

JOURNAL OF THE AUSTRALIAN NAVAL INSTITUTE

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The front cover. HMAS ARDENT, shortly to be transferred to the Hobart Port Division of the RANR.



Correspondence

WHO SANK THE SYDNEY?

Dear Sir.

The Journal has given a great deal of prominence to the question of Who Sank the Sydney? At the same time, space has been given to the forthcoming 75th Anniversary of the RAN.

It seems to me that a very logical and tangible way to prove (or disprove) one and celebrate the other would be a concerted, visible effort by the Navy to locate the SYDNEY and at very least have the site designated as an RAN Memorial. Better still, any relic and artifacts recovered could be given pride of place in either the Australian War Memorial or the projected RAN Museum.

I do not advocate a performance of raising the TITANIC, that would be beyond us, just a visible effort by the RAN to show the public of Australia its concern for the Australian parts of its own history and tradition. In all possibility it would allow the RAN to demonstrate a real use for the technical wonders of AS Warfare nuts and bolts.

Of course it would be expensive, what isn't these days! Think of the sense of achievement if the search was successful National pride would follow and successful or not, at least we tried.

For the detractors of such a scheme please remember Dave Burchell. He was thought of as something else when he went searching for *HMAS PERTH*. He did achieve results even without the help of the RAN and Australian Government — just think what could happen with it!

Yours faithfully

Joseph Porter

NOME DE PLUME

Dear Sir.

May I reply to the letters from Sub Lieutenant Goldrick and Lieutenant Lemon regarding pen names.

If "a little detective work" (Sub Lieut Goldrick) will establish the identity of a particular author why bother to use a pen name. In any event this can only apply to local readers and not to your international readers.

As for authority (Lieutenant Lemon) would that all maritime materiel, strategic, logistic and personnel problems were of a 2 = 2 + 4 simplicity. (Incidentally in some African countries which I visted 2 + 2 can equal 5 or 3 according to whether one is on the paying or receiving end.)

Any author who makes any claim to scholarship lists his reference sources so that readers can if necessary make a check to establish his accurancy (or authority) and so weigh up the worth of a work. Giving his name is a necessary part of this convention.

Surely it is a sad reflection on the present climate in the R.A.N. if an officer or sailor however senior or junior lears retribution if he states in an orderly, well mannered and factual way his own opinions on ideas.

Nelson and Jacky Fisher to name but two had the guts to speak up however unpopular their ideas and without skulking behind a pen name managed to reach the top.

> R.J. Bassett Commander RAN (Retd)

PULLING THE WOOL OVER OUR EYES

Dear Sir,

In response to the plea by Brasdacier on the subject of the Woolly-Pully (Vol.8 No.1), I have enclosed an anonymous plea of not too long ago. The subject is the same and it may be of interest for readers to note that the subject of the Woolly-Pully seems to have been covered before.

I make no apologies for the poem, nor can I claim any knowledge of the author.

Yours sincerely

Gallicae

The Woolly Pully Poem

Like Pongoes we dress in a pully. The new rig we have in the fleet.

- It's a break with Nelson's tradition
- No longer are officers neal.
- From the reefer we take out our wallet, Comb, diary, pen, pencil and such
- And stuff them in our trouser pockets
 - To make strange bumps all round the crutch.

And we're all in pullys together, They come right down to our knees, Yes we're all in pullys together,

No more looking smart if you please

The rain, though it's only a shower,

Will now leave us all wet right through And the wind whistles straight through the knitting.

No wonder we're all looking blue. Our tummies all bulge out on top of

We all look a total disgrace.

- But sometimes we must wear a reefer To welcome an Admiral aboard,
- So we all dress as for divisions Though without the medals or sword But he turns up in a pully
- For that is the rig of the day, And so with embarrassed red faces
 - The officers all slink away
- A handbag would look rather foreign For carrying our clobber around, Patch pockets or even a sporran
- Might help get this rig off the ground, But clearly the elegant answer
- Is to bring back the reefer today And to ease the financial burden
 - An increase of K.U.A.

FROM THE SECRETARY'S DESK

Having been in the chair since the end of January, the time has come to put pen to paper. First, I must point out that most mail is addressed to me, and I do receive all the mail, however, membership lists, subscriptions and changes of address are now handled by a membership Sub-Committee. Some readers may have received letters from them recently, reminding them to pay their subscriptions for 1982 — here we are with 1983 subs almost due and we are still chasing for 1982. Financial management of the Institute is tight and your subs pay for little more than the cost of the Journals — so please pay promptly. Future mail on membership issues may be addressed to the membership Sub-Committee or to the Secretary, but please do not use personal names: the bodies change but the appointments remain.

Secondly, the Council has decided that there will be no ANI Seminar in 1983. Planning takes 12-18 months, so that decision has had to be made now. Member's views are solicited on the date and theme of the next seminar bearing in mind the planning timeframe and the forthcoming anniversaries in 1986 and 1988 (see Commodore Knox's letter in the February 1982 Journal).

So far, there has been only one response to a request for thoughts on an ANI tie (November 81, my predecessor's column). Even if you have no ideas for a design, you might let me know if you feel strongly for or against the production of a tie; presumably those who do not feel strongly will not care either way and if there are no responses, the Council can assume a tie is not really required.

Apart from Council Meetings and the Journal, Chapter Meetings are the only other form of regular activity — and currently, there is a dearth of the latter. If you are a Chapter Convenor, please let me know regularly what you are doing and whether or not you need assistance — the Council may be able to help and the Editor would like to print your proceedings in the Journal. If you are in an area where there are many RAN and/or ANI members and there is no chapter why not form one? One of the councillors has a responsibility for Chapter development, so if in any doubt, drop him a line via the Secretary.

Even though I advised you not to use personal names earlier in this piece, if in need of an informal word or a piece of urgent advice, you can ring me on 062-654892, or the Editor on 062-662697. We will let you know in the column if either numbers change.

Geoff Cutts



SEAPOWER '81 — AN OPEN DEBATE

As mentioned in the Secretary's column in this issue, there will be no ANI Seminar in 1983. This will be a disappointment for most members so perhaps we should take the opportunity to investigate whether any lessons were learnt from **SEAPOWER '81**.

It is the intention of the Editorial committee to devote most, if not all of one issue of the Journal in February 1983 to articles based on the subjects discussed during the last Seminar. No format has been discussed, but perhaps it should be along the lines of an exchange of ideas, comments and maybe further discussion.

For those who did not attend the seminar now is your chance to express your point of view on any of the subjects discussed. For those who attended but were not heard, now is your chance to ask questions or put forward a point of view. Those who presented papers may care to add to, or revise the opinions and judgements presented during **SEAPOWER** '81.

Articles and other contributions will need to be forwarded to the Editor well before the December 82 deadline for copy.



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GENESIS OF THE RAN STAFF COLLEGE

This article appeared in the initial edition of 'The Balmoral Papers', Journal of the RAN Staff College. It is reprinted with the kind permission of the Director and should give members an insight into, and understanding of, the RAN Staff College.

The RAN Staff College (RANSC) was established in January 1979 with the aim of increasing the professional knowledge, judgement and competence of selected officers, normally of the rank of lieutenant commander, thereby broadening their professional background and preparing them for command and higher staff appointments in both peace and war. The College is located within HMAS *PENGUIN*, at Balmoral, a northerm Sydney Harbour suburb, and is a wholly independent unit responsible directly to the Chief of Naval Staff.

The original concept for the Naval Staff College was as one of three single Service wings of an Australian Services Staff College (ASSC) collocated with the Joint Services Staff College (JSSC) in Canberra. The JSSC was established for students at commander level in 1970 and today it continues to flourish with its 25th course. Because of delays in proceeding with a collocated staff college, it was decided to establish the RANSC as early as practicable, bearing in mind that eventually it might be incorporated as a naval wing of the ASSC. The ASSC concept does not relate at all to the Australian Defence Force Academy (ADFA) which caters for undergraduate training on first entry and for subsequent post graduate studies.

The general requirements for a Naval Staff College appeared to dictate that a course length of somewhat less than 12 months was desirable; however, the practicalities of officer availability strongly influenced the selection of a 22 week course. A further consideration was that likely existing facilities would not be able to cope with the annual requirement of an output of 40 in one course, but could handle only approximately 20 at any one time.

In designing the course, the most important factor was that the course should be run at a pace dictated by the learning abilities of the average student. This principle had implications for the staff/student ratio, course software, support facilities and student access to all varieties of instructional material. Various exercises take greater or lesser time per student depending upon familiarity with the subject. The RANSC does not limit itself to 'The slowest ship in the convoy', but due regard must be given to the widely diverging backgrounds of executive and technical officers, university graduates, non-graduate College officers and ex-lower deck officers.

Staff Training Requirements

Naval staff training recognises that at the junior level, a naval officer learns through specialised and sub-specialised courses to participate in the running of his ship or shore establishment and to employ associated trained manpower in the naval environment. His tasks require an intellectual capability to grasp concepts and reason clearly, a junior command ability to achieve a result under pressure through the efforts of others, an executive ability to solve problems and make or enable decisions, and an ability to communicate and condition his actions according to the purpose of his unit and in harmony with his environment. His chief personal objective at this stage is to achieve a high level of specialised competence.

As an officer is professionally developed by training and experience, he becomes eligible to fill staff, and later, command billets. These postings require the officer's participation in a wider field of Service operations and management which make demands upon knowledge and skills additional to those developed by this experience and earlier specialised training.

Many such postings are less directly concerned in the operational use of naval equipment and are more related to the policy and management of the naval organization and naval operations generally. The staff officer at this level becomes involved in the process of directing, planning, co-ordinating, evaluating and controlling functions - and participating in long term policy activities. The analytical work in solving problems at this level requires staff officers who can accurately define problems from complex data, arrange factors in sound perspective, and then apply the most appropriate problem solving technique. Simple qualitative reasoning alone may be inadequate, and numerate techniques will play an important role in solving problems and enabling sound decisions at the policy level.

Decisions and recommendations should not, however, be made in isolation, or in ignorance, of their wider implications. The perspective needed in staff appointments comes from being well informed of the many factors which bear on Service decisions. Knowledge is needed of defence policy and its determinants, and of the military and financial factors which influence its implementation to a degree sufficient to ensure that an officer's work is consistent with it.

A further problem in the wider field of Service management is the change in environment. An officer in most cases moves from an operational post manned almost entirely by naval uniformed personnel into a support or administrative organization partly manned by civilians. He must be able to work effectively in this organization. This requires knowledge of the structure and purpose of the organization and its agencies, the methods of management and communication established, and the role and functions of the Public Service.

Finally, a large organization such as the Navy relies on sound communications for its effectiveness. Communication is conducted through meetings and committees, or more commonly through written material in the form of staff papers, minutes, briefs and letters. These must be written, often under the stress of a limited time frame, in a way that will translate policy, orders, instructions and information accurately, concisely and unambiguously. Otherwise they may be open to misinterpretation; the impact of good ideas might not be made; the relevance of facts or experience might not be established; and the benefit of viable input lost in confusion or missed in the speed with which such papers must be processed. Representatives at meetings must also be able to state their cases clearly, concisely and in context, and evaluate and respond to the views of others.

A junior officer is unlikely to have developed these skills, or the knowledge and awareness he requires in a staff posting. The lack of such abilities impairs Service efficiency and the naval staff course is therefore designed to facilitate the transition of an officer from one field of Service activity to the next. Accordingly, a staff officer must develop skill in and acquire a knowledge of:

- solving of complex problems,
- managing resources delegated to him including the time available,
- working effectively in an organization.
- the organization for the management of Defence and his Service,
- principles and trends in the national and international factors which bear upon defence, and
- the role and capabilities of his own Service.

The RAN Staff College Course

The foregoing covers the shortfalls and requirements of a staff officer, and suggests elements in a suitable course structure. A typical course will consist of 20 students made up of 14 Navy, 1 Army, 1 RAAF, 1 RNZN officer and 3 Public Servants, of whom one may be a woman. The directing Staff comprises a Director three (Captain). Syndicate Directors (Commanders), one of whom is Assistant Director (Implementation), and one Assistant Director (Design & Development) (Commander) assisted Officers Research (Lieutenant by two Commanders). These are supplemented by a civilian librarian and administrative and clerical staff.

The course is divided into four Study Periods, namely, Basic Staff Skill, Management Principles, Defence and the Nation, and The Service Environment.

Study 1 commences with three weeks of writing, speaking and logical thinking exercises directed towards the eventual aim of producing an officer who can solve complex and unfamiliar problems logically and effectively, then express his solution convincingly in either a Service paper format or at a verbal briefing. This is followed by two intensive weeks of statistical methods which is estimated conservatively as being the equivalent of at least one university semester's postgraduate work in both quality and content. This segment is conducted by an ex-RAN officer who is now a senior lecturer at a College of Advanced Education. This is followed by two weeks of Operations Analysis and computer techniques. Because of Navy Office's heavy involvement in operational tactics and equipment effectiveness studies many Service papers involve the use of Operational Analysis techniques.

The course, therefore, gives the students some hands-on experience with computer programming in the 'Basic' language and some familiarity with solving military problems using such techniques as Queueing Theory and Linear programming. RANSC has its own computer terminal linked to a large main frame computer in Sydney, and during the peak instructional periods hires a further three terminals to provide one to each syndicate of six or seven students. Despite the short time period available, about one third of RANSC students become quite competent with programming and in using analytical techniques.

At this point, the students commence Study Period 2, the management section, of 4½ weeks, which draws heavily on academic lecturers from Macquarie and Sydney Universities and the University of NSW, plus leading practitioners in the business field. Subjects include Motivation Theory, The Principles of Human Behaviour and the broad spectrum of Decision Making from autocratic to democratic and participative, coupled with a study of individual student performances compared to other peer groups and other categories. The students are lectured on Organization Theory, and its practical applications; the Influence of Environmental Factors Upon the Workforce; and the whole is put into perspective by several, practising, management consultants.

Most of these lecturers are College regulars who seem to enjoy the type of audience at the College and exploring the military view point. This is very fortunate for the RANSC, as students must be exposed to current management and organization thinking and should not accept customs and practice of the Service without question. The RANSC does not aim to encourage naval officers to dispute Service practice in general, but to broaden their knowledge of management so that they can improve their techniques, and that of the Service as a whole.

Interspersed among these lectures, students are introduced to case study techniques by several syndicate and individual exercises. Finally, the students are allocated to small groups of two or three as consultants on problems within the Defence organization. These problems are as widely divergent as:

- 'Whether the traditional organization of Naval establishments, being an image of ship organization moved ashore, is relevant and efficient in the light of modern management concepts'
- 'To review the present refit and repair project organization in Garden Island Dockyard and recommend improvements'
- 'To investigate the problems that could arise from the introduction of diploma — certificated sailors into the RAN and recommend solutions'.

The student groups are briefed on these topics by the sponsor of the problem and make a verbal presentation on completion of their study. Finally, this is consolidated into a written paper.

An opportunity is taken to visit some of the large business organizations in Sydney where students are briefed on the scope of their management problems and explore their relevance to the Navy. These organizations include some of the largest Australian and multinational companies and banks. There is also a verv demanding individual exercise where students conduct a cost effective study into a specified organization. They are required to decide whether to introduce a computer based system, and whether this should be by hire of bureau facilities, or purchase or lease of either a main frame or mini-computer. Students are thus required to integrate their acquired knowledge of computers with their analytical and written skills.

Study Period 3 follows with the aim of developing student knowledge and under-

standing of national and world affairs which affect Australia's defence interests. The aim is achieved mainly by means of a large number of lecture and discussion periods conducted by visiting academics. Commonwealth departmental officers and experts from the business world. Topics addressed include The Australian Economy, World Economic Trends, The Energy Problem, Maritime Trade, Contemporary Political and Social Problems, International and Maritime Law, Foreign Policy and, most importantly from a naval viewpoint, Strategic Thinking, including Maritime Strategy. This study period is more educational than training oriented, and is an important learning and consolidation period for the future senior officer who will need a wide perspective and understanding of strategic thinking and the political decision making processes.

Finally, Study Period Four The Service Environment', has the aim of enhancing student knowledge of the organization, roles and capabilities of all arms of the Defence Force but with no reference to tactics. The College concentrates on the organization and management of major commands and directorates in Defence and Navy Office, project management and logistic planning. Equally important, the students are acquainted with the higher committee decisionmaking process in Defence Central, and the other departmental considerations leading to government decisions on defence matters. During this period, RANSC guest lecturers include most of the RAN's serving admirals, the Secretary of the Department of Defence, and the Chief of Defence Force Staff. Outside visits are also made to the other Services, such as Defence Research Centre Salisbury, RAAF Bases Williamtown, Edinburgh and Amberley, the Australian Joint Warfare Establishment and the Land Warfare Centre at Canungra.

Throughout the whole course, the opportunity is taken to invite any visiting foreign senior officers to address the students on either RANSC chosen topics or a topic of their particular interest. Eminent persons are also invited to address the students on topics of general interest, usually in the evenings when wives can also attend.

Overall, the workload on students is heavy and requires some out-of-hours homework; however, the objective is to produce officers who can adequately cope with future staff-work so that they may improve their prospects and better serve the RAN.





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SYSTEMATIC PROBLEM SOLVING (OR THE RAN TRAINING SYSTEM)

by Commander H.L. Dan RAN

Some of the most maligned people in the RAN are those associated with the RAN Training System. As I am one of those poor unfortunates who is often on the receiving and of illogical rhetoric from other personnel, generally around the bar, I am keen to try and explain the philosophy of the Training System in meaningful terms. In terms which, as one of my recent staff would describe, 'any intelligent person would have to agree with'.

One of the problems of the Training System has been the development of its own language which has clouded the whole issue in a veil of intricacy which has tended to alienate people. The language, or jargon, is necessary for those who operate the system, just as other employment groups have their own standardised terms in order for professionals to communicate effectively with each other. That requirement to use the jargon need not permeate this sort of article and I will attempt to keep it to a minimum.

The approach I wish to adopt here is to describe a systematic, problem solving model and show how that can be related to the Training System. Good problem solvers, of course, think systematically and there is no requirement to lay down a model for them to use. However, most of us are less than perfect and the use of a model as a strategy for attacking problems is often a useful tool. That is, the results achieved are better, on the average, if we use the model than if we don't. In addition, if all problem solvers in a particular field use the same model of problem solving, then checking their approach when the problem is not solved is easier because of the standardisation.

What do most of us do when confronted with a problem solving situation? Well in order to find out, 1 will walk through a simple navigation problem. The ship is in blue water and the problem is to get it alongside in a foreign port. How does the Navigator tackle this problem? He first **analyses** the task. Charts are consulted, tidal information gathered, weather forecasts and local effects considered. A solution to the problem is then designed. The Navigator decides on track, notes specific bearings, decides on wheel over points, tugs required and so on. A point to be noted here is that the Navigator may mentally rehearse or try out this solution to evaluate it. The next step then is to implement the solution. The ship actually tries out the design solution. During the evolution the solution is evaluated as it occurs. Fixes are taken to ensure the ship is on track. When the evolution is complete the Navigator or CO will generally continue the evaluation of the overall solution, noting where the actual result did not meet that expected in the designed solution. Corrective action can then be noted and taken account of when the performance is required again.

In summary then the following occurred:

Problem: Enter harbour and berth ship

- 1. Specify task in detail and examine and note all relevant factsOR ANALYSE
- Chart a solution noting any special requirements OR DESIGN
- Try out the solution to see if it worksOR IMPLEMENT
- Check how well the trail actually compared with the designed solution and revise
 OR EVALUATE

THE AUTHOR

Commander Daw is an Instructor Officer who currently occupies the billet of OIC RAN School of Training Technology. In this position he is involved with the management of courses designed to train personnel to implement the RAN Training System. As such, he has an interest in publicising the Training System as a simple problem solving model. In real life our first attempt at implementing a solution may not work. Modification of the solution design or part of it may be required before the solution can be implemented. If the solution does not solve the problem (this is discovered when the solution is evaluated) then it may be necessary to go back and re-analyse the problem or choose a different solution. Similarly, the solution may solve the problem initially but not over a long period because the problem may change. In such a situation there is a requirement to move back and forth over the analyse, design, implement and evaluate functions or modify the solution based on the feedback being gained during the problem solving.

I hope readers see the benefit of analysing the problem before deciding on a solution. Too often, evidence is seen of tinkering with solutions without being certain of what the problem is. In a complex situation the requirement to carefully assess the problem before designing and implementing a solution is paramount.

Now to the problem for which training is sometimes the solution. There are Service tasks to be performed for which the recruited manpower does not possess the required skill. In other words there is a gap in performance. This performance shortfall may be overcome by at least four actions:

- recruiting individuals with the required skills,
- training new or existing manpower to perform the tasks,
- changing management procedures, to provide closer supervision, change maintenance policy etc.,
- changing the performance required, say by automating the performance, re-allocating the tasks to skilled personnel and so on.

If training existing manpower is the solution selected then the RAN Training System Model prescribes the procedures which should be followed.

The Model is similar to that used in the example of problem solving (except for the addition of the Validation function which will be explained later) only the blocks are shown in a horizontal linear sequence with feedback possible at each phase (see figure 1). The aim of the Model is to ensure a high correlation among the elements of the Training System: the job, training objectives, the instruction and the testing. That is why the procedural model is formalized by the RAN to ensure that this performance problem is tacked in a systematic way.

If the five phases of the Training System are examined, the likeness to any systematic problem solving model is evident. However, it is worth making the point that, as with the berthing problem, the actual application of the model and the achievement of a successful result may require particular skills not possessed by the average Naval person.

How does the Model work? In the Analysis Phase the job and the trainee are examined to define the gap between what the trainee can do and what the job requires. This gap is then expressed as a number of precisely worded objectives which, if achieved by the trainee, would close the gap in performance. Tests are then constructed for each objective so that trainee performance can be confirmed. In the Design Phase the learning that has to be accomplished is identified and the best strategy to do this decided. Once training aids have been obtained and the course sequenced and packaged, the instruction can be tried out.

When required revisions have been made, the course can then be conducted by the school on a regular basis. The Evaluation is a withinschool immediate process to see if the solution, ie. training, has solved the problem — did the trainee make the performances at the right standard?

Validation is the measuring of the affectiveness of the solution on the job. Can the ex-trainee do the job? If not, why not? This Training System then is a particular case of a general problem solving model.

I think there would be general agreement from readers that the training world is still confronted with a great number of problems. The RAN Training System has not solved them all, nor will it. The system operates in a dynamic environment where change will continue to present new problems and modify existing problems. The



application of the Training System with the functions of evaluation and validation gives trainers the information required to keep the training current and relevant. It would be fair to say that this approach is admired by most other vocational training organizations.

What are the problems faced by managers of the Training System? Some that I perceive are:

- The expectation raised in some peoples minds that the Training System will solve all our training problems is false. Systems, models, procedures do not solve training problems, managers do. If the training problems have not been solved then management must take the blame.
- The successful application of the Training System requires adequate organization and resources. The latter, at least, is missing. This is true, both in terms of the quality and quantity

of manpower, and in the area of financial and other resources required for training.

- There is also the problem which results from the status of training in the hierarchy of Naval functions. Certainly those involved in training perceive it to be the poor relation not only in absolute but in relative terms.
- There has been a failure to integrate team, or operational, training and individual training within the RAN.

I have probably said enough. What I have tried to do is to explain the Training System in simple terms by using the analogy of a general problem solving model. I have tried to avoid the jargon associated with the system while acknowledging its place in the professional arena. The article concludes with four broad reasons why the Training System is not as successful as it could be in solving RAN performance problems.



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ARMED FORCES FOOD SCIENCE ESTABLISHMENT

It would be reasonable to assume that at one time or another, most, if not all of the members of the Institute have eaten from ration packs. Whether the diner agreed with the menu is purely academic. What is important, is how many of the diners gave thought to the ration pack itself, how was it devised and where did it come from. This article will give the reader some insight into this important adjunct of the Defence Forces.

Brief History

In 1954, development of three combat ration packs, for use by Australian Servicemen, was commenced. It commenced in Melbourne without the use of readily available laboratory facilities for the analyses of commercially processed foods, and without the use of equipment for the production and testing of 'mock-up' containers, either tinplate or fibreboard.

Private industry was generally reluctant to spend time and money on the development of new products for which there might be only a limited Defence demand. There were few food processors who were able to provide detailed analyses of their product. This made it difficult to obtain quantities of some processed foods, having specified properties, that could be incorporated in complete ration packs for test purposes. Nevertheless, during the ensuing four years, the following ration packs were developed and accepted into the Army supply system:

- Emergency Ration.
- 24-hour (one man) Ration (now Combat Ration [One Man]).
- 10-man Composite Ration (now Combat Ration [10 Man]).

Concurrent with this program of work on rations, there were four other defence food science projects being conducted in Australia. They related to meat dehydration, glucose-free egg powder, fat anti-oxidants and the compression of dehydrated vegetables. The work on compression was undertaken in a small research Scottsdale. station located at Tasmania. adjoining the only large dehydration factory in Australia. The limited facilities at this station were also used, to a minor degree, during the development of ration packs.

In 1958, it was decided to progressively terminate all defence food research in Australia except that connected with the development of rations for the Armed Forces. By then, the Australian Armed Forces had ration packs of their own and the many advantages in replacing 'canned equivalent' rations with ration packs especially designed for Australian Servicemen were fully appreciated. Also, at this time, special consideration was being given to the development of lightweight patrol rations which included compressed blocks of dehydrated meat and vegetables. For this work, laboratory facilities, and various items of equipment for compression, were needed. These were available at Scottsdale Tasmania where research had practically ceased. Hence, it was convenient and logical for work on the development of ration packs and ration scales to be moved to this readily available research station and the transfer, rather automatically, took place.

As the Australian Army had the greatest interest in the development of ration packs and ration scales, the activities of the research station were placed under the control of Army, although they also included research and development for the Royal Australian Navy and Royal Australian Air Force. For the operation of the research station, the Army raised an appropriate establishment comprising civilians and servicemen. During the ensuing years various changes to this establishment were made in the light of demonstrated needs for specialist personnel.

The original research station, in which work on compression had been conducted, was a World War Two building which had been moved to the site and appropriately modified. In 1965, Army added an administrative block comprising library, conference room, offices, tea room and toilet facilities. In 1970 a large experimental processing wing, new boiler house, laundry and Q-store complex were added and land acquired for a car park. By 1971 the range of activities of the Establishment had expanded to cover work for all three Services, and this was reflected in a change of name to the Armed Forces Food Science Establishment. In 1977, a large, new prefabricated store was added, and in 1980 new laboratories were completed for nutrition, chemistry and microbiology. A new library, engineering workshop and food museum were added also.

The reorganization of the Services and the Defence Department in 1975 resulted in increased integration of the organizations concerned with Australia's defences. Laboratories from five different departments were formed into the single Defence Science Division. As a result of this change, the Armed Forces Food Science Establishment (AFFSE) became part of the Service Laboratories and Trials Division in the Australian Defence Science and Technology Organization (DSTO).

General Charter

The basic charter of the Armed Forces Food Science Establishment is to determine the energy and nutrient requirements of Servicemen under the various conditions in which they may be required to operate, and translate these requirements into practical ration scales and ration packs suitable for use under Service conditions.

The charter would be relatively simple to fulfil if all Servicemen were engaged in normal civilian occupations and located in permanent barracks with regular supplies of fresh food, an ample supply of fresh water and adequate refrigeration and food preparation facilities. But they are not. The majority, especially in time of war, are housed in tents and constantly on the move; many are engaged on long range patrols over rugged terrain, others fly at high altitudes under confined conditions and some are in small ships subject to the incessant movement of the sea. Fresh foods may not be available and, in any case, are of little use when foods have to be transported long distances without refrigeration and then held for periods far in excess of their life as a fresh commodity.

Hence ration scales based on the utilization of non-perishable foods have to be developed. Non-perishable foods are those that have a satisfactory storage life when stored for considerable periods under tropical conditions. For test purposes, they must have a reasonable level of consumer acceptance after being stored for two years at 30°C. Most commercially processed foods will not meet this test and, hence, special food specifications are necessary to meet the requirements of the Armed Forces. The preparation of such specifications is a continuing and major responsibility of the Establishment.

In translating energy and nutrient requirements into ration packs, great care is taken to ascertain, by means of large scale troop feeding trials, the troop acceptability of each component in a ration pack. This normally requires several troop feeding trials to ensure that only components with high degrees of acceptability are included in the final design. It also ensures that the ration packs have the smallest weight and volume. It keeps wastage to a minimum and, as a result, keeps the cost of feeding likewise to a minimum.

For a soldier on patrol, the length of the patrol is normally determined by the amount of food he can carry. Hence patrol rations must be as small in volume and light in weight as possible. When all technological means of reducing volume and weight have been exhausted (trimming of bones and other inedible material, removal of as much water as possible, increasing energy value by the addition of fat and use of pouches instead of cans) the only avenue left is to determine to what extent food consumption can be reduced without impairing combat effectiveness. This, and its many related problems, is a major activity of the Establishment. Ration packs for survival purposes require special consideration. The Services mainly concerned are the Royal Australian Navy and Royal Australian Air Force. Survival packs for both these Forces have been developed and are constantly under review. Nevertheless, it is fully realised that, under survival conditions, water is far more important than solid food. Therefore, the Establishment also investigates the means of providing safe water in survival conditions.

Other major activities, complementary to the foregoing, that lie within the charter of the Establishment are hot-air drying, freeze drying, explosive puffing and compression of various foodstuffs. The Establishment conducts research into various aspect of each process and is well equipped with pilot plant for small scale production. It only engages in production on a larger scale when private industry is unable to meet the requirement for a product that has been developed and is required by the Defence Forces.

Research and Development Program

Towards the end of each calendar year, the three Services are invited to submit for consideration problems that might be investigated by the Establishment, Each submission is carefully investigated, firstly to decide if a problem really exists and then, whether the Establishment is the best place in which to have it investigated. Some problems might best be investigated by the Commonwealth Scientific and Industrial Research Organization, other Government departments or private industry.

If it is agreed that a scientific or technical problem exists, and that it can best be investigated by the Establishment, it is developed formally into a task and submitted for inclusion in the DSTO Planning Base. All tasks are reviewed annually for financial support and six monthly for scientific progress. Annual reports are made for sponsor information and continued support. Urgent tasks can be implemented if required, and these do not have to wait for the annual processes. Consultation with other authorities such as CSIRO, Commonwealth and State Departments and the commercial food industry is undertaken before any new research programs are begun. The AFFSE endeavours to foster cooperation at all levels with others in the food industry to achieve maximum use of resources and prevent any duplication of effort. Co-operative projects are entered into with other groups where equipment or expertise can be shared for mutual benefit.

Organization

The Establishment is organized into the following sections: Food Science; Food Technology; Experimental Processing; Nutrition and Physiology; Engineering Design and Maintenance; and Administration. However, the Establishment operates on an integrated basis as many task involve more than one section.

Food Science

The section has responsibility for chemical and microbiological analysis of foods; and research into the appropriate methodology. Chemical analyses are conducted for protein, fat, carbohydrates, water, ash, metals, vitamins, preservatives and pesticides. A wide selection of modern instruments are available to undertake the above analyses. They include gas and liquid chromatographs, spectrophotometers, and a protein analyser. Many of these instruments are being automated.

The principal products examined are complete ration packs used by the Defence Forces; including Combat Ration (One Man) -CR1M, Combat Ration (Ten Man) - CR10M, Patrol Ration (One Man) - PR1M, and the Emergency Flying Ration - EFR. If required by the Establishment's research program new commercial products, experimental products, and indigenous foods (bush foods) are also examined. Microbiological examinations are conducted on locally produced and other food samples for quality control purposes, and investigations are conducted to determine standards which ought to be expected in commercial production. Facilities available are adequate for the determination of total viable plate counts. detection of yeasts and moulds, and the culture and identification of possible food contaminants such as enterobacteriaceae, staphylococci, salmonella, shigella and coliforms. Methods used conform to the Australian Defence Force Food Specifications and the Standards Association of Australia. The laboratories are registered with the National Association of Testing Authorities (NATA) and participate in Australia wide testing programs to validate methods.

Food Technology

The section has responsibility for monitoring new developments in food manufacture that may have application to the Defence forces, for development of special ration components, and in conjunction with the Nutrition section, development of new rations. All ration components are organoleptically tested both before and after storage at elevated temperatures, and for this, controlled temperature and humidity rooms and a taste testing kitchen and booth are available. As most foods contain 60 to 90 per cent water there is considerable emphasis in the section on methods of food dehydration as well as compression. Equipment includes roller, tray, belt, trough, bin and freeze-drying pilot scale dehydrators. Textural changes in meat following drying are very important in relation to consumer acceptability. The section uses a texturometer and texture tester for such studies. Packaging is an integral part of food processing technology of special significance to Defence Food Science. The evaluation of flexible packaging systems to minimise mass and reduce wastage disposal problems is a further activity of the section.

Experimental Processing

The section is under the control of the Food Technology section and works closely with the Engineering Design and Maintenance section. It has two functions. One is to produce sufficient quantities of new products for field trials on a large enough scale to gauge service suitability, while at the same time determining any changes that are necessary in scaling up manufacture to a commercial level. The second function of the section is to produce Service food components for which the peace-time demand is insufficient to attract commercial manufacturers. A major activity in recent years has been a detailed study of processing parameters in freeze-drying of composite meals. This research and development program has achieved international acclaim and has led to the development of a new combat ration feeding system for the Defence Force.

Other work carried out by the section includes packaging on a small scale of speciality items which include the Australian Army Emergency Ration, the Emergency Flying Ration, Emergency Water and an Emergency Ration for use by RAAF pilots.

Nutrition/Physiology

The role of the Nutrition/Physiology section is synonymous with the charter of the Armed Forces Food Science Establishment — that is the assessment of the nutritional requirements of Servicemen under the various conditions in which they may be required to operate and the translation of these requirements into practical ration scales and ration packs suitable for use under Service conditions. This role is achieved by adopting a multidisciplinary approach and considerable time and effort is directed at liaising with the Services, industry and other sections of the AFFSE to ensure that the Service customer is provided with nutritious, wholesome and acceptable foods in line with his or her activities.

The military characteristics of a ration may relate to the bulk and weight, the number and type of meals to be provided by the ration; the maximum number of components; the minimum preparation time allowed; the maximum storage life; and the distribution and handling characteristics of the ration. When designing a new ration, the section is required to satisfy these characteristics. These requirements may be met by the use of existing commercial food components or by limited in-house production. After successful organoleptic, chemical and microbiological evaluation, the section has the responsibility to design and conduct field user trials of the ration.

Extensive troop feeding trials under combat conditions constitute an extremely important activity for the section, as it provides direct user feed-back on the acceptability, adequacy and Service suitability of the rations. The data from the trials enable necessary modifications to be made to the rations to achieve consumer acceptability. Combat efficiency, food cost and waste are accorded high priority in such work.

The range of rations for which the section has responsibility include: ration packs designed for emergency and survival purposes; rations for extended patrolling and assault purposes; situations where there is little guarantee of daily provisioning, and rations which are not packaged but provided according to a scale.

A further major activity of the Nutrition/ Physiology section is a regular review of the Australian Defence Force Ration Scales to ensure that the issue is based on sound nutritional practices while providing maximum flexibility in the choice of food items. Food usage and wastage surveys in static messes are conducted as part of this activity. Physiological studies under survival conditions are performed to assess food and water requirements.

Engineering Design and Maintenance

The size, location and type of research and developmental programs undertaken by the AFFSE require an Engineering section that is versatile to cover the breadth of activities involved in the provision of engineering services. These services include the design, installation, fabrication, testing, modification, commission, development, maintenance and operation of plant and equipment. The section is responsible also

for the provision of technical specifications, recommendations, and procurement requests for new items of equipment, the provision of cost estimates and operating and maintenance instructions for plant and equipment. The preparation and processing of technical requirements for all facility aspects of the Establishment, including major new building requirements and repairs and maintenance of buildings, is an additional function. The section also undertakes experimental food projects and tasks and provides assistance in project work to other sections of the AFFSE as required. The section liaises with industry on the development and promotion of processes and equipment of interest to the AFFSE, and compiles relevant technical information.

Administration

This section includes the library and all management cells. The Director is assisted by an Assistant Director who is in charge of the Food Technology and Experimental Processing sections, an Administrative Officer (Army Captain), a Quartermaster Sergeant, clerical assistant and typist. A number of staff functions are supplied by the Defence Regional Office, Hobart, and by the Service Laboratories and Trials executive in Canberra. Army provides many services which facilitate the administration of the Establishment.

Co-Operative and Contract Research

In addition to the defence food research and development undertaken at the Armed Forces Food Science Establishment, a small amount of defence food research is undertaken in several Australian universities on a contract basis. This research is confined to basic work requiring the use of highly sophisticated equipment for which the Armed Forces Food Science Establishment would have no general use, or requiring academic training and skills normally found only in universities and similar institutions.

These are subject to annual review and each may be continued for a period of about three years. New projects are considered from time to time and, as one reaches completion, another may be commenced.

The Defence Food Science Adviser is responsible for arranging the funding of these projects and for recommendations for their continuance or termination. Contracts have been entered into with the Universities of Melbourne and Adelaide.

Co-operative programs with appropriate institutions are undertaken as required. Other Government departments and the CSIRO are involved while the commercial food industry has a close association with the AFFSE in developmental work. A number of companies are participating usually at the one time. The results of the AFFSE programs are made available to industry freely by direct contact and consultation in addition to published reports.

Publications and Report

The AFFSE reports on projects in a number of ways largely determined by the nature of the tasks and the sponsoring agency. As the Establishment is a member of the Defence Science and Technology organization the majority of reports are directed at the Defence and allied communities in Australia and overseas. There is a well defined format for DSTO publications and this is followed for most reports. Publications are largely unclassified and are distributed widely to appropriate institutions as well as to Defence Commands according to a distribution list.

As a result of a decision by the Commonwealth Defence Science Organization, member countries produce an Activities Report at intervals. These reports represent a summary of achievements in defence food science and provide overseas countries with a concise statement of current work. Copies of most of them are available on request.

Overseas Contacts

The AFFSE maintains close contact with a number of countries through the Food Study Group of the Commonwealth Defence Science Organization. The FSG meets approximately every three years where reports and scientific papers are presented. Membership of the group is thirteen countries with the USA having observer status. Bi- and multi-lateral exchanges occur through the FSG on many areas of defence food science. Recently co-operation with France has been developed and closer ties established with New Zealand, the United Kingdom and the United States of America. Technical reports are exchanged on a regular basis and there is much officer to officer contact.



"Years of placid peace and the diffidence of Treasury had inhibited development of bombs, a natural consequence of a war to end all wars but regrettable in the face of reality. Lack of development had been assisted by the presence here and there in the Services of a few of those officers who thrive only in peacetime, lacking neither in courage nor devotion to Regulations and afternoon team but lamentably deficient in the vitality and intellectual resilience that lead to actual work being done."

Paul Brickhill - The Dam Busters



HMS HERMES (post 1981 refit) now fitted with a 12° ski-jump.

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The Proceedings of SEAPOWER 81 are available from the Institute at \$12 per copy. (Those who attended the Seminar receive a copy automatically, the cost being included in the registration fee). The Proceedings contain the papers presented at the Seminar.

Send your cheque to the Treasurer, Australian Naval Institute, P.O. Box 18, Deakin, ACT 2600.



WASHINGTON NOTES

The seizure of the American Embassy in Teheran shook the United States from a lethargy regarding its national defense. For the first time since the withdrawal from Vietnam, the general populace realized that there are valid uses for armed force in intercourse between nations. Indeed, there was much indignation when military action was not immediately forthcoming and, later, dismay when the planned rescue of our diplomats resulted in failure.

It was a shock to discover that, for all the billions spent annually on defense, our military could not act speedily and decisively to protect American diplomats from acts by a hostile government. President Carter's establishment of a Rapid Deployment Force (RDF) in late 1979, capable of handling such emergencies, was therefore met with general approval and a good deal of relief.

The original concept for manning the RDF was to place certain units of each of the armed

services, totalling approximately 100,000 men, on calls by the commander of the RDF, a marine general. The plan has since suffered from an acute case of the 'American disease': tremendous and seemingly undirected growth. Projected force strength had mushroomed to 200,000 men in 1981 when Secretary of Defense Weinberger announced that the RDF would be converted into independent Joint Task Force (JTF), an commanded by an Army general, reporting to the Secretary of Defense through the Joint Chiefs of Staff. The RDF/JTF is to become a Unified Command on 1 January 1983. Operational control of designated units will be assumed by the Unified Command.

Although the final size and composition of the RDF/JTF has yet to be established, a report prepared for Congress lists its current make-up as follows:

Service	Unit	Personnel	
Army	82nd Airborne Division (Includes combat and combat support units.)	16,200	
	101st Airborne Division (Air Assault)	17,000	
	24th Mechanized Infantry Division	12,300	
	48th Merchanized Infantry Brigade (Georgia National Guard)	3,600	
Marines	Three Amphibious Brigades (Includes aviation and logistic support elements. 15,800 in each brigade.)	47,400	
Navy	Three Aircraft Carrier Task Forces	Escorts and support vessels would vary depending on tasks	
Air Force	Tactical Fighter and Airlift Wings	Unknown	

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As with any new idea, problems exist and many questions remain to be answered:

Command

The need for an independent RDF/JTF command structure is highly questionable. For over two centuries, the United States marine Corps has been remarkably successful when acting as this country's 'rapid deployment force', and no powerful argument has been made to remove this traditional function from the Corps. Interservice rivaltries and ealousies, particularly on the part of the Army, appear to be the primary reasons for the separate command. However, the desire not to be left out of headlines nor the Army officer corps dislike of being commanded by Marine officers no longer can be tolerated when the country is sacrificing so much to rebuild its services. Duplication of command armed establishments for these purposes cannot be afforded.

The Marine Corps is well suited to assume a command role for RDF forces. Corps planners targeted the Persian Gulf as a potential area of operations soon after the Second World War. The Corps is unique in its close relationship to the Navy and in its maintainence of its amphibious capabilities which I believe will be more important in the deployment of the RDF than is currently projected, Finally, the Marine corps is our designated force in readiness. Its mission often parallel but is not identical to the Army's. Every effort should be made to equip the Corps as a fast interdiction force while the Army specializes as a heavily armed and and equipped force able to be sustained for long campaigns over extended time periods.

'Best Case' Scenario

The RDF is based on the idea that the major portion of its equipment will be prepositioned either at friendly bases near potential trouble areas or at sea. The Indian Ocean-Persian Gulf area is currently the most probable area of operations for the Force. Should our government decide an intervention is warranted, troops would be flown from the United States and other American bases to meet this prepositioned equipment. The complete force will then proceed to land in what Defense Department planners have determined will be a 'permissive environment', namely where friendly airfields and ports would be available for RDF use.

It is astounding to believe that any responsible military planner would base his estimates on such an optimistic projection. Even if a friendly government invites our forces into its country, today's sophisticated armament could enable one man or a small band of guerrillas to disable or destroy enough ships or aircraft as to render any port or airfield useless.

RDF planning and procurement should be based on a 'worst case' scenario that would have the Marines making amphibious landings and have airborne forces dropped by parachute or landed by helicopter in a hostile environment. A ship configured for amphibious landings or aircraft capable for air assaults can always use regular docking or airport facilities but aircraft and ships without assault configuration cannot be used for that purpose.

Published reports of RDF planning also suffer from the 'best case' scenario regarding the Force's use of a large portion of the nation's airlift and sealift potential. What if there is opposition to our landing and we suffer high attrition in ships and particularly aircraft? Only the C-5 and projected CX transports can move an M-1 tank, and then only one per trip. What if more than one "hot spot" develops at a time? Although ships and aircraft have been designated for use by the RDF, how long will they be available and how will attrition in those forces in the alternate location effect the continued resupply and reinforcement of the RDF?

Units Assigned

The RDF suffers from a potentially fatal flaw in that several of its key components have been assigned to multiple duties in case of an emergency. The 82nd and 101st Airborne Divisions are not only assigned to the RDF but also forms part of the strategic reserve based in the continental United States. As such, these units play an integral role in NATO planning and their use by the RDF could be potentially disastrous should there be a concurrent emergency in Europe. It is therefore necessary that these divisions be replaced by similarly equipped units of the Army or the Marines and preferably the latter under the proposed command restructure.

To date, a separate fleet has not been activated for service in the Indian Ocean so the carrier task forces designated to cover the RDF must be drawn from other fleets. Again, what if more than one trouble spot develops at the same time? Will the 6th Fleet give up a task force if concurrent problems develop in the Mediterranean and the Persian Gulf? Solving this problem will be very expensive (nuclear carrier task forces cost about \$10 billion) and will require far more flexible thinking than has been evidenced by the Navy Department.

Smaller, conventially powered carriers could provide adequate cover for the RDF. However, the acceptance of a new concept let alone the time needed for construction of such vessels pose a major drawback because the need for the vessels is immediate.

An interesting alternative has been put forward by Lieutenant James L. George, USN (Ret.), in a prize winning essay in the United States Naval Institute Proceedings. Lieutenant George has proposed the establishment of several 'flying squadrons' (the name taken from a fast squadron formed in 1898 to protect the United States East Coast from expected Spanish raiders) consisting of older ships brought home to better upkeep and less strenuous duties to extend their service lives. The first flying squadron could be established this year, formed around the CORAL SEA. This ship could soon be joined by the recommissioned ORISKANY with the former operating fighter aircraft while the latter operated attack aircraft. Further squadrons could be formed as new carriers are added to the fleet and at least one other, the BON HOMME RICHARD, is brought out of retirement. Although old and well used, these carriers could act as direct support for the RDF but, because of time constraints, would probably replace of newer carriers that could be sent to support the RDF.

Finally, to rely on reserve or National Guard units in either support or combat roles for the RDF is a contradiction in terms. Rapid **means** rapid. The force must be fully manned and equipped at all times to be ready for immediate deployment at all times. Although the proposals I have made would require the addition of at least 50,000 men and numerous ships and aircraft to the active forces, with their attendant expense, the time saved by using fully active forces for the RDF could provide the margin of victory in any conflict.

The need for the RDF remains great. We are lucky that no situation requiring its projected capabilities has yet taken place. However, much thinking and improved planning is needed from the Congress, the Defence Department, and the services before the RDF can grow into the instrument of national policy it was meant to be.

Tom A. Friedmann



JOURNAL BINDERS



Journal binders are available (as illustrated) from the Treasurer, price \$6.00 each including postage. Coloured blue, with gold lettering and ANI crest, each binder will hold 12 copies of the journal (3 years' supply) by means of a metal rod which is inserted simply through the middle page of the journal and held firmly at top and bottom of the binder. Plastic envelopes on the bottom of the spine enable volume numbers or years to be inserted.



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.



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THE GRAIN RACES 1921-1939

In the years between 1921 and 1939 the arrival of deepwater wind driven ships in Falmouth (Cornwall) and Queenstown (Eire) heralded the early summer and the end of the annual grain race from South Australia.

Described as a race, the term is not really correct. Contenders varied in tonnage, size and rig and there was no common start date. To cap it all there were no handicaps and no clearly defined course. Indeed the only commonality of the race was the starting and finish areas — Spencers Gulf in South Australia and one of three British Isles ports.

As the number of wind driven ships declined in the early decades of the twentieth century, the grain trade became the sailing-ship owner's reason for economic survival. Grain is an almost imperishable cargo and is not effected by long transit times. Providing that it was loaded during the harvest there was no subsequent seasonal market to be effected. How different this was from the earlier days of the tea and wool clippers whose existence relied on speedy, dry passages to get their cargoes to the market place.

In the 20's and 30's all the grain transported by sail came from the ports of Spencers Gulf, South Australia. Most of it was landed in British ports although there were exceptions. The **Charter Party for the Grain Cargoes in Sail** (1935) stipulated that that from her loading berth the windjammer is 'forthwith to proceed to Falmouth, Queenstown or Plymouth for orders to discharge in any one safe port in Great Britain or Ireland, or on the Continent between Bordeaux and Hamburg, or in Norway and Sweden, or in Denmark'. The **Charter Party** also specified that the weight of the grain bags (possibly up to 50 tons in a large vessel) did not count in the freight rate payable to the ship-owner.



HERZOGIN CECILE



PONAPE

The main loading ports in the Gulf were Port Lincoln, Port Germain, Port Victoria, Walleroo and Port Pirie. At the time of the grain races, very few of these ports has any import trade and thus the arrival of the windships was one of their annual highlights. Most of the ports had jetties but at Port Victoria and Port Broughton the vessels were obliged to anchor off. The grain was ferried out to them in small ketches and schooners at about 100 tons a time and loaded into the windjammers by a collection of ships labour and farm hands under the direction of the charterer's own stevedores.

Most of the sailing vessels engaged on the grain trade called at either Port Lincoln or Port Victoria on their outward passage to arrange clearances and to find the whereabouts of their particular cargo. W.L.A. Derby in his book 'The Tall Ships Pass' makes mention that early in 1934 ten square riggers made their landfall at Port Victoria within twenty-four hours of each other.

But why a race? The average time to load a 4000 or so ton windship was about three weeks plus the time waiting to berth and once loaded the ship set off on the long trek to its orders' port. Thus no two ships would set off together, nor would one wait for another. Perhaps the ingredients were a long hot period of inactivity at a loading port, intership rivalry, one or more shipmasters trying to prove a point and not least of all the unknowns of wind and weather once they had cleared the Australian Coast. Be all that as it may, these annual sailings became, in popular circles, a race.

The course was almost as ill-defined as the reason for calling the sailings a race. Once clear

of their loading port the shipmaster had two choices. Either the 'Sailors Way' via Cape Horn or the relatively gentler way to the westward via Cape Leeuwin and the Cape of Good Hope. The route via the Cape (Good Hope) was some 1,200 miles shorter than passaging via the Horn, but predominant winds in the roaring 40's and 50's were from the west thus promised a more rapid but favourable passage. The Panama Canal was not for sailing ships, due to costs and delays, so most of the grain ships chose the lonely 15,000 mile voyage around Cape Horn and up through the Atlantic. Irrespective of the route chosen the race remained the same the vessel that passaged from its loading port to its 'orders' port in the least number of days.

With no registrations for entry the number of 'contestants' depended solely upon the number of ships chartered to transport the grain cargoes. Naturally this depended on factors such as the offered freight rate and those vessels available. Each year saw many familiar vessels, yet the number taking part varied considerably.

- 1921 68 vessels. The Finnish barque MALBOROUGH HILL took the shortest time, 91 days. The '21 race differed from subsequent races in that vessels loaded anywhere in Australia and the 'season' for sailing extended for the entire year.
- 1922 7 vessels. Shortest time was the Finnish full rigger MILVERTON, 90 days.
- 1926 7 vessels, Belgian barque L'AVENIR, 110 days.
- 1930 7 vessels, Finnish barque POMMERN, 105 days.

Although the race was an annual event I have only shown the greatest and least number of contestants to demonstrate just how the field varied.

Whilst on the subject of the time taken, I am sure that the purists will want to refer to vessels of other Australian trading voyages and if astute, will produce names such as *CUTTY SARK* and *THERMOPYLAE*. True, these were faster ships, but remember they were built and operated as tea *clippers* and as such were finer lined, better manned and above all, out for prestige. When the tea trade dwindled they were used as wool clippers and to a certain extent passenger ships. The elite ships and trade, rather than later sailtramping vessels of the grain trade. In those early days steam was the novelty, whereas in the 1920's and 1930's sail trading had almost become obsolete.

For record purposes, and to put the betweenthe-wars grain passages into better perspective, W.L.A. Derby provides the following 'Best runs home' from Australia for particular ships:

CUTTY SARK

82 days Newcastle to London	1883/84
80 days Newcastle to London	1884/85
72 days Sydney to Downs	1885
70 days Newcastle to Dungeness	1888
THERMOPYLAE	
81 days Sydney to London	1879/80
77 days Sydney to London	1882

78 days Sydney to Prawle Point 1884 79 days Sydney to London 1887/88

LIGHTNING

63 days Melbourne to Liverpool

But to return to the grain passages. There was an aura surrounding the ships that took part, not so much in their owners minds as much as in the minds of the general public. The aura seemed to grow amongst the British public during the 1930's and came to a head after the 1936 grain race when Gustaf Erikson's flagship HERZOGIN CECILE struck the Ham Stone Rock and went ashore in Sewer Mill Cover. Much has been written about this grounding and subsequent loss. but the thing that is guite clear in everything I've read on the subject indicates that whereas Erikson put business sense before his personal feelings (and he felt the loss deeply), it was the British public who rallied around with offers of financial assistance and were the emotive ones in the issue. The rescue attempts were almost successful, but almost is not enough.

In the nineteen years of the grain races, five vessels were multiple winners and others shared first place. In 1933 the barque *PARMA* came near to the wool clippers times with a passage of 83 days, but neither her, nor any of the others could compete with consistent passage times of under 100 days. According to Derby a passage of under



ARCHIBALD RUSSELL

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100 days was a very good time indeed considering how the ships were manned and had aged. Best passages to win were:

HERZOGIN CECILE

1927	98 days
1928	96 days
1931	93 days
1936	86 days
TASSA	

PASSAT 1934

1934	106 days
1937	94 days (Shared with POMMERN)
1938	98 days

BEATRICE 1923

88 da	ys
103 da	VS

1925 PARMA

 1932
 103 days (Shared with PAMIR)

 1933
 83 days

POMMERN

1930	105 days
1937	94 days (Shared with PASSAT)



POMMERN



JOURNAL BACK ISSUES

Stocks of the following back issues of the Journal are available:

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Back copies may be purchased from the Institute at \$2.50 each (\$7.00 for Vol 1 No 1), which price includes postage. Write to the Treasurer, Australian Naval Institute, PO Box 18, Deakin, ACT, 2600



SHIPS AND THE SEA

HMS POLYPHEMUS

HMS POLYPHEMUS, built in 1880 had the distinction of being the Royal Navy's first and only ram-ship. Based on cigar-ship principles the concept was revived in 1873 by Admiral Sartorius in his design for a steam ram ship. Laid down in 1878 POLYPHEMUS was launched in 1881 with the official designation of Torpedo Ram.

Cigar ships had a brief life, not unlike so many of the strange ship designs that abounded in the nineteenth century. They were the brain child (or children) of the American railroad tycoons, the Winans brothers of Baltimore. Although not successful, many of the innovations linger on in various forms to the present day. In essence, the alleged advantages of the cigar ships was to do away with masts, rigging, superstructure and all else that could retard progress through wind and water. The only upperdeck feature was a light navigating platform and funnels.

Four cigar ships were built during the period 1858 to 1866 and the last and largest was the Winnans brothers yacht ROSS WINANS of 265 ft built on the Thames. This advanced design and the more unusual feature of a propellor at both ends. Three innovations of ROSS WINANS that exist to this day are forced draft for the boiler furnaces, mechanical ventilation to the internal spaces and interior watertight doors fitted with rubber gaskets.

HMS POLYPHEMUS was a hybrid cigar ship, the strength hull was akin to a submarine pressure hull with the forward end tapering to a pointed ram. She was 240 ft between perpendiculars and 269 ft overall. The major diameter (beam) was 40 ft and the draft 20 ft. Twin screws were driven by engines that developed 5,500 hp at 17 knots.

In section, POLYPHEMUS was oval with the beam being greater than the depth. Theoretical advantages were better stability, a low freeboard, rounded upperdeck to deflect shell fire and that less armour plate could be used. The actual armour plate was 3in thick and projected only 6 feet below the waterline. Superstructure was minimal and consisted of navigational platform, funnel, single mast and mountings for the above water armament. Armament consisted of 6 Nordenfeldt machine guns each in its own enclosed mounting and five torpedo tubes. All tubes were below the waterline, two fixed on either beam with the fifth firing forward through the ram. A steel cap fitted to the ram took the place of the outer door to the torpedo tube and this was rotated aside to fire the torpedo. When in place the cap formed the tip of the ram.

To be successful a ram ship needed to be fast, very strong forward and highly manoeuverable. From all accounts *POLYPHEMUS* seemed to have filled the bill. To aid manoeuverability two retractable rudders were fitted at the bow. Twin screws driven each by its own engine and set of boilers completed the outfit. When launched 12 locomotive boilers operating at 110 p.s.i. were fitted, but these were later replaced with eight circular boilers operating at higher pressure.

All accommodation was within the strength hull in accordance with cigar-ship principles. A minimum number of openings made for a hot interior and engine-room temperatures were known to have reached 140°F. It goes without saying that POLYPHEMUS operated for most of her life in the Mediterranean!

Being of circular section *POLYPHEMUS* had little inherent stability. The 17 ft of overhanging stern and twin screws helped, but reports are that her behaviour at sea were unpredictable with a tendency to take up an angle of IoII.

What was the value of POLYPHEMUS? That has been hard to ascertain. Admittedly the 12ft ram would have caused considerable damage to a battleship or smaller, but consider the internal stresses and damage to POLYTHEMUS herself when brought up 'all standing' from 17 knots in the act of ramming an adversary.

Robin Pennock





Historic Naval Events of Australia Day-By-Day. By Lew Lind. A.H. and A.W. Reed Pty Ltd 1982. Price \$24.95

BOOK

The author is a Navy Public Relations Officer at GID and foundation National President of the Naval Historical Society of Australia. He has written a number of works on naval and maritime subjects. In this book he has compiled a comprehensive record of naval events involving Australia and Australians from the sixteenth century to 1980. The introduction to the book summarises the influence of naval event on Australia and the many areas into which the naval influence has penetrated.

Information on events has been obtained from published works, unpublished manuscripts and other sources such as midshipmens' journals, diaries and ship logs.

The book lists each day of the calender year and briefly notes the events, both major and minor, that happened on each particular day. The events date from 1521 to 1980, but some links with Australia appear to be rather tenuous, e.g. the death of Sir Francis Drake. Some events also seem to be rather less than historic in the strict sense of the word.

The book does contain some inaccuracies and omissions. The appointments of some Fleet Commanders and Chiefs of Naval Staff are noted, but others are not. Rear Admiral WELLS is appointed as FOCAF on both 4 January and 4 February 1974. The casualty list for AEI is inaccurate. There is no mention made of the establishment of the RAN Staff College, or the ANI! There are other inaccuracies and omissions, but this is to be expected in such a wide-ranging work and it does not detract greatly from the overall high quality.

There are photographs of either people, ships or events on practically every page. The photographs are mostly familiar ones with a few new ones included. Some photographs are unfortunately located on different pages to the entry they relate to. Brief biographies of some notable second World War officers are also included.

The printing is good, but I, for one, would have preferred a better quality paper, even if it meant a higher cost price.

The book includes a list of abbreviations and initials used. Appendices cover War Losses, Great Sea Battles of History and a Glossary of Some Common Nautical Terms, A Bibliography is included as well as a comprehensive index.

In summary the book is a very comprehensive record and is essential reading for anyone interested in Australian Naval history. It is also most useful for Executive Officers looking for items to pad out Daily Orders.

L.I. Roberts

HISTORIC NAVAL EVENTS OF AUSTRALIA DAY-BY-DAY by Lew Lind. A.H. & A.W. Reed Pty Ltd.

In the Author's Note, Lew Lind explains to the reader how he ascertained many of the dates quoted and gives credit to the sources he researched to produce this book. What he does not quote is the enormous amount of time that must have been spent reading and cross-referencing all the documents. In my opinion his efforts are well rewarded in presenting a record of Australian naval history in such a novel fashion.

Historic Naval Events contains over 4000 entries and a multitude of photographs. With so many entries there are bound to be errors and omissions but one of the most unfortunate things is that not all the photographs and inserts are on the page to which they refer. Thus the reader is forced to flick over pages in his efforts to find the relevance.

It stands to reason that a number of entries will draw criticism but a logical approach to the book by any reader will quickly bring the realisation that the advantages greatly outweigh the minor annoyances.

As a reviewer who follows the Australian naval profession, I would question Mr Lind's use of facts that appear to have no bearing on the Australian aspects of naval history. Let me quote three although there are more:

1st January 1841 - Captain James Clark Ross RN, crossed the Antarctic Circle in HM Ships EREBUS and TERROR.

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11 September 1943 — The German raider *MICHEL* sank the tanker *INDIA* off Easter Island.

29 October 1944 — The US destroyer EVERSOLE was torpedoed and sunk by the Japanese submarine *I*-45 off Leyte in the Philippines.

The book includes appendixes, a bibliography and comprehensive index. All are essential to the story and make *Historic Naval Events* a dictionary of naval facts and figures.

In summary, Lew Lind has produced an important book which should be on the shelves of libraries and schools, and in the homes of history buffs and all those interested in the maritime profession. The recommended price of \$24.95 places it well within the reach of all.

RJP

Editors note: AH & AW Reed have kindly offered members of the Institute a discount should they wish to purchase a copy of HISTORIC NAVAL EVENTS OF AUSTRALIA DAY-BY-DAY. To obtain the discount all members need to do is correspond direct with the Promotions Manager, AH & AW Reed, 2 Aquatic Drive, Frenchs Forest NSW 2086.

DARDANELLES, A MIDSHIPMAN'S DIARY by H.M. Denham. John Murray. \$34.90.

Quoting from the publishers notes: 'This diary, richly illustrated by unpublished photographs and plans, is an important addition to the Gallipoli archive. Henry Denhams' account reveals the courage, waste, muddle and triumph associated with the names of Gallipoli and Dardanelles'.

Midshipmen serving in the Dardanelles campaign were prohibited from keeping a Journal (blessed relief for writer and reader alike?) but Mr Denham disregarded the instruction and kept a series of private diaries. He explains just how **Dardanelles** came to be published and why he decided to use the actual diaries and not a summary.

In his last term at the Royal Naval College, Dartmouth at the outbreak of World War I, the author was posted to join the battleship *EXMOUTH* at Devonport. Arriving to join the ship he and eleven other Cadet Midshipman found a change of orders waiting (*EXMOUTH* had sailed) and thus they joined the old broadside battleship *AGAMEMNON*. They were obviously in good company in the gunroom as evidenced in one of the photographs — Walker, Bowes-Lyons and Vian to name but three. Written with the obvious enthusiasm and boyish outlook of a 17 year old, the diaries are forthright documents and in some parts irreverent towards his seniors. Let me quote one such example:

'My middle with Mr Hammet and I caused the ship to go back in order to communicate with a tug so got poor old Hammet in the rattle; anyhow I woke up old Fluter three or four times! A beautiful day...'

(Old Fluter was the Captain of AGAMEMNON, Captain Fyler RN. Also referred to as 'The Monarch of the Glen')

Denham also records history and change without realising the significance of what he was seeing and makes it so much more enjoyable with his quaint use of the English language. He writes of aeroplanes ascending from ARK ROYAL.

Dardanelles is not a book for everyone, but should be made available through public, school and association libraries to complete the Gallipoli story. One also hopes that it will be available to the present generation of 'young gentlemen' to illustrate the correct use of the English language to make their own Journals more readable. It also proves the point that someone does read Midshipmans' Journals albeit 60 years plus later.

O.M.

EDITOR'S NOTE

Nautical Press and Publications have released two books which will be of interest to members. The two books are:

"Australia's Armed Forces"

This book is an Australian FIRST covering the three Services in the one volume. The book is a 340 page hard backed cover which goes into depth on all equipment used by the three services. It looks at developments of equipment, why it was developed, its role etc. Use is made of hundreds of photographs in both full colour and black and white.

This book retails at \$39.95 per copy plus post and packing (if applicable).

"Reports of Proceedings"

By Rear Admiral G.G.O. Gatacre, CBE, DSO, DSC* RAN (Rtd). This 300 page hard backed book covers the Naval Career of Rear Admiral Gatacre from 1921-1964. It is a very readable book and covers many famous and historical events in which the Admiral was involved.

Mention is made of the Spanish Civil War and the sinking of the German battleship BISMARK. Rear Admiral Gatacre was Navigating Officer of HMS RODNEY. The book covers his term in Washington D.C., the Korean War when he was the Destroyer Squadron Commander and his term as Flag Officer East Australia Area. This section features his conjecture of the MELBOURNE/VOYAGER disaster.

This book retails at \$19.95 per copy including free post and packing.

Institute Members who wish to purchase either or both of these books are urged to correspond direct to:

Nautical Press and Publications Suite 2, 56 The Corso MANLY NSW 2095



Production of the Journal is no easy task and it is made harder when there is no material to publish. The Editorial staff rely on contributions in the way of major and minor articles, letters and snippets of humour, to keep the journal interesting and professional.

Circulation of the ANI Journal is now almost 800 copies per quarter, yet each and every issue seems to contain the same contributors. With membership keeping pace with circulation, this means that a few are supporting the many.

One does not have to be a professional author nor a Member of the ANI to submit an article. The Editorial committee includes persons of many disciplines and skills who will assist in any way possible. If you have something to pass on to Journal readers, but you are worried about your literary ability, then send it in with a note granting permission for the Editor to use his Editorial licence — and the committee will do the rest.

The choice of the subject will be yours, as will be the views expressed. There will be no recriminations, nor adverse comments — just, we hope, healthy debate. Use your own name or a nom de plume. Photographs appropriate to the article are a help, but we can assist in the provision of these if needs be.

All the Editorial committee ask for are articles and ideas to keep the Journal up to its well established high standard.

In case you need a starter, here are some ideas we would like to see developed, but do feel free to write on any other subject:

- Articles from members of ships companies of our newest or oldest vessels, on technical and/or habitability aspects.
- Articles of historical value ships, places, events, personalities.
- Briefs on the roles and functions, current tasks of (small) establishments such as AJWE, AJASS, SAMR, RANTAU, RANSTT.....
- Far more short pieces on shiphandling, Technical topics or, if you wish to make the point that no
 one listens to, Nobody Asked me, But.....
- Articles from non-RAN members on the latest moves in their own Services or Organisations.
- Some general pieces on, say, maritime/military strategy, seapower, old/new weapons, training
 and education, organisation of the RAN/Defence structure, role of chaplains, recruiting policy/
 practice, feeding/drinking/sporting habits in the RAN, management/leadership etc., etc., etc.

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