4506

and

Gerry Devries.

Applications have also been received from:

Frank Natoli

and

Danielle Humphries

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## ***CLUB SUBSCRIPTIONS***

V.S.A.G. annual membership subscriptions of \$45 were due in July.

If you haven't paid yet, please do so soon as possible.

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## ***COMMITTEE NEWS***

- The financial position of the club as at 20 July was \$9766.13 in cash reserves.
- Subscriptions have been slow to come in are now overdue.
- V.S.A.G. will run advertisements in Dive Log and Sport Diver commencing August or September.
- 1994 will be the club's 40th anniversary, a year of special activities will be planned including:
  - \* An overseas diving trip to the President Coolidge
  - \* A gala 40 year dinner
  - \* Commemorative clothing

Other ideas are required by members.

John Lawler and Don Abell recently completed a marine radio course. John pointed out that operators of 27 MHZ marine radios must be licensed.

It was agreed that we would have a guest speaker at one of our meeting to talk on this subject.

The V.S.A.G. Christmas Party/Dinner will be held on Friday 3 December, venue details to be advised.

## **NOTICES**

### **FORTHCOMING TRIPS AWAY**

#### **SKIING**

Members interested in getting together for a few days skiing at either Falls Creek or Mount Buller should see or contact John Goulding Tel: 274 2213 (Bus)  
Best timing will probably be around late August or early September.

#### **TIDAL RIVER - WILSONS PROMONTORY**

Tentative arrangements have been made for a 3-4 day trip to Tidal River over the Melbourne Cup weekend.

Dates are: Sat 30th October - Tues 2nd November

Over the past few years this cup weekend at Wilsons Prom has become very popular with many Diving Clubs and again promises to be a good weekend.

## **WARM WATER DIVING MAY 1994**

### **2 WEEK OVERSEAS TRIP**

- 1 WEEK WRECKS & REEF IN THE SOLOMOMS
- 1 WEEK ON THE PRESIDENT COOLRIDGE AND OTHER DIVES IN VANUATU.

THIS TRIP IS CENTRED AROUND THE BEST WRECK DIVE IN THE WORLD - THE PRESIDENT COOLIDGE.

INTERESTED?  
CONTACT DON ABELL FOR DETAILS.

## *A WHALE OF A STORY*

DOUG CATHERALL DC

My reg had been free-flowing the whole bloody dive, I had it serviced by Boris only 4 or 5 years ago. Anyway on hitting the swollen surface and swallowing down the taste of bile and salt. I was surprised to see J.L. & Don already in the tag boat as Charlie was slowly heading over to me.

"Did you see it to?" was yelled as Charlie neared in the haines. Well did Don have a story to tell. It must have been true because he didn't bother with a second dive and mumbled something about selling things.

J.L. suggested we take a buoy each there-by allowing more freedom & manouvibility whilst on the bottom (54ft) and checking in some ledges our president turned to see a 2.3 metre shark only a metre or so to his left and slightly above. It passed Don and cruised on into the brinie turning further left. Not wanting to over-react Don withdrew his knife and triple checked his position (Yes - by now !ft below the reef). The water surrounding him was not stained as he thought "Oh good, I havn't done a Doug!!!

Twenty circles with knife leading all the way up then Uncle Don flew into the boat.

"The underside was definitely white, but the nose did not appear pointy" said Don "Most have been a white". J.L. decided as he settled Don down to a comfy lunch in the lee of Flinders knob and with the sun out it was fabulous.

Ross, his friend Russell, Captain Tamara along with Big M, Robert Birtles and Neville V joined us and were told of Don's adventure. After our appetites were sated we headed back out.

On route we got a call from "The Carrot", no more a command really, "Get over hear now, there's a whale!" J.L. got us over alright and so began a very moving and unforgettable experience.

There, only metres in front of us and between Ross's and J L's boats the sea lifted, then fell aside and our eyes focused on the barnicle encrusted head of this massive monster. The magnitude left us aghast, definitely 40 feet (12m) with the tail being 2 metres wide. This was produced right on cue as Don said "Geez

wouldn't it be great to see it's tail". The eye was larger than a cricket ball but not as red.

A calm came over us as this majestic mass of blubber turned and headed back our way. I was in the process of putting on my fins when, fortunately, I fell backwards into the boat. Our eyes were working overtime, you could clearly see the white fluting under its mouth, then as it slid only 3 metres abeam of us a second tail appeared. Yes! Here were two whales, the second being 30 feet long and a little shy.

When I did jump in I was some 2 metres from the tail of the smaller one and could see what appeared to be white seaweed growing from the fins. Looking further I could see about half way down the backbone before the vis closed in. A strange feeling, just floating there watching the animal occupy so much space.

These giants were not in the least disturbed, in fact the larger was obviously inquisitive and when no longer interested they just gave a blow and disappeared, surfacing again some 300 metres afar. We caught up after a few minutes noticing both tails were together, the larger being on top, seemingly a bit of hanky panky was going on. For about thirty minutes we had been with them and so the next time they moved on, the hint was taken so we left them to it.

Later Penguins were sighted having a chat on the surface and a lone seal dived about briefly.

This most incredible day was over by 3.00pm. Thanks to Ross's 4WD even a thickly massed seaweed beach proved no problem. Charlie and I enjoyed a sleep on the way home while Don heard for the seventh and eighth time how John lost the 10LB'er. (Also a true story)

A police officer at Bazza's roundabout took more of JL's breath and a bloody goods train near the start of the freeway left him gasping.

By the way V.S.A.G. dives every second Sunday even during the winter and this one proved yet again that the best diving is during this period.

Well that is enough for one day, maxine can now enjoy my 3LB'er.

## ***ONCE IN A LIFETIME***

TAMARA LUXFORD

On 27.6.93 Dad took me out in the boat diving. It was getting a bit boring when we were just drifting along while Dad, Robert Birtles and Russel Sheppard were down diving on the reef looking for crays just off Flinders. Don was the first to come up off John Lawler's boat, he had a knife in one hand and his reg in the other. He was yelling and screaming something to Charlie but I didn't hear him clearly.

Charlie sped over to him (I would have given him a speeding ticket) and dragged him on to the boat. I heard Don call out to us and I said to Mick we should go and see what Don was staying. We got over to the other boat and asked what Don was saying. We got over to the other boat and asked him why he had a knife in one hand and looked like he was going to kill someone or something. It turned out he was about to surface and he looked up and saw straight above him was a 7ft White Pointer shark, Don didn't have another dive he had enough. We went around inside West-head for lunch. We then went to find a second dive spot.

Before we found a dive spot Mick said he saw something like a spout in the water. Dad thought he was just joking, but he wasn't he was for real.

Next minute everyone is on the side of the boat watching two 45ft Humpback Whale's playing happily in the sun together. Mick called John on the radio and said "we have got two gianormus whale's about 5ft away from the boat". John should be very thankful that his radio was working. For the next 30min both boats were following the two whale's around.

Neville wasn't wasting time he was ready to jump off the back of the boat when we got close to them, but he jumped to early and we had to go back and get him. All the people on our boat except me jumped in and tried to swim with them. Russel was in the current of one of the two's tail and was going up and down with it. There were barnacles on one or both of their heads but not on their back that was smooth.

I don't know if Don was making what he said up but I can assure you I am not making this story of the whale's up.

*Thankyou Tamara for a very interesting article this was certainly a very special day for you and the others. I've had a fasionation about whales since I was 6 years old - but I've only been as close as about 100 metres. - EDITOR*

## ***PRESIDENT COOLIDGE***

DON ABELL

I plan to write an article for each issue of Fathoms between now and our overseas trip in april/May 1994. This first article is on the main focus of this trip - The President Coolidge - described as the largest accessible shipwreck in the world.

The USS President Coolidge was one of several luxury liners built for the American President line. It was launched on 21 February 1931 with registered measurements of 615.6 feet long, 81.3 feet beam and 28.2 feet draft. Her registered tonnage was 21936 tons but some documentation records her at 32000. For Ross Luxford she was powered by 26,500 IHP Westinghouse Turbo Electric engines and could travel at over 21 knots.

In early 1942 she was adapted for troop carrying. Prior to her fateful voyage she twice visited Melbourne on the South Pacific run. On 6th october 1942 she left San Francisco for New Caledonia and Espiritu Santo. She was originally planned to take about 1000 passengers in absolute luxury. On this voyage she had 5150 troops and 290 crew.

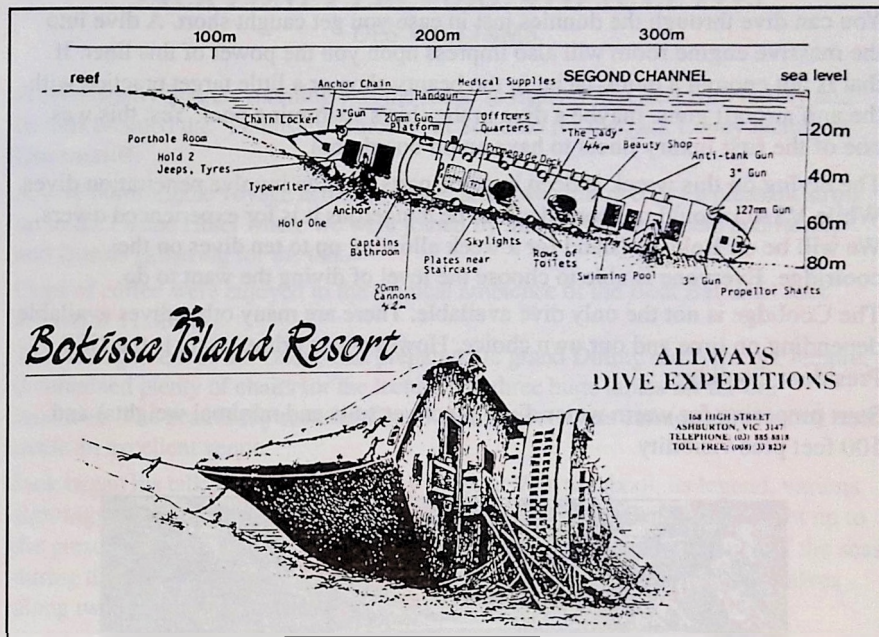
The captain of the ship approached Santo on 26 october. He was concerned about reported submarine activity on the previous day so maintained 15 knots as he approached from the north. At 0935 a radio message ordered him to stop. Alas, too late as an explosion hit amidships. The ship had sailed into a US minefield protecting the harbour. The captain backed engines but 30 seconds later a second explosion hit.

The ship was directed to run aground to minimise any loss of life. Most onboard escaped with reports varying between one and five persons lost.

At 1053 the Coolidge rolled onto her port side and slipped under water. Her stern is on the bottom of second channel in 80 metres and the bow towards the shore only 20 metres from the surface.

The diagram which accompanies this article will give you some idea of the size and position of the wreck. Some divers claim that it takes two days diving just to start to appreciate the awesome size. Those in the club who have been lucky enough to dive the Coolidge are Alex Talay, Ross Luxford and Doug Catherall.





*Diagram and illustration of the Coolidge*

While I have not dived the Coolidge I did dive on the Lermontov on the VSAG trip in April 1988. This Russian ship is a smaller ship and in shallower water but I clearly remember that it took at least four dives before I began to understand the orientation of that wreck.

The wreck lay undisturbed until 1969 when a group of salvage divers removed the propellers. One of those divers stayed on developed the sport diving interest in the wreck.

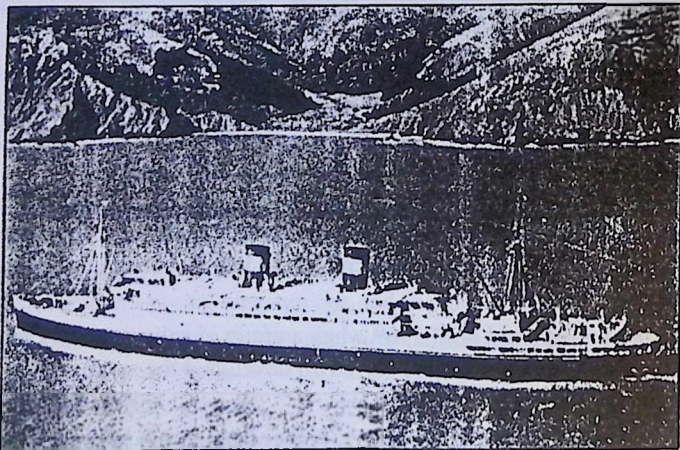
There is a great deal to see on the wreck. A lot of the ship is accessible both within and outside. A dive to "The Lady" is a must - refer to the VSAG Fathoms cover of some years ago showing Alex participating in a little foreplay with the lady herself. This statue is on the wall of the lounge and lies at about 150 feet.

You can dive through the dunnies just in case you get caught short. A dive into the massive engine room will also impress upon you the power of this liner. If that is not enough a quick facial in the beauty shop or a little target practice with the anti aircraft guns. maybe a dive in the ship's swimming pool. Yes, this was one of the first luxury liners to have an on board pool.

The diving on this wreck is deep in some parts and can involve penetration dives. While VSAG would not consider it to be dangerous it is for experienced divers. We will be on Bokissa Island for a week allowing up to ten dives on the coolidge. Everyone is able to choose the level of diving the want to do.

The Coolidge is not the only dive available. There are many other dives available depending on time and our own choice. However our prime target is the USS President Coolidge.

Start preparing for warm water diving (no wet suits and minimal weights) and 100 feet plus visibility.



*The President Coolidge under the flag of the American President Line.*

## ***JACK LONEY LECTURE 4TH JULY 1993***

DES WILLIAMS

A brisk sunny Sunday morning was the scene as many VSAGer's with family and friends boarded the "Peninsula Princess" at Sorrento for the Jack Loney lecture at Queenscliff.

A very comfortable voyage across to Queenscliff was followed by a pleasant stroll up to the Ozone Hotel where we were joined by many more members and family and friends gathering for the talk.

Cups of coffee were enjoyed in the nautical ambience of the Boat Bar until Jack arrived at 11.30am.

The management of the Ozone had prepared the grand Dining room for our lecture. It contained plenty of chairs for the lecture and three huge tables set for our luncheon. The beautifully restored Grand Dining room was comfortably heated and made an excellent venue.

Jack began his talk about the Mahogany Ships at Warrnambool, its legend, various sightings and the many attempts to locate the wreck from the late 1800's right up to the present day. We learned about the Spanish and Portuguese dominance of the seas during the 15th & 16th centuries and how they divided the world into two halves along two lines of longitude.

Jack is always able to leave an impression on an audience and his 16th century Portuguese maps of our own Victorian coastline had us all thinking maybe Captain Cook wasn't the first to sight Victoria.

Question time continued after the lecture and Jack produced a small number of his latest books, which were quickly snapped up by interested members and friends who have them autographed.

Jack then joined us for our luncheon, which was very satisfactory for our 80 strong audience. My thanks to Robert Birtles and Don Abell who assisted me to collect the money from participants so effectively.

The day was very sunny and quite calm as we left the Ozone at around 2.30pm, thanked Jack and walked back to the 3pm ferry to return to Sorrento.

A very special thanks to all members, family and especially friends for producing a great audience for Jack Loney - hope you had a good day out.

## ***V.S.A.G. ACQUIRES GLOBAL POSITIONING SYSTEM***

After several months of assessment of various Global Positioning Systems (GPS) VSAG has purchased a GARMIN-75 unit for use in pinpointing dive locations, reef, wrecks etc.

Once the latitude and longitude marks are plotted into the system, the GPS will provide a directional course to take our dive boat to within a few metres of plotted position.

This is a similar system as we used to guide the "smart bombs" during the Gulf war and will be an invaluable aid on our future dives.

The unit is quite portable and can be transferred from boat to boat.

Our thanks to Andy Mastrowicz for researching the equipment and making up several brackets for the boat owners.

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## ***FOOD GLORIOUS FOOD (A LONG WINDED STORY ON CRAYFISH)***

JOHN LAWLER

When I first arrived in Melbourne almost 20 years ago (Nov 73), I received a phone call at Seakist Foods where I was Sales Manager. The call was from a Chinese man who got my number from his uncle with whom I did some business in Sydney's Chinatown.

Our Company owned the great and famous "Clive of India" curry... powder brand and this man wanted to buy. I was given an address in Mitcham and agreed to meet the man and deliver his requirements that afternoon.

The address turned out to be a modest neat home with a garage down the back. This was the beginnings of a great Company.

This was also the start of a great friendship and the start of a successful wholesale business which Milton and Rosie Seato achieved through hard work, family involvement and a strong desire to see their vision become reality.

Milton's little Company, LS Wing Wah grew from that garage to a larger warehouse in Mitcham. As time went by Wing Wah grew and grew.

The business then moved again to Canterbury Road, Box Hill and still its growth continued. The building next door became vacant and was taken over. From this expansion came renovation and the dream of Seato become reality. Wing Wah went retail and also into takeaway, both complimenting the wholesale operation.

The "Asian Supermarket" was opened by the mayor of Box Hill and it was a street party to end all parties. Dancers, music, chinese dragons and food like you never believed possible.

Today the "Asian Supermarket" at 890 Canterbury Road, boasts the widest selection of Asian ingredients, fresh fish and meats, pork, chinese vegetables, cooking equipment and the list goes on.

As this is being written I've just had my first lesson from Milton in the art of preparing and cooking crayfish in the chinese style.

After my first lesson, we dined in style that evening on crayfish in black bean sauce and crayfish in chilli sauce - simply fantastic.

It has taken a long while to get this great man to let me in on his cooking secrets and the wait was worth it. No more boring boiled crays, its all chinese style from here on.

**FOOD GLORIOUS FOOD**

## ***DIVING INTO THE PAST***

JOHN LAWLER

This contribution to Fathoms goes back to April 1971. The author of the story was not identified but I think you will find "Aquaculture

Food From The Deep" very interesting.

We also have another story from Fathoms 1974. Written by Brian Lynch.

FATHOMS, April 1971, PAGE 8

### **AQUACULTURE: FOOD FROM THE DEEP**

In the past 100 years, the amount of food taken from the sea has multiplied more than tenfold, a rate in excess of global population growth. But the annual world catch - now about 60 million metric tons cannot continue growing indefinitely. In fact such sea staples as California Sardines, Northwest Pacific Salmon and Barents Sea Cod not to mention the beleaguered whale - are already rapidly dwindling. Contrary to the myth, Fisheries Biologist William Ricker recently warned in a National Academy of Sciences report, the sea is "not a limitless reservoir of food energy."

Urchins to Octopus. Fortunately, there is an alternative to harvesting food directly from the sea. By using artificial ponds, lakes, streams and even cordoned off estuaries and bays to raise fish, man can give nature a helping hand. Fish farming is hardly new: as long ago as 475 B.C., a Chinese scholar-statesman named Fan Li wrote the first how-to-do-it treatise. But as Marine biologists seek to exploit it's full potential - especially as a way of relieving the worlds chronic shortage of protein - water farming, or aquaculture, looms as an ever more important source of food.

The island-bound Japanese seem to be the most ingenious aquaculturists. Dependent on the sea for 60% of its protein intake, they have long led the world in growing oysters, shrimp and other aquatic delicacies. But lately, as their fisheries have been over taxed and their world travelling trawlers run into increasing opposition from foreign governments, Japanese researchers have been

working overtime on breeding projects, experimenting with everything from sea urchins to octopus. To make fish more accessible to fishermen they have even taken to dumping old street cars, buses and, most recently, concrete pipes into offshore waters in hopes of providing "aparto" (apartments in and around where fish tend to congregate).

Other nations are not far behind. On the Chinese mainland, Fen Li's descendants have dotted the countryside with so many fishpond co-operatives that their annual production of carp and related fish (1.5 million tons) nearly equals the total U.S. catch. The Israelis, who have extensive breeding pools, learned that by injecting mullets with pituitary hormones they could cause the fish to spawn in captivity. Ordinarily the mullet - a popular tropical food fish - will spawn only in open water. Similar projects are under way on Taiwan, in India and Hawaii's privately run Oceanic Institute, where scientists have just made an esoteric contribution to mullet cultivation. By stringing out buoyant strips of plastic just below the ocean's surface, they have created artificial sea grass on which diatoms will grow. These single-celled algae constitute the basic ingredient of a young mullet's diet.

At the University of Washington, researchers have succeeded in breeding a so-called "Supertrout", which outstrips its punier kin by gaining as much as two pounds a year and thriving in salt water. By cultivating the supertrout, as well as oysters and algae, Washington State's impoverished Lummi Indians are establishing one of the more promising U.S. aquafarms. The Oceanic Institute's founder, Taylor A. Pryor, whose researchers advise the Lummis, thinks similarly lucrative aquafarms can be set up all along the tidal areas of the U.S. Northwest, British Columbia and southern Alaska.

One of the more ingenious experiments in aquaculture has just begun on the Caribbean island of St. Croix. Conceived by scientists of Columbia University's Lamont-Doherty Geological Observatory, it is based on a natural sea phenomenon. In acres of the world where the right combination of wind, current and slope of the continental shelf occurs, cold water from the ocean depths sometimes churns up to the surface. Laden with nutrients from decomposed sea life that has settled to the ocean depths, these rising currents possess

extraordinary fertilising power. Once they reach the upper level of the ocean, where sunlight penetrates, they turn it into a garden of phytoplankton - the tiny floating plants that are the bottom link in the sea's food chain. Actually the "upwelling" occurs only in a few areas like the extremely rich fishery off Peru. Much of the rest of the ocean is what one scientist recently called a "biological desert".

To make such a desert bloom, the Columbia scientists are creating some upwelling of their own - in miniature. Dropping a 3½ in wide plastic pipe off the northern coast of St. Croix, where the caribbean slopes off very steeply, they are siphoning up nutrient rich, cold (41°F) sea water from a depth of half a mile and feeding it into small pools, each with a capacity of 16,000 gallons. Within 10 days the pools teem with phytoplankton and become ideal breeding grounds for aquatic life. Last week the Columbia scientists "set" their first batch of young Chesapeake bay and Long Island oysters in the ponds, where they should thrive on the bountiful food supply. Eventually the scientists hope to raise snails, shrimps and anchovies in the pools.

Useful Pollution: Some recent aquaculture projects actually make use of pollution. In Southern Germany near Munich, the Bavarian Hydropower Co. is already reaping a profit by using sewage (rich in minerals) as a fertiliser in carp ponds. The idea is not entirely new; natives of West Java have long known that carp raised in streams filled with wastes grow unusually robust. There is only one caveat: the fish must be well cooked before they are eaten.

Thermal pollution can be equally useful. Not only trout but oysters and other shellfish have been grown more rapidly in the hot effluent from power plants. indeed, one new York producer, who raises his oysters in the Long Island Lighting Co.'s cooling ponds, says that they reach full size in less than three years (v. four to five years normally). Even more spectacular results have been reported by the Scots. By placing sole and plaice in water discharged from an atomic generator, they have raised the fish in six to eight months (v. three to four years). The explanation: warm water increases both the metabolism rate and appetite of fish.



# ***SPECIAL GUEST SPEAKER***

***OCTOBER MEETING***

## ***ANDREW CARTER***

Andrew is from the “Spectrum Management Agency”  
which has formerly the  
“Department of Communications”.

Andrew is the State marine Surveyor and is a  
specialist in marine radio.

This will be a very important talk  
as safety is involved.

Andrew will have a few good stories to tell.

**Diary this date now.**

## ***ROUND AND ROUND THE RIP***

BRIAN LYNCH

On Sunday, 24th february 1974, we assembled at Sorrento Boat ramp at 10am. Three boats, sorry, four, were used - Bazza's, Dav's, Don's and Terry was there too. We headed off quickly because of the tide changes, our first objective was to be the George Roper or Holyhead wrecks just outside the Bay entrance. Arriving in the Rip with Bazza at the wheel we found it to be to be just a little hilly, so after cruising through we turned around and headed back towards the "Eliza Ramsden". Unfortunately we missed Dave, whilst searching for the Eliza marks and we could see him in the distance about to take on the big waves, flat to the boards as usual. So, urged on by the others we turned round to try to head him off. We began to slowly to overhaul old Dave, who looked to us if he were trying to ram a large tanker, passing out through the Heads. Much to our relief, Dave being a poor shot, missed the larger vessel, and then saw us and turned round. I'm sure that Dave's boat is the only one in Melbourne that skips from wave crest to wave crest, well, as dave says, there is no point in descending into the troughs, you only have to climb out the other side. When we all got back to the Eliza we found half of Melbourne there, too, so we decided to visit Corsair Rock and look for the "Time" (Three O'clock you say, Shut up Eccles). Passing some hardy surfies who were in the Rip with nothing but their boards for protection, we anchored just off shore. Going down in about fifteen foot of fast -running, ten foot visibility water we searched around to no avail. Surfacing we got back into the boats discovering Justin had turned green, could it have been something he'd eaten?

Our next objective was Pope's Eye, arriving there we slid around the current and anchored in the sheltered eye protection by the man-made rock walls. Here we could step out of the boats and stand on the sandy bottom whilst adjusting our gear. Pairing off, we left the warm shallows and began to swim around the rocks against an ever increasing current. Unfortunately there is not much fish life left now due to over-zealous underwater marksmen, but the weed and sponge growths are interesting and when after completing a half circle you turn and glide back along the rock walls the sensation is exhilarating.

Upon returning to the boats, we discovered that Justin had somehow lost his green colouring and was back to normal. So much so, that he donned skis and ploughed back towards Sorrento. When we pulled into the beach we discovered that Rob Adamson had finally arrived, having forgotten that time and tide wait for no man.

We spent the rest of the afternoon skiing, avoiding large black rays and being filmed by Rod, and to crown the afternoon off, Barry decided that I hadn't fallen off enough times without help, and cheerfully towed Justin and I through the wash of the Sorrento ferry, well a third of the way through anyway. Bottoms up!

## ***DECLARATION OF HISTORIC SHIPWRECKS: The Victorian Historic Act (1981)***

On the 17th February 1993, the minister for Community Services Victoria and responsible for the Victorian Historic Shipwrecks Act (1981), The Hon Michael John, announced the declaration of a further 15 Historic Shipwrecks in Port Phillip Bay.

These 15 shipwrecks are,  
Shipname      Location

***Aneiura*** (1918-1934): 38d 05.45'S, 144d 28.35'S, Off Point Liliias. A 1652 Ton, 3 masted, American built, wooden sailing ship.

***Briton*** (1864-1890): 38d 07.59'S, 144d 24.95'E. Off Point Henry. A 452 ton, 3 masted barque converted to a lighter. (140 x 28 x 18)

***City Of Melbourne*** (1853-1890): 38d 07.64'S, 144d 24.82'E. Off Point Henry. 1828 ton, 3 masted ship converted to a hulk after catching fire at Williamstown.

***Countess of Hopetown*** (1891-1924): 38d 15.16'S, 144d 41.46'E, off Swan island. A 75 ton, steel hulled torpedo boat built for the Victorian Colonial Navy. (130 x 13 x 7)

***Eliza Ramsden*** (1874-1875); 38d 17.68'S, 144d 40.43'E, South Channel. 415 ton, Scottish built, iron hulled, 3 masted sailing ship, wrecked after striking Corsair Rock. (152 x 27 x 15)

***Gambier*** (1874-1891): 38d 17.54'S, 144d 41.27'E, Off Popes Eye. 1577 ton, Scottish built, iron steamer, wrecked in a collision with the S.S Easby. (152 x 30 x 16)

***Medea*** (1858-1880): 38d 15.50'S, 144d 43.25'E, Off Swan island. 433 ton, Canadian built, 3 masted, wooden barque, run ashore during a severe gale.

***Monarch*** (1836-1867): 38d 12.70'E, 144d 43.25'S, West Sands. 269 ton, English built, 3 masted wooden barque, wrecked during heavy weather whilst on a voyage from Melbourne to Newcastle. (142 x 23 x 11)

- Omega*** (1893-1897): 38d 13.50'S, 144d 14.11'E, William Sands. 72 Ton, Australian built, 3 masted barquentine. (130 x 28 x 22)
- Seabird*** (1844-1867): 38d 12.10'S, 144d 48.83'E, West Channel Pile. 353 ton, American built, 3 masted barquentine. (130 x 28 x 22)
- S.F.Hersey*** (1865-1923): 38d 14.72'S, 144d 42.11'E, North end of Swan Island. 961 ton, American built, 3 masted ship. Later converted into a hulk. (168 x 33 x 22)
- Swallow*** (1860-1922): 38d 14.42'S, 144d 42.11'E, West Channel. 24 ton, Australian built, wooden ketch wrecked whilst on a voyage from Melbourne to Apollo Bay. (51 x 15 x 6)
- Time*** (1913-1949): 38d 18.05'S, 144d 38.65'E, North Side Nepean Reef. 3322 ton, English built, screw steamer, wrecked whilst entering Port Phillip Heads. (340 x 48 x 21)
- Wauchope*** (1905-1919): 38d 19.00'S 144d 44.68'E, Sorrento. 209 ton, wooden screw steamer, caught fire and exploded whilst on voyage from Melbourne to King Island. (127 x 25 x 9)
- Will O' the Wisp*** (1840-1853): 38d 14.58'S 144d 41.99'E, Swan Point, Swan Island. 101 ton, English Built, wooden schooner, designed for the opium trade. (76 x 18 x 10) NB: Protected Zone.

These 15 shipwrecks are a representative cross section of the 200+ vessels known to have been wrecked in Port Phillip Bay and as such are a valuable archeological resource. A number of these sites, including Eliza Ramsden and Wauchope have been tagged for inclusion in the Historic Shipwreck Trail and will hopefully have information plinths placed on them before the end of the year.

## **William Salthouse Opening**

Coinciding with the announcement by the Minister of the 15 newly declared Historic Shipwrecks was the announcement that the Historic Shipwreck William Salthouse (Which has been closed to recreational diving for 4 years during site stabilisation work) was to be reopened to recreational divers under a permit system.

The conditions of the permit specify that,

1. Dive vessel must be registered.
2. Vessel must carry a Dive Master or a Dive Instructor.
3. Vessel must have a certified boat operator.
4. Vessel must carry a VHF Radio.
5. No more than 12 divers allowed to dive on the site.
6. Vessel must display the 'A Flag'
7. All divers must have a copy of the William Salthouse guide.
8. Dive operator or Permit holder must provide a list of all divers who visit the site.
9. Divers must not remove, alter or damage the site in any way.
10. Dive boats are not allowed anchor in the zone.
11. Access Permit must be carried during dive operations on the site. and
12. Permit is only valid for 2 slack water periods per day and only between the hours of sunrise and sunset.

Applications for Access Permits to the William Salthouse can be obtained by contacting Shirley Strachan or Peter Harvey on (03) 690 5322.

## **Blanket Declaration and the Launch of the National Historic Shipwrecks Program.**

The National Historic Shipwrecks Program is a co-operative undertaking between the Commonwealth, the states and the Northern Territory. The Program aims to encourage public enjoyment and the appreciation of our underwater cultural heritage by:

Conserving and protecting historic shipwreck sites and associated material as a cultural resources nation: and

promoting the compilation and dissemination of information on Australian shipwrecks.

Shipwrecks are an invaluable source of archeological information which can help us understand Australia's past and are a great recreational attraction for divers. They also have potential for scientific research. Under the program People are welcome to dive on shipwreck sites, where safe, but must not disturb or damage the remains or take anything from them.

### **Blanket Legislation**

As of 1 April, 1993, The Commonwealth Historic Shipwrecks Act (1976) automatically protects all shipwrecks aged 75 years or more in Australian waters ie: waters on the seaward side of the lower water mark and above the continental shelf. More recent wrecks can be protected by an individual declaration by the Minister. Protected Zones can also be declared around shipwrecks which are particularly significant and especially vulnerable.

You are obliged under the Act to:

1. Not disturb a shipwreck site or remove any relic without permit.
2. Not enter a Protected Zone without a permit.
3. Notify the Minister of the remains of any shipwreck you discover.
4. Notify the Minister of any protected relic in your possession, custody or control.

5. Not damage or destroy a historic shipwreck relic, nor dispose of a shipwreck relic without a Permit, and
6. Comply with any other power of the Minister or of an Inspector under the Act.

Under the Act anyone who discovers a shipwreck or is in the possession of a relic from a Protected Historic Shipwreck, is required by law to report it to the Minister within 30 days of the proclamation or within 30 days of the discovery of the shipwreck/relic.

The Act also provides recognition of persons who discover and report shipwrecks.

For further information regarding The National Historical Shipwreck Program contact

Maritime and Historical Archeological Unit

Aboriginal Affairs Victoria

P.O.Box 262

Albert Park

Victoria 3206

Ph No: 03 690 5322



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## MEDIA WATCH

AGE 3/7/93

# A ship's peg may put a hole in Cook's claim to be first

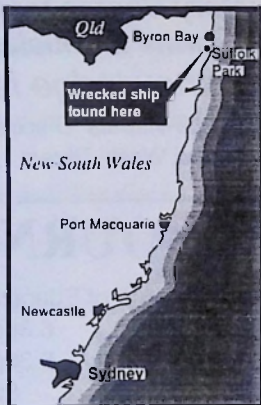
By GERARD RYLE,  
Sydney

A wooden peg tossed to the corner of a shed 30 years ago is threatening to rewrite Australian history — and steal the thunder from Victoria's legendary mabogany ship.

Recent carbon-dating of the peg, which was recovered from a shipwreck near Byron Bay, on the New South Wales north coast, has put it at up to 320 years before Captain James Cook's arrival.

The carbon-dating has provided the strongest evidence so far for what locals believe may have been the first European settlement along the east coast. They say it would confirm the Aboriginal legend of a Portuguese township that perished under a sustained Aboriginal attack.

A Byron Bay historian, Mr Bob Cummins, says he has seen evidence of a stockade built by what were thought to be Portuguese sailors and this may confirm the Aboriginal legend of a township.



(Continued next page)

The peg was one of three given by Mr Cummins to Dr Bill Boyd, a lecturer in geography at the University of New England, who carbon-dated it at between the years 1450 and 1660. He said tests showed it was cut from the branch of a yew, a relatively common European tree.

Though he cautioned that the peg might be much older than the ship on which it was used, he had no doubt that it pointed to a ship that had visited Australia's east coast at least a century before Captain Cook.

"I have seen similar things taken from medieval sites from Europe," he said. "It's enough to convince me to look further."

Ironically the peg came to light only after 28 years of gathering dust at the back

of 61-year-old Lionel Milgate's shed. A veteran sandminer from Byron Bay, he was part of a team that uncovered the wreck while searching for precious metals used in space exploration.

"It (the wreck) appeared after a pile of sand slid down the dune. . . I just manoeuvred the dredge towards a cluster of pegs stuck in rotten wood and pulled them out," he said.

"We had no idea it was significant at the time. We just thought it was another old ship that was getting in the way (of their operation)."

Mr Milgate said he and his team pulled the ship's 4.2-metre, 1.5-tonne rudder off

with a bulldozer and buried the rest of the ship with sand. He said he threw most of about a dozen pegs away before giving the remaining three to Mr Cummins.

Mr Cummins said pieces of the ship were spread out in homes all over the area. "Parts were used for barbecues," he said. "The rudder was lying in the local council yard until 1988.

"Suddenly they decided it was getting in the way so they stripped its copper coating down to pay for Christmas drinks, then burnt the wood."

It is the copper and other metals found on the ship — and photographed by the local paper at the time — that suggest the ship could not have come from the era from which the peg suggests.

Dr Boyd said it was unlikely that a ship from 1450 or even 1660 would have a copper-plated hull and he is keen to excavate the site to look for other evidence.

Dr Kevin Fewster, the director of the National Maritime Museum in Darling Harbor, also urged caution. "There could be many alternative explanations for a single piece of wood," he said.

The other problem is the reported size of the wreck, which was estimated by the sandminers to be between 51 and 75 metres. Dr Fewster said it seemed too large for expedition ships of the 15th and 17th centuries.

Despite the scepticism, Mr Cummins said time and further carbon-dating of the site would prove Aboriginal legend correct.

He said the ship was buried under about 20 metres of sand on a site declared sacred after Aborigines massacred the sailors and sank the ship in revenge for the rape of Aboriginal women.

AGE 8/7/93

# SAS diver died after mock raid

By TIM PEGLER,  
magistrates court reporter

A freak accident during a mock counter-terrorist operation on a Bass Strait oil rig fatally wounded an army diver, the Coroner's Court was told yesterday.

The Special Air Services diver was struck by an assault craft outboard motor when the boat lurched momentarily out of control.

The 33-year old diver suffered head injuries and died in the Sale Hospital soon after.

The deputy state coroner, Mr Iain West, suppressed identities of servicemen involved in the 9 December 1992 operation.

The court was told four teams of six divers were to assault the oil platform. A coxswain said that as his team unloaded, one diver's flipper caught on the gearstick. "I saw the port-side divers go and almost immediately the tiller control was wrenched out of my hand. The boat . . . speeded to port."

He quickly killed the engine. "At this point I was numb," he said. "I knew the boat would have had to cross the path of teams one and two . . ."

The craft's bowman saw a diver in the water with a bloody face and signalled for the nearest boat. He described the incident as a freak accident.

The coxswain said the SAS were using new outboard motors that had not been fitted with propeller guards. Asked by Mr John Langmead, for the Commonwealth, if he would have preferred the older engines with guards, the coxswain said he believed the newer engines were safer.

## MEDIA WATCH

HERALD SUN 11/7/93

### Treasure find

MIAMI: Divers working the remains of a Spanish treasure ship that sank south of Florida's Sebastian Inlet 278 years ago had found diamond and gold jewellery worth an estimated \$US1.5 million (\$A2.2 million), a spokesman for treasure hunter Mel Fisher said yesterday.

## TASMANIAN SUB AQUA GROUP NEWSLETTER MARCH '93

# HISTORIC WRECK OPEN TO DIVERS

VICTORIA'S best preserved and best known shipwreck, the William Salthouse has been re-opened to sport divers for recreational diving.

The wreck which was a 260 ton Barque was inward bound from Quebec when she struck the outer edge of a reef on Point Nepean on the 28th November 1841.

After continuing on into the bay she finally ran onto sand banks between the West and South Channels, where she was abandoned.

The ship drifted off the bank and sunk early the next day.

The wreck, which lies about 5 km off Queenscliffe was closed to divers in 1988 after strong tides made it unstable. Artificial seagrass has been placed on the seabed to slow tidal erosion and stabilise the ship.

**DIVE/SOCIAL CALENDAR**

<b>DATE</b>	<b>EVENT/LOCATION</b>	<b>DIVE CAPTAIN</b>	<b>MEET AT</b>
8 August	New Wreck Dive	Bob Scott 763 6872	Sorrento 9.00am
19 August	General Meeting - North Melbourne Football Club (Meet beforehand for dinner at the club)		8.00pm
22 August	Limestone Caves	Pat Reynolds 789 1092	Rye Boat Ramp 9.30am
3 Sept	"Behind the Play" Carlton Courthouse Theatre 349 Drummond St Carlton See separate notice	John Goulding	274 2213 B 899 3468 H
5 Sept	Spectacular Reef	Alex Talay 967 8492	Rye Boat Ramp 9.30am
16 Sept	Annual General Meeting - North Melbourne Football Club (Meet beforehand for dinner at the club)		8.00pm
19 Sept	Ships Graveyard	Andy Mastrowicz 318 3986	Rye Boat Ramp 9.30am
3 Oct	Abyss/Heroes Cave	Bob Scott 763 6872	Rye Boat Ramp 9.30am
17 Oct	George Kennode	Sant Khan 817 3214	Flinders Boat Ramp 9.30am

***DIVE/SOCIAL CALENDAR CONT:***

<b>DATE</b>	<b>EVENT/LOCATION</b>	<b>DIVE CAPTAIN</b>	<b>MEET AT</b>
21 Oct	General Meeting - North Melbourne Football Club (Meet beforehand for dinner at the club)		8.00pm
30 Oct-2 Nov	Tidal River (Melbourne Cup) Wilsons Prom.	Pat Reynolds 789 1092	
14 Nov	Treasure Hunt	J. Lawler 569 9851 018 395 428	Rye/Sorrento 9.30am
18 Nov	General Meeting - North Melbourne Football club (Meet beforehand for dinner at the club)		8.00pm
21 Nov	VSAG Annual Tennis Party and Mile Handicap Race Cranbourne South Tennis Club Details to be advised	Tony Tipping	
28 Nov	Flinders	Doug Catherall 888 7774	Flinders Boat Ramp 9.30am
12 Dec	Sorrento	Don Abell	Sorrento Boat Ramp 9.00am
16 Dec	General Meeting - North Melbourne Football Club (Meet beforehand for dinner at the club)		8.00pm
19 Dec	Flinders/Cape Schank	C. Brincat 876 3395	Flinders Boat Ramp 9.30am
Xmas New Year Trip-	Marlo M. Jeacle	059 712786	



## TIDE TABLES

PORT PHILLIP HEADS		PORT PHILLIP HEADS		PORT PHILLIP HEADS		PORT PHILLIP HEADS		PORT PHILLIP HEADS	
LAT 36° 18' S		LONG 144° 37' E		TIME ZONE - 1000		TIDAL STREAM CHANGE		START OF	
TIMES AND HEIGHTS OF HIGH AND LOW WATERS		SEPTEMBER - 1993		SEPTEMBER - 1993		SEPTEMBER 1993		START OF	
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4 0152 1.36	0708 1.22	20 0836 0.57	28 0943 1.19	7 TU	1230	0840	0227	0833	
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5 0229 1.40	0041 0.29	0329 1.64	0343 0.52	9 TH	1337	1945	0409	1018	
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			30 0453 0.52	11 SA	1449	2056	1835	1227	
6 0303 1.42	0141 0.34	22 0417 1.59	30 0453 0.52		0330	0944	0606	1227	
0648 0.41	TU 0917 1.18	WE 0837 0.42	TH 1730 0.48	12 SU	1534	2143	0711	0051	
MO 1505 1.41	TU 1425 0.66	WE 1600 0.46			0944	2143	1947	1334	
2111 0.25	2111 1.14	2207 0.07		13 MO	0425	1042	0711	0159	
7 0336 1.42	0255 0.37	0508 1.52			1652	2245	0812	1430	
0622 0.43	15 1024 1.22	1021 0.46		14 TU	0529	1151	2047		
TU 1537 1.40	WE 1543 0.59	TH 1644 1.42			1748	0003			
2143 0.23	WE 2238 1.21	2253 0.14		15 WE	0640	0003			
					0748	0125			
8 0411 1.40	0413 0.39	0600 1.43		16 TH	0850	0936			
0957 0.47	11 1123 1.28	1105 0.50			2124	1409			
WE 1610 1.36	TH 1654 0.47	FR 1730 1.34		17 FR					
2215 0.23	2249 1.33	2339 0.23							

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## TIDE TABLES

## PORT PHILLIP HEADS

LAT 38°18' S LONG 144°37' E TIME ZONE -1000  
TIMES AND HEIGHTS OF HIGH AND LOW WATERS

PORT PHILLIP HEADS  
TIDAL STREAM CHANGE  
OCTOBER 1993

## OCTOBER - 1993

Time m	Time m	Time m	Time m	Time m
1 0004 1.25	0502 1.36	17 0038 1.54	0712 1.28	
0651 0.50	1041 0.51	17 0605 0.49	25 1225 0.52	
FR 1213 1.25	SA 1654 1.23	SU 1232 1.38	MO 1912 1.14	
1816 0.39	2243 0.22	1824 0.08		
2 0052 1.33	0545 1.31	10132 1.64	26 0045 0.48	
0638 0.48	10116 0.53	18 0659 0.46	26 0801 1.22	
SA 1251 1.28	SU 1736 1.19	MO 1321 1.44	TU 1325 0.54	
1855 0.31	2322 0.26	1917 0.01	TU 2027 1.11	
3 0131 1.39	0832 1.25	19 0223 1.68	0145 0.57	
0716 0.46	11159 0.55	TU 0747 0.44	27 0852 1.18	
SU 1325 1.31	MO 1829 1.15	TU 1408 1.47	WE 1435 0.53	
1930 0.25		2008 -0.01	2137 1.12	
4 0206 1.44	0011 0.32	0312 1.67	28 0258 0.63	
0751 0.45	12 0729 1.21	20 0834 0.42	28 0944 1.16	
MO 1359 1.34	TU 1251 0.55	WE 1454 1.47	TH 1548 0.48	
2004 0.20	TU 1835 1.13	2057 0.02	TH 2243 1.18	
5 0239 1.47	0111 0.40	0359 1.62	0412 0.65	
0825 0.44	13 0834 1.19	21 0919 0.42	29 1034 1.16	
TU 1433 1.36	WE 1358 0.52	TH 1539 1.43	FR 1647 0.41	
2038 0.18	2104 1.16	2144 0.09	2341 1.28	
6 0313 1.47	0226 0.48	22 0446 1.54	30 0519 0.63	
0906 0.44	14 0842 1.20	22 1004 0.44	30 1123 1.18	
WE 1308 1.33	TH 1515 0.44	FR 1623 1.37	SA 1737 0.34	
2110 0.18	2229 0.26	2229 0.17		
7 0347 1.45	0347 0.52	0534 1.45	0628 1.34	
0933 0.45	15 1044 1.25	23 1049 0.46	31 1010 0.60	
TH 1543 1.31	FR 1626 0.32	SA 1713 1.29	SU 1206 1.21	
2141 0.18	2338 1.40	2313 0.28	2313 0.28	
8 0424 1.41	0502 0.52	0623 1.36		
1007 0.48	16 1140 1.31	24 1135 0.49		
FR 1617 1.27	SA 1729 0.19	SU 1806 1.21		
2210 0.20		2357 0.38		

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ADD 1 HOUR TO TIMES SHOWN FOR OFFICIAL "SUMMER TIME"

	START OF			START OF			START OF			START OF	
	FLOOD	EBB		FLOOD	EBB		FLOOD	EBB			
1	FR	0902 2134	18	MO	0258 1515	1910 2250	19	TU	0958 2340	2014 2708	1910 2250
2	SA	0945 2213	20	WE	0346 1585	1058 2340	20	WE	0424 1628	1144 1796	0958 2340
3	SU	1021 2248	21	TH	0459 1702	1144 1796	21	TH	0528 1829	1248 1842	0424 1628
4	MO	1055 2322	22	FR	0532 1736	1144 1796	22	FR	0615 1815	1248 1842	0528 1829
5	TU	1129 2355	23	SA	0607 1809	1248 1842	23	SA	0620 1806	1248 1842	0615 1815
6	WE	1204	24	SU	0640 1842	1248 1842	24	SU	0648 1856	1248 1842	0620 1806
7	TH	0928 1238	25	MO	0716 1914	1248 1842	25	MO	0735 1949	1248 1842	0648 1856
8	FR	1312	26	TU	0752 1948	1248 1842	26	TU	0823 2029	1248 1842	0735 1949
9	SA	0136 1348	27	WE	0881 2029	1248 1842	27	WE	0916 2120	1248 1842	0823 2029
10	SU	0214 1426	28	TH	0916 2120	1248 1842	28	TH	0920 2145	1248 1842	0916 2029
11	MO	0257 1514	29	FR	0916 2120	1248 1842	29	FR	0920 2145	1248 1842	0920 2145
12	TU	0350 1613	30	SA	1010 2223	1248 1842	30	SA	1021 2303	1248 1842	0350 1613
13	WE	0459 1731	31	SU	1116 2345	1248 1842	31	SU	1129 2443	1248 1842	0459 1731
14	TH	0804 1852			1229				1018 1335		0804 1852
15	FR	0715 2002			0715 1335				0921 2104		0715 2002
16	SA	0821 2104			0921 2104				0322 1528		0821 2104
17	SU	0919 2158			0919 2158						0919 2158

ADD 1 HOUR TO TIMES SHOWN FOR OFFICIAL "SUMMER TIME"





1



2



3



4



5



6