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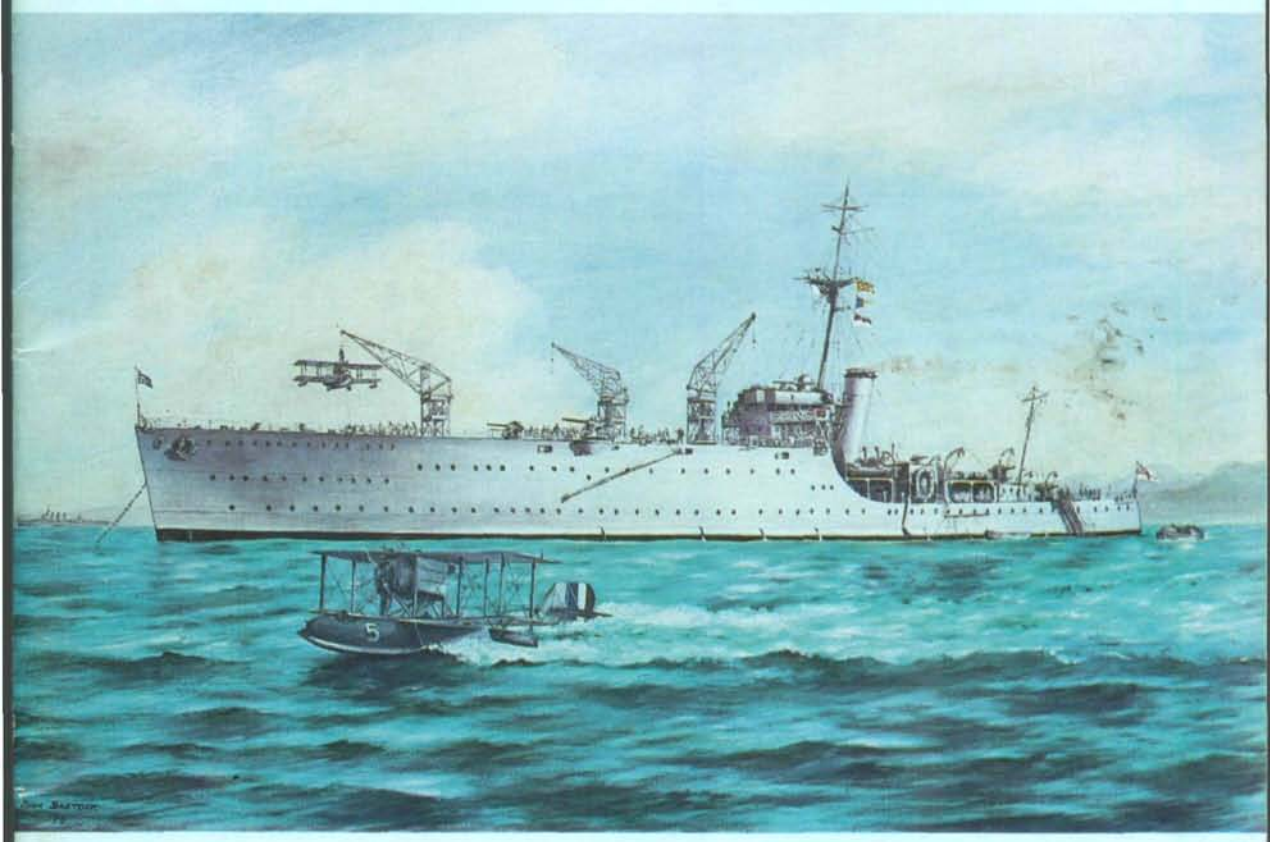
(INCORPORATED IN THE ACT)



AUSTRALIAN NAVAL INSTITUTE INC

1. The Australian Naval Institute Inc is incorporated in the Australian Capital Territory. The main objects of the Institute are:
   a. to encourage and promote the advancement of knowledge related to the Navy and the maritime profession,
   b. to provide a forum for the exchange of ideas concerning subjects related to the Navy and the maritime profession, and
   c. to publish a journal.
2. The Institute is self supporting and non-profit making. The aim is to encourage discussion, dissemination of information, comment and opinion and the advancement of professional knowledge concerning naval and maritime matters.
3. Membership of the Institute is open to —
   a. Regular Members — Members of the Permanent Naval Forces of Australia.
   b. Associate Members — (1) Members of the Reserve Naval Forces of Australia.
      (2) Members of the Australian Military Forces and the Royal Australian Air Force both permanent and reserve.
      (3) Ex-members of the Australian Defence Force, both permanent and reserve components, provided that they have been honourably discharged from that Force.
      (4) Other persons having and professing a special interest in naval and maritime affairs.
   c. Honorary Members — Persons who have made distinguished contributions to the naval or maritime profession or who have rendered distinguished service to the Institute may be elected by the Council to Honorary Membership.
4. Joining fee for Regular and Associate members is $5. Annual subscription for both is $20.
5. Inquiries and application for membership should be directed to:

   The Secretary,
   Australian Naval Institute Inc,
   PO Box 80
   CAMPBELL ACT 2601

CONTRIBUTIONS

In order to achieve the stated aims of the Institute, all readers, both members and non-members, are encouraged to submit articles for publication. Preferably, submissions should be typed, double spaced, on A4 paper; the author's name and address must be shown clearly, even if a pseudonym is required for printing purposes; to be eligible for prizes, original articles must be accompanied by statements that they have been written expressly for the ANI; and short biographies will be welcomed. The Editor reserves the right to reject or amend articles for publication.

DISCLAIMER

Views expressed in this journal are those of the authors, and not necessarily those of the Department of Defence, the Chief of Naval Staff or the Institute.

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Cover: HMAS Albatross — a photograph of a painting by John Bastock (page 55)

FROM THE EDITOR

This edition of the Journal sees a change of editor. I would like to think that without this advice you would not have noticed for this would demonstrate success in my endeavour to maintain the excellent standard set by Geoff Cutts. Geoff is retiring from the Service to confront new challenges-in the field of adult education and in Queensland. Tribute to his contribution to the Institute is paid elsewhere in the Journal by longer-serving Councillors than me; however, I welcome this opportunity to add my tribute — given added sincerity by my recent insight into the complexity of his editorial role — and best wishes for his next career.

The theme for this edition is maritime history. That interest in the area is wide may be gauged by the surfeit of contributions — in fact on this count I am almost grateful for the mail disruption which delayed some copy beyond the deadline thus easing the selection process and providing a basis for the next edition. I trust though that reporting this situation will not breed complacency within regular contributors nor discourage the uninitiated. A reasonable assumption is that membership indicates committment to the Institute's aims. These demand the expression of the membership's views on maritime and related matters to broaden and stimulate development of the profession and its individuals.

The coverage is broad. It ranges chronologically from the early 17th Century, through colonization, Federation and to the present RAN Fleet; geographically from Scandinavia, through Tudor England and Reagan USA to Australia; and in focus from ships through their salvage and the people who operate them, to those who care for the people.

Special attention is drawn to the Institute Reports published in this edition. The Treasurer's Report and audited accounts are printed for your information. The President's Report reviews the year's activities. It also discusses Council's intention to review the rules pertaining to membership of the Institute. Your consideration of this fundamental question, in the light of the President's comments and the separate amplifying statement on membership provisions, and response to the Council is sought.

The next edition will have no specific theme so offers scope for all to express their views, doubts, observations and ideas. The deadline for copy is 20 January 1986, a date chosen to allow New Year resolutions to become a contributor, to be implemented. Contributions are acceptable in any format; new contributors are encouraged to use articles published in this edition as a guide if necessary. Inclusion of a short biography is appreciated. Your early advice of intention to contribute too is welcome since this allows the edition to be shaped progressively up to the printing deadline. Note that this edition lacks a Correspondence column. This is not an oversight — no-one wrote to me. Please, if your are constrained against (or not noved towards) contributing an article or piece, then participate in affairs through the 'letters' column.

John Hyman
(062—67 6656)

1984–85 — PRESIDENT'S REPORT

The 10th anniversary year of the Australian Naval Institute, has been one of progress and consolidation.

The Journal continues to be the essence of the Institute. It has maintained its high standard and the number and quality of contributors have been impressive. I particularly enjoyed the contribution from our younger members in the 10th Anniversary issue and echo the editor's sentiments that more such people will begin to write to him.

Membership of the Institute has remained about the same with 600 individual members, 74 Defence subscribers and 54 non-defence subscribers. New members balanced out the unfinancial individuals who have been struck from the membership list. Once again considerable administrative effort has been expended chasing overdue subscriptions.

The financial status of the Institute continues to be satisfactory with a modest increase in our net worth to about $24,000. The Treasurer's statement follows my report.

During the year there has been a marked improvement in the level of Chapter activity outside Canberra as well as positive developments towards establishing a sound pattern of liaison between Chapters and Council.

At the beginning of the year there were four active Chapters: Canberra, Sydney, Melbourne and Perth. Since then the Council has approved formation of Chapters in Brisbane and Hobart and consideration is being given to establishing Chapters in Adelaide, Cairns, Darwin and the Nowra area.

The basic objectives of the ANI can only be met if Chapters are active and strong and able to focus the attention of their community on maritime matters. I regard the expansion of the number of Chapters as heartening therefore. However, Chapters also need to increase the number of active supporters if they are to grow in strength and I hope the successes we have had during the past year, and other proposals I will make later, will provide the stimulus for this to happen.

Distinguished speakers to Chapters during the year included Admiral Thomas B. Hayward USN (Retd), a former Chief of Naval Operations. Admiral Hayward's successful visit to Australia was sponsored by the Navy League of Australia in conjunction with the ANI. His address to the Canberra Chapter was published in the August Journal.

For the future I look forward to a period of invigorating Chapter activity. In 1986, the 75th Anniversary of the RAN, I hope that all Chapters will sponsor speakers in support of the Navy's celebrations.

An outline plan for Seapower 87 has been endorsed by the outgoing Council recommending that the next seminar be held in Canberra in September or October 1987 with the theme 'Australia — A Maritime Nation'. Active consideration was given to other venues but for a variety of reasons it was determined that it would not be practical to hold the next seminar outside Canberra. Planning for Seapower 87 will be an important activity in the coming year.

During the year ANI Silver Medals were presented to Ms Elizabeth Cowan and Lieutenant Commander M.J. Taylor, students at the RAN Staff College. Their winning essays have been published in the Journal.

In August your Council made an important decision to invest more than $3000 in computing equipment capable of running the ANI Management System developed by Commander Cutts. At the same time as procuring the equipment and the software we have charged a councillor with responsibility for custody and operation of the system.

In my last report I identified the key objective: 'In the light of 10 years' association, examine whether any significant changes should be made to the ANI to further its aims'.

The fundamental issue is whether 'Regular Membership' should be extended to include members other than full time members of the Permanent Naval Forces. Whilst the Institute may be continuing to meet its objectives it must be recognised that its influence beyond the small dedicated membership is very limited and that we cannot expect more than a modest increase in numbers (and thus Chapter size) under the present membership rules.

The basis for Regular and Associate Membership has been under discussion for some years. There are sound reasons for maintaining the status quo and also good arguments for amending the Consitution to widen the Regular Membership.

Proposals to change the Constitution were detailed by the President in his 1981 Report and narrowly defeated at a Special General Meeting held in February 1982.

Since that time the debate has continued and I believe that it is necessary for us to consider again the question of extension of Regular Membership to other than PNF personnel. Therefore I attach to this report a statement which reviews the existing membership rules and the options for

change. A summary of the case for and against change to the Constitution is included together with a timetable, agreed by the Council, foreshadowing a Special General Meeting in April, 1986. This meeting will consider any proposed changes to the Constitution arising from the review process.

You will note that we are actively seeking the views of members on this issue, especially of those who will be unable to be present at the Special General Meeting. I hope that there will be a good response-in writing please before the deadline of 15 January, 1986.

Before concluding I wish to record my appreciation for a job well done by all councillors. It is often a thankless task and their job has been complicated by the larger than usual number of postings during the year. I would like to single out Commander Geoff Cutts for special recognition. A founder member and consistent supporter he has made an unequalled contribution during recent years as Journal Editor and to the administrative efficiency of the Institute. We wish him well in retirement and hope that he will continue to be a regular contributor to the journal.

In addition to the special edition of the Journal, the 10th Anniversary was appropriately recognized by a dinner attended by many distinguished Regular and Associate Members. The record of the Australian Naval Institute during its first ten years has been impressive. I am confident that with the active support of its membership the Australian Naval Institute will continue to prosper and to make an important contribution to informed consideration of maritime affairs.

REVIEW OF MEMBERSHIP PROVISIONS

(A Statement Amplifying the President's Report: For Consideration by Members)

The ANI Constitution requires that Regular Members be members of the Permanent Naval Forces of Australia. Members of the RAN Reserve, other Services and their Reserves, former members of these, and other persons having and professing a special interest in naval and maritime affairs are entitled to Associate Membership. The distinction between Regular and Associate Members is that only the former can hold office or vote at a General Meeting.

The basic objective of the Institute is to encourage and promote the advancement of knowledge related to the Navy and the maritime profession.

It is arguable that present and ex members of the Permanent and Reserve Naval Forces should be entitled to full membership of an institute intending to promote the Navy. It might also be argued that others, who support the objectives of the Institute, should be entitled to full membership.

Others would argue, however, that the founders of the ANI, when drafting the Constitution, intended the membership rules to ensure currency of association with the contemporary Navy. They would argue that this decision remains valid today.

A change to the membership rules was considered at a Special General Meeting in February 1982 and rejected. It is understood by the Council, however, that there may be significant concern over the matter still and it may be appropriate that it be considered again. Accordingly, the Council wishes to seek the views of both Regular and Associate Members so that they can decide on the need for a Special General Meeting to consider a change to the membership provisions of the Consitution.

It is assumed that no changes are favoured for the rules covering Honorary Membership. There are however four options for the rules covering Regular and Associate Membership. These are that:

a. the present rules remain unchanged;
b. there be only one form of membership for those persons having and professing a special interest in naval and maritime affairs and willing to support the aims of the ANI, irrespective of profession or occupation;
c. Regular Membership be extended to all members of the Permanent Naval Forces, the Australian Naval Reserve, officers and instructors of the Naval Reserve Cadets and former members of these forces;
   or
d. Regular Membership be extended more widely, but short of that at either b or c above.

The opinions of Regular, Associate and Honorary Members are requested in writing to the Secretary by 15 January 1986.

If your responses indicate support for change, the Council will call a Special General Meeting for April 1986. In the event of little or no support there will be no meeting. Advice of the Council's decision and a summary of arguments for and against proposed changes, if any, will be included in the February issue of the Journal.

FROM THE TREASURER

The annual audit was carried out by Paul Reis and his report and supporting statements are published in this journal. Once again our operating costs exceeded the income generated by subscriptions, and the source of our overall profit was the interest earned on our accumulated funds. The increased subscription rate should reverse this trend and if we contain our overheads, it should be several years before another increase is required. Further on this matter, at the time of printing one third of members have not yet renewed subscriptions. Prompt payment of dues is essential to allow orderly operation by the Institute.

The debts written off this year include one from a bankrupt advertiser which has been outstanding for several years. Others include bank fees and agents' commissions. We begin this financial year carrying forward only those debts outstanding from advertising in the May and August Journals. A major disappointment was the extremely low income generated by advertising in the August Journal. As a result, several colour photographs had to be deleted from that edition.

A bonus for the year was the income generated by *Seapower 84* sales; we were able to absorb some residual costs and still show a profit. A further bonus has been the generous donations to the library, including cash for a specific book. The Council has endorsed a buying programme to improve the library but perhaps some members have books on maritime matters gathering dust, which they may care to donate.

The decision to purchase our own computer carries with it a continuous ownership cost which will be justified by using it to reduce our administration costs, particularly when running a Seapower seminar. However, its best justification will be the provision of a service to Chapters and members and of course administering the increasing numbers generated by your recruiting efforts.

Peter Coulson

CHAPTER NEWS

New Chapters

Chapters have been formed in Brisbane and Hobart. Convenors are as follows:
- Brisbane Chapter — Commander R.D. Poulton RANR, telephone (07) 393 1199.
- Hobart Chapter — Commander W.T. Gascoyne RANEM, telephone (002) 21 2336.

Detailed investigation is under way to establish the feasibility of forming Chapters in Adelaide and Cairns.

Melbourne Chapter Report

The Annual General Meeting was held on 26 August 1985. Office-bearers elected were:
- Convenor — Mr Lloyd Saltmarsh
- Treasurer — Captain John Noble
- Secretary — Commander Neville Daniel (telephone (03) 857 9020)

The Chapter will be meeting every quarter, with a guest speaker on an informal basis.

Paul Reis *A.A.S.A. F.T.I.A.*

CERTIFIED PRACTISING ACCOUNTANT

Correspondence to
P.O. BOX 20
MAWSON A.C.T. 2607

Telephone
(062) 811566

ROOM 207
2ND FLOOR
MLC TOWER
PHILLIP A.C.T.

4th November, 1985

The President,
The Australian Naval Institute Inc.,
P. O. Box 18,
DEAKIN. A.C.T. 2600

Dear Sir,

Please find attached various Operating Accounts and Income & Expenditure Account, and Balance Sheet of the Institute which relate to the twelve months ended 30th September 1985.

In my opinion the attached accounts are properly drawn up so as to give a true and fair view of the state of affairs of the Institute.

The rules relating to the administration of the funds of the Institute have been observed.

All information required by me has been obtained.

Yours faithfully

P. O. REIS

AUSTRALIAN NAVAL INSTITUTE INC

BALANCE SHEETS
FOR THE 12 MONTHS ENDING - 30 SEPTEMBER 1985

ACCUMULATED FUNDS	1985	1984
Balance at 1 October	22452.97	20133.39
ADD Surplus for year	2050.40	2319.58
Balance at 30 September	24503.37	22452.97
Provision for		
Replacement Medals	200.00	600.00
Legal Fees	300.00	200.00
LIABILITIES		
Subs in advance:		
1985	0.00	5550.00
1986	5800.00	120.00
1987	120.00	30.00
1988	60.00	15.00
1989	40.00	15.00
Sundry Creditors	0.00	0.00
	31023.37	28982.97

REPRESENTED BY

ASSETS	1985	1984
Sundry Debtors	1711.00	6261.00
Commonwealth Bonds	6000.00	6000.00
Cheque account	123.28	257.55
Defence Credit Union	18678.98	14465.59
Stock on hand:		
Insignia	1359.11	1955.40
Medals	450.00	42.43
Medal Die	1.00	1.00
Computer	2700.00	0
	31023.37	28982.97

FOR THE 12 MONTHS ENDING 30 SEPTEMBER 1985

INCOME AND EXPENDITURE ACCOUNT

EXPENDITURE	1985	1984
Journal Operating Costs	6333.98	5983.87
Postage	123.90	101.90
Audit Fees	210.00	160.00
Company Fees	10.00	4.00
Donation to Legacy	100.00	100.00
Advertising	0.00	94.12
Stationery	773.47	561.20
Library Additions	41.85	83.89
Bank Charges	3.85	59.37
Presentation Medals	92.43	84.86
Chapter Support	952.49	250.00
Provision for Replacement Medals	100.00	0.00
Provision for Legal Fees	100.00	100.00
Office Services	375.12	429.33
Computer Service	1290.50	475.00
Write off bad debts	333.42	103.00
Adjust stock value	0.00	281.39
	10841.01	8871.93
Surplus Transferred to to Accumulated Funds	2050.40	2319.58
	12891.41	11191.51

INCOME	1985	1984
Insignia Trading	121.91	107.50
Seapower 84	154.40	64.43
Joining Fees	235.00	340.00
Subscriptions	9165.00	8340.67
Interest	2715.10	2338.91
Medal provision transfer	500.00	0.00
	12891.41	11191.51

FOR THE 12 MONTHS ENDING 30 SEPTEMBER 1985

JOURNAL OPERATING ACCOUNT

EXPENDITURE	1985	1984	INCOME	1985	1984
Printing Nov	4066.00	4456.00	Advertising:		
Printing Feb	3925.00	3850.00	Nov	2790.37	2025.00
Printing May	4237.00	3850.00	Feb	2430.20	2880.00
Printing Aug	3535.00	4504.00	May	2431.00	2835.00
Envelopes	0.00	342.40	Aug	1697.83	2785.00
Postage	732.90	677.27	Sales	35.50	435.48
Prizes	350.00	354.68	Subscriptions	1227.02	1345.38
Editorial			(non-members)		
expenses	100.00	149.98	Net Operating		
Agent/Bank			Cost Transfer		
commission	0.00	105.40	to Inc&Exp A/c	6333.98	5983.87
	16945.90	18289.73		16945.90	18289.73

INSIGNIA OPERATING ACCOUNT

Stock on hand 01 Oct	1955.40	202.45	Sales	733.50	887.90
Purchases	0.00	2651.54	Speaker gifts	26.00	116.25
Postage	41.30	33.55	Binders for library	0.00	35.49
Profit transfer to Inc&exp A/c	121.91	107.50	Stock on hand 30 Sep	1359.11	1955.40
	2118.61	2995.04		2118.61	2995.04

MEDAL OPERATING ACCOUNT

Stock on hand 01 Oct	42.43	127.29	Presentations	92.43	84.86
Purchases	500.00	0.00	Stock on hand 30 Sep	450.00	42.43
	542.43	127.29		542.43	127.29

SEAPOWER LINK ACCOUNT

Expenditure			Income		
1983 Advance	0.00	1000.00	Advance/repay	0.00	1000.00
Proceedings	137.50	6588.05	Advertising	0.00	6765.00
Distribution	0.00	186.43	Sales/P'dings	475.50	92.00
Report	0.00	47.00	Insignia	0.00	116.25
Speakers' gifts	183.60	116.25	Seminar	0.00	223.91
Hon memberships	0.00	195.00	(Surplus transferred)		
Profit transfer to Inc&Exp A/c	154.40	154.40			
	475.50	8197.16		475.50	8197.16

Royal Swedish Navy has taken delivery of Hugin-class patrol boat no.14 in a series of 16.
Length: 36.4 m. Displacement: 150 tons. Speed: 30+ knots.
Complement: 18.

SCANFIRE

- Bofors all purpose gun 57 mm/ L 70.
- Kongsberg SSM Penguin Mk 2.
- Philips combat & weapon control system 9LV 200.

This powerful weapon package is proposed for the R.A.N. Freemantle class FPB.

PHILIPS ELEKTRONIKINDUSTRIER AB
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PHILIPS

WARSHIPS FOR THE ROYAL AUSTRALIAN NAVY 1945–85

by Rear Admiral William J Rourke AO MEc CEng FRINA FIEAust RAN

Summary

This is an account of the acquisition of warships for the Royal Australian Navy in the forty years since World War II. It describes the main overseas and Australian programmes of the period, with particular emphasis on the choices made between offshore purchase or local construction. Current capability for design and construction of warships is described, and prospects for the next decade are assessed. Many people have helped prepare this paper. I would particularly like to thank Mr J Mortimer, Mr F Shadbolt, Director of Naval Ship Production, and Mr B Robson, Director of Ship Design, for their substantial assistance. I have also drawn on a paper by Rear Admiral M P Reid entitled 'Fifty Years of Naval Engineering 1925–1975'. The paper is presented by permission of the Chief of Naval Staff, Vice Admiral D W Leach, AC, CBE, LVO, RAN. The views expressed are not necessarily those of the Royal Australian Navy or the Department of Defence, but are the responsibility of the author.

Introduction

Australian governments since Federation have lent some measure of support to naval shipbuilding as a necessary part of defence industrial capacity. However, the shipbuilding capacity built up in times of need has lapsed in periods of low demand. In the last decade, this capacity has been built up again and it is now to be determined whether or not it can be successfully maintained, or will lapse again into another period of disuse. Much will depend upon the standards of execution of current programmes.

The Australian Commonwealth Naval Board was established in 1905, and in 1908 the Australian Government passed the Coast Defence Appropriation Act for the acquisition, among other things, of two torpedo boat destroyers. In March 1909, the Minister for Defence authorised the purchase of three TB destroyers, and after the Imperial Conference this was extended to a larger programme. A battle cruiser, two cruisers, two destroyers and two submarines were built in Britain. a third destroyer *Warrego* was built in Britain and knocked down for reassembly at Cockatoo Island dockyard. Three more destroyers *Huon*, *Torrens* and *Swan* and the cruiser *Brisbane*, with the greater part of their engines, were built at Cockatoo between 1913 and 1916.

A further cruiser, *Adelaide*, was commenced at Cockatoo during the war and completed in the 1920s. At the end of World War I, in 1919, the destroyer leader *Anzac* and five S class destroyers, six J class submarines and three sloops were transferred to the RAN. A further sloop was transferred in 1925.

In the early twenties, it was decided two more cruisers were needed, and there was extensive debate on the merits of local construction. As local construction costs were assessed at about 50% above British costs, it was decided to spend the funds available on two British built cruisers, *Australia* and *Canberra*, and a Cockatoo-built seaplane carrier *Albatross*. Two submarines, *Oxley* and *Otway*, were approved for acquisition in 1924. During the thirties, a policy of some imports and some local building continued. Four V and W class destroyers, the destroyer leader *Stuart* and the light cruisers *Sydney*, *Hobart* and *Perth* were acquired from the United Kingdom, and the sloops *Yarra* and *Swan* were built at Cockatoo.

The Author

Rear Admiral Bill Rourke joined the Royal Australian Navy as a cadet midshipman in January 1942. After brief service at Flinders Naval Depot and in HM Ships *QUEEN ELIZABETH* and *HOWE*, he joined the Royal Naval Engineering College in Plymouth in 1946. On return to Australia, he joined *HMAS SYDNEY*, and served in that ship in the Korean War, being mentioned in despatches. He has had post graduate engineering training in nuclear engineering and was involved as a project engineer with Yarrow-Admiralty Research Department in Glasgow. He has been closely associated with ship construction through his career and spent some years in the United States as project officer for the guided missile destroyers *PERTH*, *HOBART* and *BRISBANE*. He served as Military Adviser to the Chief Defence Scientist from 1969 to 1971 and later, after a year at the Royal College of Defence Studies, was posted as Defence Scientific and Technical Representative, London. He returned to Australia in 1976 and was promoted Commodore to take up the post of General Manager, Garden Island Dockyard. In March 1979 he was promoted Rear Admiral and appointed Chief of Naval Material, in which position he served until his retirement in 1985.

At the outset of WW II, two more ships *Parramatta* and *Warrego* had been laid down at Cockatoo and orders were placed for two destroyers *Arunta* and *Warramunga*, with a third, *Bataan*, ordered in 1942. In 1938, the Naval Staff had decided to proceed with the design of a corvette for anti-submarine and minesweeping duties for use in the approaches to our ports. A total of 60 Bathurst class corvettes were built in Australia during the war, 36 for the RAN, 20 for the Admiralty and four for the Royal Indian Navy. Twelve River class frigates were built, two of them at Williamstown, taken over by the Commonwealth in 1942 and remaining a naval shipbuilding yard since. Four boom defence vessels *Kookaburra*, *Koala*, *Kangaroo* and *Karangi*, were built at Cockatoo.

During the war, the cruiser *Shropshire* was transferred to replace *Canberra*, lost in action, and two Q class and five N class destroyers of the Royal Navy were Australian manned. After the war, five Q class destroyers were transferred to the RAN.

Early Post War 1945–60

In January 1944, the Australian War Cabinet appointed a committee to review the Australian shipping and shipbuilding industries and to recommend plans for their peacetime development. In August 1945, the Prime Minister, Mr Chifley, announced government decisions that 'the maintenance of a peacetime merchant shipbuilding industry is essential for defence purposes' and 'a planned naval production programme, an essential accompaniment to a planned merchant programme will be entered upon . . . to ensure stability to the industry as a whole'[1]

In January 1946, Mr Chifley expressed the Government's concern at the high cost of Australian shipbuilding, about double the cost per ton of work on the Clyde.[2] Nevertheless, on 26 March 1946, the Prime Minister announced that the Government had approved in principle the building of four additional destroyers (two each at Cockatoo Island NSW and at Williamstown, Victoria), when the two destroyers of British design then being built (*Tobruk* and *Anzac*) had sufficiently progressed, so as to avoid the dispersal of the skilled staff and other personnel. Funds were made available to enable new methods of pre-fabricated welding construction to be undertaken.[3]

At the beginning of World War II, most material and equipment for ships was imported from Britain, but by 1946 about seventy per cent was being made in Australia.[4] It was decided that this development should be continued and extended in the new destroyer programme for the Daring class. These were the first British post war destroyer design, modified slightly for Australian service. They were the first all-welded naval vessels built in Australia. The hull was largely built of 'DW' quality steel requiring preheating to 100°C. Aluminium alloy plate was used extensively in the superstructure, connected to the steel hull using aluminium alloy rivets with a barium chromate paste between the mating surfaces. Significant maintenance problems were experienced. Steam conditions were 650 psi 850°F, in line with USN practice, and they were AC ships operating at 440 volts 60 cycles. Boilers, turbines (including rotor forgings), gearing, and major items of auxiliary machinery were all built in Australia. Although the number of ships built was later reduced from four to three, as an economy measure, the Daring construction programme of *Voyager*, *Vendetta* and *Vampire* was a successful one, with new engineering capabilities established.

In 1946, discussions had been initiated with the Admiralty on the formation of a Fleet Air Arm, and it was agreed that two Majestic class carriers laid down during the war would be completed and transferred to the RAN. The decision was announced in Parliament on 3 June 1947 and *Sydney* commissioned in Devonport in December 1948. The British carrier *Vengeance* was lent to the RAN from 1952 until 1955. *Melbourne* commissioned in Barrow in October 1955 and incorporated such innovations as the steam catapult, mirror landing sight and angled deck. A substantial modernisation was carried out by Garden Island Dockyard in 1968.

While the Darings were building in the early fifties, *Arunta* and *Warramunga* were modernised, and four British built 'Q' class destroyers were converted to Type 15 AS frigates between 1950 and 1957. This involved a considerable redesign effort, with extensive use of aluminium superstructure to reduce topweight. This was our first substantial experience of aluminium steel interface problems.

In August 1950, just after the Darings had been laid down, the government announced that six new anti-submarine frigates of the River class would be built, three at Cockatoo and three at Williamstown. The programme was subsequently cut back to four ships with the final two not authorised again until the early sixties. The design of the Australian River class was similar to that of the British Type 12 Whitby class. Propulsion plant employed steam plant with double reduction geared turbines. Seacat anti-aircraft guided missiles were installed and *Stuart* received the first installation of the Australian designed and developed Ikara anti-submarine missile in 1963. For the first four ships, boilers,

TB Destroyer HMAS Yarra *Photo courtesy J. Mortimer*

turbines and auxiliary machinery were all locally made. The 4.5 turrets were manufactured in Bendigo.

It will be recalled that the announcement of six frigates in August 1950, making ten destroyers on order in Australia at the one time, came soon after the outset of the Korean War in which so many ships and men of the RAN served with distinction. The order book was cut back to three Darings and four Rivers in 1954. The boom defence vessel *Kimbla* was built by Walkers.

1960–75

During the late sixties, the hydrographic ship *Moresby* was built at the State Dockyard, Newcastle. This was the first post-war naval vessel designed in Australia.

There was increasing military activity in South East Asia. The three Daring class were in commission and the four Rivers nearing completion. Further orders were necessary, and it was decided in January 1962 to order two Adams class guided missile destroyers from the United States. Despite strong criticism by the Labor Opposition, the Menzies Government went ahead, arguing that the construction of these vessels was beyond the skills and experience of Australian shipyards. The shipbuilders did not agree.[5] The government's decision led to a contract in January 1962 with the Defoe Shipbuilding Company, Michigan, for the ships *Perth* and *Hobart*, with an order for a third ship *Brisbane* placed in January 1963; the first two ships commissioned in 1965, and *Brisbane* in 1967.

The Australian DDGs followed the USN — Gibbs and Cox design except for modificiation of accommodation and the installation of the Ikara missile system. The earlier USN ships were built of HY80 steel, although the hull design was based on HT steel, and the RAN ships were built of this material. They introduced a new era of weapons, weapons control, and propulsion technology to the RAN with the Tartar missile system, 3D electronic scanner radars and 1250 psi 850°F steam propulsion systems. It was clearly more economical to order ships from the USA — Defoe had already built four of the class — and most of the equipment would have had to have been imported. However, it is difficult in retrospect to support the view that construction in Australia would have been beyond the capability of local shipbuilders.

In 1961, six Ton class minesweepers were

purchased from the UK; two of them were later converted to minehunters by Garden Island Dockyard. In 1962, it was decided to re-establish a submarine arm of the RAN, and in January 1963 it was announced that four British Oberon class were to be built in Scotland at a cost of £5,000,000 each. *Oxley* commissioned in March 1967 and the fourth boat in December 1969. Two more Oberons, *Orion* and *Otama* were ordered in 1971 and delivered in 1977 and 1978.

Meanwhile in Australia, two more River class frigates were ordered, one each at Cockatoo and Williamstown. Although the basic design of these frigates, *Swan* and *Torrens*, was based on the Type 12 hull, the reconfigured frigates were designed by the Naval Design Branch of the Department of Navy. During this time, the Navy designed destroyer tender *Stalwart* was ordered from Cockatoo. Towards the end of the sixties, 20 Attack class patrol boats were ordered. This class of patrol boat was also designed by Navy. The hulls of the patrol boats were made by Commonwealth Engineering and assembled at the shipbuilders Evans Deakin and Walkers. In the words of Dr Hughes, the then General Manager of Walkers:

> 'In this contract we have the interesting spectacle of sophisticated little vessels being built at prices competitive with those tendered by many overseas builders, without the benefit of any shipbuilding subsidy . . . You might well ask why it is possible to compete directly? . . . The lessons are clear: the boats have been ordered in sufficient number to warrant the application of fullscale methods of batch production, including the extensive use of jigs, the degree of detailed planning which brings its rewards, the advantage of buying in bulk and the opportunity for tradesmen to perform the same type of work on a succession of similar ships.'[6]

Much the same would apply to the NQEA build of *Fremantle* class some fifteen years later.

The design of the 15,500 ton destroyer tender *Stalwart* provided the naval design branch with the opportunity to carry out a complete design. There was a more substantial task in the design of the modified Rivers, *Swan* and *Torrens*. Major changes were involved, including the integration of the Dutch M22 fire control into the combat system. The Daring class destroyer *Duchess* was lent to the RAN, and later transferred, following the loss in collision of the destroyer *Voyager*.

In the late sixties, as *Swan* and *Torrens* neared completion, the Department of Defence focused its attention on the future of naval shipbuilding. In 1969, an interdepartmental committee was established to examine the needs for naval dockyard development. The capability of Australian shipbuilding yards, both private and government operated, was examined, and consideration was given to the desirability of carrying out naval shipbuilding in private yards. Although support was lent to the benefits of building in private yards, particularly for non-combatant and minor-combatant ships, it was broadly concluded that destroyer construction was only likely to sustain one building yard, and that the skills, experience and investment needed, favoured Williamstown for this purpose, with Cockatoo providing reserve capacity.

At about the same time, after experience of the confrontation campaign in the establishment of Malaysia, a requirement was developed for a new class of light destroyers. In 1967, there were discussions with the Royal Navy on joint development, but it was not practicable to establish a common requirement. In 1969, assessment of increasing air threat led to a revision of the requirement and it was decided to proceed to develop a local design. Some supplementation of local design capacity was necessary and YARD Australia were awarded a preliminary design contract in early 1970.[7]

The overall design task, and particularly that of weapons system integration, was a formidable one, and as design concepts were developed, there was increasing support for adopting the combat system used in the latest USN frigate known as the Patrol Frigate or Perry class FFG. The Government announced its intention to order three Australian designed DDLs in the context of the August 1972 budget, but the election led to a change in government. The incoming Minister for Defence, Lance Barnard, ordered a comprehensive review of the project that led to a decision in August 1973 not to pursue the indigenous DDL design, and in April 1974 to acquire two FFGs. This decision reflected a realisation that the costs and R&D risks of a specific design were too high, and that it was in Australia's interest to share the overheads of a new class, preferably a large one. Our design processes had not run smoothly and our design review cast some doubt on the validity of the work completed. In the event, we joined the USN in the largest frigate programme since World War II. The FFG class provided a missile system and combat system that met our needs, was close to our overall requirement, and had a simple system of gas turbine propulsion of unequalled efficiency. The order for *Adelaide* and *Canberra* was followed by add-on orders for *Sydney* in October 1977, and *Darwin* in April 1980. The *Darwin* design was significantly modified by the USN to improve helicopter operating and handling arrangements.

Although the decision to purchase FFGs was soundly based it created two major problems. One was that the destroyer building yard at Williamstown was left without orders. The other was that an initial attempt to establish a design agency support base had foundered. Both consequences had long term effects. In regard to employment at naval yards, the Government decided that the modernisation of DDGs that the Navy had planned should take place in the United States, should be carried out in Australia. This was a major task for Garden Island which, despite initial misgivings, was successfully accomplished. Williamstown was given the task of River class modernisation but nevertheless, problems with imbalance of trades, and policies of no retrenchment, led to non-productive employment in the form of 'idle time'. The termination of the attempt to design a DDL within Australia signified a general conclusion that such a task would not normally be appropriate, at least when similar capability ships were being designed with heavy investment, by our allies.

In the early seventies, Walkers built six Landing Craft Heavy (LCH) for the RAN and two for the PNG Navy.

The Past Decade 1975–85

In the last 10 years, the programmes of purchase of submarines from the UK and frigates from the US, have been continued and extended, but at the same time there has been a renewed emphasis on the merits of local construction. The survey ship *Flinders* was designed by the Australian Shipbuilding Board and built at Williamstown in the early seventies. In 1974, an order was placed on Williamstown for the oceanographic ship *Cook* to a design produced by the Naval Design Branch. The order was placed in haste, to fill the void of the cancellation of the DDL programme, and suffered many difficulties, but the ship was satisfactorily commissioned in 1980, and is proving effective in its oceanographic role. In November 1977, an order was placed for an amphibious landing ship *Tobruk*, constructed at Carringtons Slipway in Tomago. This was a local adaptation of an earlier British design and the substitution of local materials and equipments led to some difficulties in control of weight, and in setting to work. After a number of modificiations to arrangements, the ship is now running well.

For some time, Navy had planned to replace the ageing British built underway replenishment ship *Supply* with a ship that would replenish all the needs of an escort — fuel, stores and munitions — at the one time. A design for this vessel was produced by the Naval Design Branch but was eventually shelved on grounds

Sloop HMAS Swan *Photo courtesy S. Given*

of expense. Overseas designs were then evaluated, and a French design selected with the initial expectation that the ship would be ordered in that country. However, the government decided in March 1978 that the construction should be open to Australian bids, and Cockatoo were awarded the contract in October 1979. The specification and the construction tasks proved significantly more complex than the contractor or the Commonwealth had expected, and it proved necessary to renegotiate the contract price and delivery schedule. A great deal of difficulty was experienced by the builder in the re-establishment of shipbuilding skills not used since the completion of *Torrens* in 1971. These difficulties were gradually overcome, and the 17,800 tonne ship *Success* is expected to deliver in early 1986 to the currently contracted time and cost.

It became clear during the seventies that *HMAS Melbourne* was reaching the end of her economic life, and if the capability she provided was to be maintained, another aircraft carrier was needed. An aircraft carrier, together with its fixed wing, represented a substantial investment, and the need for a carrier was analysed and discussed at length over a period of several years. In 1980, the government decided that an aircraft carrier should be acquired to provide a capability for operating ASW helicopters, and to have potential for operating STOVL aircraft.

Various overseas designs were investigated, including, particularly, those of the Invincible class building for the Royal Navy; the Garibaldi class building for the Italian Navy; the Sea Control Ship to Gibbs and Cox design building for the Spanish Navy; and a Littons design based on the US Navy LPH. Attention had narrowed to the two latter alternatives when the UK government indicated *Invincible* was available for sale, and further investigations led to acceptance of that offer. In the event, the Falklands war led to a withdrawal of the UK offer, and a change of government in Australia in early 1983 was followed by a decision not to proceed with an aircraft carrier acquisition.

A requirement was established in the late seventies for a new class of patrol boat, and after international competition it was decided the lead boat should be built by Brooke Marine to their design, with fourteen follow boats to be built by North Queensland Engineers and Agents of Cairns. After some initial difficulties associated with overweight of the lead boat, the programme has been an outstanding success, with boats delivered ahead of schedule, within budget, and to a very high standard. Dr Hughes' prescription for a successful programme has been confirmed again.

A major Naval Design Branch effort has been the development of a unique concept for mine countermeasures, involving the design of a glass-reinforced plastic catamaran hull, carrying an advanced digital-processor-based combat system for mine detection, identification, and destruction. A unique solution has been produced to meet a most demanding requirement. A contract has been awarded to Ramsay/Fibreglass of Tomago, NSW, who have two prototype ships under construction in a special grp facility. New facilities have been established for evaluating the magnetic, shock and noise characteristics of the ships and systems. The new vessels are planned to undergo their operational evaluation in 1986–87. Progress to date has given encouraging confirmation of the feasibility of the concept, and the merits of the solution. There are good expectations that successful prototype trials will be followed by a production run of at least four more vessels for the RAN in 1986. There are good prospects of export orders.

The largest of several current naval construction programmes is that to build two more of the FFG-7 class, at Williamstown Naval Dockyard. The ships are to the same design configuration as *Darwin*, except they will have the Australian designed and built Mulloka sonar. this programme increases the numbers of the FFG class in the RAN and enhances the advantages of class maintenance and support, including particularly the successful system of a rotatable pool of refurbished equipments. It also provides Williamstown with an established design, well developed for production, that should provide a good vehicle for the re-establishment of naval ship building skills. Given the need to maintain capacity at Williamstown, it was agreed that construction there should cost the Commonwealth no more than would further orders of Todd in the United States. Variations in exchange rates that have occurred since that decision have brought us to the current assessment that there is no significant premium for the local build, and clear advantages to building in Australia.

Since *Swan* commissioned in January 1970, and *Flinders* in April 1973, Williamstown's principal tasks have been the construction of the oceanographic ship *Cook*, and the modernisation of the River class frigates. Difficulties encountered in each of these tasks were attributed in part to an inadequate preparation for the definition of the task. In the case of the new frigates, a great deal of effort has been applied to establishing a clear contract between the General Manager of the Dockyard and the Australian Frigate Project Director. Contract amendments will be made only with the

Bathurst Class 'sweeper HMAS Deloraine *Photo courtesy S. Given*

agreement of both parties and will include variations in time and cost. It should be noted that Williamstown have let a support contract to Todd that should help with the transfer of production technology and production planning, and allow the Australian yard to reap much of the learning benefit obtainable from the fifty and more ships of the class already built. Approval to cut steel was given recently and the two ships on order should be commissioned in 1991 and 1993.

The other naval dockyard, at Garden Island in Sydney, has the refit of the Fleet as its primary mission, but has undertaken substantial modernisations, particularly of the DDGs. The largest modernisation to date is to commence later this year at a total cost of about $250 million in current dollar terms. It will include upgrading of communications, gun and missile fire control systems, and the ship's central command and control system and will allow the ships to attain a total useful service life of thirty-five years. Other modernisation work of note is the recently completed programme at Cockatoo to install updated sensors and combat systems in the Oberon submarines. This Australian managed design development has brought the Oberons to the forefront of diesel powered submarine capability, able to exploit to the full the capability of such modern weapons as the MK 48 torpedo and the submarine launched Harpoon missile.

Australian Design and Construction Capabilities

Australia's defence and contribution to regional stability will continue to require the maintenance of a modern, capable and effective fleet. This in turn requires the ability to assess, select, acquire and bring into service, and modernise as necessary, ships incorporating advanced technology, close to the limits of our national engineering capability. Our ability to perform this task well, is interdependent with the scope of our endeavours. Although it would not be economical to design ourselves all the ships we need, we cannot afford not to be deeply involved in design. Although it would not be economical to build ourselves all the ships we need, we cannot afford not to be deeply involved in shipbuilding. We must, of course, be involved in modernisation as well as in repair. Each one of these activities reinforces our competence in the other. In each, we must try to avoid the excessive costs of discontinuity.

Our insularity, and our modest and fluctuating levels of activity, pose particular problems for the maintenance of design capability and competence, and yet such capability and competence is a necessary foundation for our acquisition management, construction, modernisation and repair skills. The wide range of our equipment introduces further problems of

spreading the available expertise. I believe it necessary that we foster development of our design capability amongst our naval engineers, our civilian engineers and scientists in the Department of Defence, and in industry. Our engineers in the Naval Design Branch need to be employed principally in assessment and design management, but to allow them to discharge that responsibility effectively, they must participate in design activities, particularly in industry. We must enlarge the opportunities for this by increasing our complementary activities with industry here and abroad.

Designers need to be associated with production, and we need to develop arrangements where not only our younger engineers, but those at higher levels of responsibility, can increase their experience and interaction with shipbuilders here and overseas. We need to enlarge the level and competence of design support to industry. We need to assume, as a public duty, the task of developing and enlarging the self-sufficiency of industry; and need to encourage industry to take on tasks they have not taken on before. This needs to be a gradual and sustained process if the costs of learning are to be kept within reasonable bounds. Such an approach should sit well with a philosophy of giving the shipbuilder a broader specification than has been common in the past, and encouraging him to develop a detailed design that is production oriented.

We have a whole new field of increasing importance in the design, development and maintenance of system software. Again, it is an area where the partnership of naval analyst and civil analyst is essential. Again, it is a field where we need to develop further an industry support capability. Australia has already made large advances in this area and has achieved high standards of combat system support for surface warships and for submarines.

Industry Assistance

Naval shipbuilding capabilities are interdependent with the capabilities of the shipbuilding and repair industry as a whole, which in turn are interdependent with our overall industrial capabilities. These capabilities are influenced by government policies of industry assistance. Although a comprehensive account of policy changes and their effects is outside the scope of this paper, some brief references should be made to the emphasis accorded to naval shipbuilding.

In 1959, the Tariff Board Report on the Shipbuilding Industry said:

> 'For reasons of broad national interest it is the policy of the Government to maintain an efficient shipbuilding industry in Australia . . . The board understands that the principal consideration underlying the Government's policy is the defence significance of the industry in that its operation in peace time would provide a nucleus of skilled technologists and tradesmen.'

The 1971 Tariff Board Report stated:

> 'The primary defence requirements is for facilities for dockings and repair and for building small vessels such as minesweepers, patrol vessels and landing barges. Capacity for the production of larger ships is regarded as a secondary requirement likely to be of importance only in the event of an extended conflict.'

In 1976, defence considerations were reported as substantially the same.

> 'Naval dockyards undertake routine refits, repairs and modernisations and possess the necessary skills to construct warships. Commercial yards are used mainly for repair refits and docking and for constructing smaller vessels such as patrol boats. Given major contingencies, greater demand for these services would be placed in commercial yards, as well as for the replacement of various cargo carriers. Such conditions would have significant warning time, and the ability to produce items such as engines, electronic equipment and weapons systems would be as important as hull construction.'

In 1979, Defence advised the IAC that the shipbuilding industry 'would be likely to require expansion in a defence emergency and therefore the maintenance in the industry of the current range of skills and technologies and their continued upgrading would be in the defence interest'.[8] The Commission did not take account of the defence implications in examining the question of assistance for the industry, considering that 'if assistance justified on economic grounds is insufficient to maintain the industry, the question of further assistance on national security grounds is a matter for Defence'.[9]

Reductions in industry assistance and the lifting of restrictions in imports have led to the cessation of local construction of large commercial vessels. The assistance provided for construction of smaller vessels, including the extension of assistance to vessels for export, is a significant factor and may help Australian builders establish themselves as suppliers to the region. Although this subsidy will fall to 22.5% in 85/86, and to 20% the following year, it should serve a valuable purpose at this level.

Battle Class Destroyer HMAS Anzac *Photo courtesy R. Hart*

A Look to the Future

The fourth guided missile frigate building for the RAN is currently receiving post shakedown modifications before arrival in Australia. When they are complete, all current RAN shipbuilding and modification orders will be with Australian shipyards.

What of future orders? An order for patrol boats for South Pacific nations is to be placed shortly and within a few years we will need to start work on the design of the Fremantle replacements. Project Definition Studies for submarines will begin this year, with associated studies of the appropriate level of Australian participation. If all goes well, a construction contract should be placed in 1987, and it seems likely that most or all of the submarines in the programme will be locally built. The Government's decision will be based upon the assessed performance of Australian builders, and that in turn will be based on the realised performance of the last few years, and of the immediate future.

During the nineties, there will be a need not only to replace the Oberons, but the Rivers as well, and the surface combatant to follow the Australian Frigate programme needs to be selected within the next one or two years. There seems to be no reason why these ships should not be built in Australia, and it is to be hoped that the capability currently being restored will be maintained and developed in the years to come. It is to be hoped that capability will be built up not only at the shipyard, but in the many supporting industrial activities.

We have some difficulties in that the number of yards looking for naval and commercial work seems to be greater than the forecast work load that could sustain them. If we are to have the needed continuity of employment, it seems inevitable that we must see some reduction in the number of yards. Although Williamstown has made great advances in its industrial relations and in its organisation in order to re-establish its shipbuilding capacity, I do not believe government yards are best suited to ship

building tasks. Shipbuilding often needs an entrepreneurial approach that does not sit well with departmental procedures. Perhaps opportunities may arise in the years to come, to privatise the naval building activity, and for two or three of the competing builders to become the recognised naval building yards. It will be necessary, however, that they remain cost competitive both in Australia and overseas, so as to earn a right to a continuing work load. We should look to strengthening their capacity for design so that they can produce their own production drawings, and we should consider the continued utilisation of their expertise as the technical authority for the lifetime support of the class.

We have a further difficulty in timely selection of a design. The success of local shipbuilding programmes is dependent to a considerable extent on the standard of preparation for the task. It takes a good deal of time to establish local sources for material and equipment. It takes a good deal of time to plan the production processes and to ensure the necessary sources will be available. All too often, we withhold endorsement of a requirement, and of a design to satisfy it, until too late, so that these processes are unduly rushed, and we are forced by pressures of time into less than optimal solutions. We should aim for early attainment of the position that we have a design completed, and a prototype being built. We can then afford to take a flexible approach to the timing of the production vessels.

Conclusion

It adds significantly to our capability to support our defence force if the warships we need can be built in Australia with reasonable economy. Start-up costs will often be such that single ships might not provide an economical programme, but our industry has shown that we can order a number of similar ships, they can be built here to standards of quality and cost that are competitive with imports. We have also seen that there are many difficulties in regaining a capability lost with lack of exercise. It is in our interest to plan our warship acquisition so that our building and support capability is further developed and maintained. If we do these things, we will have an efficient shipbuilding industry, and will have a significant contribution to the defence and security of this country.

Notes

1. Commonwealth of Australia. *Digest of Decisions and Announcements*. No. 106, 12 Aug, 45 to 31 Aug, 45. p 59.
2. DODA No. 108, p 45.
3. DODA No. 112, p 32.
4. Hutcheson, G.I.D. 'Naval Engineering in Australia' Papers on Engineering Subjects. Admiralty 1946.
5. See Parker, *RG Cockatoo Island*, p 59.
6. Hughes W.L. *The Shipbuilding Industry*, 1968.
7. Yarrow Admiralty Research Department had been established by the Royal Navy in 1949 to act as design agent, particularly in the propulsion field. YARD Australia was established with a more comprehensive role and was supplemented by temporary attachment of Royal Navy design staff.
8. IAC Report. Ships, Boats and Other Vessels Not Exceeding 6000 Tons Cross Register, 25 July, 1979. p 47.
9. Ibid p 47.

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JANES FIGHTING SHIPS
A HISTORY

by Graeme Andrews, Australian Editor JFS

Tucked away in sundry naval bridges of major naval vessels and many of the warships of both sides of the Iron Curtain are copies of *Janes Fighting Ships*. The US Navy and the Royal Navy place large orders for each copy — and so does the Soviet Union!

Each issue of *Janes* is eagerly awaited by both sides and both sides will use it to provide political ammunition. Pravda has often quoted *Janes* to emphasise its case that the West are war-mongers while sundry Parliamentary Committees world-wide use the latest *Janes* to show that they are falling behind in Naval parity. The editorials of the world's major naval annual have long been famous for clarity of thought, accuracy and as a source of free editorial for the leader writers of major newspapers.

No naval annual is better-known yet no naval annual suffers more from an identity crisis. It is regularly referred to in secondary quotes as '*James Fighting Ships*', while I have had advertising mail addressed to me as 'Miss/Mrs Jane. . .Australian editress Janes Fighting Ships'. This caused my own personal identity crisis, particularly with my wife of 22 years!

Janes Fighting Ships as most will know, is a very expensive, glossy annual which now comprises more than 800 pages, nearly 4000 photographs, many line drawings and an advertising list which illustrates much of the state of the art of naval warfare.

The book is published in early August each year and compilation commences in January, when Australia, Argentina and Albania are assembled and sent to galleys. Because Australia is where it is, it is often difficult for the Australian entry to be as up-to-date as is (say) Venezuela. For many years the Australian entry was provided entirely by the Department of Defence and it invariably came in past the book's tight deadline. This is my tenth year assembling the RAN (and Army) section and in this time the Australian section has increased in size by about 25 per cent — and has been on time.

To provide the RAN section I provide DOD PR with a photostat of the latest entry. This is usually done within three days of the new (unpublished) book arriving. With the 'stat' I send a list of questions and requests for comment based upon a careful reading of the public press and sundry defence journals during the year. I usually request action by the end of September or early October but over the last three or four years the degree of assistance from Canberra has faded noticeably when compared with the late 1970s and early 1980s.

To partly offset this difficulty *Janes* can call upon a number of Australian naval enthusiasts who combine, in their individual ways, to provide the RAN with a quality of entry that compares well with any other nation. Mr John Mortimer of Canberra has been providing fine naval photographs for more than a decade while Lieutenant James Goldrick RAN, has provided excellent line drawings for some years. I make it my business to establish contact with many naval-oriented people and I have been able to provide many naval photos of RAN and other navies. These are always credited to the person who took them.

To a naval (and ex naval) man with just on 30 years of service in uniform, in reserve and in naval interest, the current decline of the RAN is a matter of sadness. Part of this decline must be attributed to the late start that the RAN made in the Australian 'Hearts and Minds' programme which was won so convincingly by the RAAF with its big-budget F-18 purchase. Aeroplanes can fly over many cities while few citizens can see a naval ship and fewer still experience the vastness of the sea, except from the confines of the bar of a cruise ship.

Janes cannot get to these people either but it tries to provide a rational assessment of the situation on, under and above the seas of the world and it backs this up with a number of spin-off publications such as cheaper, more basic naval books and by publications such as *Janes Defence Weekly*.

Fred T. Jane was born in 1865 in Richmond, Surrey, England. He was the eldest son of the local Vicar but his fore-fathers had a naval connection with naval explorers and an admiral in the family tree. Fred provided his school with a rival journal to that which stated official policy and

The Author

Graeme Andrews joined the RAN in 1955 and served in *Kookaburra, Sydney, Melbourne Quickmatch, Voyager Duchess, Vampire* and *Supply* before paying off in 1968. Since then too his various activities indicate his strong maritime bent — journalist and editor in boating magazines, ferry and tug master and inspector-surveyor with the MSB (his present employment). He has published a score of books including maritime history works, the latest of which, *Search for the Kobenhaven and Other Sea Stories* are first-person experiences at sea by Australians in the 1930s.

spent more time on that and on chemistry than he did on studying. As a result, he did not do well at school. After school he tried to join the Army and the RN but failed both physicals. He started work as a reporter on the *Birmingham Times* at a period before photos were printed in 'papers'. His sketching skills were well-used and his interest in naval things grew. in 1889 he went to sea as an official artist-reporter for the *Pictorial World* and his sketches of the naval manoeuvres of 1890 which were published in *The Illustrated London News, Daily Chronicle* and the *Standard* brought him recognition.

Around this time Jane began to realise that naval men needed a work of reference that would quickly allow them to discover the identity and capabilities of a particular naval vessel. He began sketching every ship he could see. It did not take him long to realise the similarities between structures, the value of particular armour, importance of guns and speed, not to mention manoeuvrability, turning radii at speed and so on. He developed his trilogy of the requisites of the efficient naval officer. These were (and are):

- An understanding of what the ships of the opposition can do and what your own vessel can do.
- A quick identification method that also informs one of the armament and defences of the other vessel.
- A means to test theories under realistic conditions without actually 'shooting up' the other ship.

The first two criteria resulted in the 1897 appearance of *Janes All The World's Fighting Ships*, a ponderous tome of 221 pages which contained more than 1000 carefully prepared pen and ink drawings, most of which were done at sea.

In 1898 he introduced his Janes Naval Wargame and by 1900 this complicated method of evaluation of naval skills was in use by The Royal Norwegian Navy, The United States Coastal Artillery, The Imperial Russian Navy and by the Imperial Japanese Navy. Other Navies, including the Royal Navy, used it on an unofficial basis.

In 1900 Jane produced his famous critique of the Russian Navy which discussed the various weaknesses which were so well illustrated by the naval action against the Japanese Navy at Tsu Hima in 1905.

In the 1900 issue of the re-named *Janes Fighting Ships*, Jane introduced photographs for the first time and in his 1902 edition he stated 'only the heavier-than-air type of flying machine seems to have any future at all. . .'. This at a time when the airship roamed the skies and the Wright Bros flight was ONE year in the future. To illustrate his faith in air travel, Jane brought out his second annual in 1909 — *All the World's Airships, Aeroplanes and Dirigibles*, now *Janes All the World's Aircraft*.

Because of the complexity of publishing the Naval Annual, and its size and price, most of the select band of editors of *Janes* have produced spin-offs or reduced versions for the cheaper end of the market. The first of these was published posthumously by Fred Jane in 1916. Getting this and the big one out in the middle of a war, might well have hastened the heart attack which is thought to have killed the founder.

After Jane died in March 1916 he was replaced by Maurice Prendergast who edited the annual until 1922. Perhaps it is fitting that Prendergast was the second editor and not the first as 'Prendergast's Fighting Ships' seems to not have that certain ring to it.

When the famous naval historian Oscar Parkes left the RN in 1919 he joined Prendergast as Joint Editor. Parkes is best-known for his massive work on British battleships. Failing sight caused Prendergast to retire in 1922 and his place was taken by Francis G. McMurtrie with Parkes still as joint editor.

Oscar Parkes took over as editor in his own right in 1930 but died unexpectedly in 1934, whereupon McMurtrie was recalled, battling on throughout World War Two with all its problems of supply, censorship and verification of rumour and report, until he died in 1949. His sudden death brought Raymond V.B. Blackman to the prestige job. In 1970 Blackman was provided with an assistant editor, the first job of that title on the book, in the person of Captain John Moore, RN (rtd). John Moore carried out an 'apprenticeship' of two years or so, during which he produced a brace of smaller naval books. He took over as editor for the 1972–73 edition and has had the chair ever since. He has been, by far, the most prolific of the *Janes* editors with major changes made to the book and a steady stream of well-researched spin-offs, including a number on the Soviet armed forces.

Although there is a wide international net-work of correspondents providing much of the material in *Janes*, and although most of the Western and Third World navies offer assistance, the assembly and aquisition of information which is sometimes more up-to-date than that of the official sources, is a massive, almost 365 days a year job and very demanding upon the incumbent. Because of this and a reported illness in Captain John Moore's family, it may be that he will stand down within the near future. Who will be his replacement is probably already known and agreed upon because *Janes Fighting Ships*, unlike any other book perhaps, is a vocation and is the sum of the men who have made it over more than 80 years — getting the right man for the job is something that must not be considered when the job is already vacant.

THE SALVAGE OF WARSHIP VASA

by Captain AHR Brecht RAN

The building looks very ordinary from the outside, a greyish white aluminium structure about as high as a four storey office block, distinguished only by its unusual shape. Long and fairly narrow, marginally higher at each end, it sits beside the water at Djurgarden on the mainland of Stockholm harbour in Sweden, opposite the large island of Skeppsholmen. Outside is bustling activity in a compound surrounded by a high wall through which tourists and marine experts alike pass via turnstile gates after payment of a fee. Various exhibitions, souvenir ships, a theatre, cafe and models dot the entrance courtyard where a constant stream of people moves towards the museum.

Inside the building the great ship dominates all else. Instinctively the visitors speak in whispers as if to sanctify the structure itself or perhaps to pay homage. Marine archaeologists and students of maritime history are more likely to feel a sense of awe from what they see: His Swedish Majesty's Ship *Vasa*, built in 1627, sunk on her maiden voyage in 1628, yet returned from the depths after 333 years in a watery grave on the bottom of Stockholm harbour.[1]

Vasa is indeed imposing. Years of restoration and preservation have brought her to the present stage where she is on view to thousands of people every year. Personal impressions vary but *Vasa* makes one common impact: that of incredulity.

The hull rises 64 feet from keel to the upper deck and is surrounded by viewing galleries where the solid black timbers, glistening with wax-like preservative, can be inspected. *Vasa* is 200 feet long excluding the elaborately carved, decorated bowsprit and sits in a steel cradle which runs the length of the building. Striking as her overall impact is, the spectacle of this unique piece of history has its focus in the ornate double sterncastle gallery which towers above the highest viewing platform where visitors cluster to photograph and enthuse. At the top is an image of the King; his crown held by two griffins. Beneath is the Swedish coat of arms supported by two huge lion figures with carved drapery held back by two putti, all fixed to a vertical wall immediately above the upper horizontal gallery which is bounded by elaborate large crowns at the point of each stern quarter. The lower gallery is held aloft by eight magnificently carved figures and adorned with a series of warriors wearing Roman armour and carrying weapons, all embossed in gold. The effect is breathtaking.

So too is the aura of strength exuded by the thick hull planking, the huge gun ports, and the few interior compartments which can be seen. Much of the upper deck fittings are intact,

The Author

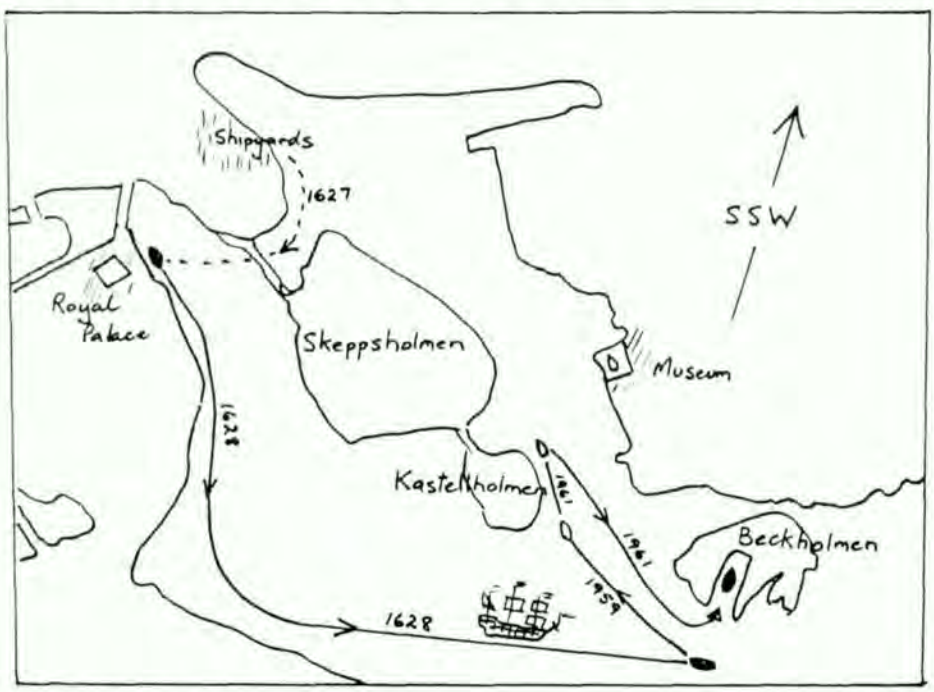
Captain Alan Brecht joined the RAN in 1957 as a telegraphist and, after training, served in HMA ships *Quickmatch* (twice), *Parramatta* and *Melbourne*. He attended the SD officers promotion course in UK as a Petty Officer Radio Supervisor, was promoted to Sub-Lieutenant SDEXC in January 1965 and served in the RN in *HMS Defender* and *HMS Mercury* (the RN Communications School). Since his return to the RAN in 1966 he has served in *HMAS Parramatta*, the RAN Communications School, the Directorate of Naval Communications (twice), Naval Communications Station Canberra and *HMAS Albatross*. He was promoted to Lieutenant SDEXC in January 1967 and transferred to the General List in 1970. He attended the RN Advanced Communications Course at the Royal Military College of Science, Shrivenham, UK in 1974 and then served as Communications Officer in *HMAS Melbourne*, CO of *HMAS Cairns* and Director, Electronic Warfare. He is presently Director of Naval Communications.

including capstans, bollards, gratings and stumps of the three masts. Witnessing this incredible spectacle one can only wonder how such a monument to the shipwright's craft survived all those years underwater. Why is *Vasa* as she is today and how did this come to be?

When *Vasa* was warped from her berth at the Royal Palace bordering Stockholm harbour[2] for her inaugural voyage through the archipelago, a multitude of people came to see this magnificant addition to His Majesty's fleet. On a warm sunny afternoon, Sunday 10 August 1628, evening vespers behind them and a momentous naval spectacle ahead, the citizens of Stockholm had good reason to be thankful for the wisdom of their king and to be assured of the maritime safety of the realm. The year 1628 came at the height of the Thirty Years War in Europe (1618–1648) at a time when General Albrekt von Wallenstein supported by the Catholic Hapsburgs had declared himself Admiral of the Seas surrounding Scandinavia, thereby posing a threat to Protestant Sweden. German plans to invade Scandanavia were widely touted in the diplomatic circles of the day and obscure, impoverished Sweden seemed in much danger during the war's early years. One of the most prominent figures in the political arena was Sweden's King Gustavus II Adolphus (1611–1632) who was to transform the country into one of the leading powers of Europe, largely through the development of a powerful navy which became indispensable to the King and his army. Gustavus was to state 'next to God the welfare of the Kingdom depends on her navy'.

In 1625 Gustavus II ordered four new warships, to be built at the Stockholm shipyard by the Chief Naval Shipwright Henrik Hybertsson. These were two large and two smaller ships, the larger ones intended as the most powerful warships in the Baltic; *Vasa* was the second of these. She was launched in 1627 after an intensive construction period which entailed selection and transportation of oak, mostly from the island of Angso in Lake Malar and from the coast of Smaland, as well as the skills and techniques of 17th century shipbuilding. Timber selection was not merely the choice of huge stands of oak, for each angled timber or special piece had to be found in a living tree of the correct shape and that tree felled for the purpose.

When finally ready to put to sea for the first time *Vasa* was a fitting adjunct to the Royal Palace where she lay. Lavishly decorated with no ornament or expense spared this three masted masterpiece of the day boasted 48 × 24lb cannon plus 16 smaller pieces, total 80 tons, with 24 gun ports on each side. By the standards of the time such firepower was devastating but the sinister element for *Vasa* herself was its weight. Estimates only are available for her crew, put at about 133 officers



Vasa's voyages 1628–1961 *Drawn by author*

and men but she was built to carry 300 soldiers although a mere few dozen embarked for her fateful voyage.

To the thunderous acclaim of the crowds Severin Hansson, *Vasa's* captain, and Joran Matsson the Sailing Master set four sails in a light afternoon SSW breeze: fore-topsail, main-topsail, foresail and mizzen. Still in the shelter of tall cliffs south of Stadsgarden *Vasa* stood out into the harbour, a physical demonstration of Sweden's naval might and purpose, echoing the cheers and rapture ashore. Then suddenly the breeze strengthened in a squall and the cheers fell to stunned silence as *Vasa* heeled sharply to port and became clearly in distress. Hansson tried in vain to haul the cannon to windward but their weight was too much against the increasing heel. Water gushed through the lower gun ports thereby increasing the list. Miraculously *Vasa* fought back to an even keel but in a second heeled even more positively to port. From this she could not recover. Water entered through the upper gun ports and she was driven down with sails still set and all flags flying. At 5pm, less than two minutes after the squall, *Vasa* was gone.

Reports to His Majesty must have been made with trepidation for this was a major catastrophe. Few records exist of the period immediately after the sinking but there is no doubt that everbody blamed everyone but himself. Historians are fortunate that some transcripts of the Court of Enquiry held the following September have survived and these show, as far as can be pieced together, that positions had become firmly entrenched by then.

The shipwright, Hybertsson, had died the previous year and thus could not defend himself against claims of poor workmanship, bad design and lack of any real stability in the ship. Evidence on his behalf proved that he had shown his designs to King Gustavus II himself who had given them his approval. It was argued that since the King had placed his seal on the design then it could not be at fault and some other reason for the sinking would have to be found. The search for a scapegoat continued.

Vasa was indeed topheavy, narrow and sharp at the bottom, and inherently unstable. Her sinking is particularly notable for the fact that such happenings were rare. At that time written plans and drawings for the construction of ships simply did not exist and they were built against the methods and experience of the shipyards concerned. Ideas, procedures, and designs were handed down by word of mouth and practical example from shipwright to shipwright so the wonder is that even more ships did not capsize through instability. Two well known examples of this unfortunate trait are the *Mary Rose* which capsized outside Portsmouth in 1545 going down with 700 persons on board, and the equally tragic loss of the *Royal George* which heeled over and went to the bottom in 1782 while riding at anchor in Portsmouth harbour; some 900 persons were lost.

For *Vasa* the position was even more mystifying because the Court was faced with the embarrassing disclosure that soon after her launching the Fleet Admiral Klas Fleming had conducted a stability test which the ship failed alarmingly. Thirty men were made to run to and fro across her upper deck but she rolled so dangerously they had to stop for fear she would capsize at her berth. This without masts and rigging! Incredibly, the Admiral did nothing, Hybertsson did nothing, and in the end the Court did nothing. The sinking was unexplained and the case dismissed without anyone being held responsible in any way at all.

Vasa's loss was a devasting blow to the King and his navy but pragmatists were already at work. The hull, fittings, and solid bronze cannon were extremely valuable so salvage experts immediately began to assess the feasibility of recovery. But the ship was in 110 feet of water and salvage methods were primitive. Minor fragments were grappled but nothing of importance occurred until 1629 when the British engineer Ian Bulow managed to bring *Vasa* to an even keel in the mud. Discouraged by his failure to achieve anything more significant Bulow withdrew, little realising the importance his achievement would assume, three centuries later.

Little more happened until 1663 when technology took a hand in the person of Lt Col Hans Albrekt von Treibelen who had invented a crude diving bell a few years before. With this he had successfully dived in 1658 on the Danish flagship *Sancta Sophia* sunk off Gothenburg in 110ft. This bell was both an innovation and a test of nerve. Made of lead and 4ft 2 inches high it was very heavy and difficult to raise, lower or manoeuvre. The diver, clad in a watertight leather suit, stood on a square piece of lead 20 inches below the bell with his head in air trapped inside. He was lowered into the water where he worked using a boathook, for periods up to 15 minutes. Although primitive by present day standards, von Treibelen's bell was quite successful and in the 17th century it was justifiably recognised as a most important breakthrough in the field of salvage.

Von Treibelen sought permission to salvage *Vasa's* cannon but initially met with official resistance which took some time to overcome. He began work in 1663 and had considerable success throughout that summer and the following year. By the end of 1665 von Treibelen had raised most of the 24-pound cannon, each weighing about one and a half tons. The

View of Vasa's sterncastle *Photo courtesy of author*

View of Vasa's bowsprit *Photo courtesy of author*

magnitude of this task becomes more apparent when one remembers that the divers worked over 100 feet down in very cold water where visibility was murky at best and where life itself depended upon the most primitive of equipment.

This particular salvage is confirmed by documents in Stockholm which record the export of 53 cannon in 1665 although the recipient, or country, is unnamed. *Vasa* was again disturbed in 1683 when another 24-pound cannon was raised by someone now unknown. After this, with all accessible cannon removed, and little left but the hull itself (now deemed worthless) the once great warship was left to her fate; and subsequently lost to living memory of the day.

The existence of the *Vasa* museum today, the ship herself, and her importance to maritime history, all have their genesis in the fascination which sunken ships hold for marine archaeologists. Apart from the celebrated *HMAS Victory* at Portsmouth few examples exist today of the skill and craft of naval shipwrights and artisans of previous centuries. Information has been gathered from Egyptian burial ships recovered in the great tombs of the Pharaohs in the Pyramids of Egypt, while Roman galleys from Lake Meni and Viking galleys from Denmark have provided valuable data for students of early shipbuilding; but in the main historians have been forced to rely upon the written word. Unfortunately, because of the dearth of detailed knowledge about early 17th century sailing ships and the shortage of recorded information, physical examples are of priceless worth. The public acclaim for recovery of the *Mary Rose* in 1982 is of little account compared to that of the historian and marine archaeologist, for this very reason.

The marine archaeologist to be remembered in this story is Anders Franzen, a native of Sweden who devoted most of his life to the study of sunken ships, and a large slice of that study to *Vasa*. Soon after the end of World War II Franzen began cataloguing the ancient wrecks of the Baltic Sea, testing at the same time his theory that the Baltic was a graveyard unique from all others. He considered this sea to be a treasure trove because of its fresh water properties.

Apart from the menace of fire, wooden sailing ships up to the 18th century were vulnerable most of all to a seemingly insignificant wood-worm, Teredo Navalis, the borer. This pest, with its slender worm-like body, grew up to 12 inches

Vasa in dry-dock after salvage in 1961

Vasa museum photograph courtesy P. Trick

in length and, boring with a rasp like action, could devastate any timber. Each female laid approximately 100 million eggs in one year and the larvae entered the wood leaving no trace other than a pinhole. Timber could therefore look sound but be rotten, riddled with countless tunnels bored along the grain but never merging. Defences against Teredo Navalis led finally to copper sheathing of underwater hulls but for sunken ships there was no protection.

Franzen argued that because the Teredo Navalis could not survive in cold, fresh water, shipwrecks in the Baltic sea should be found intact. Minor discoveries confirmed his theory and as the 1940s drew to a close he increased his research into *Vasa*, trying to find some record of where in the harbour she might be.

Years of fruitless effort passed; while Anders Franzen spent his winters researching the libraries for old records and the summers scouring the Stockholm harbour with a grapnel, even his friends began to question his devotion to the task. Some less kind thought he had lost his sanity and rational thought; yet he persisted. In 1954 he deciphered an ancient script which led the following year to discovery of an 18th century map of the harbour. Franzen was revitalised and, convinced that he knew where *Vasa* lay, he began thousands of soundings off Stadsgardskajen working well after dark, every day of that summer. It was all in vain. *Vasa* and her location were as far off as before.

Franzen was nothing if not determined and he returned again to his research. Then came the breakthrough he had sought for so long. During the winter of 1956 he came across the original letter sent to King Gustavus II by the Council of the Realm two days after *Vasa's* loss.[3] The vital words must have seemed to glow before him:

> 'and this past Sunday, as stated, shortly after evensong. . . . . came to Beckholmsudden.'

The little island of Beckholm was well known to Franzen who in his youth had been fishing in that vicinity many times. He was now to cast a line for his greatest catch ever. In August 1956 he began intensive sampling of the area using a special device which on striking wood, bored in and took a sample. His reaction is unrecorded, but can well be imagined, when one sample brought up black oak.[4] Repeated sampling yielded identical results: *Vasa* was found.

Although certain that his long search was over Franzen needed confirmation before the announcement could be made to a disbelieving world. With the assistance of trainee divers from the naval diving school in Stockholm, Franzen returned to the site and began preparations for them to dive on the wreck. By this time *Vasa* had been on the bottom for 328 years and all of her superstructure was gone; she was a tangle of lost lines and anchors from countless ships and boats, covered in debris and totally derelict in the murky gloom.

In their modern diving suits equipped with air hoses and telephones the navy divers were technically much more advanced than those of von Treibelen but they too had difficulty with the cold, the current, and the very poor visibility. The charge diver reported fragmentally to Franzen that he could make out what appeared to be a fantastic sterncastle rising out of the mud, covered by a labyrinth of cables. Groping in the murk he reported what seemed to be a curved solid wall, broken by square holes at regular intervals. These could only be gunports and for an elated Franzen they could only be in *Vasa*.

Compared to the centuries she spent under water the next period of *Vasa's* saga is miniscule but the four years to 1960 proved to be the most important of her life to that time. Salvage was no simple matter and finding the ship was but the easy part. *Vasa* lay deeply embedded 8 feet into the clay bottom of the harbour, 110 feet below the surface, and then covered by almost 10 feet of soft black mud. Had she not been on an even keel her salvage intact would have been impossible because she would have torn to pieces from the suction. The authorities had good cause to remember Ian Bulow's efforts so many years before.

The decision to raise the ship was not taken easily. Her condition was unknown and reason suggested that she would fragment if disturbed, assuming that it was possible to move her at all. A *Vasa* committee, established in January 1957, considered many proposals of which two very serious ones were to fill the ship with tennis balls or to freeze water inside her so that she would float to the surface as a huge block of ice. Eventually it was decided to rely upon proven conventional means and plans were established to lift the ship between two pontoons using the methods which successfully raised ships of the German High Seas Fleet from the bottom of Scapa Flow in the 1920s. A private company, Neptune Salvaging Co. won the contract and before the winter of 1957 work began.

Effective salvage could only be attempted after *Vasa* had been cleared of rubbish so this became the first task. At the same time the divers began to collect and fossick for the thousands of relics which lay around the wreck, having been dislodged over the years or scattered during the sinking. Together with finds made in the ship itself these totalled 24 000 of which about 14 000 had to be put back in their proper place after *Vasa* was raised. Many of the remainder now form the 'Life on Board' exhibit at

the museum which houses a variety of items as diverse as a butter box with rancid butter still in it and the personal property of the seamen, taken from sea chests found onboard.

One most important contribution to the many decisions made by the *Vasa* committee during this period was the confirmation that Teredo Navalis had indeed been defeated by the Baltic as Anders Franzen suggested. The many fantastic wooden objects brought to the surface from around the ship showed no trace of borer-rot and a relieved committee knew that *Vasa* was exceedingly well preserved. Details of her sculptured ornamentation came to light: knights, warriors, mythological figures, sea creatures, grotesque designs now blackened from the mud and clay but with traces of gold here and there as a reminder of the splendour which once had adorned the ship.

Salvage operations underwater were led by Per Edwin Falting, a Chief Diver from the Swedish navy which cooperated with Neptune Salvaging and provided much of the diving effort. The major problem was that even with the debris removed *Vasa* was so embedded in the mud that a detailed investigation could be carried out only after concentrated preparation, and very, very slowly. All of the iron nails had rusted away so great care had to be taken that she did not fall to pieces around the divers as they probed, prodded, and worked. Adding to the difficulties was the intense Scandinavian cold which meant that diving could only be carried out in the warmer months. There was much to do but even at this early stage it was clear that progress would be slow.

After much discussion it was decided that the only way to prise *Vasa* from her bed of clay and mud was to tunnel underneath her and feed cables through which would then be attached to the pontoons. (Flooding the pontoons enables the slack to be taken up on each cable and then as the water is pumped from the pontoons, the wreck rises). Six tunnels were planned.

Although work began in 1957 the first tunnel took eleven months until April 1958 and was completed then only after tunnelling from each side of the ship was introduced. Two major problems were encountered by the divers: first the intense cold at that depth, even in summer and with the latest in insulated diving suits; second was the blackness. Buried almost twenty feet under the ooze the divers could work only by feel and then for no more than 15 minutes at a time. The knowledge that 200 feet of warship containing hundreds of tons of stone ballast was immediately above them could hardly have improved matters. The difficult task would have been impossible had it not been for the Zetterstrom jet, a powerful water device invented by Arne Zetterstrom which cut through the mud and sucked the debris out behind the diver into tubes which carried it away. Grappling with the hose took great effort and strength on the part of the divers who emerged from the tunnel exhausted after 15 minutes, and as there was only a limited number of divers the work could not be hastened.

Even though the wreck was universally acknowledged to be *Vasa* the final proof came in September 1958 when a cannon was raised bearing the inscription 'G.A.R.S.' (Gustavus Adolphus Rex Suecise). There could now be no doubt that this was indeed the pride of the 17th Century Swedish navy.

By mid 1959 salvage had advanced to the point where four tunnels were finished and the end of this first phase was in sight. The fifth was done by 8th July and the last completed at the end of the month. Before the cables could be attached it was necessary to check the ship to make sure that no sign of disintegration was apparent. Fears were still held that the wreck could not withstand the enormous pressure and stresses if she was moved so the crews took extraordinary care in the examination which now took place. When it was proved that all was well, temporary wires were placed under the hull and secured to the pontoons. After this was done the divers celebrated the end to 1500 hours underwater thus far.

Pontoons were filled on 12th August and submerged. When the 6 inch steel hawsers had replaced the temporary wires under *Vasa* all was in readiness for the first lifting attempt. On 20th August the pontoons were pumped out and after what seemed an eternity in which nothing happened, *Vasa* lifted about one inch. Then gradually and with immense reluctance the mud gave way, releasing its 331 years hold on the hulk. *Vasa* was free and sitting in a steel cradle just above the bottom. Phase 1 was successful.

Damage to the ship was so severe that attempts to float her in her present position, or even to bring her to the surface, would have been disastrous. Shallow water was needed where *Vasa* could lie at a depth more amenable to the repair work needed to make her buoyant. Nail holes had to be stopped, missing timbers replaced, and the more dilapidated parts of the hull, forward and around the poop, had to be planked. None of this was possible where she now lay and the next phase of the salvage was to move her across the harbour.

Vasa was slowly raised above the mud, suspended in her cradle. Weighing about 700 tons deadweight and as fragile as a thousand eggs she was to be treated gently but with great skill and care. The first move of 100 yards preceded a further 17 needed to transfer her the next 350 yards to shallow water inside the protected inlet of Kastellholmen.

Each of the latter moves was extremely short as the salvagers worked to ensure the great ship would arrive intact. In retrospect the initial move was too ambitious and entailed risks which should not have been sustained. The modest aims of subsequent lifts reflect the danger to the entire operation which was by this time fully appreciated by officialdom and Neptune Salvaging Co alike.

The eighteen-stage move shifted *Vasa* into about 50 feet of water and the course of her journey was complicated and indirect. Sometimes she slid backwards into the position where she had been at the end of the previous lift and on others she refused to move at all. On occasions she sank so deeply into the mud that she was as far from the surface as she had been before that move. Altogether, the operation was frustrating and difficult. It was necessary at times to turn the ship completely round and tow her stern-first but despite all of these problems the dedicated work continued and she finally reached the objective. It was now clear that *Vasa* could probably be brought to the surface provided she was properly prepared.

Underwater repair took all of the 1960 summer. Gun ports were sealed and damage repaired as *Vasa* gradually became more watertight in her temporary berth 9 fathoms down. On 24th April 1961 it was time for the final lift to the surface, an event which was the centre of world-wide interest and attention. More witnesses would see her emerge than had watched her sink. They hydraulic winches strained and slowly, after 333 years in the deep, the ancient warship broke the surface before thousands of spectators and press, radio, and television media from all over the world.

Vasa could not be left exposed to the air so a race against time now began. A vast quantity of mud had first to be pumped out of her as well as the battle against seawater pouring in from nearly 1500 leaks. The pumps prevailed. After being released from the two pontoons Oden and Frigg which had supported her for so long, *Vasa* made the last 100 yards to the appropriately named Beckholmen dock on her own keel. On this happy day she finally entered the dock with a slight list to port and draught of 22 feet. After more than three centuries *Vasa* was safe.

In some respects the discovery and salvage form only the first part of the operation for feverish activity now began to recover the treasures *Vasa* held inside her and also to protect the hull. Separate articles can be written about the fight for her physical preservation, the unique discoveries made by the archaeologists, her fantastic decoration, and life onboard. As these are outside the scope of this offering it is sufficient to recognise the achievement which culminates in the present museum. But for the dedication of extraordinary men like Anders Franzen and the brave daring of Falting and his divers, [5] not to mention the army of salvage experts, officials, workers, aides, seamen and enthusiasts, *Vasa* would still be lost on the harbour bottom. History would indeed be the poorer.

This story has no ending for the *Vasa* restoration still continues today. She now rests in a purpose built aluminium structure which facilitates public viewing from galleries around her hull. Sweden intends to restore the between decks further than has been feasible up until now and it may one day be possible to tread these (now) 357 years old decks, and to imagine what life was like in 1628 when *Vasa* was in her untried glory. For the present one must roam through the exhibitions and relics or spend hours inside the building contemplating the impact this grand old lady of the sea makes just by being there. For the student of history, the romanticist, the naval expert or simply the curious, *Vasa* has more than enough to satisfy all.

Notes

1. *Vasa* was a ship of the line, one of a series of the largest vessels in the Swedish fleet. Named '*Wasen*' after one of the symbols of the Swedish crown she is often referred to as *Wasa* but the Royal Swedish Academy and the Advisory Council for Swedish Terminology and Usage recommend the name *Vasa*, spelled with a V.
2. Now the Grand Hotel at Skeppsbron in the area of Stockholm known as Old Town.
3. This report is now located at the Swedish National Records Office in Stockholm. Gustavus II had not witnessed the sinking because he was leading a military campaign against Poland, at the time.
4. The initial sample of black oak is preserved on display at the *Vasa* musuem.
5. Falting received the *Vasa* medal from the king in 1959. His divers were awarded special other decorations for their services.

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(Part 2 of this account of the ship's 1788-89 Voyage will be published in the February issue)

HMS SIRIUS VOYAGE TO THE CAPE OF GOOD HOPE 1788-89

PART 1

by Ray Jones

In 1788-89 *HMS Sirius* sailed from Port Jackson to Table Bay at the Cape of Good Hope and back to Sydney, carrying food for the new settlement at Sydney Cove. The voyage is usually passed over in a sentence or two in general accounts of the settlement at Port Jackson which stress the need for the provisions she carried. Interesting maritime features of the voyage are ignored.

But *Sirius*' 1788-89 voyage has considerable maritime historical interest for two main reasons. Most important was the pioneering of the best route for ships sailing from Port Jackson to Europe. Before *Sirius* showed the way, masters of the few ships leaving Port Jackson bound for England were variously advised: to go west across the Indian Ocean, or to go north around New Guinea and through the East Indies (now Indonesia) to Batavia (now Djakarta), or to cross the Pacific Ocean and round Cape Horn. There was insufficient knowledge of global weather patterns to give definite advice. Captain John Hunter showed in *HMS Sirius* that the fastest, safest route was across the Pacific eastward at high latitude, around Cape Horn, then join up with better known shipping routes in the Atlantic Ocean.

An account of *Sirius*' voyage also illustrates the problems typical of any voyage in that remote, little-known region of the world. These difficulties dominated the early growth of white settlement in Australia for several decades. Scurvy, weather damage, the danger of shipwreck and navigational problems all played their part in *Sirius*' story and were features more or less present in any voyage to or from Australia at that time. Above all was the uncertain quality of the charts and the problem of finding a ship's position at sea.

Maritime navigation at the end of the eighteenth century was no longer as haphazard as it had been a century before but it was not yet a precise science. At least the general shape of the world's oceans was known although there remained a lot of detailed charting to be done. The first Hydrographer of the Navy was not appointed until 1795 and the formation of a recognised body of professional hydrographers was in the future. Charts were published for profit and quality varied widely; there was no accepted chart standard. Royal Navy officers had to purchase charts from civilian chart dealers in London, so whatever charts *Sirius* (or any other ship) carried depended on choices made by her officers before leaving England.

Finding the position of a ship at sea to mark on these charts was sometimes an uncertain business. The technique of finding latitude by observation of the sun was long established but methods of finding longitude were still being developed. A procedure for observing the angular distance between the moon and another body (the lunar distance), then comparing this distance with that between the same bodies at Greenwich, was developed in the 1760s. The Nautical Almanac, containing tables of predicted lunar distances necessary to use this technique, was first published for 1767.

This apparently promising lunar distance technique suffered from the fundamental drawback that predicting lunar position to the required accuracy was beyond astronomical knowledge of the day and results of a lunar distance observation could be up to half a degree in error. There arose the practice of taking sets of lunar distances over extended periods of time and using the average when establishing the position of a port for charting. As an example, Sydney Cove's longitude was found by taking the mean of 312 lunar distances measured on 15 days in March and April 1788 by two officers.[1] This was not possible at sea but the principle of multiple observations was often applied when an important position was being found during a voyage. As well as one officer making several observations, all the qualified officers on board would take a set of observations and the mean of all observed positions was accepted.

The Author

Ray Jones served in a variety of aircrew and Staff Postings in the RAN until he retired in 1983 to continue his education. He is presently studying at the University of Tasmania.

If Greenwich time was available in a ship, comparison with local time found by observation of the sun would give longitude from Greenwich and the longitude problem would be solved. Considerable effort had been devoted to design and construction of a time-keeper which would keep Greenwich time in a ship at sea and time-keepers with acceptable reliability became available in the mid-eighteenth century. Captain Cook established their use at sea when he was loud in praise of a prototype time-keeper taken on his second voyage in the 1770s, but they did not immediately become widely available.[2]

Using time-keepers for finding longitude relied (apart from being able to see the sun) not so much on great accuracy as on consistency. It did not matter very much if the time keeper was slightly slow or fast provided the rate of losing or gaining was constant and known, so allowance for errors could be made when calculating longitude. If the rate changed during the voyage then longitudes found would be increasingly wrong without the seafarer being aware of the error.

Combined with the difficulties of position finding were those of chart accuracy and completeness in remote regions. Cook had completed the discovery of all major lands in the Pacific and the Indian Ocean had been reasonably well known for some time but numerous islands remained to be found. The region immediately north and north-east of Australia was particularly poorly known. Compounding the navigational problem was the presence on charts of islands which existed only in the imagination of their 'discoverers'. Even land which had been discovered had not necessarily been charted in detail. This was the case for most of the east coast of Australia and of southern Van Diemens Land (i.e. Tasmania); the latter had been visited by several explorers but had not been thoroughly surveyed. Lack of time forced explorers to make running surveys during which inlets were not investigated (or always noticed). The confident-looking solid lines on the resulting charts sometimes bore only slight resemblance to the real coastline.

In this uncertain navigational environment, any voyage from Port Jackson was inevitably a voyage of exploration regardless of any other purpose. In March 1788, *HMS Supply* had stumbled across Lord Howe Island while sailing between Port Jackson and Norfolk Island and discoveries of this kind were common around Australia for some years. Similar accidental discoveries by *Sirius* would not have been surprising under any circumstance but her voyage to Table Bay was marked by planning typical of an exploration voyage with special urgency because of the food situation in the colony.

The voyage was ordered by Captain Arthur Phillip, RN, as governor of the colony and as Principal Captain of *HMS Sirius*, after the first crop planted in the colony failed to germinate. Seed grain held for the next season was planted immediately but food shortage approached and Captain John Hunter, RN, was ordered to take *Sirius* to the Cape of Good Hope for food. Before the First Fleet left England, Hunter had been appointed as Second Captain of *Sirius* with authority to act as Commanding Officer when Phillip sent her away from the colony on occasions such as this.

Sirius had been built as the storeship *Berwick* and had been in reserve near London when the Navy Board selected her as the vessel to lead the First Fleet to New South Wales. She commissioned on 25 October 1786 as a sixth rate of about 550 tonnes (reports differ), and 40.2 metres long.

After arriving in Sydney Cove in January 1788, *Sirius* had anchored as guard ship at the mouth of the cove and her crew were employed around the settlement. Her carpenters had been in particular demand ashore and so had been unable to carry out maintenance onboard. Some caulking had been inexpertly done on her side and decks but other ships husbandry had been postponed. Towards the end of September 1788 *Sirius* was prepared for her voyage to the Cape of Good Hope. Eight guns with carriages, shot and gunpowder, a spare anchor and other articles were landed to make room for the supplies she was to bring back. Hunter reluctantly complied with Phillip's directive to leave the ship's longboat behind for use in the colony.

Phillip's written orders to Hunter were issued on 30 September. Hunter records there had been a difference of opinion between them over whether *Sirius* should sail east or west to the Cape. The westerly route was a shorter distance and Phillip strongly recommended this route but left the final decision to Hunter. This difference of opinion between the two senior naval officers over the best route between Port Jackson and the Cape of Good Hope illustrated the deficiences in knowledge of weather in the Australian region. Lack of knowledge of winds meant that any voyage from Port Jackson bound for England lacked a recognised best route. There were three possible routes for a ship to take to reach better-known waters in which traditional routes could be followed to Europe. These were later described by Hunter as the northern, western and southern passages.

The northern passage went north from Port Jackson, north of New Guinea, then through the

East Indies to Batavia. Shipping routes from Batavia across the Indian Ocean to the Cape of Good Hope and on to Europe were well known. The considerable disadvantages of the northern route included vague knowledge of the islands north-east of Australia which were rumoured to be inhabited by fierce natives. Furthermore, the Dutch jealously guarded charts of their East Indies in which winds were often unfavourably light and variable. The southern route went across the Pacific Ocean, around Cape Horn then to the Cape of Good Hope or to Rio de Janeiro. Weather around Cape Horn was a significant deterrent to using this route. The western route from Sydney, south around Van Diemens Land then west across the Indian Ocean to the Cape of Good Hope was the shortest and most direct route. This route appeared most attractive on paper because it avoided poorly charted land for most of the way. Unfortunately it required a ship to battle the prevailing wind for nearly the whole way. A ship setting out on this route would be faced with a slow and uncomfortable voyage.

The dilemma of choosing a route faced the transports and storeships of the First Fleet when they dispersed from Sydney after their release from government service. Three bound for China to load tea faced a similar dilemma but the general direction of their voyage was pre-determined. The remaining ships returning to England had to select one of the three routes.

Four of them had left Port Jackson before *Sirius* departed but news of their experiences on the voyages could not have filtered back to Sydney when *Sirius* sailed. Two of them chose to sail together via the northern route to Batavia. They encountered unfavourable weather and scurvy ravaged the crews so badly as they made slow progress that one ship was scuttled and surviving personnel combined in the other. This desperate measure was barely sufficient and the single ship arrived at Batavia with only one crew member capable of going aloft. A team of sailors from ships in Batavia came onboard to bring her into harbour.

Two other ships elected to return to England via Cape Horn. They crossed the Pacific at medium latitudes and reached Rio de Janeiro with insufficient working sailors to bring the ships into harbour unaided.

When Hunter was deciding which way to go to the Cape of Good Hope he considered earlier explorers' reports and remembered the westerly winds experienced by the First Fleet in 1787. He decided the route to the west would be '. . . a long and tedious voyage . . .'[3] which, as far as he knew, had not been attempted before. He undoubtedly took note of Cook's voyage from New Zealand to Cape Horn across the Pacific mostly between 50 and 60 degrees South latitude in November and December 1774 as

HMS Sirius in Botany Bay — from an engraving from The Voyage of Governor Phillip to Botany Bay published 1789.

an indication that, at the time of year *Sirius* would be voyaging, the east bound route was possible at high latitudes. He believed his voyage was far too urgent to be trying experiments such as the western route which had '. . . never yet been attempted, not even by ships employed in that kind of service which leaves it in their power to make experiments (i.e. exploration ships) . . .'[4] He intended to go south from Port Jackson then south-east past New Zealand until he encountered the westerlies which, he expected, would carry *Sirius* quickly to Cape Horn.

Sirius unmoored on 1 October and sailed down the harbour to a lower anchorage just inside the heads, ready to sail with the land breeze next morning. She carried basic provisions for four months having left some of her victualling stores for use in the settlement. When she cleared Port Jackson on 2 October 1788 the wind was south-west and strong, '. . . with thick, hazy and dirty weather, . . .'[4]

As soon as the hull began working at sea, *Sirius* began leaking. The carpenter's report of the leak caused Hunter considerable concern, not only because of the long voyage ahead of them through barely known waters, but because his sailors were not as healthy as they should have been when setting out on a long voyage. The crew had been eating mostly salt provisions since leaving the Cape of Good Hope in November 1787 with the First Fleet. Garden Island in Port Jackson had been made available to *Sirius* from February 1788 for growing vegetables, but the amount grown was not great. They had also eaten a few fresh fish caught in Port Jackson but, overall, the sailors' diet had pre-disposed them to scurvy. Manning the pumps regularly would place an extra demand on this already weakened crew.

Within a few days the leak was isolated to an area near the bow on the starboard side just below the water line. The cause was attributed to an iron bolt '. . . being corroded by the copper . . .'[5] allowing water to enter. On the port tack *Sirius* made 13 to 15 centimetres an hour and had to be pumped out every two hours to hold down the water level. Attempts to plug the leak at sea failed.

From Port Jackson *Sirius* ran south about 180 miles off the coast seeking the westerlies. Hunter was also looking for isolated islands similar to Lord Howe Island which *HMS Supply* had discovered earlier in the year. None were seen.

By 9 October *Sirius* was east of the southern extremity of Van Diemens Land and altered course to pass south of New Zealand. The temperature had dropped noticeably and additional clothing was issued to those in need of it as Hunter intended to sail further south. The south-easterly track was maintained while *Sirius* passed south of New Zealand on 12 October and crossed 50° South latitude two days later. Next day she altered course to slightly south of east to take her to Cape Horn. The surgeon recommended special measures against scurvy begin at this stage in the voyage and malt essence was served to each man daily; this was the only anti-scorbutic carried in the vessel.

By the beginning of November, *Sirius* had settled down to the long haul to the Horn. On the 1st she reached 55° South and passed 152° West longitude (or as Hunter recorded it, 208° East). Hunter had chosen this track because it lay between the tracks of ships on Cook's expeditions and he hoped to find any islands in this unexplored region. Hunter commented on the large number of penguins around the ship; he assumed (incorrectly) that, since they laid eggs on the land yet were so slow, land must be nearby.

Air temperatures continued decreasing, and 1°C was often being recorded by mid-November. In that month *Sirius* covered 3407 miles at an average speed of 4.7 knots.[6] Icebergs were being met by the end of November when she was still at 55° South; sometimes *Sirius* had to alter course to avoid these '. .. ice islands. . .'[7]

As they drew closer to Cape Horn, Hunter took his track across an island called Diego Ramirez marked on his chart about thirty miles from the Horn. At noon on 26 November he took a good altitude of the sun (giving latitude). That morning he and Lieutenant Bradley had each taken a set of lunar distances (giving longitude) which agreed to within a few miles. This position put them very close to the marked island but land was not in sight and *Sirius* turned towards Cape Horn.

Hunter had no intention of searching further for Diego Ramirez because of the urgency of his voyage, not only for the settlement at Port Jackson but, more immediately, for the health of his crew and the safety of his ship. As Hunter had feared when *Sirius* left Sydney early in October, inadequate fresh food for the crew in Sydney had predisposed them to scurvy which was now apparent and *Sirius* carried none of the recognised treatments. Far from being surprised at scurvy breaking out within two months of leaving a port he was surprised it had taken so long to occur since they had now been over a year without adequate fresh food.

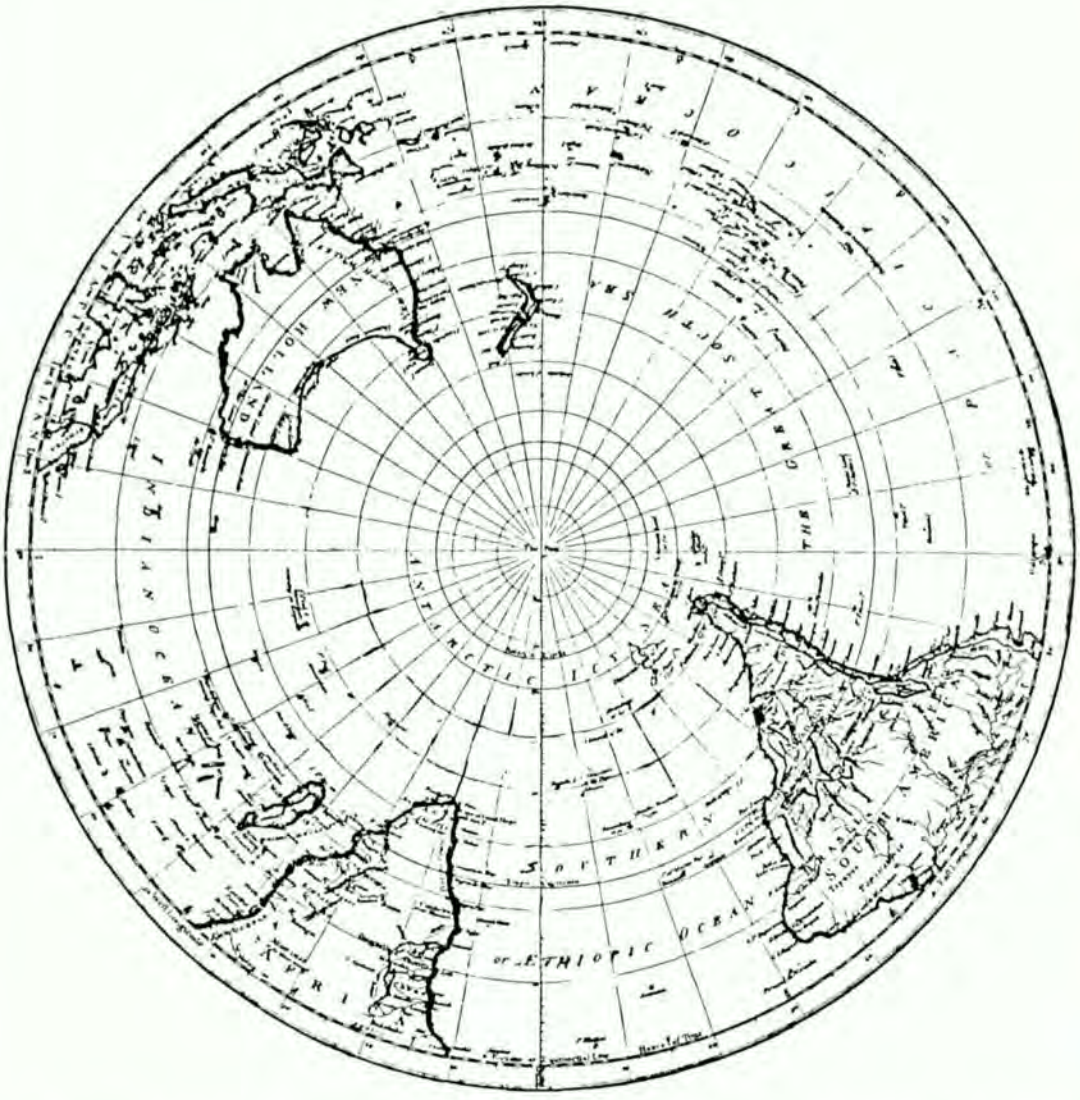
Adverse winds slowed progress after rounding Cape Horn when speed became even more important as *Sirius*' crew was reduced by scurvy. For the first twelve days of December she averaged 64 miles per day (an average speed of 2.7 knots). During this time Hunter was trying to make headway to the north-east seeking sunshine to ease scurvy symptoms but the wind,

such as there was, was unseasonably north-easterly ensuring very slow progress.

The first death from scurvy occurred on 12 December; the sailor concerned had a lung disease as well but Hunter attributed his death primarily to scurvy. After 12 December the wind increased in strength from the north-west or south-west and *Sirius* made much better time towards Table Bay. For twelve dys from 13 December she averaged 146 miles per day (6.1 knots) bowling along in gales of wind.

Since rounding Cape Horn *Sirius* had been continuously among icebergs. Hunter noted they ranged in size from '. . . the size of a country church. . .'[8] to three miles in circumference. He implies that, had the nights not been very short, his ship would have been in danger at night. The icefields thinned appreciably at 46° South on 18 December and the last ice was passed at 44° South on 20 December after twenty-eight days among icebergs.

Sirius crossed the Greenwich meridian on 25



The dilemma facing Hunter — to sail the shorter distance west against the wind or the longer distance east with following winds — is illustrated by this chart, an amended copy of one engraved by Faden and Jeffreys Geographer to the King and published in 1775.

December and repeated that day. Hunter's journal, by then, records 28 of the crew as sick, some of them dying. The next death, from scurvy alone, occurred on 30 December. *Sirius* continued towards Table Bay but there was now doubt over her position. On 31 December lunar distances taken by Bradley and Hunter gave a longitude of 17°07' East at noon but the time-keeper gave a longitude of 18°10' East, while the longitude of Table Bay was 18°25' East but land was not in sight. The time keeper had developed an unknown error and was no longer trustworthy.

From astronomical observations, Hunter knew *Sirius* was in the latitude of Table Bay so he adopted the time-honoured procedure of running down the latitude for the rest of 31 December. After nightfall, because land was close ahead (judging from astronomical observations), *Sirius* stood out to sea until about midnight then turned towards land somewhere to the east. Another seaman died of scurvy during the night. At first light, land was sighted and by afternoon *Sirius* was near the entrance of Table Bay where she anchored for the night.

The First Lieutenant was sent ashore to ascertain the state of relations between England and the Netherlands and confirmed they were again friendly. Had they been at war *Sirius* would have been liable to detention because her crew was in no condition to sail anywhere else. She now had only twelve men in each watch not bedridden and half of these twelve were incapable of going aloft because of muscular contractions caused by scurvy. Many of the sick were close to death. Next day *Sirius* sailed up Table Bay and anchored. The Governor indicated Hunter could have whatever was needed and forty crewmembers were landed to the hospital.

Sirius' voyage from Sydney was widely regarded with surprise for the short time taken. She had taken 92 days to sail 9961 miles giving an average run of 108 miles per day and an average speed of 4.5 knots throughout. On some days with less favourable winds she had run much less: the worst day's run was 9 miles on 21 October 1788.[9] But *Sirius* was no greyhound of the seas as her performance with the First Fleet had shown; little *HMS Supply* had been selected by Phillip as the faster vessel to take him to Botany Bay ahead of the main part of the fleet. *Sirius* was not a notably fast ship, but he made optimum use of good winds. Had she not experienced unseasonable contrary winds when north-east of Cape Horn, an even faster journey would have been completed.

In Table Bay, *Sirius*, was heeled over and the troublesome leak near the bow, found and plugged. The cause was confirmed as electrolytic corrosion between an iron bolt and the copper sheathing. The bolt had dropped out completely just after the ship left Port Jackson leaving a hole more than 2.5 centimetres in diameter which was now filled with a wooden plug. Many other smaller holes, left by nails originally securing the skirting board at the top of the copper sheath but now entirely corroded, were also plugged. The ship still leaked, but not as much as before.

By January 1789 *HMS Sirius* had successfully sailed half way around the world to load provisions for the colony at Port Jackson and had proven the route across the Pacific was fast and safe, at least during the southern Summer. Now Hunter had to return to Sydney with the food. The concluding part of this article will describe the second part of the voyage.

Notes

1. Captain John Hunter, *Transactions at Port Jackson and Norfolk Island*. John Stockdale, London, 1793. Facsimile edition, Adelaide, 1968, pp 87-88.
2. Eric G. Forbes, *The Birth of Scientific Navigation*, National Maritime Museum, London, 1974, pp 11-13.
3. op cit, Hunter, p93.
4. *loc cit*.
5. ibid, p94.
6. These distances are calculated between noon positions recorded in Hunter's journal. No allowance is made for deviations from a straight line between the noon positions.
7. op cit, Hunter, p98.
8. ibid, p101.
9. The day's run figures assume the recorded noon positions are correct. Mariners of the time often recorded three longitudes: that from lunar distances, that from the time keeper and that from log and compass. The three rarely agreed and different ones were entered in the log. On the occasion referred to the recorded weather indicates poor sailing conditions.

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Now We Are 21 . . . Well, Almost

The Royal Australian Nursing Service (RANNS) Comes of Age

by Lieutenant Commander E.J. Coles RAN

Naval nursing passes back into history some 200 years to the time when sailors took their women to sea to care for them. Less colourfully but equally important for RAN history is 2 November 1985, the 21st anniversary of the re-formed RANNS.

Following lengthy discussion into the feasibility of a nursing service, a decision was made in December 1963 by the then Minister for the Navy, Senator John Gorton to re-introduce the RANNS. This followed a lapse of 16 years during which the navy's nursing care was provided by a loyal band of approximately 20 civilian nursing sisters spread from Manus island to Westernport Bay. So the RANNS was re-formed on 2 November 1964 and thus began another chapter in the history of naval nursing. This chapter was to last 20 years and seven months when, on 7 June 1985, the final words were written with the abolition of the designation 'RANNS' and a re-title of 'Nursing Branch'.

During those years the nursing service underwent many significant changes; uniform and rank titles, equal pay, terms of employment and conditions of service, to mention just a few. In 1971 the RAANS uniform saw a marked change. The red cap badge was withdrawn, as was the summer blue cotton cape, the naval crown brooch worn with the working rig, the epaulette replica on the winter cape, and beckets from all uniforms. These were replaced by a gold cap badge; and shoulder boards and sleeve lacing as worn by the male officers but with maroon distinction cloth. Collar bars of gilt metal, reproducing in miniature the distinctive marks of rank are now being replaced by soft rank insignia shoulder boards.

In 1974 organdie veils were replaced by the paper veil except for 'special' occasions such as Admirals's inspection. A further step forward occured in 1984 with the complete withdrawal of all veils.

Rank titles have also undergone changes. The nursing officer of 1964 was afforded the following rank equivalents:

Sub Lieutenant	—	Sister
Lieutenant	—	Senior Sister
Lieutenant Commander	—	Superintending Sister
Commander	—	Matron

This nomenclature continued until December 1979 when nursing officers relinquished the hospital terminology to assume male rank titles. Needless to say the sailor was confused . . . . 'Don't know whether to call you Sir or Ma'am so I'll call you Sam'.

Perhaps the most welcome breakthrough came on 1 October 1978 when all female officers were granted equal pay with their male counterparts. Another bastion broken down!

Postings have varied with the billets being established and dis-established to fit manpower requirements. In January 1972 the nursing officer billet in *HMAS Harman* was dis-established following the change from sick quarters to sick bay. This was followed in May 1974 when the ANZUK Medical Centre in Singapore was closed thereby terminating an excellent 'rabbits' posting for a RANNS officer. *HMAS Nirimba* gained a nursing officer in 1977 following the retirement of a civilian nursing sister after 20 years of untiring support.

Care for RAN personnel in *HMAS Stirling* commenced in 1978 when the modern health facility opened its doors for business. This area is expanding significantly with the increasing presence of the Fleet in Western Australia. Regrettably, its neighbour at *HMAS Leeuwin* closed in December 1984 thereby ending a 20 year span of providing health care to junior recruits.

In February 1978 the office of the Director General of Naval Health Services, including the Matron, RANNS, was transferred from Melbourne to Canberra. The title of Matron was changed to Director Nursing Services Navy with a further change in 1984 to Director Nursing Services and Health Service Training, Navy.

Across the hill at Russell the Joint Services Medical Centre (now Joint Services Health Centre) received its first RANNS officer in 1977 and the billet is now shared on a two-year Tri-Service rotation.

In June 1981 the first nursing officer attended the RAN Staff College. Now five nursing officers are proud bearers of 'psc'.

Perhaps the most professionally rewarding posting ceased in December 1982 when the last nursing officer left the Patrol Boat Base, Lombrum on Manus Island. This move ended an 18 year association with the indigenous people and PNGDF personnel working side by side with the RANNS officers to care for the people of Manus Province.

The loss of these billets in the idyllic Admiralty Islands saw the last of long term overseas postings for nursing officers. However, Operation Sea Surge was activated in July 1983 as a three month exchange posting to the United Kingdom. Thus far two nursing officers have participated in this programme. This posting is seen as an excellent public relations exercise for the exchange of ideas and professional development within the Health Services.

31 August 1984 was a highly significant milestone in our history when the first male nursing officer joined the RAN. Presently both male nursing officers are serving in *HMAS Cerberus* as a welcome addition to the Health Services team.

To the present . . . . November 1985 and the Australian Defence Force Academy has an RAN nursing officer as a member of the Tri-Service health team preparing for the influx of cadets in 1986.

Now the final words in this chapter of RANNS history have been written. A signal was despatched on 7 June 1985 stating that:

> 'The Naval Forces (Womens Services) Regulations have been repealed. . . . The designation RANNS will be abolished. Former members of the RANNS will become members of the Nursing Branch to be constituted by CNS determination. Former officers of the WRANS and RANNS will use the designation RAN.'

This new Nursing Branch will accommodate both male and female members, and the Chief of Naval Staff's determination of 23 August 1982 will be revoked. Whilst current Nursing Branch and RANNS officers will continue to serve under their existing conditions of service, a set of conditions of appointment has to be agreed and confirmed for nursing officers entering the RAN after 7 June 1985.

As the nursing branch members assume wider roles and responsibilities within the RAN our colleagues of 21 years ago can be assured that the same high standard of professional care will be carried forward for another 21 years . . . . and further.

The Author

Lieutenant Commander Liz Coles joined the RANNS in 1975. Postings have included HMA Ships *Cerberus* and *Penguin* and 12 months at Manus Island. She attended the Cumberland College of Health Sciences in 1980 and this was followed by the RAN Staff Course 6/81 the next year. A two and one half years posting as Staff Officer Projects to DGNHS preceded her present posting as Officer-in-Charge of the Medical School in *HMAS Cerberus*.

THE MARY ROSE

EXCAVATION & RAISING OF HENRY VIII'S FLAGSHIP

a resumé of Margaret Rule's book by Peter Trick

It was ordered that at daybreak the galleys should advance upon the British whilst at anchor and, by firing at them with all fury, provoke them into engagement and then retreating endeavour to draw them out of their hold towards the main battle. This order was executed with a great deal of intrepidity and the weather favoured our attempt beyond our wishes for it was proven in the morning a perfect calm. Our galleys had all the advantages of working which we could desire to the great damage of the English who for want of wind not being able to stir laid exposed to our cannon and being so much higher and bulkier than our galleys hardly a shot missed them while they, with the help of oars, shifted at pleasure, and thereby avoided the danger of the enemy's artillery. Fortune favoured our fleet in this manner for above an hour during which time, among other damages the English received, the Mary Rose, one of their principal ships, was sunk by our cannon and of 5 or 600 men which were on board only 5 and 30 escaped.

Immediately after the *Mary Rose* sank, naval and military commanders were faced with two tasks; firstly to explain why she had sunk and secondly to recover the hull as quickly as possible. The first task was relatively easy and the eye-witness account of Sir Peter Carew and Lord Russell's letter to Sir William Paget, paved the way to a general verdict of 'indiscipline & mishandling', although Sir Walter Raleigh years later, attributed the disaster mainly to a design fault and the fact that there was too little freeboard between the lower gunport sills and the water.

The second task was delegated to the Venetians Peter de Andreas and Simon de Marine who received 40 marks for their efforts in trying to recover the sunken ship from the seabed.

Two empty ships each of 700 tons burthen, the *Jesus of Lubeck* and *Samson*, were moored on either side of the *Mary Rose* and secured to her by strong cables. At low water the cables would be hauled tight on the capstans and as the tide rose the buoyant ships would ride with it, bringing the *Mary Rose* off the bottom. In early August Viscount Lisle reported that the Venetian salvors had asked for six more days to drag the ship to shallower water. Somehow the main mast had been torn out of the mast-step in the keelson and silt had entered the vessel. Salvage attempts were abandoned and apart from minor recoveries of cannon and guns the ship was soon forgotten.

It was a chance exposure in 1836 that Charles Deane rediscovered the wreck using the latest in diving apparatus with an open helmet. Whilst working on another wreck, the *Royal George,* he was invited by some local fishermen to investigate an area where their lines frequently tangled in some seabed obstruction. He found some timbers protruding from the seabed and to his delight a large bronze gun (3.4m long). Later that year he brought up three more guns reporting that he had found them resting on 'some wreck *completely buried in sand*'.

During the intervening four years Deane had recovered wrought iron breech-loading guns, cast muzzle-loading brass guns, yew long bows, pottery, cloth, several skulls and a variety of timber. He requested and received six unserviceable 13in bombshells to enable him to blow a crater in the seabed to explore more of the wreck and from this recovered further guns.

The Search—1965–71

In 1965 a team of well-trained and experienced divers, but none of them trained archaeologists, were sent to discover and survey several well-documented historic wrecks in the Solent. Their

inexperience made them cautious and very properly they limited their initial programme to diving and recording what they saw. There were no plans to excavate or to survey — just to look and learn. Margaret Rule, eminent archaeologist was invited to join the team and was desperately keen to see if it was possible to work underwater and to record in a manner which would be acceptable to conventional land archaeologists.

When the *Mary Rose* team of divers dived on her they reported a mound of seaweed-festooned wreckage 3m high and 60m long. Contemporary accounts of the sinking suggested that the *Mary Rose* lay in shallow water within sight and sound of Southsea Castle. The King (Henry VIII) had heard cries of her drowning sailors and it seemed unlikely that even on a calm day they would have carried very much further than the edge of spit sound. In 1966 a chart of 1841 was found in the Hydrographers' department of the Royal Navy. The chart was annotated with a red cross to mark the spot where the Deanes had discovered the *Mary Rose*.

In 1967 a sonar trace was used over the site of the *Mary Rose* . The profiler revealed a W-shaped anomaly beneath the surface of the seabed and above the anomaly a slight mound. On the basis of the evidence the *Mary Rose* Committee obtained a lease to the seabed from the Crown Estate Commissioners in order to protect the sight from trespassers.

The aims too of the Committee were 'to find, excavate, raise and preserve for all time the remains of the *Mary Rose* as may be of historical or archaeological interest.'

Contact at Last

On a bright sunny day, 1 May 1971, one of the team of divers returned to the search vessel. 'There's wreckage, including planking sticking up from the mud', he muttered — the *Mary Rose* had been found. Further dives were made and it was reported 'large numbers of ends of timbers straight in a row each approximately 12in x 18in and protruding only 2-3in from the seabed. To the left of them is timber planking.'

Were the timbers ribs of the main hull below the waterline, or, as was wanted to believe, the frames of the bowcastle? Was the line of planking inboard or outboard — was it a ceiling planking or outer hull planking? It would be weeks before the divers understood what the timbers were — a Tudor Carrack.

As work progressed it became clear that the ability to excavate non-destructively underwater was limited by funds, resources and experience and it was decided to concentrate efforts on clearing away the silts from the edges of each timber to expose a 'fair face'.

During 1972 it was planned to spend 68 days on site with determination of exposing the heading and the angle of heel. On the starboard side a small section of frames and clinker planking was identified as the sterncastle.

The light overlapping planks and the frames and standards which supported them, were eroded and fragile and with limited funds it was agreed to back-fill the area with silt and leave for further investigation.

Over the following years the painstaking work continued with encouragement and funding by many associates and the enthusiastic support of the Patron HRH Prince Charles who in 1975 dived to inspect the wreck for the first time.

In 1978, a major trench across the hull from the port to the starboard side at the bow was excavated. The starboard junction of the bowcastle and the bulwark rail were examined and it became clear that we had a coherent structure with personal possessions and ship's stores *in situ* exactly as they fell across the decks 433 years earlier.

With the purchase of a diving vessel *Sleipner* the work accelerated, teams of divers exploring the ever revealing wreck. The *Sleipner* had been used in Sweden on the recovery of the famous *Wasa*, and after being used as an anchor-laying ship, sailed to Southampton to assist on the *Mary Rose* project. During the remaining 229 days of the 1979 season diving occurred on 146 days and 6858 dives were made from the decks of *Sleipner*. During that time approximately 600 cubic metres of silt were removed from the site. Work concentrated on removing secondary post-tudor silts from the bow, stern and along the starboard side of the ship.

Later in the season as new divers joined the team, a video of methods of excavation and techniques of survey used on the site was made. The video camera was probably the most important single piece of equipment loaned to the trust during excavation. The wide angle 85 degrees lens registered 10-12 per cent better than the human eye and, in addition to being used as a briefing tool for new divers and archaeologists, it allowed essential recording of the ship's structure to continue as the excavation proceeded.

Conservation

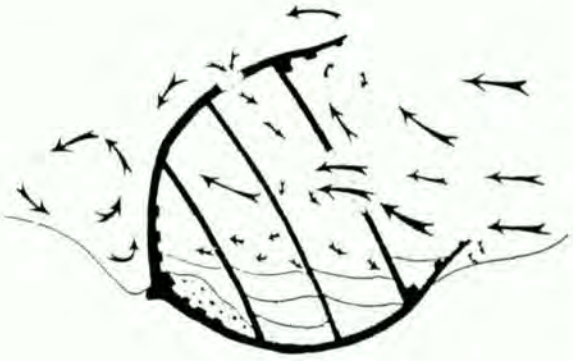
The majority of objects recovered from the *Mary Rose* are of wood or leather and right from the beginning it was recognised that large numbers of waterlogged organic objects would present a major problem for the conservators. It was decided to tackle the task in close alliance with Portsmouth City Museum where material from *Mary Rose* had been conserved since 1971. Various studies using polyethylene glycols were used on restoring wood and rope. Another team

Mary Rose — taken from the only contemporary painting in existence, known as the Anthony Anthony Roll, a list of the Kings Ships completed in 1546.

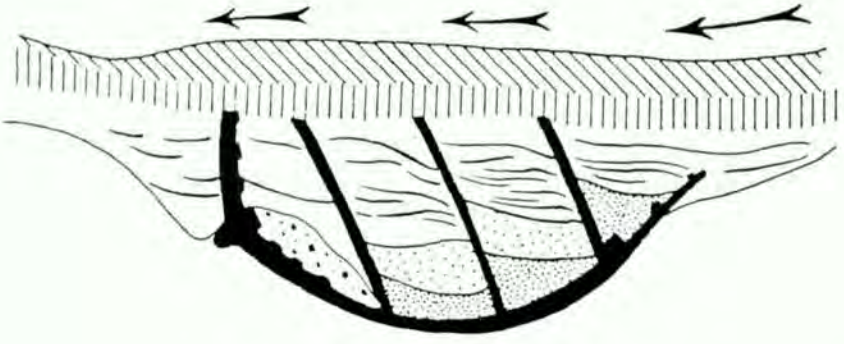
Impression of excavation in 1981. Grid of steel poles divides the site into 3m squares, while airlifts are removing silt. Hull of salvage vessel Sleipner visible top left. In reality this overview was never possible under water.
(From a painting by John Adams printed in Rule's book The Mary Rose

THE EROSION PATTERN

1. After the ship sank it lay on its Starboard side at 60° from the vertical and current-borne silt was deposited in the relatively calm water within the hull. The abrasive action of the silt-laden current weakened the exposed hull by thinning the timbers, and scored a deep pit on the port side.



2. Continued abrasion caused the exposed hull to collapse, filling the scour pits. The now smoother flow continued to deposit silt within the remaining hull structure.



3. By the late seventeenth or early eighteenth centurey a hard layer of shelly clay was deposited over the site, sealing the tudor levels. Above this, a mobile 'modern' bed was layed. This was removed by scour action from time to time and the 1836 discovery and 1971 re-discovery probably resulted from these periodic temporary exposures.

(Based on text and diagrams presented in Rule's book *The Mary Rose*.)

led by Chris O'Shea tackled the task of conserving wood, bronze, leather ceramics, textiles, lead and pewter.

The wrought and cast iron guns from the *Mary Rose* have all been stabilized by heating them in an atmosphere of hydrogen and converting the oxidised iron to metallic iron during a reduction process. Although this process has been criticised it has proved to be the only reliable method of preserving wrought iron from the site.

Early experiments to conserve waterlogged wooden objects using the acetone rosin process gave variable results and since 1979 most objects have been treated by freeze-drying after soaking in a tank of polyethylene glycol to bulk the cells of wood.

Into The '80s

By the end of 1981 the excavation was almost complete. The ship lay revealed beneath a 3inch grid of steel poles and two separate steel manifolds carried low pressure air to take off points on the port and starboard side of the wreck to power a system of sixteen airlifts. The archaeologists still had a formidable task to record and dismantle the brick-built galley and remove all ballast and stores from within the hold amidships, but this work was completed during May and June 1982 by a specially invited team of volunteers working day and night shifts.

On a visit to the US in January '81 Margaret Rule met the only person who had heard of the *Mary Rose* — a taxi driver who had seen an advert for Damart thermal underwear and he recognised her as the "Thermal Underwear Lady".

(Shamedly the first knowledge I had of *Mary Rose* was on a visit to Southsea Castle in 1982 when the ranger there introduced me to the *Mary Rose* exhibition area, I thought perhaps she was a local filmstar, but after seeing the marvellous collection of artefacts, photos and video screening, my enthusiasm in the *Mary Rose* story was born. P.T.)

Recovery

The final recovery of *Mary Rose* was broken up into various phases.

- Phase 1 —preparation: the removal of the back-fill of silts which had accumulated inside the ship over the winter months and the removal of sandbags and terram sheeting which had been placed over the decks to limit colonisation by fish and other marine life; the excavation of four post pits was necessary so that the legs of the underwater lifting frame could be correctly positioned in the seabed.
- Phase 2 — an archaeological programme of survey and excavation was needed to complete the removal of the final deposits in the hold and on the orlop deck and also to complete the survey of the structure.
- Phase 3 — installation of lifting equipment by positioning an underwater lifting frame above the wreck in a pre-determined location.
- Phase 4 — tunnelling beneath the hull at nine points to pass man-made fibre strops beneath the hull and bringing them up to hydraulic tensioners on the underwater lifting frame.
- Phase 5 — internal bracing: the selection of positions for pads for the steel girders and the installation of the steel bracers.
- Phase 6 — lifting to cradle: to lift the underwater lifting frame with the hull suspended beneath by nine strops using a ship-borne crane, to be followed immediately by placing the *Mary Rose*, still suspended from the underwater lifting frame, on a prefabricated steel cradle on the seabed with water bags between the hull and the cradle to provide a comfortable mattress.
- Phase 7 — the lift into air: the final lift of the cradle and the underwater lifting frame with the *Mary Rose* suspended and supported between the two onto a pontoon using a crane, and then the tow ashore to the Royal Naval base in Portsmouth Dockyard.

When the structure was eventually brought to shore the ship had been placed in a wet dock. I was rather disappointed in 1983 seeing the remains of the *Mary Rose*, a pile of broken timbers continually being sprayed by water in her steel cradle — next to the majestic HMS *Victory*. After seeing the whole hull of *Wasa* in Sweden I realised what an endless task the Trust have with the *Mary Rose*.

In years to come it is proposed to reinstate the decks, cabins, and companion ways that have been removed so laboriously underwater. It will be necessary to keep the ship wet to prevent micro-biological decay and initially this will be done by mist-spraying and chilled water.

A plan for the Tudor Ship museum close to the beach at Eastney, Portsmouth has been proposed. The centre point of the museum will be the shiphall, but great care will have been taken to link the exhibition galleries with views of the hull and the museum. This museum too will contain lecture theatres, a cinema, conservation laboratories and study facilities for visiting scholars to take in the historic and majectic *Mary Rose* that will live again after its death in 1545.

References:

The *Mary Rose* by Margaret Rule.

ISBN 0 85 177 255 2.

Any readers interested in joining the Mary Rose Society contact:

Peter TRICK,
12 Greenvale St.,
Fisher, A.C.T.

WASHINGTON NOTES

by Tom Friedmann

'America bashing' has become a popular sport in many foreign countries. Thus, when the New Zealand Labor Party fought its 1984 general election campaign in part on a platform calling for legislation banning nuclear armed and nuclear powered ('nuclear') ships from New Zealand (read 'American ships') ports and calling for the 'denuclearization' of the ANZUS alliance through the re-negotiation of the ANZUS treaty, Americans took little note of the situation. History had shown that, once elected, governments in countries allied to America usually evaded or repudiated party platforms that opposed the United States as being in the best interests of their own countries.

The Labor Party won the New Zealand elections on July 14, 1984. But contrary to precedent, the newly-designated prime minister, David Lange, immediately announced he would adhere to his party's nuclear platform. This position was seen by the American government as a direct threat to its policy of refusing to confirm or deny the presence of nuclear weapons aboard its ships.

For six months the United States engaged in intensive negotiations with the Lange government seeking a way out of an impasse which threatened the existence of one of America's most solid alliances, the ANZUS Pact. Frustrated by a lack of diplomatic progress, the Reagan administration sought to join the issue on January 21, 1985, by routinely requesting docking privileges in New Zealand for the conventionally powered guided missile destroyer *USS Buchanan* during planned ANZUS exercises. Standing by its nuclear non-confirmation policy, the American government refused to respond to New Zealand's inquiries regarding the munitions on board the *Buchanan*. New Zealand refused to admit the ship into its territorial waters.

Sir Wallace Rowling, New Zealand's new ambassador to the United States, contests this interpretation of the events surrounding the *Buchanan's* proposed visit. The ambassador emphasizes that New Zealand did not challenge America's non-confirmation policy. Rather, the New Zealand government has elected to decide if a ship is capable of carrying nuclear armament on a ship-by-ship basis. For example, it is assumed that if a ship is sufficiently sophisticated to be nuclear powered, it will also be nuclear armed and will thus not be permitted in New Zealand waters. Separate determinations will be made regarding conventionally powered ships.

The position of New Zealand should not have been a surprise, according to Sir Wallace, who brings to his new position the added insight of a former prime minister. Both National and Labor Party governments from 1969–1976 refused to permit nuclear powered vessels in New Zealand waters. This was not a military policy question but rather stemmed from New Zealand's concern about idemnification in the event of a nuclear accident. As the situation developed, however, by the time the idemnity question was settled the issue had evolved into the question of admitting nuclear weapons to New Zealand.

Washington reacted swiftly and forcefully to what it views as one of the most serious challenges it has ever faced in the alliance. Upcoming ANZUS exercises were cancelled as was the annual meeting of ANZUS foreign ministers, the most important date on the calendar of the Australian and New Zealand foreign ministers. New Zealand officers will

probably not be replaced on a one-for-one basis as they leave US training schools. Military cooperation is at a standstill or has been cancelled outright. Intelligence flowing to New Zealand under the provisions of the 1947 UKUSA Intelligence Agreement has been stemmed and the entire agreement placed under review. ANZUS, as a trilateral pact, is in abeyance and New Zealand is no longer considered as an ally but rather as a 'friend'.

But most vexing — and most hurtful — is that New Zealand is seen to have breached the unwritten policy of the United States government that placed our relations with the United Kingdom and the old dominions of Canada, Australia, and New Zealand on a plane surpassed by no other countries. Only these countries are cleared to see 'top secret' information in military categories called 'Combined Military Operations, Planning and Readiness', 'US Order of Battle', and 'Military Intelligence'.

This unique alliance — this family — provided the leverage for Prime Minister Clement Atlee to intercede with President Harry S. Truman during the Korean War to help prevent the use of atomic weapons. Only Australia's capital and an Australian prime minister have lent their names to ships of our navy. American support of the United Kingdom during the Falklands War — despite the correctness of the cause — came at a great cost to us in international opinion in Latin America. A Canadian diplomat, when accepting thanks for his country's assistance to Americans during the Iran hostage crisis, reflected that his was a small country with a small diplomatic service to which the United States gave frequent assistance. What Canada did, he said, was only a small repayment for the help the United States had given Canada.

Regarding ANZUS in particular, the Treaty is an easy one for all of the parties to live with. Instead of committing the principals to combat if the other was attacked, it calls for collaboration in developing the collective security of the powers to resist within the constitutional framework of each participant. The cost of ANZUS for the United States is rather cheap. The nuclear umbrella spread over the antipodes would have probably been extended whatever the case. Indeed, New Zealand argues that ANZUS is not and never has been a nuclear alliance and thus American nuclear protection is neither needed nor wanted. On the other hand, such protection has only recently been rejected.

Australia and New Zealand have never asked for nor received American aid under the Treaty. ANZAC forces patrol reaches of the southern Pacific that America's post-Vietnam Pacific Fleet would be prohibitively stretched to cover; they speak as democracies for democracy to Third World nations with power and influence that our overwhelming size prohibits; they have supported our geo-political goals in the South Pacific; sent participants to the Multinational Force in the Sinai; backed us in the United Nations on many contentious issues, including Israel; and helped contain communism in Malaya and continue to maintain a presence there.

But two points supersede all the others. First, the forces of Australia and New Zealand have fought and died with those of the United States in every war America has engaged in during this century. They were in Vietnam when our other allies were only good for heaping scorn upon the United States. Second, ANZUS is an alliance of truly free people with whom it was an honor for the United States to join. It is not a situation of an alliance with a government which was 'democratic' solely by the determination of a given President of the United States in order to reach a particular foreign policy goal as has so often been the case.

The United States is confronted with a tough predicament. Any action against the New Zealand government will bring us into conflict with a people who are — and remain — closely attached to the government and people of the United States. Statements by the Reagan administration trying to separate our actions against the New Zealand government and its people are as futile as similar attempts that were made regarding the United States during Vietnam. The government of a democracy represents the people who freely placed it in office. The people of New Zealand freely elected their government knowing what its position on nuclear armaments would be.

The situation is further aggravated by coming at a time when communist adventurism in the South Pacific, following the flag of a vastly expanded Soviet Pacific Fleet, appears to be increasing while the primary alliance we depend upon to help us in that area is crumbling. Despite Prime Minister Lange's warning to the Russians to stand clear of the dispute between our two countries, Soviet propagandists are nevertheless exploiting the problem to the fullest.

Finally, the American government is concerned how certain political groups in countries like Australia, Japan, the United Kingdom, Greece, Denmark, and Spain perceive our responses to New Zealand's actions.

One should, however, hesitate before concluding that any actions taken in regard to New Zealand will apply in all cases. Australia has a large and vocal left-wing within the ruling Labor Party which forced Prime Minister Hawke to back

out of a previous commitment to permit MX missile testing in the Tasman Sea earlier this year, an abrogation, Ambassador Rowling notes, that passed virtually without comment by the United States. Important American intelligence facilities in Australia already appear to have helped bring about a different response to a nuclear weapons question with our other ANZUS ally.

A nuclear exclusion from the United Kingdom may be determined less onerous than losing the services of the Royal Navy in the defence of the North Atlantic. Access to facilities in Belgium might be considered more important than giving a 'no nukes' pledge. Unfortunately for New Zealand, similar direct military relationships are minimal in number and importance.

There are indications that the citizens of New Zealand and their government are beginning to grasp the full ramifications of the breach with the United States. The recent loss of a local election in Timaru, which had been a Labor stronghold for 58 years, may have been due in part to the importance New Zealanders attach to their relationship with the United States. Indeed, polls show support for ANZUS has risen from 61% to 71% in the last year.

Recent reports show some new flexibility by Prime Minister Lange who no longer rules out in advance, visits by ships that are 'nuclear capable' but only those deemed to be carrying nuclear weapons. The eventual solution, however, may be a form of 'nuclear courtesy' of the type now practiced between the United States and Norway.

The Norwegians forbid nuclear weapons and ships in their territory. They state their position and expect their allies to adhere to it. No specific action or judgment is taken in regard to the armament of a specific aircraft or ship. No challenge is thus made to the American 'non-confirmation' policy. The Royal Norwegian Government does not take an affirmative position in each individual case but relies on the discretion of its allies.

American officials are hesitant to discuss what further steps against New Zealand are contemplated if Prime Minister Lange follows through with his party's pledge to enact the nuclear ban into law. Agricultural preferences, supported by various administrations as a cost of alliance, can now be considered dead. American dairy surpluses could be used to drown New Zealand's economy in milk but it is not in America's best interests to do so because other nations still allied with us are dependent upon dairy exports. Agressive enforcement of GATT may be mandated by Congress despite the administration's desire to separate trade and defense issues.

America's position as the West's leading nuclear power has not been an easy one for this country. Those who think like Mr Lange should be reminded that nuclear weapons were used against Japan in order to save New Zealand and Australian lives as well as American lives. A sampling of editorial opinions from American newspapers on August 7, 1945, makes it clear that the horror and promise of nuclear power have been tandem problems for Americans from the beginning. Perhaps America, whose government is responsive to the pressures of public opinion on the question of nuclear armaments, is tired of being considered more dangerous than nations like the Soviet Union who rattle sabres and threaten world peace, free of similar pressures.

It took a century and a half for the United States to set aside the admonition of its first President, George Washington, to 'steer clear of permanent alliances'. There are those in the United States who now question whether or not our allies are maintaining their share of joint defence burdens. It further appears that certain governments, like New Zealand's, ignore the meaning of 'alliance'. While these governments do not perceive a nuclear threat to themselves, their ally, the United States, is threatened, and must face that threat along with any conventional challenge. The United States needs to know now, in peacetime, who it can rely upon and who will rely upon it in times of crisis.

The United States cannot maintain two navies, one to call at ports that permit American nuclear ships and one to call at ports that do not permit such calls. Countries ready to take our nuclear weapons during wartime may have to commit themselves to accept them in peacetime. The United States should not bear the burden of nuclear weapons deployment by itself.

There is a growing perception that many of our 'allies' are not allies and that many of our alliances lack the basic requirement of mutuality of interest. Allies must work together in peace to deter war, work that is infinitely more difficult yet infinitely more desirable than having to work together in war to secure peace.

Winston Churchill once said to beware of the American eagle. It can be pushed and prodded and make no move. But it would be wrong, Churchill continued, to believe that the eagle did not feel the jabs nor understand the reasons behind them. New Zealand may be the one that finally prodded the eagle once too often.

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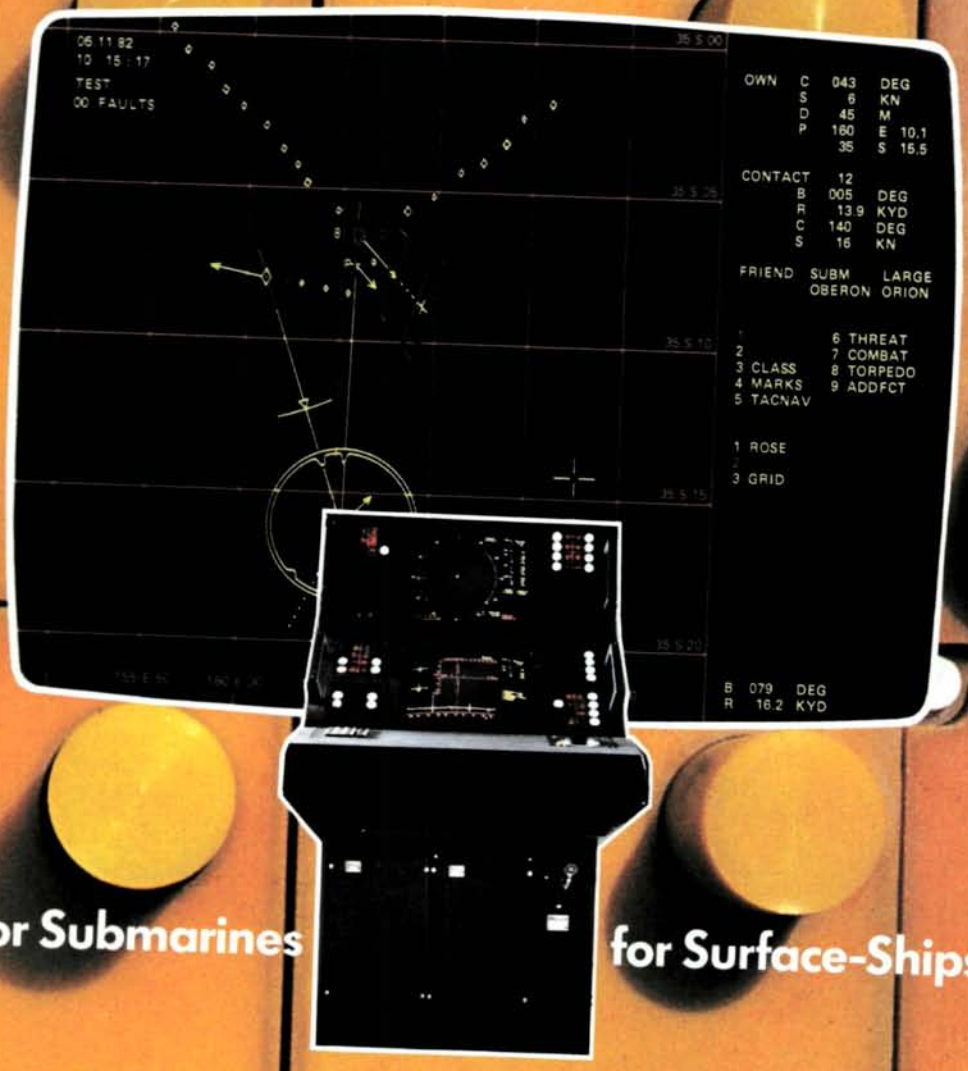

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KRUPP ATLAS ELEKTRONIK

JAMES CRAIG

A RESTORATION PROJECT OF THE SYDNEY MARITIME MUSEUM

Moored at Birkenhead Point in what was once the old industrial harbourside of Sydney is the historic fleet of the Sydney Maritime Museum. Sydney Maritime Museum began twenty years ago and since then has been a leader in the effort to preserve our seafaring past for future generations. The Museum has a superb collection of maritime artefacts, models, artworks, photographs, and small boats as well as Australia's largest collection of historic ships. Sydneysiders who travel across Iron Cove Bridge will be familiar with *Lady Hopetoun*, *Waratah* and *John Oxley*. A recent addition to the fleet is famous wartime raider *M.V. Krait*. Although the property of the Australian War Memorial, the *Krait* has been entrusted to the care of Sydney Maritime Museum.

The Museum's biggest project is the restoration of the 1874 square rigger *James Craig*. The era of sail spanned the first vital century of Australia's existence. It was only the expertise of seafarers and the speed and safety of their ships which made the settlement and expansion of our young country possible. The Museum is restoring the *James Craig* to sailing condition as a permanent reminder to us of those days.

The *James Craig* was a deep sea cargo vessel like hundreds of others; her original name was *Clan MacLeod*. She was a sturdy little vessel and rounded Cape Horn 23 times in her first 26 years. Her first visit to Australia was in 1879 when she delivered general cargo to Brisbane. In 1900 she was sold to J.J. Craig of Auckland and 5 years later came the name change. Like all vessels, *James Craig* was named for a member of the owner's family. By 1911 steamers had overtaken sail for economy and speed and *James Craig* went the way of many other beautiful windjammers. She was cut down for a copra hulk.

S.T. Waratah (left) and M.V. Krait

Photo: courtesy Sydney Maritime Museum

She spent World War 1 in Port Morseby, but with the end of the war she met unexpected good fortune. Heavy losses to shipping meant new life for previously discarded ships, and the *James Craig* was bought by Henry Jones & CO. and towed to Sydney where she was re-rigged and refitted at Morts Dock Balmain. She went back into the Trans-Tasman trade, but she was after all nearly fifty years old and it wasn't long before age caught up with her.

Her last voyage was a poignant one. The crew were friendly and the food was good. The men who served on her all commented on her as a ship that they felt was special. When she failed to pass survey her Captain and crew felt real regret. With every sail set she was watched by hundreds of people in the Hobart Domain as she made this last journey in the 1920s (last that is until her move for restoration almost 60 years later). She was again hulked and left to rot in lonely Recherche Bay in southwest Tasmania.

Realising the importance of restoring a sailing ship for Sydney, Sydney Maritime Museum found the *James Craig* in 1971 and began to salvage her. The technical problems encountered were massive, and it was not until 1981 that the vessel was towed to Sydney Harbour. She now lies at Rozelle Bay; and the final stages of her restoration are underway. To repair and rebuild the hull the *James Craig* will go up onto a huge pontoon dock. The ship on the dock will provide a tremendous spectacle for visitors, and there will also be an exhibition area and audio-visual to further explain the ship. The *James Craig* has received $1.5 million as a Bicentennial grant. The total cost of the project however, is $7 million. When complete, the *James Craig* will be displayed in Darling Harbour as part of the Sydney Seaport fleet.

It is a big challenge, but a worthwhile one. By 1988 Sydney will have a permanent reminder of those days when it was wind alone that connected us to the rest of the world.

James Craig (left) in New Harbour in the 1890s *Photo: courtesy Sydney Maritime Museum*

JOHN BASTOCK SAILOR AND ARTIST

by Alan Zammit

When one enters the wardroom of the FFG *HMAS Adelaide*, the first object to catch one's eye is a fine painting of the cruiser *Adelaide* in 1944 in her wartime camouflage. Similarly, the wardroom of FFG *Sydney* displays a striking picture of *HMAS Sydney*, famous vanquisher of the German raider *Emden* in World War I. Our new *Canberra* also has an outstanding painting of the 10 000 ton County Class cruiser *Canberra* in her pre-war paint. All these paintings were done by John Bastock and presented by him as gifts to each of the new FFGs.

John has drawn and painted ships and marine subjects since his schooldays. Having joined the RAN as a boy, he was trained in *HMAS Tingira*, and later served in some of the well-known ships of the earlier RAN.

His first years at sea were too crowded with activity to devote any time to painting. These included service in *HMAS Brisbane* on the China Station and in *HMAS Melbourne* in the Mediterranean. Amongst the young officers serving in *Melbourne* during her Mediterranean commission were several whose names were to make history in the annals of the RAN. These included Lieutenant (later Vice Admiral Sir John) Collins, the ship's gunnery officer; Lieutenant (later Captain) Dechaineux, who, as Captain of *HMAS Australia* lost his life when his ship was attacked by a Japanese kamikaze aircraft at Leyte Gulf on 21 October 1944; Midshipman (later Lt. Commander) R.W. Rankin who went down while in command of *HMAS Yarra* as that ship fought valiantly against overwhelming Japanese odds, south of Java on 4 March 1942; and Midshipman (later Rear Admiral) G.G.O. Gatacre — first Captain of *HMAS Melbourne*.

Having served the final commission in *HMAS Sydney* John, with most of the old Ship's Company sailed in *SS Beltana* to commission *HMAS Canberra* at Clydebank, Scotland. On the ship's voyage to Australia, via the Cape of Good Hope, John found time in the dog-watches to take up painting again. He completed many pictures of the *Canberra*, some on art board, others on black velvet, depicting the vessel at night on a moonlit sea, with all lights ablaze. The art board paintings were sold to his shipmates for about 2/6d (25c) and those on velvet for about 5/- (50c). John's supreme effort during this period was a large painting of the ship on canvas, suitably framed, and signed by the Captain (Captain Massey, RN) and his senior officers. The picture was raffled amongst the Ship's Company and netted John about 15 pounds ($30.00) profit. The asking price for a similar painting today would be in the $700–800 range! A ship painting sometimes takes weeks of research and concentrated work to complete, which is what makes it so valuable.

John qualified at *Cerberus* as a torpedo-gunner's mate (his was the first class of TGMs undertaken at *Cerberus* as previously this course, for the highest torpedo rating attainable on the lower deck, involved a posting to the UK). Following further service at sea, John sustained an affliction which culminated in blindness in one eye and he was discharged from the Service as below the required physical standard. Fortunately, over the years the condition partly improved to such an extent that he was able to resume painting.

Since then he has painted many subjects and has executed hundreds of drawings, diagrams and paintings of ships and written and illustrated many articles on both ships and maritime subjects. His book *Australia's Ships of War* (now out of print but hopefully to be revised and updated in the near future) is well known as a work of naval reference. Signed editions have

The Author

Alan Zammit served in the canteen staff of the *Australia* and *Sydney* between 1945 and 1955 and is a committeeman of the *HMAS Australia* Veterans Association. He has written naval historical articles for many publications including newspapers and *Navy News*, *Naval Historical Review*, *Reveille*, *White Ensign* and *Chopsticks* the Journal of the Korean and South East Asia Forces Association.


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become a much-sought-after collector's item, and copies, when available, fetch a high price.

He is a recognised authority on the Sail/Steam era, and in this regard he has in publication a new book, packed with the results of his research on the Australia Station period and illustrated with photographs, drawings, diagrams and a series of his paintings of the flagships involved. The book when published will become a valuable reference work on a period of Australia's naval history of which little authentic information has ever been published.

John laments the fact that many locally produced books contain misnamed photographs of ships on the Australia Station. His new book will include a correctly named picture of every vessel which served on the station — the results of study and research extending over a quarter of a century.

The keynote of John's work is correctness of detail — perspective must be spot-on, funnels and masts must have just the correct angle, guns must look as though they will not collapse when fired, seaboats must be turned out, properly griped, ready to lower, correct pattern anchors are to be carried, bollards, fairleads and a host of other such details must be included, and the details must be correct for the period depicted.

John believes that ships, like people, have an ideal angle from which they should be seen, and so he likes his ships in this ideal position, really looking as though they are having their portraits painted!

All these points — all his striving for accuracy, is based not only upon study and research, but most importantly, upon the knowledge and actual experience gained in years of service at sea.

As well as being an outstanding naval artist and writer, John Bastock's collection of naval photographs is of international significance. This collection was obtained the hard way, by over 60 years of taking photographs himself, and exchanging them with naval photograph collectors throughout the world. Hardly a week goes by without John being asked to identify or date a ship photograph, or give some advice about the vessel concerned.

I first met John when he came on board the *Australia* in 1946 to do some research for an article he was writing for a magazine. I was amazed then at his knowledge of the vessel, and I doubt whether there is anyone who is more knowledgeable on ships of the RAN and British Commonwealth navies than John Bastock. In a way, he is as expert in drawing and painting naval subjects as Norman Lindsay was in painting nudes!

Presentation to FFG HMAS Sydney's first CO, CMDR P Kable in the ship's Wardroom May 1984. Shown, left to right, LCDR O Kelly, John Bastock, LEUT S Woolrych, SBLT C Scott, LCDR P DeGraff and CMDR R Kable.
Photograph courtesy Command Photographic Centre Sydney

SOLDIER SAILORS — SAILOR SOLDIERS

AN ACCOUNT OF THE PRE-FEDERATION MARITIME DEFENCE OF TASMANIA AND WESTERN AUSTRALIA

by Lieutenant JH Straczek RAN

Since the arrival of the first white settlers in Australia the responsibility for the defence of the colonies was vested in the Royal Navy. The British troops stationed in Australia were there primarily to provide for the internal security of the new colony. This situation remained virtually unchanged until the outbreak of the Crimean War when troops were withdrawn and sent elsewhere. Shortly after this, further troops were withdrawn and sent to New Zealand. These events, coupled with the general reduction in the number of British troops in Australia and the apparent weakness of the Royal Navy in Australian waters, caused a general feeling of insecurity amongst the colonists. As a consequence of this the colonies began to assume a greater responsibility for their defence.

In the main this was done through the establishing of military units, both regular and militia, as well as the construction of fortifications to defend the approaches of ports and harbours. Most of the colonies also established and maintained their own naval forces to assist in the defending of their ports and harbours. The colonies which did not establish naval forces were Tasmania and Western Australia. Each of these colonies did however have, as a part of their Defence Forces, a unit which had a naval character about it. These units were the Tasmanian Torpedo Corps[1] and the Fremantle Naval Artillery[2]. Both units had what at best could be described as unimpressive histories; however, they do form part of our naval and military heritage and as such their stories should be told.

Tasmanian Torpedo Corps

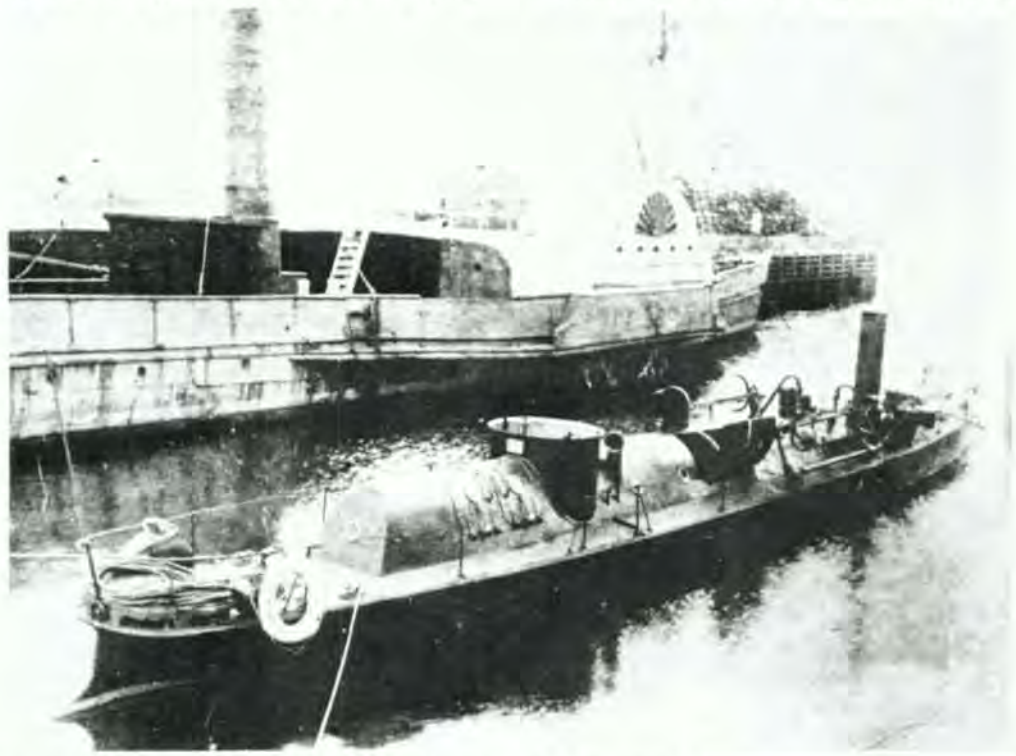
The origins of the Tasmanian Torpedo Corps can be traced back to 1878 when Sir W. Jervois put forward his proposals for the defences of Hobart and Launceston. No formalised naval forces were envisaged by Sir W. Jervois as the overall scope of the proposed scheme was that the defences of Hobart and Launceston were to be sufficient to defend these towns against attacks by unarmoured cruisers or privateers. The scheme basically consisted of a series of gun batteries and fortifications with mines laid in the Tamar and Derwent rivers. Although the Jervois recommendations had been accepted, no action had been taken in the area of torpedo defences by the time the Royal Commission into the Local Forces of Tasmania presented its report on 15 September 1882. In their report the Commissioners recommended the establishment of an engineer unit to operate the torpedo defences as well as supporting Colonel P. Scratchley's suggestion that a Second Class Torpedo Boat be purchased to assist in defending Hobart. The recommendations of this report were accepted and a 53 man Engineer Corps was established at Hobart. The Tasmanian defence Budget for 1883 also included an initial amount of £150 for a Second Class Torpedo Boat and £202.1.0 for the purchase, and conversion to a powder hulk, of the yacht *Enchantress*. By December 1883 the newly formed Corps was in a position to carry out its first mining exercise. On the morning of 25

The Author

Lieutenant Joe Straczek joined the RAN in 1971 as a Junior Recruit and commissioned as a Midshipman SLSU in 1977. His postings have taken him along the eastern seaboard from *Lonsdale* to *Cairns* and included a short period even further north in Port Morseby. Presently he is serving in *HMAS Waterhen*. One of his major interests is maritime history and he holds the office of Treasurer of the Naval Historical Society.

December the Torpedo Corps mustered with their mines and awaited the arrival of the steamer *Pinafore*, which had been chartered to transport the mines and the soldiers to where the mines were to be laid. Once the steamer arrived the Torpedo Corps prepared to embark with their mines. Unfortunately, when the master of the *Pinafore* realised what his cargo was he immediately slipped and sailed leaving the soldiers and the mines behind on the wharf. The services of the paddle steamer *Kangaroo* were eventually obtained and this enabled the exercise to continue. The *Kangaroo* however, proved to be totally unsuited for the role of laying out and picking up mines. As a result of this, Captain E.M.T. Boddam, Commandant Tasmanian Engineers, recommended that the steamer *Pearl* be purchased and converted to a mining vessel. These recommendations were not implemented; however the *Pearl* was regularly chartered for mine-laying exercises.

On 1 May 1884 the Second Class Torpedo Boat ordered from Thornycroft's of Chiswick arrived. After being off-loaded from the merchantship *Abington* the boat was towed to the shipyards of John Lucas at Battery Point, where her machinery and propeller were fitted. Some minor repairs were also carried out at this



TASMANIAN TORPEDO BOAT

Photograph courtesy author

TB191 TECHNICAL DETAILS

Class:	Second Class Torpedo Boat	Speed:	17.21k max; 8k economical
Builder:	Messrs Thornycroft and Co. Church Wharf Chiswick	Armament	Originally carried one spare torpedo. Replaced in 1887 with dropping gear for 14 inch Whitehead torpedos (one on each side) and one 1 inch two barrel Nordenfelt machine gun.
Yard No:	191		
Launched:	1883		
Completed:	1884		
Length:	63 feet		
Beam:	7 feet 6 inches		
Draught:	3 feet aft; 1 foot fwd		
Displacement:	12 tons		
Horsepower:	150 HP at full speed	Cost:	£4524

time. Once this work was completed *TB 191* (she was never named but carried her builder's number throughout her career) ran her first trials. These trials were conducted under the supervision of two engineering officers from *HMS Nelson*. On completion of the trials both officers expressed their satisfaction with the vessel and her performance.

Whilst *TB 191* was being readied for service the Torpedo Corps continued to carry out minelaying exercises and drills. In November 1884 the Torpedo Corps, using the steamer *Pearl* laid an exercise mine field of some 16 electro-contact mines. Some of these mines were later exploded and the remainder were recovered in January 1885. Once *TB 191* joined the Torpedo Corps she proved to be a most valuable asset to the Tasmanian Defence Forces. So much so, that Colonel W.V. Legge, Commandant of the Tasmanian Defence Forces, recommended that a second vessel be ordered and specialist personnel be enlisted to maintain and operate the boats. Neither of these recommendations was implemented. During 1885 a Nordenfelt Machine Gun and Whitehead torpedo equipment were ordered for the boat.

1886 saw a reorganisation of the Tasmanian Defence Forces and an increase in the authorised establishment of the Torpedo Corps to 75. New uniform regulations were gazetted on 23 February 1886 and the Corps paraded in these uniforms for the first time on 9 December 1886.

The Whitehead torpedo equipment and Nordenfelt machine gun ordered for the torpedo boat arrived in 1887 and was fitted. The fitting of the dropping gear for the Whitehead torpedoes necessitated the removal of the spar torpedo and the port funnel, the starboard funnel also having to be moved further forward. The Nordenfelt was positioned near the conning tower where the helmsman sat.

A lack of finances coupled with the difficulty of finding a proficient crew to operate the torpedo boat saw it being used less and less. During 1894, *TB 191* was paid off and laid up in her shed. She was reactivated the following year; unfortunately the collapse of part of the slipway with the boat on it meant that some fairly extensive repairs had to be made to the boat. Whilst this was occuring the role of the Tasmanian Engineers was also changing from that of submarine mining to general fieldcraft. By 1900 the decision had been taken to dispose of the torpedo boat and thus sever one of the lasting remaining links between the Engineers and their former mining role. After Federation, the Tasmanian Engineers became part of the Military Forces of the Commonwealth and *TB191*, which had become a unit of the Commonwealth Naval Forces, was transferred to South Australia.

Fremantle Naval Artillery

Western Australia was the only colony which did not operate warships of its own as part of its defence forces. The main reasons for this were the cost of establishing and maintaining naval forces and the fact that Western Australia was not a self-governing colony, and as such the Colonial Naval Defence Act of 1865 was not applicable to her. By the time Western Australia did become a self-governing colony, the government had ratified the Naval Agreement of 1887 and was paying a contribution towards the cost of maintaining the Australian Auxillary Squadron and could not afford the additional costs of naval forces.

The establishment of military forces was a different matter as almost any colony could raise their own military forces. In Western Australia the establishment of military forces was governed by the Western Australian Volunteer Force Ordinances of 1861. These ordinances laid down the method and general rules by which volunteer units could be raised and governed. Two of the more interesting sections of this act allowed for units to elect their own officers and make their own rules and regulations for use when not on active service.

Under the Volunteer Ordinances the formation of a Volunteer Unit was not recognised until the Western Australian Military Council was satisfied that a sufficient number of personnel were enrolled and that a satisfactory standard of drill had been reached. Once the formation of a unit had been gazetted, that unit was eligible to receive government assistance. This assistance was mainly in the form of a provision of arms and certain items of uniform. On 11 February 1879 notice of the formation of one such unit was published in the Western Australian Government Gazette:

Colonial Secretary's Office
Perth, 10th February 1879

His Excellency the Governor has been pleased to approve the formation of a Naval Volunteer Force at Fremantle under the designation of 'Fremantle Naval Volunteers' and of the following gentleman officiating in the capacity stated opposite his name pending the result of the examination to be held before a Military Board assembled under the Government Notification of 20th April 1875.

George A. Forsyth, Esquire, Lieut, Commanding

By His Excellency's Command
ROGER TUCKF GOLDSWORTHY
Colonial Secretary

As the founding members of this unit were all ex-Royal Navy personnel, the rank structure, uniforms and drill, even to the extent of using Snider Sea-Service rifles, were all naval in character. Enlistment into the Fremantle Naval Artillery was also restricted to ex-Royal Navy personnel or merchant seamen of good character.

The Fremantle Naval Volunteers was a half battery established to provide for the defences of Fremantle harbour. To achieve this function the Fremantle Naval Artillery was equipped with two 6pr brass field guns. These guns were reputedly cast in 1720 and had seen service in the Peninsular Campaign. Unfortunately, there were neither wagons nor limbers held for these guns and so their mobility was greatly restricted. In fact there is only one recorded occasion on which they attended a Volunteer Camp and that was at Albion in 1884. During 1887, the Commandant of the Western Australia Volunteer Forces described these guns as totally obsolete and recommended their replacement. In 1889 they were replaced by two 9pr RML guns, complete with limbers and spare equipment.

Being a part-time unit, the Fremantle Naval Artillery had no formal barracks area. However they had the use of a number of building at the Fremantle Immigration Depot. These buidings were used as a gun shed, armoury and bandroom.

During 1882 concern was being expressed as to the effectiveness of some of the units within the Western Australian Volunteer Forces. One of the units about which concern was being expressed was the Fremantle Naval Artillery. The reasons for this were firstly due to the more liberal sections of the Western Australian Volunteer Force Ordinances and secondly due to the declining numbers of personnel enlisting and attending parades. This decline was due to the requirement that all personnel enlisting in the Fremantle Naval Artillery be either ex-Royal Naval personnel or merchant seamen of good character. The problems being experienced by the Fremantle Naval Artillery came to a head on 16 December 1884 when Lieutenant Forsyth was relieved of his command and ordered to hand over to Lieutenant F. Wemyss, an army officer.

Some time after assuming command of the Naval Artillery, Lieutenant Wemyss submitted a report to the Commandant of the Western Australian Volunteer Force recommending that the Naval Artillery be disbanded and restructured along lines similar to that of the Perth Volunteer Artillery. These recommendations were accepted by the Commandant and on 20 December 1888 the following General Order was published in the Western Australian Government Gazette:

GENERAL ORDER

1. His Excellency the Governor and Commander-In-Chief has been pleased to sanction the following changes in respect of the Fremantle Naval Artillery:
(a) The title of the Corps to be Fremantle Artillery.
(b) The uniform to be similar to that of the Perth Artillery except that the letters on the shoulder straps of the Non-Commissioned Officers and men will be FAV.
2. The above alterations do not in any way affect the legal constitution of the Corps, nor the enrolment of the present number.
3. Petty Officers will be given equivalent army ranks to what they now hold counting from the date of their original appointment.

By Command
W.G. PHILLIMORE
Lieut-Colonel
Commandant Volunteer Forces

Head Quarters Perth
18 December 1888

Though this order spelt the end of the Fremantle Naval Volunteers the unit soldiered on firstly under the designation Fremantle Artillery Volunteers and then as No. 2 Battery Field Artillery, until it, like the Tasmanian Torpedo Corps, was absorbed into the Commonwealth defence organisation after Federation.

Notes

1. The unit usually referred to as the Tasmanian Torpedo Corps was actually the Tasmanian Engineers. One of the major functions of army engineers in the 19th Century was defensive submarine mining.
2. The Fremantle Naval Artillery was called by a number of different names in government papers. The unit was most frequently referred to as the Fremantle Naval Artillery, however Fremantle Naval Volunteers and Naval Brigade were also commonly used.

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A LINK WITH THE PAST

by VIC JEFFERY — Navy Public Relations Officer, Western Australia

Just a few metres offshore at the northern end of Jervoise Bay in Cockburn Sound, Western Australia lie the remains of a forgotten link in Australia naval history. The former RAN tug and unarmed patrol vessel *ALACRITY* was driven ashore in Jervoise Bay 54 years ago during a fierce gale.

ALACRITY was the last link with the proposed ill-fated Henderson Naval Base on which construction ceased with the outbreak of World War 1. Construction had commenced in 1911 and gradually ground to a standstill after four million pounds had been spent on the project. The Department of Naval Construction purchased the 353 ton *ALACRITY* from the Melbourne firm of Howard Smith & Co in 1911 and despatched the vessel to Western Australia to be used for construction works on the fledgling base. It seems the Navy was content to retain the name *ALACRITY*, being an apt name for a tug and secondly because there had been six RN predecessors carrying that name, the first in 1806.

The tug had originally been built at Havre, France in 1893 and named after the famous French Admiral Jean Bart. As was the case with many early steamers she was rigged as a ketch to extend her range. The builders, the Societe Anonyme Forges et Chartiers de la Mediterranee, installed two 122 nominal h.p. triple-expansion engines into her steel hull along with twin screws. Owners of the tug, the Dunkirk Chamber of Commerce employed it on the river Seine and other rivers in Northern France until her sale, in 1902, to Howard Smith of Melbourne who put her to work in that port. With the outbreak of World War 1 *ALACRITY* was used as an unarmed patrol and boarding inspection vessel with a secondary role as a minesweeper. It operated in Gage Roads and outside Rottnest Island in the approaches to the Port of Fremantle. After the war, *ALACRITY* had the honour of conveying the famous British Admiral, the former First Sea Lord, Earl Jellicoe around Cockburn Sound on his inspection of the proposed Henderson naval Base in 1919 as part

RAN Tug Alacrity *Photo: V Jeffery Collection*

of his report on the Naval defence of Australia. Sadly, however, events leading up to the 1921 Washington Naval Conference saw the abandonment of the project. On December 16, 1925 the *ALACRITY* was sold by auction to A.E. Tilley of Fremantle who later sold her to the machinery and metal merchant J.E. Hall in April 1931.

ALACRITY was moored on desolate Jervoise Bay for stripping before being broken up for scrap. Before stripping could commence a fierce gale caused the old workhorse to break adrift from her moorings and end up stranded on the beach where her remains lie today. Her engines were removed and the vessel was stripped of all useful fittings before being abandoned. For nearly 40 years the old tug lay there, her silhouette changing little until the mid 1970s when a channel was dug to float the oil rig Ocean Endeavour from its construction site in Jervoise Bay to the sea. The rusting old tug was suddenly left 100 metres off-shore by the dredging and deteriorated rapidly to a point where only a few jagged pieces of metal protruded above the waves, indicating its position. *ALACRITY* broke-up quickly around the time the fleet support facility *HMAS STIRLING* commissioned in 1978. It was almost as if after waiting despairingly for more than half a century for a Naval base to be completed in Cockburn Sound the old *ALACRITY* was content to finally slip below the waves when this happened. However, her spirit could well live on in the *HMAS STIRLING*-based RAN medium tug *TAMMAR*. This vessel, named after the nocturnal member of the wallaby family found in large numbers on Garden Island in Western Australia, was constructed by Australian Shipbuilding Industries on the shores of Jervoise Bay, only several kilometres from where the *ALACRITY's* remains lie. *TAMMAR* came into service on 10 March 1984 and was the first naval vessel to be built in W.A. since World War 11.

The wreck of Alacrity, Jervoise Bay 1964 *Photo: V Jeffery Collection*

OF SHIPS AND THE SEA

KRUZENSHTERN (ex PADUA)

The Bicentennial celebrations in 1988 will include a gathering of wind-driven ships not seen in this hemisphere since the late 1930s: not the grand gatherings of the working grain ships, but more the latter day Tall Ships, vessels devoted to preserving sail training and basic seaman's skills in this high-tech era. Amongst the fleet expected to visit is the big Russian four-masted steel barque *Kruzenshtern*. Even more exciting is the expectation that she will visit at least one South Australian port, probably Port Lincoln at the mouth of the Spencer's Gulf, on her passage to Hobart and Sydney. Interestingly enough, I can find no record of this vessel, in either of her two names, ever calling at an Australian east coast port. It appears that South Australia was the only state she ever visited in 1934 and 1935, but I could be wrong. To appreciate that the visit of a real wind-driven ship of this size will be history in the making, it is necessary to give some background details of a German ship owner, the Flying P Line and *Padua* herself.

The 'Flying P Line' came into being at the beginning of the 1870s when Herr F. Laeisz of Hamburg bought the iron full-rigged ship *Polynesia* and the iron barque *Flottbeck* (later *Professor*). Over the years that followed his fleet increased and challenged the French shipowner Ant Dom et Fils on the South American nitrate trade. Except for one vessel (*Henrietta Vehn*) every one of Laeisz' vessels had a name beginning with the letter 'P'. Hence the 'Flying P Line'.

Concentrating solely on the nitrate trade, Laeisz' ships were indeed clippers in the true sense of the word, providing quick, safe and consistent voyages and service to his customers. Many years of steady service were brought to an end when his entire fleet was lost during World War 1, being either captured or seized as war reparation. At that time his fleet consisted of:

- *Ponape* (ex *Regina Elenis*) — captured by the British in 1914 and passed to the short-lived shipping firm of J. Bell and Co. and renamed *Bellhouse*. Later bought by Hugo Lundgvist of Marieham who allowed the name *Ponape* to be brought back into use. In 1929 she was bought by Gustaf Erikson and served him well until broken up in 1936.
- *Pelikan* — also acquired by J. Bell and Co., renamed *Bellco* but broken up in about 1925.
- *Parma* (ex *Arrow*) — allocated to the British government as war reparation. Re-purchased by Laeisz in the early 1920s and later bought, in partnership, by Captain Rueben de Clouz, Gustaff Erikson, Alan Villiers and Algo Johansen.
- *Peiho* (ex *Argo*, ex *Brynymor*) — also allocated to the British government and re-purchased by Laeisz in the early 1920s.
- *Potosi* —passed to the French government, thence to Italy and eventually to Chilean owners. Renamed *Flora* she was finally abandoned and scuttled in the South Atlantic in September 1930 after a fire broke out in her cargo of coke and coal.
- *Pinnas* (ex *Fitzjames)* — passed to the French government and repurchased by Laeisz in the early 1920s. Abandoned in the South Atlantic on 27 April 1929, after being dismasted in a violent storm.
- *Passat* — was also acquired by the French and re-purchased by Laeisz. Sold to Gustaf Erikson in 1929 he kept her in service until 1951. *Passat* is preserved at Travemunde, Germany.
- *Perim* (ex *Radiant*) — passed to the Italian government as war reparation.
- *Pamir* — passed to the Italians and later purchased by Laeisz. In 1931 she was sold to Gustaf Erikson and re-sold to German owners in 1951. Regrettably, *Pamir* was lost at sea in 1957.
- *Peking* — passed to the Italians but was later bought by the British government and remaned *Arethusa* for use as a stationary training ship in the Medway.
- *Pirna* (ex *Osorno*, ex *Beethoven)* — also went to the Italians, renamed *Pinus*.
- *Pommern* (ex *Mneme*) — became the property of the Greek government but sold to Gustaf Erikson in 1922. She is preserved at the Alands Sjofartsmuseum at Mariehamn.
- *Penang* (ex *Albert Rickmers*) — taken over by the ship-owner John Nurminen Danzig.

Bought by Gustaf Erikson in 1923 she was posted missing in 1940 whilst on passage from Port Lincoln to Cork.

By 1922 Herr Laeisz was operating six wind-driven vessels and was competing, yet again, with Ant Dom et Fils on the lucrative South American nitrate trade. To show his faith in wind and ships he ordered two four-masted steel barques, *Priwall* and *Padua*, launched in 1918 and 1926 respectively.

Built by J.C. Techlenborg of Wesermunde, *Padua* was launched on 24 June 1926 and is said to have been the last steel four-masted barque build as a merchant vessel. Under the command of Captain B.R. Petersen (who had once commanded *Preussen* she sailed on her maiden voyage to South America for nitrate on 30 August 1926. A tribute to her builder, the first three voyages showed tha *Padua* had fine, consistent sailing qualities. Recorded by Basil Lubbock in *The Nitrate Clippers* her times were:

- Hamburg to Talcahuano 87 days
- Taltal to Delfzijl 94 days
- Hamburg to Talcahuano 82 days
- Iquique to Hamburg 87 days
- Hamburg to Talcahuano 76 days
- Mejillones to Terneuzen 72 days

Although she was employed mainly in the nitrate trade, both *Padua* and her sistership *Priwall* were employed in the South Australian wheat trade for the 1934 and 1935 seasons. In the 1934 grain race *Padua* sailed to her orders port in 109 days as against the winner, *Passat*, 106 days. In the 1935 race she sailed home in 100 days with *Priwall* winning in 91 days. Of interest is the fact that both *Padua* and *Priwall* returned the best times for a passage to Australia in ballast. Both vessels departed from Hamburg on 31 October 1933 arriving at Port Broughton and Port Victoria (respectively) on 6 January 1934. Elapsed time for both vessels was 67 days.

In 1945 *Padua* was forfeited to the Russians as war reparation. Extensively refitted, with the addition of auxillary engines and modern equipment, she was renamed *Kruzenshtern* after the Admiral and Hydrographer of the 18th century. A regular participant in the Tall Ship races, the barque is operated as a sail training vessel by the Travel Fleet of Riga, Western Division of Training Vessels, USSR Ministry of Fisheries.

Relevant statistics:

Length	376 feet
Beam	46 feet
Draft	22 feet 6 inches
Tonnages	2 678 registered, later 3 064 4 800 deadweight
Sail area	36 500 sq ft, later 39 354
Cadets	40 (as built)
Present Complement	24 officers 71 crew 175 cadets

Robin Pennock

ANSWERS TO AUGUST CROSSWORD

BOOK REVIEWS

CAMERA AT SEA 1939-1945. 192 pp, $43.50. THE PACIFIC WAR — As seen by USN photographers during World War 11. 208 pp,$44.95. Both books published by Conway Maritime Press.

Much has been written about the war at sea between 1939-1945 but few books are dedicated to the presentation of the photographic records of this conflict. At last the Conway Maritime Press has produced two excellent books on the subject, *Camera at Sea 1939-1945* and *The Pacific War*.

The first, *Camera at Sea 1939-45* focused on the massive store of unpublished or rarely-seen photographs taken of the war at sea. It touches on almost every aspect of the war with most graphic and telling photography. The book features 254 black and white and 23 colour photographs and is divided into eight sections, dealing separately with Warships, Weapons and Equipment, Personnel, Navies in Exile, Naval Air Power, Operations and Victory. Each of the 277 photographs featured is comprehensively captioned by one of nine internationally known naval authorities, David Brown, Aldo Franccaroli, Eugene M. Kolesnik, Jaques Mordal, Anthony Preston, Alan Raven, Hone Roberts, Lawrence Sowinski and Anthony Watts.

Just a few of the excellent photographs included are:

- Japanese sailors saluting their flag as it is lowered on the flight deck of the severely–listing *Zuikaku* off Cape Engano after the Battle of Leyte Gulf;
- the battle-scarred HMS *Exeter* returning to a hero's welcome at Devonport after the Battle of the River Plate;
- German sailors sunbaking on the quarterdeck of a minesweeper off the Dago and Osel Islands in 1941;
- superb colour shot of Divisions on the massive forecastle of the battleship HMS *Nelson* in 1945; and
- one of the great photos of the war-survivors from a merchant ship being taken aboard a rescue ship, emotions ranging from the hysteria of a Lascar to the numbed bewilderment of another man.

Well laid-out, *Camera at Sea 1939-45* was edited and produced by the staff of *Warship*.

The Pacific War gives a fascinating insight into the US Navy's Archives in Washington. It was from this store of superb but long-forgotten negatives that author Larry Sowinski selected the photographs for this book. Within 208 pages Sowinski has managed to successfully cram 37 colour and 443 black and white shots from Pearl Harbour to Tokyo Bay.

The book is divided into separate sections dealing with Pearl Harbour, Hit and Run, the Solomons, Counter Attacks, Showdown in the Marianas, Leyte, The Winter Campaigns, Okinawa and Victory in the Pacific. The photographic coverage in this book was such as to allow the arrangement of the pictures into chronological chapters, each photo being briefly captioned with some historic background being included. The RAN is represented by a classic shot of the destroyer *HMAS Warramunga* coming up to a US destroyer during July, 1943. There is a second close-up shot of *Warramunga* taking on stores on the same page. Also featured is the heavy cruiser *HMAS Shropshire* with a photo of her bombarding Luzon prior to the amphibious assault.

Without even studying the pictorial captions there is clearly enough in this book to enthral the reader for many hours. Thought of the situation when some of these mind-boggling photos were taken is worthy of consideration and shows the dedication and professionalism of the naval photographer. Shots of cleaning up after the attack on Pearl Harbour, the torpedoed carrier *Wasp*, Kamikaze attacks and damage, flight deck prangs, and a series on the wrecked battleships, aircraft carriers and other Imperial Japanese Navy units after bombing attacks on the Japanese homeland are awsome. The horror and futility of war at sea have never been more graphically illustrated than in this book.

These two books are available in Australia through Princeton Books, Cnr Mills & Herald Street, Cheltenham, Victoria and most good bookshops.

I place them both in that rare category of books in which you can find something new every time you pick them up. Recommended reading.

Vic Jeffery

SHACKLETON Roland Huntford, London, Hodder & Stoughton, 1985.
UK price £14.95 (Book expected to be available in Australia early in 1986)

After he had brought his *Endurance* party out of the Weddell Sea where he had lost his ship, Sir Ernest Shackleton was treated with kindness and generosity in Chile, Argentina, Uruguay and the United States. However, he had a 'rough ride' in New Zealand and Australia.

In their falling out with him, the Aurora Relief Committee had some right on their side in being critical of the way in which he had left the management of the Ross Sea party in the hands of A.L.A. Mackintosh, but they were not the right men to deal with Shackleton. Rear Admiral Sir William Creswell did not understand merchant service masters. Professor D.O. Masson was just an academic. Griffith Taylor, one of Scott's geologists, had never organized anything. Shackleton was angry because they had placed *his* ship under Captain J.K. David. These men could not grasp the magnitude of his achievement in bringing his party home without loss. In the end, when they met, it was the Committee that got a 'rough ride', and they began to realize how they had misjudged the size of the man.

That was one of the points about Shackleton, that many did not recognize his ability, charm and leadership until they met him. It was the thought of Shackleton coming over the Antarctic continent from the Weddell Sea that inspired the Ross Sea party to make unbelievable efforts to carry out their task of laying depots for him. Ernest Joyce had known him in the *Discovery* and the *Nimrod*, and was completely loyal. Dick Richards told how Mackintosh, who had been in the *Nimrod*, told the men who could not understand this respect, with his silly little laugh, 'You will when you meet him'. Those who met him learned that high regard. Even Winston Churchill, First Lord of the Admiralty, changed his decision after he had lunched with Shackleton in 1914.

His ability as a leader came out in his *Nimrod* expedition of 1907–09, and even more in the *Endurance* in 1914–16. In the *Discovery* in 1901–03, Scott recognized his potential and 'put the boot in'. His death in the *Quest* at South Georgia in 1922 was a tragic end to an outstanding explorer.

That was the side the public saw. There was another man, who was careless with promises and finance, the inconstant husband, the restless man who could settle at nothing for any length of time, the heavy drinker, the man with original ideas, too acute for most of the comfortably-placed geographers and officials of his day, the man who did not fit in with the social world of Edwardian England, but was quite at home in dealing with a rating.

One great merit of this book is that it deals openly with all sides of Shackleton's character, reputable and otherwise, unlike the hagiographies of Scott, until the publication of *Scott and Amundsen* in 1979. Another merit is that it has been compiled largely from contemporary letters and diaries, often quoted, showing what Shackleton did and thought, and what others thought of him. Eighty-five pages of references and sources show how thoroughly Mr Huntford has done the job over the past five years; the biography will not have to be repeated. And the reader is left to make his own judgement. It is the story of a big man, well told. For some 800 pages the price is reasonable. There are illustrations (some of them not before published) and maps.

A.G.E. Jones

THE FALKLANDS WAR Ed A.R. Coll and A.C. Arend, Boston, Allen and Unwin 1985 pp252 RRP $19.95

The Falklands War has produced a plethora of publications concentrating mainly on the military aspects of the war; this book deals with the abstract areas of strategy, diplomacy and international law. The various contributors, most of whom are American academics, examine the reasons for the outbreak of the war, its impact on international relationships and lessons to be learnt for possible future conflicts.

This book is ideal for those who enjoy accounts of the intricate workings of diplomacy. The failure of the UN and Alexander Haig to reach a compromise between the two participants is dealt with in depth with that failure being seen as inevitable considering the long-standing historical claims of both Great Britain and Argentina to the Falklands/Malvinas.

The legal examination of who was in the right generally supports Great Britain. This is based on Article 2 (4) of the UN Charter which forbids the threat or use of force against the territorial integrity or political independence of any State. There are other factors which are examined but the conclusion in this book is that it was Argentina's aggression that put her in the wrong.

An interesting book for the more scholarly reader. My only criticism is the somewhat overpowering legal jargon used in some of the articles.

Shane Moore

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Members and libraries overseas who would like to receive their journals by air mail, should add the following sums to their subscription orders:

For those in	New Zealand, PNG	A$6.00
	Indonesia, Malaysia, Singapore	A$8.00
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ADVERTISING INFORMATION

Size of Journal — B5 International (Print area 215mm x 145mm)

Printing Process — Offset Litho

Full Page Size — 50 picas deep by 33 picas wide

Half Page Size — 50 picas deep by 16 picas wide
— 25 picas deep by 33 picas wide

Material Form Required — B&W: Clean art work or negatives
— COLOUR: Four colour separation negatives

Screen Size — 133 preferred but 125-150 acceptable

Advertising Charges

a. **Standard Rate**	**Black & White**	**Full Colour**
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Double Page (Centre Spread)	$300	$750
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Back Cover	$180	$500

b. **Discount Rate** (Four or more successive insertions of same advertisement booked in a single order)

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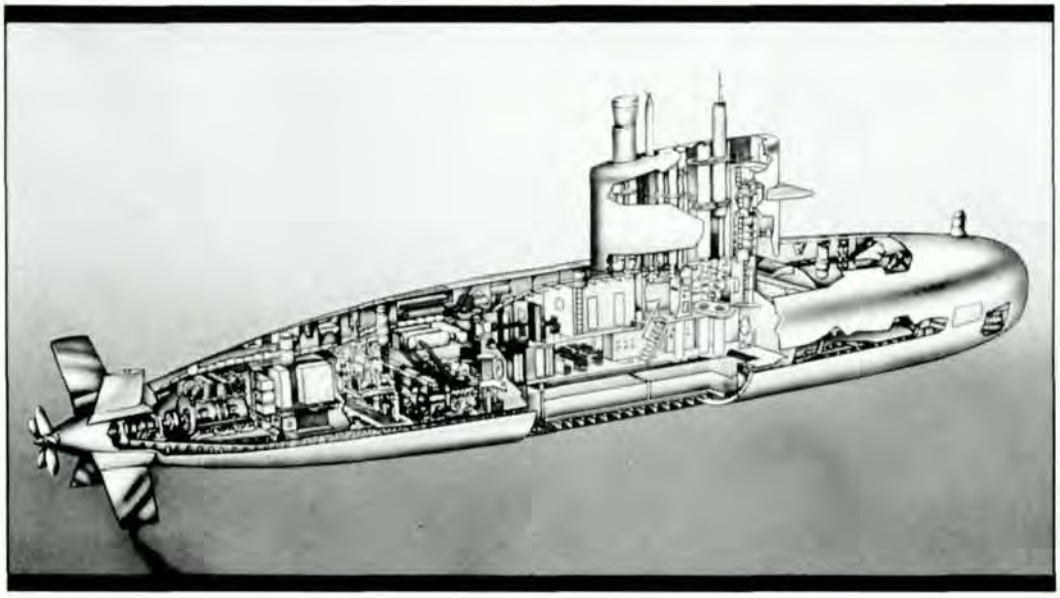
Notes: 1. The **deadline** for advertising material is 21 JAN, 21 APR, 21 JUL, 20 OCT.

2. Two-, Three- and Four-colour line advertisements can be inserted. Prices can be supplied on request.

3. Payment for advertising should be made after receipt of an invoice from the Institute.

Further information on request to the Advertising Manager.



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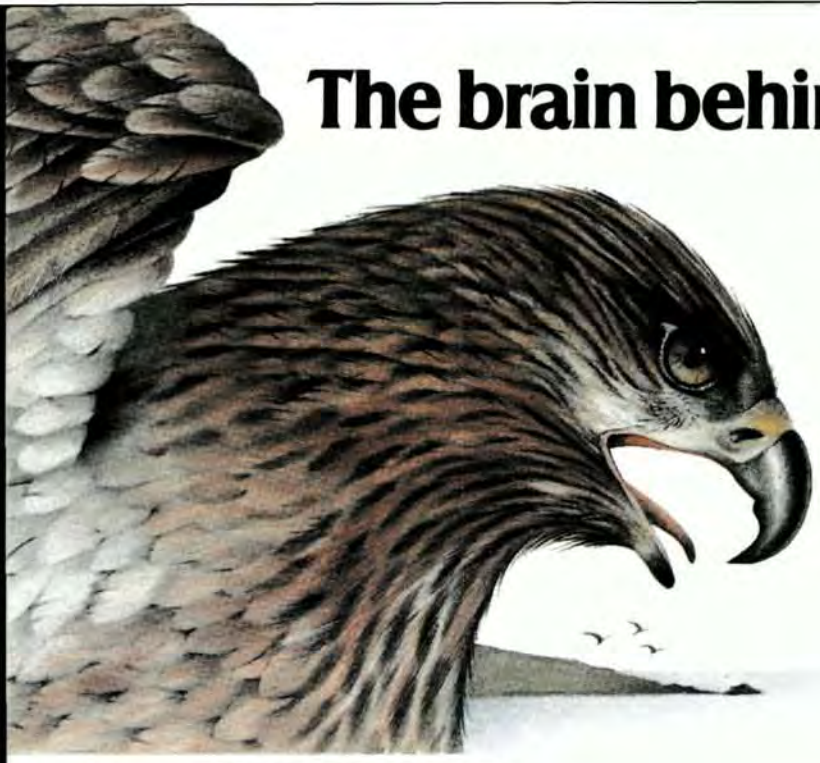

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