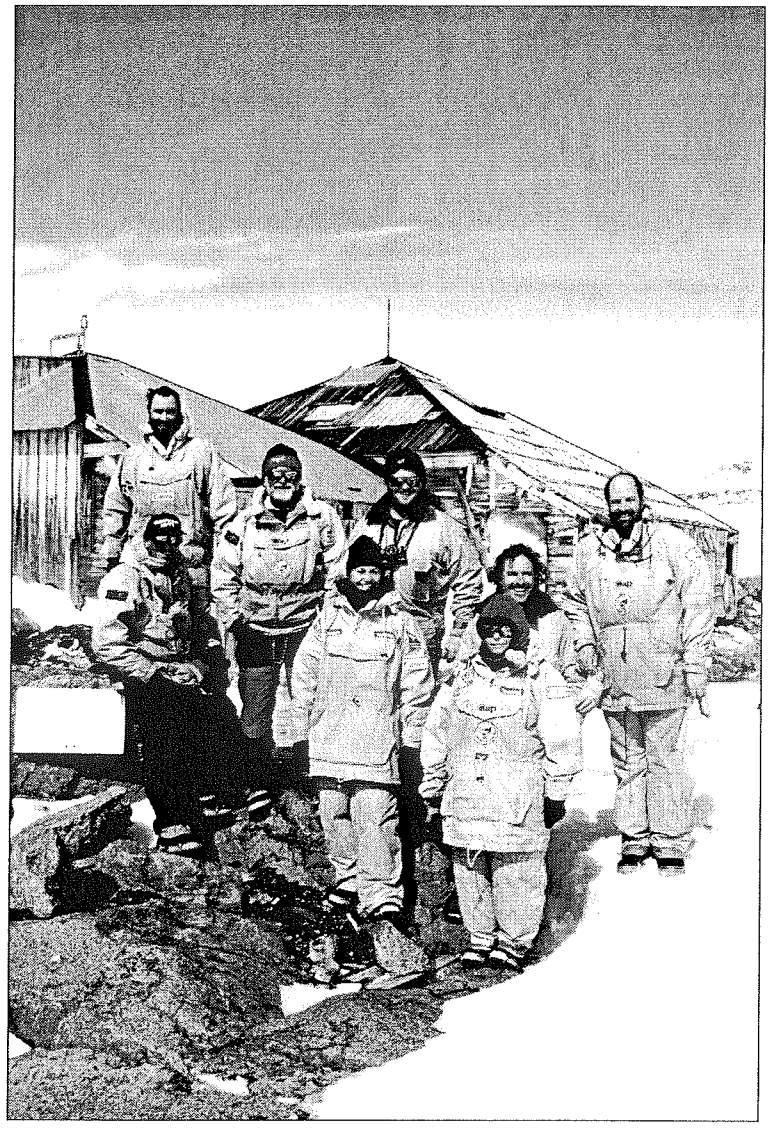
Rob Easther

REPORT OF THE AAP MAWSON'S HUTS FOUNDATION EXPEDITION 2000-01



Written by members of the expedition
Back row L to R: David Little, Rob Easther, David Killick, Ian Godfrey, Alasdair McGregor
Front row: Ted Bugg, Julia Searle, Estelle Lazer.

March 2001

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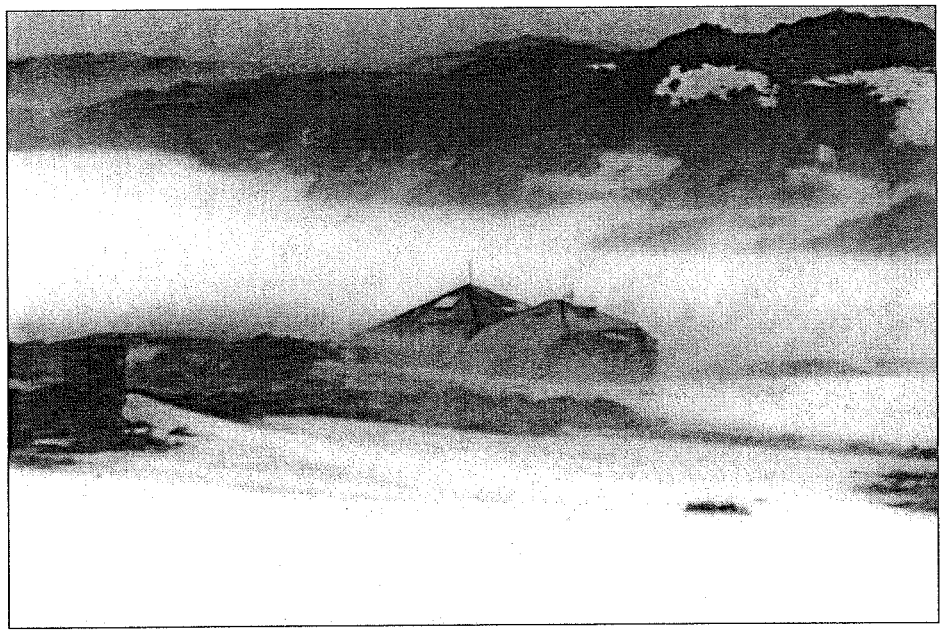
Contents

All photographs in this report by David Killick using digital cameras supplied by Canon.



The Winter Quarters nestled into the landscape January 2001

1 Executive Summary

The second expedition of the AAP Mawson's Huts Foundation to advance the conservation works program at the Historic Site, departed from Hobart on the Sir Hubert Wilkins on Saturday 16 December 2000 and returned triumphantly and safely on 17 January 2001.

The conservation works program was largely achieved with repairs carried out on the Main Living Hut and archaeological and conservation recording in and around the Hut progressed further than expected. The program in the Magnetograph House was completed and the ambitious clean-up of post BANZARE materials was also finished. Photographic documentation of all work was comprehensive and the interests of our sponsors well served.

Two objectives of the works program were not achieved. Planned repairs to the internal workshop roof collar ties were assessed as impractical on site when inspection revealed broken rafters to which the collar ties needed to be attached. There was insufficient time as the scale of the repairs required is way beyond what was anticipated. Since there is no immediate threat to the structural integrity of the Workshop, the need for the repairs is doubtful and needs to be reviewed.

The planned removal of the refuge Granholm Hut was assessed as unwise on safety grounds for the current and future work parties, scientists and tourists visiting the Historic Site.

At the time of writing, the approach to some aspects of the longer term conservation of the huts and artefacts remains unresolved and this is the subject of several recommendations for consideration by the Steering Committee in the final stage of negotiation over the Conservation Management Plan.

The report recommends further important conservation work to be achieved by one more expedition. Specifically, repairing the external roof cladding of the Main Living Hut and excavating the remainder of the ice from the interior of all of the Winter Quarters is recommended. Conservation of the huts of the AAE would then be primarily a matter of condition monitoring and more effective visitor management with occasional visits by work teams of 3-4 people.

Infrastructure to support the 2000-01 expedition at Cape Denison was most adequate and remains in excellent condition to support further conservation teams.

The logistic support of the French Antarctic program once a signed agreement is reached with the Australian Antarctic Division (imminent), is likely to offer the best opportunity for transport to and from the Historic Site for work parties.

Summary of Recommendations

Field Leader

1 There needs to be one more conservation works program at the Historic Site to
   a) repair the Main Living Hut roof to minimize the ingress of snow and ice into the hut;
   b) complete the removal of snow and ice from the interior of the Winter Quarters as a comprehensive archaeological excavation;
   c) paint the Granholm Hut to reduce its visual impact and re-locate the timber stack.

2 Produce a comprehensive data base on the artefacts at the Historic Site.

Carpenter

Main Living Hut

1. A decision is made on whether the bulk of the ice is to be removed. If so, it's folly to leave the roof unsealed as it is. The hut will in a matter of a decade refill with snow. Realistic options could be total or partial recladding of the roof, strip battening over the weathered T&G joints or the Ashley proposal of a vapour permeable membrane.

2 Temporarily remove the new ridge cappings and discretely fit a weatherproof seal where the edges fit the cladding.

3 Install flashings on the apex side of all skylights with appropriate material.

4 Reputty glass bead on skylight sashes This job is flagged in the CMP, but a wind free and sunny day is needed. Time demands are usually high on such days.

Workshop

1. It is considered if the collar ties are to be repaired and the split rafters replaced, the new external cladding be removed in the vicinity of the rafters and original fabric carefully taken up. New fabric can then be inserted through the slot created. It will be less intrusive on the lining with this method. The decision to repair this will be only cosmetic if the main mass of ice is to remain.in place.

2 A permanent boardwalk be installed to the main entrance from the normal summer ice edge of approx'15 metres in length, with a spur track leading throught he artifact scatter. Lazer supports this concept.

Jubilee Base

1 The tent platform is enlarged with another 2 sheets of ply, to accommodate another polar pyramid.

2 The bunks in the kitchen of the Sorensen Hut are moved into the Apple.

3 The kitchen shelving and bench top area be extended into the space now occupied by the bunks Form ply would do the job, to match existing.

4 The kitchen door in the Sorensen is removed to better utilise the space.

Structural Stability of the by Alasdair McGregor

The next phase of conservation work on the hut should involve cladding the roof planes of the living section in a similar manner to the workshop. This should stop most of the ongoing ingress of drift. The interior of both parts of the hut could then be excavated and the spirit of the place reinstated. A "new look" roof would have to be tolerated for a while but in a sense it too would be part of the nature of the place. The battens added by the AAE could easily be replicated on top of any new cladding.

Archaeological and Conservation Work Program

1 The workshop location is not the most appropriate long term storage space for either the dog or the container. If a decision is made to clear the Huts of snow and ice as part of a long term management strategy it will be necessary to move the dog and the tin. Consideration needs to be given to the best long term strategies for artefacts from the plateau.

Repatriation is probably the least desirable option for AAE artefacts. Nonetheless, these artefacts have already been removed from their original context. Return to Australia should not be considered unless an arrangement could be made to cover the costs of transportation, conservation and curation in an appropriate institution with a commitment for the storage and/or exhibition of the dog and kerosene tin.

2 It is strongly recommended that corrosion monitors be installed in the Main Hut and in the Magnetograph House when Cape Denison is next visited.

3 Further examination of the sub-floor conditions is recommended.

4 The plastic containers that held artefacts from the 1985-6 Project Blizzard excavation were relocated to the area above the ice tomb for the dog in the workshop. Other out-of-place artefacts were kept in their current positions. This is only a temporary solution and further consideration of the most appropriate location for these items is required. While the AAD's artefact guidelines provide a useful policy for the site generally, they provide only general guidance in relation to this issue. Future expeditions would benefit from a clearer policy in this regard. Similarly, the management plan that is adopted for the site could include strategies for dealing with artefacts currently stored in the Hut that are no longer in their original context. These strategies could also apply to other items such as the post-BANZARE tin left in the Magnetograph House.

5 These items were left *in situ* but it is recommended that a policy is developed for these artefacts as they should be relocated to enable reuse of the Magnetograph House for its original purpose.

6 The surface survey of the site should be continued by future expeditions as differential annual ablation will reveal different artefacts each summer.

It was hoped that a detailed and accurate map could be made of the artefacts across the site using GPS but it was not possible to obtain access to the appropriate equipment for this expedition. It is recommended that this work be done by future expeditions.

7 It is recommended that artefacts are accorded equal status to the larger structures in the conservation management plan that is adopted for Cape Denison. All the material remains associated with Mawson's expeditions can be described as artefacts, including the buildings. It is important to recognise this as it may affect long term management strategies for the site. The huts, for example, can be seen as artefacts, with the history of their occupation embedded into their fabric. Replacement or removal of elements would diminish the heritage values of these structures.

8 It is recommended that a government appointed representative accompany all expeditions that plan to land at Cape Denison. This person could aid with visitor education and help control the movement of tourists across the site. This is the approach taken for visitors to historic sites in New Zealand's Antarctic Territory and it appears to be very successful.

There does appear to be some inconsistency in the obligations of tourist ventures. It is important that the passengers on smaller vessels that visit Cape Denison comply with the same visitor guidelines as those who travel on vessels that are managed by larger tourist operators.

Another means of improving visitor education would be to produce a briefing video which could be shown to all visitors prior to landing.

A pragmatic solution to the problem of tourists walking across the artefact scatter would be the construction of a series of boardwalks across the artefact scatters. These signal the significance of the site and guide people so that there is minimal impact on artefacts. Ted Bugg, who has considerable experience and expertise in the construction of heritage boardwalks, constructed a boardwalk across the meltwater and artefacts to the entrance of the Hut. It was fairly unobtrusive and resulted in minimal impact on the artefacts immediately to the west of the Main Hut.

9 It is recommended that visitor numbers inside the Hut be maintained at about two to three people at a time.

10 It is recommended that private occupation of the site for tourist purposes is inappropriate and should be discouraged. Private bases should not be built or maintained on territory associated with such an important historic site.

Medical Report by Dr David Little

1 Encourage use of promethazine rather than cinnarazine should the antarctic division establish an index of ships {and their roll characteristics }transfering it's personnel as some work would be impossible in certain ships during much of the southern ocean transit.

2 All antarctic medical kits contain pregnancy testing kits.

3 Because of the frequency of git side effects with use of cox-1 nsaids,they should be replaced in the field with cox-2 inhibitors such celecoxib for routine use.cox-1 inhibitors should be available for those with sulfa allergy or other contraindication of cox-2 use.

4 All groups planning heavy work in this area be supplied with one "knee guard" per person.

5 Include tricyclic ocp and primolut or similar in medical kit.

Dr David Little, our only casualty, stiches his own finger assisted be nurse Bugg.

2 Leader's Report by Rob Easther.

The conservation works program

Members of the Expedition have reported on their specialist fields on all aspects of the conservation works program. Their observations and recommendations stand alone. As the Expedition Leader, I have commented where I think necessary simply to reinforce their fine work and draw upon their views to make conclusions about the future conservation of the Historic Site.

It is critical for the long term conservation of the Huts of the AAE that a clear and decisive strategy is agreed. The Conservation Management Plan (CMP) is the place to do it and this report plus the contributions of the three respondents from the public consultation process, are currently being used to bring clear direction to the strategy to conserve the huts.

Getting to Cape Denison is looking easier with an agreement between the Australian and French Antarctic programs about cooperative activities soon to be made. The French have already demonstrated their willingness to help us. The logistics of getting a small team in and out of Cape Denison with them is relatively straightforward given the close proximity (120 kms) of Dumont D'Urville.

The main obstacle lies with the clarity of vision as to what should happen about the Huts. The most contentious issues centre around the removal of ice from the Winter Quarters (ie the Main Living Hut and the Workshop), the extent of interference with the fabric of the Main Living Hut roof in order to minimize the ingress of snow and ice, and the management of visitors to the Historic Site.

The answer? Fix the roof, clear the snow and ice. Put expert guides with tourist visits and continue monitoring the condition of the Huts and Site.

The energy devoted by so many people through levels of government, and the corporate and heritage communities of Australia, has been immense. We must not falter now at this critical point when this, the most successful of ventures, is coming to a conclusion. The next moves involve the AAD and AHC coming to agreement on the strategy and ensuring it is delineated in the CMP. Once this is complete, the responsibility for future work and monitoring rests with the AAD whom we look to for leadership in this important task.

Those priveledged few of us who have worked directly on the conservation of Mawson's Huts, deserve a special hearing in the decision making about future strategies. Alasdair McGregor has journeyed to Cape Denison now 3 times and his conclusions about the conservation of the Winter Quarters are eloquent and informed; Ted Bugg has worked on the huts over two expeditions – in another life he could easily have been a member of Mawson's crew erecting the huts, he has such a connection with the Winter Quarters. He, like Geoff Ashley and the other carpenters, Dave Gillott and Paul Delaney, like

Estelle Lazer, who has worked on the huts more than any other person (3 expeditions), all care passionately about the conservation of these Huts and they deserve to be listened to.

It is unimaginable that any of the highly expert people from our two expeditions and the original reconnaisance by Alasdair and Geoff in 1996, would do other than work to ensure the Winter Quarters stays where it is forever, part of the landscape.

Reports on the need for decisive action to conserve the huts date back to the 1960's. The frustration for many of us, from this, the most successful campaign to save the huts, is that the obvious strategy could just be out of reach because of indecision.. See Ted's conclusion.

Carpenter Ted Bugg excavates ice from the workshop to examine the internal collar ties and rafters.

On the issue of ice removal, I believe the prevailing wait and see approach has run its course. Note Alasdair's and Ted's view on the likely failure of the roof of the Main Hut which will ultimately mean penetration of the wind into the interior. There is surely sufficient knowledge and experience of the huts to support removal of the snow and ice without risking their structural integrity. As ships are built to go to sea, not to reside in harbours, so are huts built to be ice free!

The Winter Quarters remained almost ice free between 1914 and 1931 when Mawson visited again; witness a photograph published in The Illustrated London News May 30, 1931 (Attachment A). Evidence from the Commonwealth Bay visitors log book suggests they were still so in January 1959. But, three years later, a visiting party discovered the Main Living Hut "full of ice and drift-two ceiling skylights missing." In 1967, the Director of the French Antarctic program, Paul Emile Victor commented in the visitors book (Attachment A),

"Mawson's hut filled with ice because some stupid 'Antarctic explorer' (unknown) forgot to close it properly between January 1959 and February 1962. In January 1959 I got easily into the hut. There was some ice in it but everything was still in shape."

It appears the hut remained relatively ice free and structurally sound for the 46 years between 1913 and 1959 without any maintenance at all. It remains structurally sound. Rather than having to show good reason why the snow and ice should be removed, the challenge should be to show why snow and ice should **not** be removed!

I hope readers will tolerate some passion in this debate. Combined with practical sense gained from experience, it is much needed to see this important work completed.

There needs to be one more conservation works program at the Historic Site to

- **d) repair the Main Living Hut roof to minimize the ingress of snow and ice into the hut;**
- **e) complete the removal of snow and ice from the interior of the Winter Quarters as a comprehensive archaeological excavation;**
- **f) paint the Granholm Hut to reduce its visual impact and re-locate the timber stack.**

In addition, we need to institute a program of training for guides of visitors to the Historic Site who can also report back on the condition of the huts and site. And whenever there is a need, the AAD should send a work team on L'Astrolabe.

Logistics summary

The second expedition of the AAP Mawson's Huts Foundation to advance the conservation works program at the Historic Site, departed Hobart on the Sir Hubert Wilkins on Saturday 16 December 2000. This followed four days of delays, due to paperwork requirements regarding crewing levels on the vessel. We received good media coverage on departure and arranged further contact with the ABC 7.30 Report, Hobart on return.

The Expedition was landed by inflatable rubber boats at Cape Denison on Sunday 24 December at approximately 1pm, cargo operations were completed by 1130 pm. After 17 days ashore, during which only one and a half days were lost to the works program due to the weather, the program was completed one day ahead of schedule and the Team was retrieved on Tuesday 9 January 2001, and arrived back in Hobart on Wednesday 17 January, at 0730.

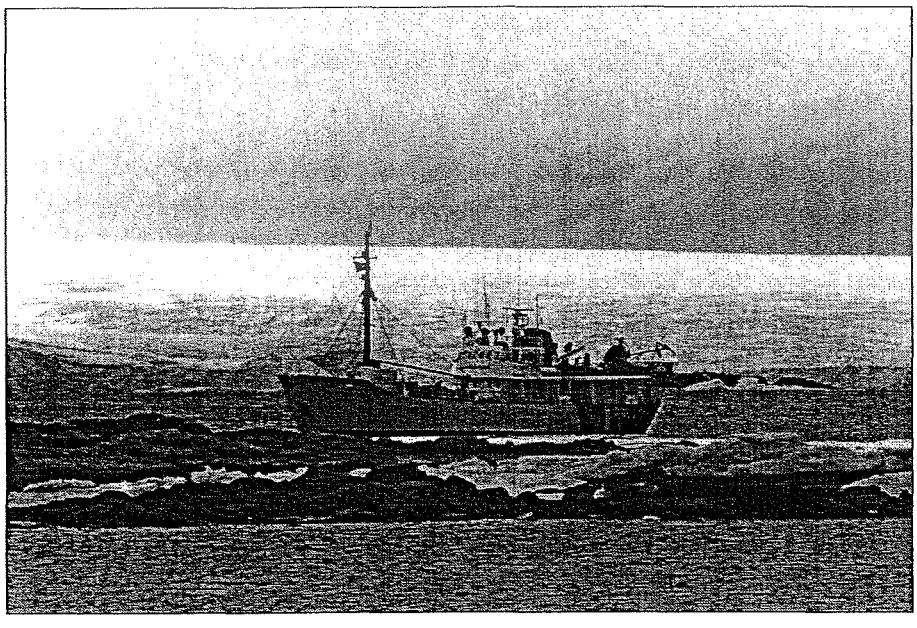
Team members were:

Dr Estelle Lazer, Archaeologist
Dr Ian Godfrey, Materials Conservator
Julia Searle, Assistant Archaeologist
Ted Bugg, Carpenter
David Killick, Chef, Communications, Journalist
Alasdair McGregor, Photographer, Artist
Dr David Little, Medical Officer
Rob Easther, Leader.

Overall cost of the expedition was $213,000.

Shipping

The vessel Sir Hubert Wilkins proved suitable for the task of delivering the Expedition and its equipment to Cape Denison. Being just under 37 metres long with a hull designed to navigate through ice, its motion was not sea kindly and most members of the Expedition were sea sick for much of the journey down and back. The Crew seemed relatively unnaffected so perhaps with more time on the ship, this would be less of a problem. It was marginally better on the voyage home.



Sir Hubert Wilkins anchored close in to Cape Denison, under Memorial Hill during ship to shore operations.

The vessel was untested in ice conditions on this expedition. It managed to avoid ice on the voyage south and only encountered a narrow band of 3-4 tenths on the voyage north. This was navigated primarily by avoiding collisions with ice, the navigable route having been identified by aerial reconnaisance using the ship's helicopter. It took almost one day after departure from Cape Denison to attain the ice edge and open water. The Master had not negotiated ice conditions before and was understandably cautious. With an

experienced ice pilot on board for the following voyage to the Ross Sea, the capabilities of the vessel are yet to be confirmed but with only 600 horsepower, a single bronze propellor and being 40 years old, it seems likely its ice capabilities will prove very modest.

Cargo capacity (estimated at 70 cubic metres but in fact less due to ship's storage needs) was adequate for the purposes of the Expedition but there was some anxiety from the Master about carrying empty gas cylinders and fuel drums (particularly empty petrol drums) from the environmental clean-up program at Cape Denison. This was in part a result of the limited deck space available on a small ship. If the vessel is going to be used for such purposes in the future, some improved method and procedure for carrying such items would need to be found.

Inflatable rubber boats (IRB's) were used to deploy and retrieve the Expedition and its equipment and to transport substantial quantities of rubbish and other waste to the vessel from the Historic Site. In effect, only one boat did this work as the second IRB was configured with a centre console and was therefore unable to transport large items of cargo or waste. It was used for transporting people but spent most of the time operating as a platform for bathymetric work in the region. A second cargo boat would have speeded the operations at both ends of the expedition and this can be an important factor in working in Antarctica due to the rapid changes in weather. In fact, after completion of deployment of the Mawson's Huts group, it was another four days before the conditions were again suitable for boating operations.

The Foundation paid a fare of $20,000 for each of seven berths (plus $1,000 per person in goods) for Expedition members with Alasdair McGregor's passage being paid through his paintings to the value of $15,000 under a private arrangement made with the Owners, Don and Margie McIntyre. As the voyage progressed, members of the Expedition learned that fares varied considerably with one scientist reportedly paying a daily fee to cover his living expenses (believed to be $75 per day), two others who joined only days before departure and paid $14,500, and a photographer who pre-arranged the trip from the UK, paid the full fare of $21,000. Crew members and the helicopter pilot were volunteers while the Master was paid a small retainer. The variable fare scales was a topic of discussion on many occasions and a source of some ill feeling regarding availability of opportunities to spend time ashore.

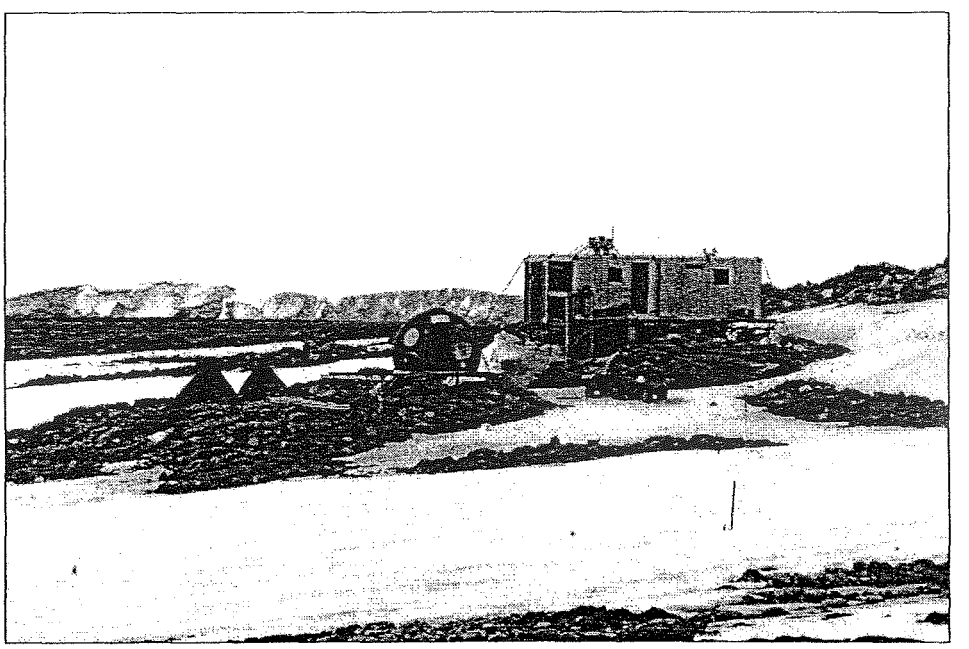
Victualling on board was generally adequate but well short of a standard expected with a fare of $21,000. There was no choice at meal times for example. On several occasions, the meal was not suitable for people feeling unwell although the cook and crew always provided an alternative on request. On a few occasions, a cheese board supper was provided, this being the kind of service expected more frequently for the fare paid. Anecdotal evidence from those who had travelled on other vessels to Antarctica (tourist and Government) was that the catering overall was below standard.

The fare of $21,000 is high, especially given the standard of accommodation, degree of discomfort of the motion of the vessel and standard of victualling.

Base Camp facilities

"Jubilee Base", comprising Sorensen Hut, an Apple Hut and two pyramid tents was an excellent and secure home, especially the enlarged version of the Sorensen completed by the 1997 group including 'Delaney's Dunny'. For 8 people it was verging on luxury.

We gained approval from the Australian Antarctic Division through its environmental impact assessment process to dispose of kitchen sullage and human waste into the sea. This was a thoroughly sensible and reasonable alternative to storing it for delivery to the ship and disposal north of 60 degrees of latitude as the 1997 group had to do. Dispersal was usually at a great rate of knots off shore as it was difficult to find calm conditions at Cape Denison. The disposal point north of the Base camp was suitable although one had to take care at the ice edge due to the large overhang of ice over the sea.



Jubilee Base comprising Sorensen Hut, the Apple and two pyramid tents on a wooden platform.

The Sorensen Hut may be the most appropriate place to store some items from the Historic Site that are becoming artefacts out of context. For example, we (ie Ted) fastened the metal plaques of sponsors names previously displayed outside the Main Living Hut by Project Blizzard on the wall of the Sorensen. Other items might include rafters and other timber taken from the Main Hut followng repairs and replacement. Archaeological advice suggests such items may not belong in the Main Hut but they might more appropriately remain near the site rather than be repatriated. Some further consideration of this point is warranted and a facility such as a lockable cabinet, for safe and secure storage might be needed.

Ted has commented further (Carpenter's Report) on some of the specifics of the facilities that are important for any group planning to stay there in the future.

Clean-up program

Rusty fuel drums, gas cylinders, old ration packs dating back to the 1960's, camping gear and two cargo containers and their contents were transferred to the relief ship 'Sir Hubert Wilkins' and transported to Australia for disposal. Most of the waste was from the 1978 AAD expedition with some from the Magnetograph House left by an American expedition in 1965 and Project Blizzard, 1984-5.

Members of the expedition ferry rusted waste from in front of Granholm Hut to the head of Boat Harbour for transport to the ship.

The clean-up program was challenging for members of the Expedition and for the ship's Crew as the whole operation was conducted using the rubber boats. It was a physically demanding task. For Expedition members, the business of cutting the steel containers into manageable pieces then handling them on a litter carried by four people over rocky terrain, was a potentially dangerous activity. That any back, knee and muscle injury was avoided is gratifying, especially as the Medical Officer was a key member of the clean-up group!

For the Crew, the waste was messy and contaminated, and sharp edges in rubber boats required excellent boat handling skills. All are to be congratulated on the good spirit with which this unpleasant task was achieved.

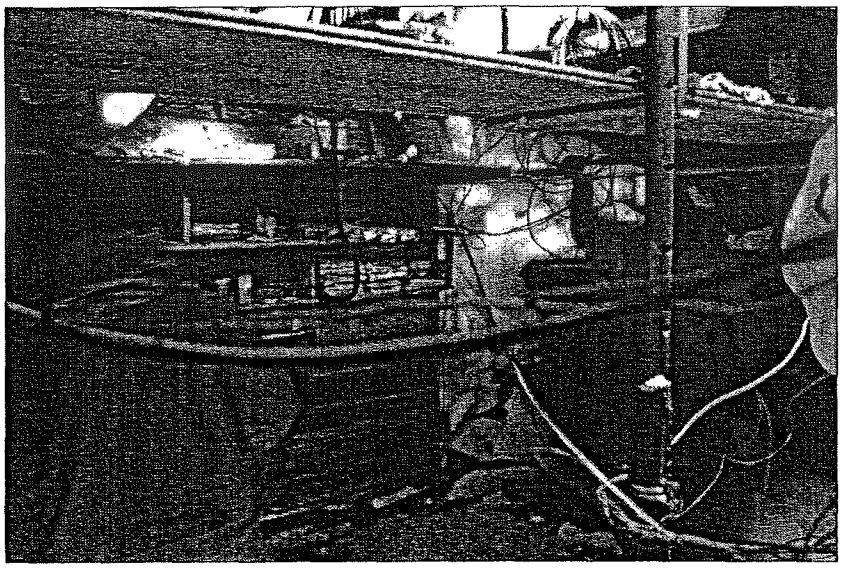
The Main Living Hut

Despite the substantial repair work completed by the 1997 group which included skylights and ridge capping, more than 190 kgs of snow and ice had entered this section of the hut in the intervening three years.

The most controversial issue surrounding the conservation of the huts has been whether or not the large amount of snow and ice inside the main living hut (about 60% of the space) and adjoining workshop, should be removed. Concern for the artefacts inside if the relative humidity and temperature are changed by the removal of snow and ice and potential risks to the structural stability of the huts are important considerations which have greatly restricted the options for returning the huts to their former condition.

But the electronic environmental monitoring data collected over the past three years, the work of the last two expeditions and observations by heritage building specialists Godden Mackay Logan, plus the carpenters and architects employed by the Foundation, suggest that the internal space should be excavated to expose the many artefacts of the AAE thought to be entombed in the ice and not seen since 1931 when Mawson last visited the site.

Whilst conservation of the artefacts inside the Hut is vital, without looking after the exterior of the Main Hut, they will be lost.

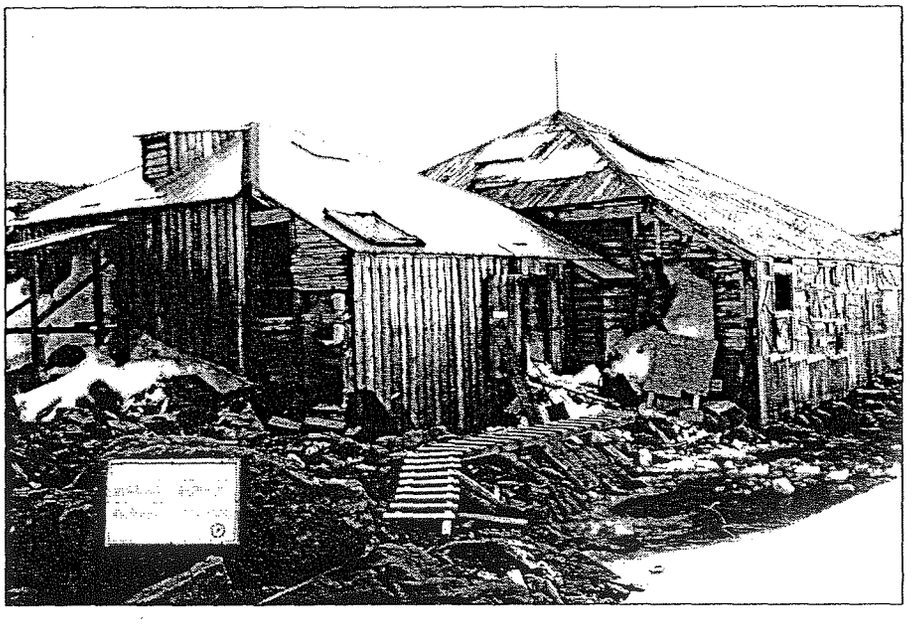


Interior of the Main Living Hut on arrival of the 2000-01 Expedition showing ice build up and wires from the data loggers.

The success of the new roof on the workshop in keeping out the snow and ice and in improving the stability of the roof section suggests that a similar outcome could be produced by repeating the procedure on the main roof. To do this keeping the appearance of the roof as it is, would be a significant works program especially given the number of

battens which are on the roof and which would need to be re-positioned over any new roof in order to maintain the original appearance of the hut.

A compromise would be to make relatively minor repairs to the southern plane of the main hut roof (south facing) in the form of replacement of the wooden battens that Mawson's men tacked on the joints of the tongue and groove Baltic Pine timber and which have mostly blown away. Combined with use of a sealant, this would significantly reduce the ingress of snow and ice into the space. As recorded in Ted's report, a small number of such battens were installed on the upper plane of the roof and monitoring of the success of this limited work will be of great interest to test the viability of such action for the remainder of the roof.



Walkway constructed to keep visitors and workers from trampling artefacts at the entrance to the Hut.

Keeping the interior relatively free of snow and ice would reveal the full extent of the winter quarters, allowing it to be photographed and recorded and viewed and appreciated by visitors to the site. Keeping it ice and snow free would be relatively simple. Two hundred kilograms in 3 years even without further repair is manageable.

It is important for the long term management of the main living hut that this issue be resolved and a clear direction agreed in the CMP, as the current approach is ambiguous and risks the overall conservation of the Hut.

Uncovered for the first time since Mawson left the huts, was the hatch cover that leads to the under floor space where frozen meat and other produce was stored. Although it was not possible to open the hatch due to the risk of damaging it, small inspection holes were drilled confirming that the area under the floor is solid ice as expected from repeated thawing and re-freezing over the past ninety years. The stability provided by the

presence of ice under the floor and the solid wall of permanent ice two metres thick that fills the verandah on three sides of the main living hut and workshop, means the huts are remarkably stable as measurements by the 1997 group proved. They revealed that the internal dimensions and stability of the winter quarters has remained as exact as the day it was completed.

The workshop roof

Planned repairs to the internal roof of the workshop section of the winter quarters were found to be unneccesary after excavation of the accumulated snow and ice of the past 23 years revealed that the new external cladding on the roof installed by the Foundation's 1997 expedition, had stabilised the structure of the workshop roof and made the potentially disruptive collar tie and rafter replacement work redundant.

As Ted reports, due to broken rafters, the collar tie repair was pointless even had we the time to do it. Alasdair's summary of the structural implications for the Hut makes perfect sense.

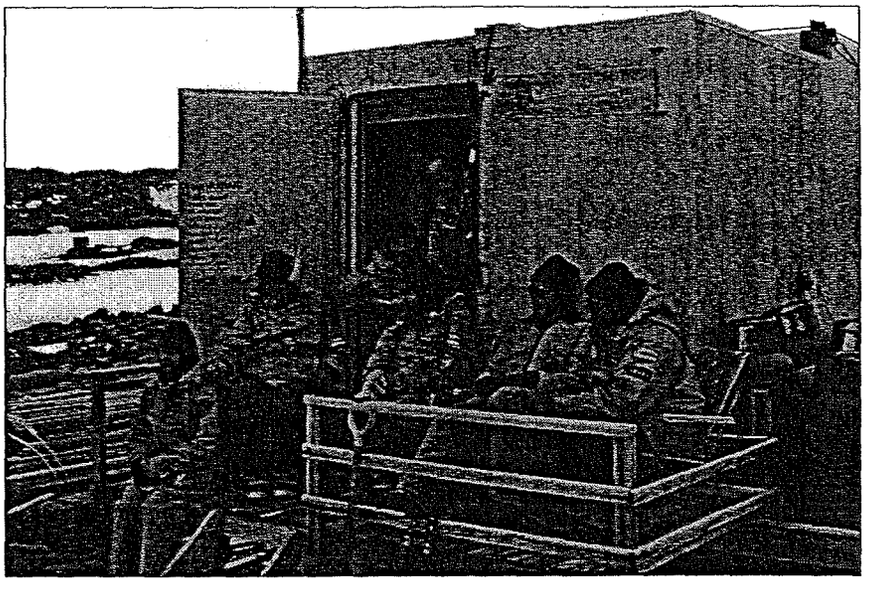
The new workshop roof remained drift free during a blizzard experienced during our stay, in contrast to the main living hut roof which allowed considerable ingress of snow during the same blizzard.

The golden brown semi gloss-finish to the Baltic Pine boards of the workshop roof provided by the Intergrain product they thought would be lucky to last six months, is in perfect condition, three years after it's application. It looks very out of place with the rest of the hut. The next visit by a works team should go prepared to remove the finish so the true patina of the timber can be restored, thus reducing the adverse visual impact of the roof and therefore of the winter quarters. Ian Godfrey advises that deterioration of the surface is now apparent and changes can be expected by the next visit. If this continues then remedial work is not likely to be required.

Granholm Hut

Removal of the Granholm Hut, installed in 1978 by the Australian Antarctic Division's team led by Rod Ledingham, was an objective of this visit. But it soon became clear that the hut was in fact, a very important facility for members of the group and for the repair and maintenance program generally.

The 1997 group erected a substantial tent alongside the Main Living Hut as shelter and a workshop but it soon became drifted into its position to the extent that it would have required a major effort to extract it at the end of their stay. This proved impossible and the Weatherhaven tent remained at the site for another twelve months. When next visited, it was of course shredded and the poles broken. Much of the remains were excavated by members of the crew of the yacht, 'Spirit of Sydney' and returned to Australia.



Members of the Team relax out of the wind in the lee of the Granholm Hut during a meal break.

Granholm Hut, only 200 metres away houses several boxes of nails and other fastenings, stocks of which were drawn upon on many occasions during this expedition. A large stack of timber delivered to the site by the 1997 expedition is tied down adjacent to the Granholm and was also used many times. Members of the works team adjorned to the Granholm frequently for breaks and warming up. Julia Searle and David Little cleaned the hut out and it is now perfectly functional for these purposes. Having only refuge status, it has a small gas stove and cylinder, a few pots and a ration pack as emergency stocks. The two bunks are intact and the building supplies are contained in two wooden boxes. Neat, tidy, clean and uncluttered, the hut is now perfect for its functions. It was used on two occasions by members of the Sir Hubert Wilkins, once by two people stranded ashore and again by their photographer. In 1997, one member of the conservation team had cause to spend a night there when the weather changed for the worse.

The visual impact of Granholm Hut is minimal, being on the western edge of the Historic Site valley and outweighed by its importance as a refuge available to any works team and as a storage place for essential building materials. It should remain for as long as plans exist for work parties to visit Mawson's Huts with planned removal once the need for substantial maintenance has gone.

Its impact could be reduced by painting the Granholm Hut as demonstrated in the digitally enhanced photograph. The timber stack could be re-located to the western side of the Granholm so it is shielded from Mawson's Huts by the Granholm but this would require installation of several tie down points into the rock, a very minor impact given its distance from the nearest penguin rookery.

Inventory of Artefacts

Estelle has now documented artefacts at the Historic Site over three field seasons and has amassed a considerable amount of information in note books and on film; most recently, on digital record. There is a need to make this information available for research and general interest purposes to the wider community. But it will require considerable effort to achieve its conversion to **a systematic and comprehensive data base**. Consideration needs to be given to how this might be achieved, perhaps through a grant or temporary employment of a suitable person. Otherwise, the benefits of much hard work in freezing conditions will realise only a small fraction of its true worth to the Australian public and heritage community.

Alasdair and Estelle record amidst the artefact scatter downwind of the Winter Quarters.

Access to Cape Denison

The landing site for boats in the bay adjacent to Jubilee Base (Sorensen and Apple Huts) is not reliable due to a combination of the swell and height of the ice edge although withdrawal of all equipment and waste for this expedition was conducted there, albeit in near marginal conditions. Accordingly, visitors must be prepared to deploy and evacuate from Boat Harbour which presents a challenge in getting gear to and from Jubilee Base. This is easily catered for by having a quad or two, towing sleds or, more tediously, by expeditioners towing sleds. This is an important logistical consideration for working at

the site. The suggestion (by Ted) for landing a party armed with an electric chain saw to prepare a site prior to the commencement of cargo operations, is worthy.

Visitors ashore

Prior to arrival at Cape Denison, Don McIntyre gave a comprehensive briefing to all passengers and Crew on the conduct of activities ashore. He particularly emphasised safety, environmental priorities and group management, designating specific leaders to guide passengers around the site. Estelle briefed everyone on issues related to the movement of people around the Historic Site and the protocols for guided visits inside the Winter Quarters. Guidelines published by the AAD were distributed to all members.

As reported in the Archaeological and Conservation section, some visitors from the ship unwittingly trod on artefacts, underlining the importance of the need for closely supervised visits to the Historic Site.

From a safety perspective, it was surprising to find some passengers and Crew wandering, often unaccompanied, all over Cape Denison, from the moraine line to the shore. On one occasion, two members were stranded ashore when the weather changed and they took refuge in the Granholm Hut. Their radio was not working and they had minimal gear for a night out. Their presence was not advised to us, their only effective means of assistance in the event of mishap, until the afternoon following their night ashore.

For brief stays at Cape Denison, a hazard in itself due to the risks associated with ship to shore access, all members should have access to survival gear sufficient for several nights ashore.

Essential equipment and supplies should be positioned by tour organizers in strategic places such as all huts (as is the case with Gadgets Hut).

Requirements for minimum cothing and survival equipment in a day pack, should be specified and checked before leaving the ship. Memebers should stay together with guides. For short visits, solo rambling is a risky business especially for the inexperienced.

Recent artefacts from the Historic Site

I brought back the Visitors books from both the Granholm and Sorensen Huts so they can be copied and then returned to the Site. It may be wise to incorporate both collections into one to avoid confusion. The material makes fascinating reading which deserves a wider readership than the few priveledged to visit the Historic Site.

Acknowledgements

This was a very relaxed expedition with an excellent group of people, all skilled in their specific roles, highly motivated about the project and the place. A high level of cooperation prevailed from the outset and there were no problems of morale throughout

the five weeks of the expedition. The relatively short time and the small group were factors but there were no tensions to the end between members. On the contrary, laughter and good hearted banter were a feature of the group dynamic that carried all members through the voyage down and back on a vessel that was less than comfortable for most.

Although every member deserves the highest praise for their contribution, I know Ian, Dave L, Alasdair and Estelle won't mind me giving Dave K, Ted and Julia a special mention. Dave carried the Comms and cooking responsibilities, both considerable in themselves. But he also managed to write stories for AAP, take digital photographs all aspects of the expedition's work, keep the website current and help with the clean up program. A fantastic effort.

Ted fixed everything, constructed everything we needed as well as carted water and sorted the waste from base camp, usually thankless tasks (but not with this group). His levels of energy and dedication to the general maintenance of the infrastructure for the living arrangements were an inspiration. In addition, he was responsible for the maintenance works program on Mawson's Huts and played a critical role in the environmental clean-up.

Julia had no Antarctic or expedition experience, nor had she sailed before. By the end of the first day out of Hobart, she must have wondered what in the hell she had let herself in for! But, she proved an invaluable member of the group, prepared to do whatever task requested of her and showed great enthusiasm for the role of Assistant carpenter (known to the group as "Makita Girl" actually), working on the Main Hut in addition to her role as assistant to the Archaeologist. She seemed to revel in the new experiences and is to be congratulated on her stoicism.

To the Owners, Don and Margie McIntyre, Master Craig Rogers and Crew of the Sir Hubert Wilkins, thankyou for your contribution to the success of the Expedition and for our safe delivery to Cape Denison and home again.

An important factor for all of us was the knowledge that we had a contact person back in Australia to whom our friends and families could refer if they had any concerns about us. Andrew Jackson (who would rather have been returning to Cape Denison with us I suspect) served us wonderfully, professionally for me and personally for all of us. He was available 24 hours a day and relayed information to our people. Many thanks again Andrew.

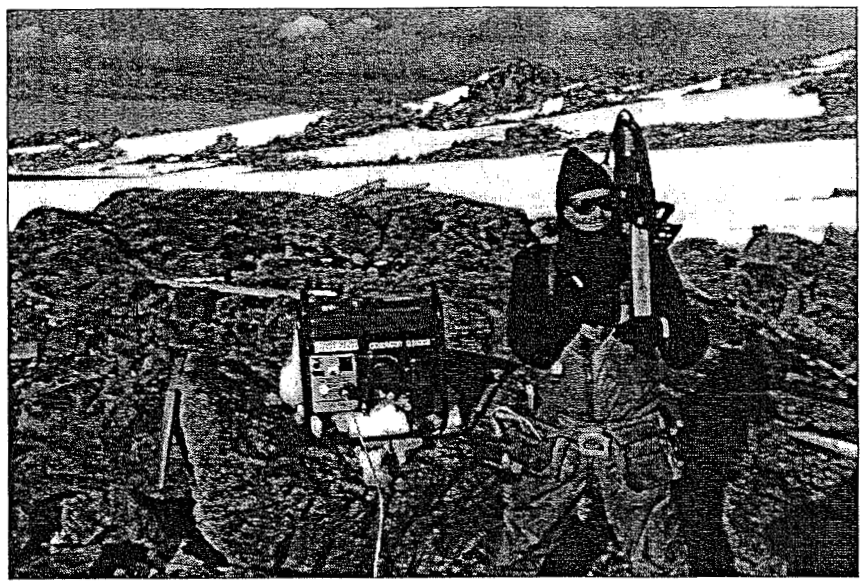
The support of AAP and the Foundation's Board was greatly appreciated throughout the Expedition. The send off by the Tasmanian Governor and the dinner hosted by David Jensen, Sir Peter Derham, Neil Aveling and Greg Holland (with apologies from Peter Robson), were discussed frequently during the expedition. And the welcome home with Neil representing the Board was wonderful. Knowing we had the full support of the Board was a great contributor to the good spirit of the group.

The support of my employers, the AAD, has been critical to the success of the whole project. Some will say this should really have been their job all along. But, for many reasons, involvement in this work has meant an additional workload to most areas of the organisation, not (yet) part of its mainstream functions. Whilst this is changing, it doesn't alter the fact that many staff in the Operations, Medical, Policy and Planning and Corporate Services and Science Branches have contributed greatly to the two expeditions. On a personal note, the forbearance of my supervisors, Richard Mulligan, Kim Pitt and Director, Tony Press, in releasing me from other duties at an important period of change in our organisation, has been enormously appreciated.

This project has drawn together the Heritage Commission and the Antarctic Division in a most cooperative way, culminating in both organisations sending staff on the second expedition. The support of the Commision through Lynden Ayliffe, has been essential to the success of the project and augers well for the conservation of the Historic Site.

All this has happenned under the overall mantle of Federal Government support from Senators, the Honorable Ian Campbell, Ian MacDonald and most recently, Robert Hill. And of course, the Treasurer's support when lent on ever so gently by Sir Peter Derham has been crucial. It is a proud association all round for a most worthy cause.

Power tools were donated by Makita, digital cameras (still and video) were loaned by Canon and Qantas supported the expedition by discounting some fares. Yalumba supplied wines. Product photographs and digital movie footage were taken in and around the Historic Site and delivered to the sponsors within two weeks of the Expedition's return to Australia. Their support for the work of the Foundation has been invaluable and well appreciated.




QANTAS
THE SPIRIT OF AUSTRALIA

CARPENTER'S REPORT

by Ted Bugg

'The success of this venture was a mixture of good luck, good management, a dedicated team and the vision of people, not prepared to allow Australia's most important heritage asset in Antarctica, to be blown away by the inaction of the Toohard Basket Band'. Feb17, 2001.

CONTENT.

1. Introduction.

The opportunity to continue with stage 2 of the conservation work was accepted with a degree of trepidation and one also of pride that the *Foundation* considered me suitably capable of carrying out the required tasks at Cape Denison.

In response to the Draft Conservation Management Plan for the historic site, a summer programme was formulated, taking into account the limited time constraints, a realistic and prioritized multi-disciplinary task agenda.

I believed prior to the expedition, this was easily achievable, in reality, some aspects were not; more on that later.

The responsible flexibility of the expedition leader, to make decisions in the field, gave us an advantage over the 97- 98 works party. The party size also gelled into a very cohesive unit, with each member aware of what was happening on a daily basis with other work programmes.

2. Main Hut.

Mention Mawson's Huts and this evocative image of a weather-beaten timber structure nestled in the rocks and surrounded by ice fields is immediately conjured up, this is the icon!

The entrance albeit much easier to than in 1997, was festooned with wires leading from the data logger, to the various probes which had been placed in various places throughout the main hut and workshop. See Godfrey.

Without doubting the useful information gained by the probes, the mass of wires detracted from the special ambience and aura which emanates from entering the main hut. All team members commented negatively on this.

I was however, more interested to see how snow and ice had ingressed since 98. Plastic sheeting of about 2.5m square, had been placed in the central section of the hut, to monitor the future mass of snow ingress somewhere under the apex and where Mawson and his men sat around a table for meals. A substantial mass had settled there. See Godfrey/Searle. Drift had settled also on the collar ties and joists associated with the central platform. The snow was obviously building on these elements both vertically and laterally.

Above the collar ties, further deposition was evident above Mawson's cubicle, the chases cut through the ice to free the collar ties on the southern plane of the roof on the previous expedition, had all but disappeared under new drift. At the apex of the roof, the electroscope housing which had been refixed in position in 98 was encrusted with 70 kg of snow and ice. Self and Searle weighed this mass.

There was also meltwater entering from between the skylights where there is inadequate flashing. The melt is then flowing and entering the hut at various points, freezing and accumulating.

Drift seems to be primarily entering through voids in the tongue and grooves in the cladding, which have now been abraded to a critical point. This has become most apparent in the intervening time of expeditions. It is suspected, drift is also entering under the new ridge cappings of the main hut, where different thickness of the cladding have not allowed a tight fit of the cappings. Oregon pine battens of 50x 15mm were screwed/glued over the worst affected area, between the southern skylight and the apex with the ridge to halt this ingress.

A 30mm diameter circular wooden bung was also fitted to this area. The original purpose of the drilled hole is not known.

An inspection of the roof battens fitted by Mawson in his second year showed evidence of recent loss of that fabric. Godfrey recommended all planes of the roof and walls were secured from further loss of battens. This was achieved with 20 mm Robinson stainless screws.

New timber baffles were fitted at the doorways of the main hut and workshop, both to exclude drift from blowing through the hut and deter casual entry. The baffles are braced into position and only need a hammer to knock these out to gain access.

Recommendations

2. *A decision needs to be made on whether the bulk of the ice is to be removed. If so, it's folly to leave the roof unsealed as it is. The hut will in a matter of a decade refill with snow. . Realistic options could be total or partial recladding of the roof, strip battening over the weathered T&G joints or the Ashley proposal of a vapour permeable membrane.*

5 *Temporarily remove the new ridge cappings and discretely fit a weatherproof seal where the edges fit the cladding.*

6 *Install flashings on the apex side of all skylights with appropriate material.*

7 *Reputty glass bead on skylight sashes This job is flagged in the CMP, but a wind free and sunny day is needed. Time demands are usually high on such days.*

3. Workshop

The principal repairs in the workshop part of the huts roof was also flagged in the CMP as a priority task. Broken collar ties, similar to what was encountered in the main hut were to be either repaired or replaced, depending on the condition as they were excavated.

Access was through the western skylight, and 8 tons of ice was removed. An electric chainsaw again being the main tool for the work. A slide was constructed to enable the excavated ice and snow to be cleared of the artifact field immediately adjacent to the hut. Searle and self spent 2 full days in this task.

The excavation, to the level where the collar ties were joined to the rafters exposed 5 out of the 8 rafters had been split and or broken at the bolted joint .In the process, the pine lining had also pulled away from the rafter.

No deflection of the roof line along the ridges was evident, giving credibility to the speculation that the tonnage of ice in the workshop and verandahs was making the hut a monolithic mass and the structural design of a collar ties irrelevant to the stability of the structure.
Plastic sheeting was placed under the apex to monitor further ingress of snow, although none was seen to enter in the one blizzard, which occurred during the expedition. This would suggest a very successful result of the recladding in 97/98 and reinforce this proposed method of weatherproofing the main hut.

Meltwater, however was observed to be entering through the skylights; a similar design flaw as the main hut.

The structural integrity of the sub-floor was to be attempted through access to Mawson's freezer, the hatch in the floor leading to the cellar. About 1.5 metres of previously

unexcavated ice were removed, uncovering a wooden soapbox, a handsaw and bits of brass wire in the process. See Lazer.

Despite finding the hatch frozen shut and not fully excavated to the 4 edges, a 3mm-drill bit was drilled through the hatch timbers in the corners and centre, to try and determine if there was a void under the flooring. This may have indicated a larger and possible crawl space in the sub floor. However, solid ice was encountered to the depth of 75 mm in all 5 holes. This would suggest the subfloor is completely ice filled

Reports of excessive shrinkage and cupping of the new roof cladding were not accurate. I considered the cold dry environment to have not adversely affected the timber to any unexpected degree. All fixings, flashings and ridge cap have weathered off to an agreeable dark rusty brown. The *Intergrain* protective coating was unfortunately still protective very bright and showed little evidence of abrading.

Wind scour and ablation around the huts, exposed a lot more artifacts than the 97-98 expedition. This was especially evident at the main entry area of the hut.

To protect this area, a timber board walk of about 12 metres long by half a metre wide was built, to keep the foot traffic above the artifact scatter. This proved to be very successful. The boardwalk, although a temporary structure, was left in situ and used by the team members, and others from the ship while they were ashore. It would be expected that other cruise operaters would brief the shore visitors to keep to the boardwalk, when in the vicinity of the main hut and workshop.

Recommendations

1 *It is considered if the collar ties are to be repaired and the split rafters replaced, the new external cladding be removed in the vicinity of the rafters and original fabric carefully taken up. New fabric can then be inserted through the slot created. It will be less intrusive on the lining with this method. The decision to repair this will be only cosmetic if the main mass of ice is to remai in place.*

2 *A permanent boardwalk be installed to the main entrance from the normal summer ice edge of approx'15 metres in length, with a spur track leading throught he artifact scatter. Lazer supports this concept*

4 Magnetograph House, Absolute Magnetic & Transit Hut.

Magnetograph House.

Meltwater had entered under the front door and had been dammed and frozen. Several hours work was required to chip this away to allow access for Lazer and Godfrey.
The new cladding of the roof was in good condition with all fixings in place. However, like the workshop roof, there has been little abrasion of the *Intergrain.*

Absolute Magnetic.

All repair work appears to be sound. The opportunity to salvage more original fabric from the ice surrounding the hut was not possible due to the volume and height of the frozen meltwater.

Transit Hut.

Several loose cladding boards were refixed with 25mm Robinson screws. Of the cladding fixed in 97-98 with copper type screws, these had failed through what would appear to be metal fatigue, caused by the vibration of the timber in the winds.

Recommendation

The huts continue to be conserved as the CMP dictates.

5 Jubilee Base.

The Sorensen Hut had the appearance of people leaving in haste..., which they had. Despite the state of disarray, there was no snow buildup, inside, the vents were tight. Guys were tightened, a plastic basin cut into the kitchen bench provided us with a good washtrough, and Delaney's Dunny afforded the best view from the privy of any other on Planet Earth, out over a busy Adelie penguin rookery, Commonwealth Bay, to the iced up McKellar Islets.

The Apple Hut was required as sleeping quarters and needed to be cleaned out. There were numerous cracks and holes in the hut, which allowed drift to enter, and were not sealed effectively until departure. A second homemade catch was fitted on departure and the door taped with cloth gaffer type tape.

A tent platform was constructed 10 metres to the east of the Apple and 2 Polar Pyramids were erected on this structure. We were all impressed with this arrangement with a sturdy level base. This kept us out of the ice while providing an easy tent to guy down and striking the tents was easy, not having to dig out frozen valances etc Three sheets of 2400x 1200x20mm-form ply and rough sawn 75x50mm Oregon provided the platform

with piers of pine offcuts. The piers merely had rocks piled around them to provide lateral strength and on departure, was weighted with numerous several large rocks.

Recommendations

1 *The tent platform is enlarged with another 2 sheets of ply, to accommodate another polar pyramid.*
2 *The bunks in the kitchen of the Sorensen Hut are moved into the Apple.*
3 *The kitchen shelving and bench top area be extended into the space now occupied by the bunks Form ply would do the job, to match existing.*
4 *The kitchen door in the Sorensen is removed to better utilise the space*

5 Logistics.

Just a few things while I remember,

1. Agents unknown now contaminate the ULP petrol; it would be old kero, dirty petrol or oil.
   The next expedition should consider bringing in new fuel or suitable filters.
2. The gas fittings at Sorenson Hut and the Granholm hut should be replaced. Certainly, new regulators and hoses to suit the gas oven are taken to Cape Denison.
3. The small gas cooker at the Granholm uses *Companion* fittings and bottle. There is only a couple of litres of gas in the existing bottle, (5kg)
4. If a ship-based expedition is deployed in the future, an advance party is landed several hours prior to unloading the ship. This would allow the carving of an ice landing area, and make unloading operations much safer and less labour intensive. Consideration should also be given to using Sorenson Bay to offload.
   This is a marginal site depending on wind wave and tide, but possibly save a lot of hauling around to the Jubilee Base.
5. Quads are a vital tool at Cape Denison, woe to the party who lands without this workhorse.

7 Sir Hubert Wilkins.

Fortunately, I was not affected too much by the antics of this vessel,

I thought the food was great, but like most, was bored by shipboard life very quickly, and bunk, bridge, library became like I imagine, gaol.

Without being critical of the opreration, I thought it would have been fairly obvious what was important to people, ship speed, weather forecasts, and the like.

I am not keen however to get back on board.

8 Acknowledgements.

To David Jensen, thanks for the inspiration and your faith in the teams, Sir Peter Derham

OAM, for your ability to coerce politicians into your way of thinking, may your vineyards prosper! To the other members of the AAPMHF Board, Neil, especially, thank you for looking after the boring bits and pieces. Rob Easther, your quiet leadership was truly outstanding, and my Brothers, Associate Brothers and Sisters, long may you repel the Vikings! ...And to my long suffering wife, Cindy , ...thanks babe.

Mawson's Huts - Structural Stability by Alasdair McGregor

The structural stability of the main hut in its current state of repair is in my opinion greatly underestimated. This option was reinforced during my most recent visit to the site in December / January 2000/01.

On the work programme for that visit was the scheduled replacement of broken collar ties in the workshop. After excavation of snow and ice down to wall plate level, a collective decision was made to not carry out this task. On reflection, it seemed unwarranted to replace the collar ties on structural grounds, particularly as the rafters the original ties were fixed to had broken when the ceiling platform had collapsed. Both the western and eastern verandahs are almost full of ice and snow. Effectively the outer walls of each verandah, together with the walls of the workshop itself and the intervening 1.5metres of ice and snow act as massive buttresses preventing any spreading force caused by roof deflection. In a north south direction, any spread is similarly prevented by the structure of the living section.

These ice buttresses in all verandahs of the hut also add greatly to the lateral stability of the whole structure, counteracting shear forces in all external walls. They also act as massive above ground footings, preventing any wind induced lift, bending or turning moment. As such they should not be excavated. While the ice and snow remaining within the workshop itself and the living section obviously adds to the dead weight of the building, its presence is in no way critical to the structure's integrity. The contents of the verandahs are more than adequate in aiding structural stability.

In the medium term, the greatest threat to the hut is not from failure of the main structure. It could well remain sound for at least another century and following the repairs made in 1997-98 is probably as sound as it was in 1912. I believe the roof of the living section is now the most endangered part of the building, particularly the windward southern plane. The gaps between boards continue to widen and the boards themselves continue to abrade. Catastrophic failure of the cladding in the next 10 to 50 years is not inconceivable. Such failure would see the interior fill rapidly with ice. Remaining artefacts would be buried, blown away or destroyed. Yet at the same time rafters, hips, collar ties, posts etc would probably remain sound.

The next phase of conservation work on the hut should involve cladding the roof planes of the living section in a similar manner to the workshop. This should stop most of the ongoing ingress of drift. The interior of both parts of the hut could then be excavated and the spirit of the place reinstated. A "new look" roof would have to be tolerated for a while but in a sense it too would be part of the nature of the place. The battens added by the AAE could easily be replicated on top of any new cladding.

It seems highly illogical to me to allow the magnificent interior of the hut suffer through continued ice accumulation on the grounds that the hut might blow away if this ice is removed. I strongly believe that this would not happen for the reasons outlined above.

The interior is redolent with the spirit of the AAE. It, as much as any part of the building, maintains the essence of their presence at Cape Denison. To not protect this through continued external maintenance would in time undo all the good work done by the AAP Mawson's Huts Foundation.

Alasdair McGregor B.Sc B.Arch
February 2001

Report on Archaeological and Conservation Work Program for 2000-01 AAP Mawson's Huts Foundation Expedition to Cape Denison

Dr Ian Godfrey, Dr Estelle Lazer and Julia Searle

Assessment of the Conservation Works Performed by the 1997-98 AAP Mawson's Huts Expedition

Assessment of the work performed by the 1997-98 AAP Mawson's Huts expedition was the first priority of the 2000-2001 expedition. It was essential to determine the success of the previous program to aid in the development of long term management strategies for the site.

Main Hut

The new workshop roof was inspected. It appears to be in very good condition with only minor cupping of the roof timbers and very little fading of the Intergrain finish. The tongue and groove joins are in good condition, though minor separation at the end of some of the boards on the northern face can be observed.

Although the appearance of the workshop roof is in stark contrast to that of the roof of the Main Hut, there are some signs that the bright Intergrain finish is starting to weather. Early signs of weathering were evident on the north-facing roof, where the timbers were in contact with the ridge capping. This very slight amount of weathering which was not easily seen from the ground, occurred in only a few places and affected only a very small overall area. Interestingly, the Intergrain coating was retained in these weathered areas with the underlying wood changing from a yellow-orange colour to grey. It is not unexpected that the wood/ridge capping interface provided the first evidence of weathering of the new roof. Retention of water will be higher in this region and will therefore enhance the interaction between the wood and the ambient light and UV radiation.

Some of the small battens that had been attached to the roof in 1997-98 had failed and were found to the north of the huts in the artefact scatter. They were easily identified by the Intergrain coating on one side.

There was no evidence of snow ingress through the workshop roof or the repaired skylights.

Magnetograph House

The Intergrain coated tongue and groove boards that were used to overclad the Magnetograph House roof were in good condition, though slight cupping of the boards was evident. No evidence of weathering of the Intergrain finish was observed. The restored stable door was also in good condition. The reattachment of loose tar paper strips

with new battens in the vestibule has been successful. About 5 cm of frozen meltwater had to be removed from the entry porch floor before access to the main part of the hut was possible. This appears to be greater than the amount of frozen meltwater that was removed by the 1997-98 expedition.

Absolute Magnetic Hut

The repairs to the Absolute Magnetic hut have, in general, been successful, though two of the vertical members appear to have snapped. A portion of each was found frozen in the melt lake that surrounds the structure. One was discovered immediately to the west of the hut and the other to the south.

Transit Hut

The repairs to the Transit Hut appeared sound. The only obvious exception was a board on the southern side of the Hut that had previously been repaired and had again become loose. This board was reattached during the expedition.

Memorial Cross

The restored cross appeared stable. The stainless steel bracket that was used to reattach the cross arm was observed to be in good condition.

Relocation of seal carcasses

During the 1997-98 expedition, seal carcasses located against the eastern wall of the Main Hut were relocated as these skins were acting as a dam and potentially trapping meltwater above the internal floor height. It appears that the relocation of these carcasses has improved drainage on this side of the hut. Observations by previous expedition members indicate that the meltlake is larger than it was previously and it appears that the tide marks on the eastern wall of the hut have receded. The highest mark on the wall is about 40cm above the present level.

Assessment and management of the dog and kerosene tin found on the plateau

A freeze dried dog and a kerosene tin dating back to the AAE were discovered on the ice plateau by a private expeditioner in 1997. They were found near the AAE staging post known as Aladdin's Cave and were subsequently relocated to Cape Denison by the 1997-98 AAP team.

The dog was subjected to a brief autopsy by Rod Givney, the expedition doctor, and Estelle Lazer in 1998. It was then interred in a specially constructed wooden box in the ice-filled workshop. It was acknowledged that this was only a temporary measure until a more suitable location could be found for the final resting place for the dog.

The kerosene tin was documented and repatriated. In line with the AAD artefact policy of not removing artefacts from their historic context except in extenuating circumstances, it was decided to return the kerosene tin to Cape Denison with the 2000-01 AAP expedition. The key problem for the relocation of this artefact was that it had been moved away from its original context on the plateau. As it was not practical to return it to its original location, a compromise solution was to store it in a specially prepared container in the workshop above the ice chamber where the husky has been buried.

The dog was re-examined in 2001 by Ian Godfrey, Estelle Lazer and David Little and rephotographed with a colour card by Alasdair McGregor. The dog had a distinct odour that suggested some degree of decomposition. Mould growth was observed on the soft tissue of the dog in 1997-8. The quantity of mould does not appear to have increased. Ian Godfrey suggested that continued storage in the sub-zero conditions of the ice tomb in the workshop should minimise further deterioration until a decision is made about the final resting place of the dog.

The workshop location is not the most appropriate long term storage space for either the dog or the container. If a decision is made to clear the Huts of snow and ice as part of a long term management strategy it will be necessary to move the dog and the tin. Consideration needs to be given to the best long term strategies for artefacts from the plateau.

- **It would be impractical to return the dog and tin to their findspots on the plateau. It would also be impossible to ensure their long term preservation on a glacier.**

- **Similarly, it would need to be demonstrated that other options, such as burial under rocks at the moraine line would not cause damage to the dog or other artefacts.**

- **Repatriation is probably the least desirable option for AAE artefacts. Nonetheless, these artefacts have already been removed from their original context. Return to Australia should not be considered unless an arrangement could be made to cover the costs of transportation, conservation and curation in an appropriate institution with a commitment for the storage and/or exhibition of the dog and kerosene tin.**

Documentation of Post-AAE and BANZARE material

One of the primary aims of this expedition was to identify, record and remove evidence of human activity on the site that post-dated the 1931 BANZARE visit by Mawson and his party. Certain structural elements, like the Granholm, Apple and Sorensen Huts were exempt as they are required for future field work at Cape Denison. The majority of the team were involved with the large scale clean up of the site, which included the removal of large post-BANZARE structures and objects like the seatainers to the north of the

Granholm Hut. These larger items were readily identifiable as post-BANZARE. Smaller items were more difficult to date as metal and wood have respectively been corroded or corraded over time. Easily identifiable post-BANZARE material like lead used for roof repairs by the 1978 ANARE or wood fragments with an Intergrain coating that had blown off the Hut were documented and collected for return to Australia. A number of small wooden boards, tin cans and other objects that were comparable to those left behind by the members of the AAE were released at surveyed points by the Project Blizzard expedition in 1985 as part of a study of the influence of the wind on the distribution of artefacts across the site. All objects were marked on as many surfaces as possible with permanent ink prior to their release. The high UV levels and wind borne ice particles have been responsible for the loss of many of the labels over time. A Project Blizzard wind study board was discovered to the north of the Hut towards the sea. This is the first such item to be relocated since 1985. It was documented and then returned to Australia.

A cautious approach was taken in the case of objects that could not be dated with certainty as post-BANZARE. These were left *in situ*.

A large quantity of post-BANZARE material was removed from the Granholm Hut. This included Project Blizzard ration packs, food, and a considerable quantity of rubbish including broken glass, which had been left in the hut. Items relating to previous conservation expeditions were retained and removed to the Sorensen Hut. These included the Project Blizzard plaques, some papers and a visitor's book. The main items now remaining within the Granholm Hut include the bunk on the southern wall, a portable gas stove and gas bottle, tools and other building materials (e.g. nails, screws), saw horses, basic kitchen items (saucepans, cups, plates, cutlery), a ration pack, fire extinguisher, folding chairs and some food items.

MAIN HUT

Repairs to workshop collar ties

The repairs to the collar ties in the workshop section of the Main Hut was identified as a high priority as they would complete the conservation works to the Main Hut that had been identified in the 1997/98 works program. Ice excavation was carried out in the workshop with a chainsaw by Ted Bugg and ice was removed from the immediate vicinity of the Main Hut by a temporary chute on the workshop roof. This chute extended from the western skylight across the western meltlake and ensured that the ice and snow did not fall directly on the artefact scatter. Ice removal was minimised to that necessary to undertake repairs and it is estimated that about 8 cubic metres of ice was removed from within the workshop roof.

It was not expected that artefacts would be revealed in this sterile post occupation deposit. The original build up of snow and ice that post-dated Mawson's occupation was removed in 1978 when the workshop was cleared of snow and ice by ANARE. The snow and ice cleared by Ted Bugg had only built up in the intervening years and no artefacts

were found during this excavation. The excavated ice varied in appearance and compaction, and consisted of both ice and snow.

It became clear during excavation that the extent of repairs required to the workshop roof was greater than anticipated, with a number of rafters also being damaged. Following discussions about the stability of the workshop and the extent of work required, it was decided not to proceed with any repairs during this expedition. The present condition of the interior of the roof was photographed for future reference.

At the conclusion of the excavation, black plastic was left in the workshop ceiling to monitor any future ice ingress.

Workshop ventilator

The works program identified that, if time allowed, the cover to the workshop ventilator would be reconstructed to help reduce snow ingress into the workshop. Excavation of the ice within the workshop roof for the proposed repairs revealed that the ventilator cover has been boarded over. There was no evidence of snow ingress in the workshop during the period of the expedition and particularly following a blizzard that occurred after ice excavation was completed. All the tools remained free of snow and, although the outside of the ventilator was completely encased with snow, there was no fresh snow within the roof space. The ventilator does not therefore appear to be a major source of snow ingress into the hut. A number of photographs of the interior of the ventilator were taken for future reference.

Repairs to Main Hut roof

It appears that there may be significant abrasion between the tongue and groove joins of the roof boards, particularly on the southern plane of the living section of the Main Hut. It is possible in places to see through gaps between these boards into the roof cavity below. This may require attention in future and should ideally be monitored on a regular basis so that deterioration and potential failure of roof timbers can be identified. The draft CMP discusses the considerable aesthetic significance of the Main Hut roof in demonstrating the patina of the building's occupation, thus requiring a careful approach to any repairs.

New battens were attached to the southern plane of the living section roof of the Main Hut in an attempt to prevent further ingress of ice and snow into the hut through the most significant gaps between the roof boards. This work was carried out by Ted Bugg with the assistance of Julia Searle and was limited to a small number of boards to minimise any visual impact. These repairs should provide valuable data about whether the apex of the southern plane is a major source of snow ingress into the hut and possible means to limit this ingress.

Measurement of snow and ice build-up since the AAP Mawson's Huts 1997/98 repairs to the skylights

Although there was no evidence of snow ingress in the workshop, there was considerable build-up of snow and ice in the Main Hut. A large amount of snow had entered the Main Hut through the roof with a very large accumulation around the electroscope housing and above the former platform area.

Although most of the snow that had entered the building since 1997/98 was retained by the upper structural timbers some had also accumulated on black plastic that had been placed on the floor of the living space and in Sir Douglas Mawson's room. Their masses were determined, as was that of a large overhanging lump that was removed due to concerns about its stability and therefore the safety of those working immediately below it. In order to monitor the effectiveness of minor repairs made to the roof during the 200/2001 season, snow was also removed from the electroscope housing and from a small area above the platform. A sheet of black plastic was left in this area to monitor future ingress in this area.

Area	*Mass of snow/ice removed (kg)*
Centre of main hut	30.9
Ice shelf – living space	0.5
Mawson's bedroom	32.3
Platform rafter	67.8
Electroscope and surrounds	66.8

Following the blizzard on 4/1/01, there was evidence of snow ingress in the living section of the Main Hut at the following locations:

- northern end of the platform;
- below the shelves towards the southern end of the Hut; and
- around the eastern skylight.

This ingress comprised a fine layer of snow up to a few millimetres thick in parts. It also appeared that there may have been further ingress on the collar ties. There was a layer of snow above the western and southern skylights between the glass and the skylight cover, although no snow appeared to have entered at this point.

Conductivity of snow and ice samples

Snow and ice samples were taken from inside and outside the Main Hut. These samples were returned to Australia where their conductivity and chloride content will be

determined. The results of these analyses will provide information that will be of use in assessing the corrosive nature, or otherwise, of the internal and external environments.

Installation of salt candle and corrosion monitoring instruments

A salt candle, corrosion monitoring coupons, a wire-on-bolt unit and a zinc plate were installed on the Workshop roof for Dr George King of CSIRO Melbourne. These instruments are being used to gather data on the corrosive nature of the external environment. At the completion of our fieldwork the salt candle, wire-on-bolt unit and zinc plate were dismantled and packaged for return to Dr King. The coupons are to be exposed for 1-2 years.

Dr King was contacted and arrangements were made for additional coupons and zincorr wire-on-bolt units to be brought to Cape Denison by crew of the yacht Spirit of Sydney. These were to be installed in designated positions in the Main Hut so that baseline corrosion data could be determined for the interior of the building. Unfortunately heavy pack ice prevented the Spirit of Sydney from carrying out this work. **It is strongly recommended that corrosion monitors be installed in the Main Hut and in the Magnetograph House when Cape Denison is next visited**. The data that is obtained can be used to complement the environmental monitoring data that is currently being accumulated.

Corrosion coupons that had been installed on Anemometer Hill in 1998 (for Dr King) were removed and packaged to minimise corrosion during their trip back to Australia.

Surface moisture contents of timber and documentation of wood condition

Moisture contents were measured for a range of internal and external timbers of all huts in the Cape Denison historic site. As expected, the moisture contents of external timbers reflected the wood type, orientation to the sun's path and the build-up of drift snow and melt-water.

For the Main Hut most timbers on the south, east and west verandah walls had moisture contents in the ranges 14-15%, 8-9% and 8-11% respectively. Values in regions that were close to ice or melt-water were significantly higher, with values exceeding 60% in some cases.

Inside the Main Hut moisture contents were measured for timbers in the north and west walls (range 23-25%), the south wall (25-28%), the east wall (22-32%), the east ceiling (23-28%), the outer walls of Sir Douglas Mawson's room (23-28%), structural platform timbers (uprights and rafters, 17-26%) and the east wall of Hurley's darkroom (23-50%). Apart from the timbers installed by the 1997/98 AAP team (average values 17%) the moisture contents of all timbers exceeded their fibre saturation points. Despite the high moisture contents, surface mould was surprisingly light.

Moisture contents were also determined for external timbers of the Workshop, Transit Hut, Absolute Magnetic Hut and the Magnetograph House (internal and external).

In order to determine the abrasive effects of windborne particles, thicknesses were measured on those timbers for which access was possible (Main Hut, Memorial Cross, Magnetograph House, Transit and Absolute Magnetic Hut). Only a very limited number of timbers could be measured using Vernier callipers. The obtained data dramatically illustrates the physical deterioration suffered by exposed timbers. One plank on the south-west corner of the Main Hut has a thickness range of 9.8 - 21.1 cm while a piece on the Magnetograph House has a range of 2.6 – 12.7 cm. A full range of measurements and measurement locations will be provided in the final report.

Chemical deterioration of wood and coating of new workshop roof timbers

Wood samples were taken from the walls and roof of the Workshop and the Main Hut. Samples were chosen to reflect the possibly different deterioration experienced by the timbers. Thus samples were taken from areas in which tidemarks indicated the presence of at least occasional high moisture contents, from north-facing areas in which UV deterioration is expected to be high, from iron-stained areas and from areas in which surface mould was present. Samples of the Intergrain finish were taken from the Workshop roof and from a piece of wood that was on site but had not been exposed to direct sunlight or moisture.

Milligram samples were taken for analysis by Fourier transform infrared analysis.

Calibration and reconfiguration of the data logging system in the Main Hut

The Vaisala temperature/relative humidity sensors, deployed by Stephen Martin in 1999, were recalibrated using a saturated sodium chloride solution in a sealed chamber. Recordings were made of the response times of all sensors so that the most reliable and responsive could be chosen for further logging. The 4 best sensors were then relocated, one external to the building, one in the centre and the other 2 near the east and west walls of the living space of the Main Hut. Cables were strung to minimise the visual impact on the interior of the building.

All thermocouples and associated cables were removed from their previous locations, disconnected from the logger and returned to Australia.

For the duration of the 2000 AAP Mawson's Huts stay, Tiny Tag Ultra loggers (8) were also installed in the Main Hut and in the Magnetograph House (3). The data obtained from the loggers in the Main Hut will be used to provide a check on the accuracy of the data recorded by the Vaisala sensors. In addition the shorter logging period (10 minute intervals for the Tiny Tags versus1 hour for the Vaisala sensors) will allow more accurate information to be gained on the possible impact of visitors and workers on the internal

microenvironment of the Main Hut. These aspects of the monitoring program will be reported on in the more comprehensive final report.

The installation of loggers in the cold porch and interior of the Magnetograph House will allow a comparison to be made between the environment inside this building, which is substantially ice-free, and that of the snow and ice-filled Main Hut.

At the completion of the AAP work program 3 Tiny Tag loggers were left in the living space of the Main Hut, with one also deployed in the Magnetograph House. These loggers will accumulate temperature and relative humidity data at 1.5 hourly intervals until May 2002.

Measurement of ambient light and ultra-violet radiation

An Elsec 764 Environmental Monitor was used to measure ambient light intensities and UV radiation levels. Readings were taken by holding the meter on the same planes as the roofs of the Main Hut and Workshop. In this way a comparison can be made between the differing exposures of these surfaces to light and UV. These data will be used to determine the correlation, if any, between the deterioration of the wood and its orientation.

Sub-floor conditions

The draft conservation management plan recommends that the sub-floor areas of the Main Hut should be inspected to ascertain the structural integrity of the Hut's foundations. An understanding of the sub-floor conditions of the Main Hut would aid the development of a long term management strategy for the structure. While desirable, inspection of the sub-floor was not a priority activity for the works program and was therefore only commenced in the final two days of the expedition. It was decided that the least intrusive means of gaining access to this area was to excavate the ice above the trapdoor for the cellar. The cellar entrance is in the workshop verandah near the entrance to the Hut. It was assumed that it would be less likely to be obscured by artefacts than other parts of the floor as it was required for easy access to the cellar. Also, if it were possible to define the edges of the trapdoor it might be possible to open it rather than to cut or drill into the floor.

The use of a chainsaw as an archaeological tool was found to be effective by the 1997-98 AAP Mawson's Huts Expedition team. Ted Bugg applied this technique for the excavation of the door to the meat cellar. He excavated a trench 101 cm (N-S) x 80 cm (E-W). Julia Searle cleaned the last centimetre or so of ice to expose the floorboards using available tools, including a wire brush, a crowbar, a screwdriver and a soft brush. This method was eventually abandoned as it resulted in some scratching of the surface of the floorboards. It also appeared that the northern edge of the hatch had not been reached during the chainsaw excavation.

It is recommended that a variable speed angle grinder be employed in conjunction with a chainsaw for future ice excavation at Cape Denison. A variable speed angle grinder was not available for the 2000-2001 expedition but was employed successfully for excavation in the proximity of artefacts without causing damage by the 1997-98 AAP expedition team (Hayman *et. al.* 1999: p. 17).

A small piece of asbestos cement sheet was found above ground level. A wooden soap box with a rope handle, a brass wire and a handsaw were revealed at ground level. A portion of a stump for the building was uncovered in the south west corner of the trench. It is possible that the wooden box and hand saw were used for ice collection as described by Mawson in *Home of the Blizzard.*

After documentation and temporary relocation of the artefacts above the trapdoor, Ted Bugg drilled 5 fine holes into the four corners of the trench and one in the middle. Each hole was 50 mm deep. These were then probed to provide an indication of the sub-floor conditions. It appears that the area under the cellar door is filled with solid ice. It would have been preferable to define the edges of the trapdoor and to try to open it but it was not possible to extend the trench with due care in the limited time available ashore.

The artefacts were replaced in their original positions and covered in black plastic to facilitate the re-excavation of ice in this area. From this examination, Ted Bugg postulated that the trench would need to be extended to the north and west to fully expose the trapdoor and its hinges. **Further examination of the sub-floor conditions is recommended.**

Identification and management of artefacts that are inappropriately stored in the Main Hut.

There are a number of items inside the Main Hut that date to the period of Mawson's occupation but are no longer in context. These include the artefacts stored in plastic containers by Project Blizzard in 1986, artefacts that were originally on the platform, and structural elements that were removed from the platform as part of the 1997-98 AAP Mawson's Huts Foundation conservation program.

The plastic containers that held artefacts from the 1985-6 Project Blizzard excavation were relocated to the area above the ice tomb for the dog in the workshop. Other out-of-place artefacts were kept in their current positions. This is only a temporary solution and further consideration of the most appropriate location for these items is required. While the AAD's artefact guidelines provide a useful policy for the site generally, they provide only general guidance in relation to this issue. Future expeditions would benefit from a clearer policy in this regard. Similarly, the management plan that is adopted for the site could include strategies for dealing with artefacts currently stored in the Hut that are no longer in their original context. These strategies could also apply to other items such as the post-BANZARE tin left in the Magnetograph House.

Continuation of catalogue of artefacts inside the Main Hut

It was noted that additional ablation had occurred inside the Hut since the last AAP visit in 1998. Newly uncovered artefacts were observed to the north of the living area west of the stove and on the eastern side of the main living area. Newly observed artefacts were documented and photographed with a colour card.

Other artefacts in the main living area and Mawson's bedroom were documented to ensure that the recording of artefacts inside the Hut is consistent. The condition of artefacts was also recorded along with photographs taken with a colour card. This latter work was undertaken on behalf of Janet Hughes, Senior Materials Conservator, National Gallery of Australia, who is assessing the rate of deterioration of artefacts at Cape Denison over time.

Whilst documenting artefacts inside the Hut, writing was observed on the north wall of Mawson's cubicle and on the south eastern wall adjacent to the south eastern bunks in the main living area. The latter were illegible pencil marks. The writing on Mawson's cubicle consisted of dates, apparently all in June, and a series of numbers. It has been suggested that these reflect the calculation of angles either of the sun or some other astronomical feature.

MAGNETOGRAPH HOUSE

The Magnetograph House and Absolute Magnetic Hut have been reused since the AAE. The French Antarctic Expedition made magnetic observations in 1951 and 1959 and some readings were made by the New Zealand Department of Scientific and Industrial Research in 1962. In February 1962, the members of an expedition to make V.L.F. recordings were forced to inhabit the Magnetograph House as they were unable to return to their ship, the USS Burton Island due to inclement weather. They left behind a number of items, including American ration packs, tin cans and soap powder. They left notes in a tin explaining why they had occupied the hut and recommended that these items be removed prior to further magnetic studies.

Artefacts associated with this expedition were documented and returned to Australia. The condition of these objects was also recorded to obtain information about the rate of deterioration of artefacts over time in this area of Cape Denison. The only post-BANZARE artefact retained within the Magnetograph House was a metal tin with the words 'note inside'. The contents of this tin are now located within the visitor's book, which was repatriated to Australia for copying and eventual return to Cape Denison.

The removal of these items revealed previously unseen AAE artefacts, such as packets of Bromide papers used for recording magnetic readings. The majority of the Bromide papers, envelopes and instructions were found in the area around the position of the instrument at the eastern end of the hut. These were documented and left *in situ*. A

detailed photographic record was made of 1911-14 clothing stored in this hut. Other artefacts that date to Mawson's original occupation, such as tin cans and cast iron stove parts have almost certainly been placed inside the Magnetograph House since 1914. It is extremely unlikely that these objects would have been in the vicinity of the hut during the period of AAE occupation as they would have been a source of ferrous interference to the magnetic readings. **These items were left *in situ* but it is recommended that a policy is developed for these artefacts as they should be relocated to enable reuse of the Magnetograph House for its original purpose.**

OUTDOOR SURVEY

The distribution of artefacts across Cape Denison provides a basis for the identification of the boundaries of the site. The outdoor artefacts also reflect the activities of the members of the AAE and provide a means of gaining some understanding of their behaviour during the period of occupation. Further, this material provides information that is not included in the written records.

Priority was given to the continuation of the survey of outdoor artefact scatters across Cape Denison that was commenced in 1984-85. It was considered important to record these scatters as they are potentially vulnerable to damage or collection by unsupervised tourists.

Emphasis was placed on the artefact scatter to the north of the Main Hut as this has the richest artefact field and is in an area most likely to attract tourists. Another factor which influenced the priorities of the archaeological program was the fact that there was a remarkable amount of ablation at Cape Denison in the summer of 2000-1. This provided an opportunity to record artefacts that have not been visible to previous expeditions, such as a sled to the east of the Main Hut and fur boots and a well preserved sheep's leg to the north of the Hut towards the shoreline.

As the field season was limited to two and a half weeks, it was necessary to use a method that provided the maximum amount of information in the minimum amount of time. Alasdair McGregor provided training in the use of a digital video camera. This provided a most efficient means of recording the site as it only required one operator and descriptions could be verbally as well as visually recorded. The key artefact scatters that surround the Main Hut, artefacts to the west of the Hut and objects around the Transit Hut were recorded as a series of east-west runs, generally moving from south to north. Runs were recorded from both directions to reveal objects hidden in rocky crevices. Still shots and moving images were recorded on the video tape and key artefacts were recorded with detailed shots on slide film. Each run was also recorded with a written description.

The most notable results came from the artefact scatter to the north of the Main Hut. The area directly to the north of the workshop was almost completely ice free and a number of previously unknown artefacts were revealed. One such find was a seal's head. The skin

had been cut and parted to reveal the underlying bone. The skull had then been carefully sectioned to expose the brain, which had then been removed. This dissection was far too careful to merely reflect butchering activity. It appears that this animal had served as a biological specimen.

Mawson described the plume of rubbish left by his party that extended to the north of the Main Hut in *Home of the Blizzard* (1915 vol 1: p. 115). The 2000-1 artefact survey also revealed that rubbish extended back towards the Hut from the sea edge. For example, an extremely well preserved sheep's leg was found in a rocky crevice at the northern end of the scatter. It comprised the majority of the tibia and fibula and all bones of the foot. The skin, hair and underlying soft tissues were well preserved as was the hoof. It is possible that this was discarded soon after landing at Cape Denison as the sheep were butchered prior to arrival at Commonwealth Bay and this portion of the animal was of no use as meat or insulating material.

Some of the artefacts near the sea edge, such as mooring lines, did not comprise rubbish at all but were associated with ship to shore activities. Cached seals provide another example of deliberately placed artefacts. More seals were observed along the coastline in the 2000-1 summer season than have been recorded for other expeditions to Cape Denison. It is notable that some of the seals were merely cached, whilst others had been butchered. Several different butchering methods were observed. These are probably a reflection of different members of the expedition. A large proportion of the butchered seals could be identified as juvenile.

The results of the outdoor survey confirm previous observations that Mawson's party left material evidence of their occupation right across Cape Denison and onto the ice plateau. It is also apparent that the artefacts across the site can be classified into deliberately and accidentally discarded objects and artefacts that were consciously cached or placed across the site for practical purposes.

The surface survey of the site should be continued by future expeditions as differential annual ablation will reveal different artefacts each summer.

It was hoped that a detailed and accurate map could be made of the artefacts across the site using GPS but it was not possible to obtain access to the appropriate equipment for this expedition. It is recommended that this work be done by future expeditions. Various agencies are interested in providing assistance to such a project as the results of aspects of accurate survey work in this location are of interest to other disciplines.

It is recommended that artefacts are accorded equal status to the larger structures in the conservation management plan that is adopted for Cape Denison. All the material remains associated with Mawson's expeditions can be described as artefacts, including the buildings. It is important to recognise this as it may affect long term management strategies for the site. The huts, for example, can be seen as

artefacts, with the history of their occupation embedded into their fabric. Replacement or removal of elements would diminish the heritage values of these structures.

Tourism

The tourism survey commenced by Janet Hughes in 1997 (Hayman, Hughes and Lazer 1999) as part of a National Estate Grant was continued. This project involved briefing all visitors prior to landing at Cape Denison and handing out survey forms after the visit. The key objectives of the survey were to:

- Study visitor expectations of their visit to the site;
- Examine patterns of use of the site, e.g. time spent at different locations;
- Identify whether briefings meet visitor needs and provide sufficient information;
- Evaluate visitor opinions on the conservation of the site, including the importance of being able to enter the Main Hut.

Results, discussion and recommendations

The 2000-2001 expedition provided the fourth opportunity for this survey to be conducted. Most of the passengers and crew attended the pre-landing briefing. Sixteen out of twenty two visitors, including ship's crew completed the survey form.

Overall, the results of this survey were consistent with those of the previous AAP Mawson's Huts Foundation expedition. It is apparent that there is a need for improved education and control of tourists visiting the historic site since the tourists are able to walk across the entire rocky promontory of Cape Denison with minimal supervision. Observations of the tourism activities during the expedition revealed the potential to damage the fabric of the hut or the artefacts simply through a lack of understanding of their values. Although passengers and crew on the ship were briefed by Estelle Lazer about heritage issues and advised that they should not walk on the artefact scatter, it was clear on site that there was a lack of understanding about what this scatter entailed. Whilst their actions were unintentional, a number of people had to be asked not to walk on the artefacts. This reflected a lack of understanding of heritage issues and demonstrated the need for appropriate trained guides. It may also have been more useful for passengers to be briefed when they arrive on site and sensitive areas such as the artefact scatter clearly identified.

The results of the tourism survey indicate that visitor education did have a significant impact on tourists. This was especially noticeable in the influence it exercised on the perception of the artefact scatters as a useful archaeological resource rather than just being rubbish.

Despite the fact that the AAD provided visitor guidelines for Cape Denison, it was only read by five of the sixteen respondents. This was a problem as many of the visitors

seemed unaware of the need to avoid areas of artefact scatter. It was not possible for the members of the AAP Mawson's Huts Foundation team to exercise control over visitor movement for most of the time that tourists were ashore. Most of the tourist landings at Cape Denison took place late at night or in the early hours of the morning when the team members were asleep. This problem was exacerbated by the fact that Mawson's Huts are not visible from Sorensen Hut. There was evidence, in the form of footprints in the snow, of people walking over the artefact scatter to the north of the Main Hut. Also, at one stage the tour operators were responsible for storing ice axes for visitors in the area of the main artefact scatter. It was necessary for tourists to walk over the scatter to get an axe. It is apparent that even though visitor guidelines are provided for tourists, they are not always read and understood. **It is recommended that a government appointed representative accompany all expeditions that plan to land at Cape Denison. This person could aid with visitor education and help control the movement of tourists across the site. This is the approach taken for visitors to historic sites in New Zealand's Antarctic Territory and it appears to be very successful.**

There does appear to be some inconsistency in the obligations of tourist ventures. It is important that the passengers on smaller vessels that visit Cape Denison comply with the same visitor guidelines as those that travel on vessels that are managed by larger tourist operators.

Another means of improving visitor education would be to produce a briefing video which could be shown to all visitors prior to landing.

A pragmatic solution to the problem of tourists walking across the artefact scatter would be the construction of a series of boardwalks across the artefact scatters. These signal the significance of the site and guide people so that there is minimal impact on artefacts. Ted Bugg, who has considerable experience and expertise in the construction of heritage boardwalks, constructed a boardwalk across the meltwater and artefacts to the entrance of the Hut. It was fairly unobtrusive and resulted in minimal impact on the artefacts immediately to the west of the Main Hut.

The tourists understandably resented too much control being placed on their ability to move around the site. The only area where tourists accepted the need for controlled visits was in gaining access to the Main Hut. Estelle Lazer took the first group of tourists through the Hut as part of the 1997-98 AAP expedition. A similar approach was taken for the 2000-01 expedition visits to the Hut. Lazer took in two people at a time and guided them through the Hut. Small numbers were considered essential to ensure visitor safety and to prevent damage to artefacts in the interior of the Hut, especially those *in situ* on the floor. In addition, the floor is mostly covered by ice and is slippery and uneven in places.

One of the most positive outcomes of the small number of tourists inside the Hut at any one time was that it provided a more personal experience for visitors. An entire day was

put aside for taking tours through the Hut. All the passengers on the *Sir Hubert Wilkins* who wished to visit the Hut were able to do so. The content and length of time of each tour was tailored to suit the individuals entering the Hut. **It is recommended that visitor numbers inside the Hut be maintained at about two to three people at a time.**

Finally, it is recommended that private occupation of the site for tourist purposes is inappropriate and should be discouraged. Private bases should not be built or maintained on territory associated with such an important historic site.

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MEDICAL REPORT

MAWSON'S HUTS EXPEDITION - DECEMBER 2000 - JANUARY 2001- MEDICAL REPORT
The medical events on this expedition occurred in two environments - the sea voyage component and that on the continent.

SEA VOYAGE - on SIR HUBERT WILKINS

Seasickness was severe on this trip. The vessel at around 650 tonnes is small and will have intrinsic roll characteristics because of this alone. SHW also developed An idiosyncratic roll in very smooth waters when underway which contributed to the nausea felt by passengers and crew. The result was that all expeditioners were incapacitated by seasickness for much more of the southbound part of the voyage than was expected. Two of those were rarely out of their bunks. One expeditioner required repeated injections of promethazine to control vomiting.

Seasickness was less severe on the return voyage,but again,was sufficient to render most expeditioners bunkbound for much of the trip.Recovery of "sea legs" occurred about 5 days into the Northward leg.

The medications used were promethazine (phenergan,avomine) and cinnarazine (stugeron).Promethazine is the standard recommended by medical officers of the Australian Antarctic Division. It is a powerful antinauseant and also has use as an antihistamine.It is widely used in Australia for both of the above. Stugeron is used as a travel sickness agent in Europe and comes with wide recommendation from Australian yachting figures. Our experience in what could be reasonably described as a challenging environment was that promethazine was a much more effective remedy than stugeron but with greater side effect of drowsiness than experienced with stugeron. It should be noted that seasickness is a highly subjective event clinically,and with the small number of subjects these comments can be regarded as impressions only.

RECOMMENDATION - ENCOURAGE USE OF PROMETHAZINE RATHER THAN CINNARAZINE SHOULD THE ANTARCTIC DIVISION ESTABLISH AN INDEX OF SHIPS {AND THEIR ROLL CHARACTERISTICS }TRANSFERING IT'S PERSONNEL AS SOME WORK WOULD BE IMPOSSIBLE IN CERTAIN SHIPS DURING MUCH OF THE SOUTHERN OCEAN TRANSIT.

Other medical events -

One female ship's crew member had symptoms in which the differential diagnosis included ectopic pregnancy.A disposable pregnancy testing kit would have been useful.

RECOMMENDATION - ALL ANTARCTIC MEDICAL KITS CONTAIN PREGNANCY TESTING KITS.

A male ship's engineer suffered near amputation of distal phalanx of R index some 5-10 mm distal to joint. The extensor tendon and joint were intact.Sensation was present but reduced in the finger pulp. Treatment was by splinting after suturing the wound.Antibiotics given erythromycin 500 mg qid. The wound healed slowly and he was left with stiffness of the joint which was fit for mobilization physiotherapy on his return to Hobart.The injury was due to a falling hatch.

MEDICAL EVENTS WHILE ON THE CONTINENT

Whilst working on the roof of the Mawson's huts one male slipped and caught his hand on the roof planking,embedding several splinters,one of which needed local anaesthetic to allow exploration of the area.

Another male, the expedition medical officer, cut his R index whilst fitting crampons. The wound involved the tendon sheath Assisted by others he sutured the wound himself. The wound healed well but with some ongoing discomfort involving the tendon sheath.

There were 4 instances of mild knee injury - all of which were due to slips and falls on rock. We could have used more knee supports especially thick multi layer types.

A recently introduced anti inflammatory agent celoxicib, "celebrex",was used for musculo - skeletal pain. This drug was effective and was without side effects in this instance.

> Celecoxib is one of a new group of anti inflammatory agents which work in a different way to older agents. The difference between the two is that celcoxib inhibits the enzyme cyclo oxygenase-2 (COX-2),while other agents inhibit cyclo oxygenase-1. While it is generally not much more effective than the other agents it has a much lower incidence of gastro duodenitis which is a common side effect of the other agents. The gastroduodenitis induced by any agent can be catastrophic when duodenal/gastric ulcer and bleeding occur. It is a side effect worth minimizing!

RECOMMENDATION - BECAUSE OF THE FREQUENCY OF GIT SIDE EFFECTS WITH USE OF COX-1 NSAIDS,THEY SHOULD BE REPLACED IN THE FIELD WITH COX-2 INHIBITORS SUCH CELECOXIB FOR ROUTINE USE.COX-1 INHIBITORS SHOULD BE AVAILABLE FOR THOSE WITH SULFA ALLERGY OR OTHER CONTRAINDICATION OF COX-2 USE..

RECOMMENDATION - ALL GROUPS PLANNING HEAVY WORK IN THIS AREA BE SUPPLIED WITH ONE "KNEE GUARD" PER PERSON.

Medical kit

The medical kit supplied by the Australian Antarctic Division was excellent and comprehensive. The one thing I required which was not included but which I carried was a pack of tricyclic oral contraceptive pills in the event that an expeditioner or visiting

crew forgot her supplies. This proved to be the case on one occasion. I would also recommend the inclusion of primolut or similar for treatment of dysfuntional uterine bleeding.

RECOMMENDATION - INCLUDE TRICYCLIC OCP AND PRIMOLUT OR SIMILAR IN MEDICAL KIT.

I had a pack of fibreglass splints recently developed and released by 3M. I planned to try these in the absence of any actual injury but did not do so. I think it would be worthwhile for this pack and instructions to be included in the medical kit of an enthusiast who could trial its use in the field. This product provides the opportunity to use easy to apply,strong, long term splintage in the field. If it is tried I would appreciate comments on its effectiveness,as would 3M who donated the product.

ASTHMA STUDY.

One of the expeditioners suffers from asthma. It is the usual policy of the Australian Antarctic division to exclude asthma sufferers from travelling to antarctica due to well understood and documented "cold induced asthma". Essentially this is thought to occur due to irritation of hyperreactive airways by cold air resulting precipitating the release of agents in the airways of asthmatics which result in bronchospasm. This event can happen to anyone and will occur to a certain degree in all subjects if exposed to cold enough temperatures. Some asthma patients are particularly prone to this and others relatively immune. Our asthma patient had, however, been to Antarctica before and had done so in stressful circumstances - on a yacht which required her to be lashed to the mast while on iceberg watch in storms!

It was decided that she was fit for the purposes of this trip. The patient was on treatment - this consisted of EFORMOTEROL ("OXIS")12 MICROGRAMS TWICE DAILY by turbuhaler,ventolin puffer if required and PULMICORT 400micrograms twice daily.

I decided to conduct a basic study which involved collecting "peak expiratory flow rate" (pefr)measurements on all of the 8 expeditioners whilst we were at Cape Denison. The pefr gives a good picture of the degree of bronchospasm a patient may be experiencing,and is easy to perform. The aim was to observe any changes in asthmatic state of the known asthma sufferer,and use the other personnel as controls.Another aim was to see if there was any detectable differences in pefr occurring in the controls and if so,at what times.

The study design was as follows - several baseline pefr's were taken prior to landing on the ice, then readings were done, from 29th Dec.until 9th Jan., four times per day - these "measurement points" were

1. on arising from sleep,
2. after being in the warmth of a hut and having had breakfast,
3. on arriving back at the hut after being in the field for the day at bedtime.
4. at bedtime

It is noted that these readings are being done on a functional rather than a strict temporal basis. There were some days when some or all persons could not leave the hut due to weather conditions and some readings were unable to be taken. Further pefrs were taken after returning to Australia.

The results were then analysed in the following way -
1 - each measurement point (eg "on entering hut in am") for each expeditioner was studied to note any pattern (such as progressive decline) during the 12 day study - RESULT - there were no patterns of decline,improvement etc over the period of the experiment. All expeditioners showed small (not statistically relevant)variations.

2 - The average of each time period was compared with others in the same patient to note any consistent differences between measurement times. Only one expeditioner showed consistent changes. This subject's pefr dropped 10% after working outside and by a further 6% by bedtime- this was not the asthmatic patient. It is of interest that all subjects except the one mentioned above experienced a slight improvement in pefr after being in the field.

3 - The results showed a small decline in overall average pefr in all subjects whilst on the continent. This ranged from 4.8% to 14 %. The asthma patient suffered a decline of 10% on average, but maintained very similar pefrs throughout. This is significant in that unstable pefr's are an indicator of loss of control of asthma.

CONCLUSIONS

This study suggests to me that in the conditions at Cape Denison as described, asthmatics may be well controlled using a combination of inhaled long acting beta-2 agonists and inhaled steroids.

There was an overall small but detectable drop in pefr which was not related to exposure to cold conditions - this drop was present in all subjects throughout all time measurement conditions. The pefr drop reversed on return to Australia. The implications are uncertain - if validated by a bigger study or other studies it implies a non cold mechanism. We know there are many asthma triggers and it may be that irritants in the hut or exposure to the very dry air are responsible. The change was moderate but without clinical symptoms and no treatment was considered necessary.

The fact that one of the non asthmatic subjects showed evidence of mild bronchospasm reminds us that undiagnosed asthmatics are plentiful in the community. Screening diagnostic techniques involve pre and post ventolin spirometry and saline challenge (for diving candidates). The question is what screening criteria and what exclusion criteria should be used regarding asthmatic expeditioner candidates.

The concerns of the medical community regarding exposing proven asthmatics to the Antarctic environment are valid. However,we now have around 20% of the Australian

population being diagnosed with "asthma".I think it is worth exploring the inclusion of this group for Antarctic work -provided they are mild/moderate asthmatics and they are not subject to significant drop in pefr when exposed to high workload in cold conditions. The latter would be difficult but not impossible to assess. The subject could be placed in eg a freezer room and exercise on a standard stress ecg testing platform with pefr or, better,computed spirometry,being performed at intervals. I do not know if this has ever been done and if not it would be an interesting exercise in Antarctic physiology research.

DAVID LITTLE

COOK, COMMUNICATIONS, JOURNALISM AND PHOTOGRAPHY REPORT

Cook'sReport
By David Killick

Preface

I was honoured to have been chosen for the role of cook during this expedition and it was a job I enjoyed immensely. I would like to thank Rob Easther, Estelle Lazer and Julia Searle for their great assistance in the preparation, cooking and serving of many of the meals, which helped tremendously in making the task easier. I would also like to thank Joan Russell, work during the previous expedition provided an example for me to model my comparatively modest effort upon.

Ordering

Initial estimates of the food required for the expedition were based on the food order prepared by Joan Russell for the 1997/98 expedition. Planning was based on a maximum 28-day stay, which was intended to allow at least a ten-day reserve in the event of any delay in departure from Cape Denison. The 28-day figure was approximately one-third the number of person-days spent ashore by the 1997/98 expedition, which provided for easy reckoning. Lists of provisions remaining inside the Sorensen Hut were provided by the Claypoles and were relied upon for contingency planning. In the event the quantities of food provided proved to be more than adequate.

A draft menu was circulated several months before the expedition and met with broad acceptance from all expeditioners. An e-mail message was circulated to further refine planning to take into account like and dislikes. Several changes were made to the menu are a result of this message. The final draft menu, which formed the basis for meal planning during the expedition, forms appendix A to this report.

There were several significant differences between this expedition and the previous. It was never intended that fresh bread be cooked during the expedition. No conscious effort was made to reduce packaging or avoid glass, as the amounts involved on such a short trip were likely to be small at any rate. Due to the shorter length of the expedition a greater reliance was placed on fresh fruit and vegetables. Freeze-dried meals shunned in favour of freshly prepared food.

A draft food order was forwarded to a local providore six weeks prior to departure. The quote was delivered late, indecipherable and was expensive. It was decided to purchase most of the food items at local supermarkets and the required fruit and vegetables from a local market and to buy only what was
otherwise unobtainable from the providores.

This approach, while time consuming, was cheap and convenient despite Hobart prices being somewhat more expensive than Sydney. A copy of the final draft of the food order is appendix B to this report.

Provisioning, packing and cartage.

The expedition's food was packed into numbered wooden boxes set aside for the task in the Antarctic Division store. Non-perishable food items were packed into numbered wooden boxes in the field store. Each box was marked with its contents and recorded on a central manifest. As far as possible weights were kept to those easily managed by two people, however in some instances this was exceeded. Glass items were wrapped in bubble-wrap plastic, a successful approach that resulted in a zero-breakage rate.

Kitchen equipment was drawn from the field store and the cook's personal equipment, with some items being purchased from local suppliers. This was packed into two separate boxes and given priority for unloading.

Changes from the previous expedition.

Being able to build on the experiences of the last expedition was particularly useful. There were several important differences with this group.

Firstly, and most significantly, members of the expedition ate only three meals a day instead of the four plus a late snack which was the norm on the last expedition. Initial planning had called for breakfast, smoko, lunch, dinner and supper or 'chompers'. The reduction in the number of meals eaten contributed to the slightly larger-than-expected food surplus at the end of the expedition. Meals were taken later in the day than on the previous expedition. Breakfast typically began around 9am, followed by lunch at 3pm and dinner around 9pm or 10pm.

Items such as packet soups and muesli bars that were unpopular on the first expedition were avoided this time. Freeze-dried meals were only eaten on the first night ashore.

The expedition relied heavily on fresh fruit and vegetables with tremendous success despite somewhat dubious storage aboard the ship. There was almost no spoilage and even parsley approaching four weeks old remained fresh and crisp thanks to the cool conditions ashore. Oddly, and despite ample quantities, expeditioners displayed little interest in the apples and oranges provided.

Meals Ashore

As with the previous expedition, breakfast was generally a self-serve affair, with people making use of the bread provided to make toast or toasted sandwiches.

Lunch alternated between a buffet style affair - with bread, spreads, condiments and toppings such as salami - and a meal prepared by the cook, such as sausage rolls, fresh soup, pasta, meatloaf et cetera. Supplies of foodstuffs taken to Granholm Hut appeared to suffice for lunches when these were taken in the field. Several members of the expedition also exhibited a taste for dinner leftovers, particularly at breakfast and lunchtime.

Dinner comprised of roast meat with vegetables: roast lamb or beef or a pasta or rice dish. Members of the expedition, notably Rob Easther assisted by cooking the evening meal on several occasions, displaying considerable prowess in the kitchen.

Dinners were supplemented with desserts according to the time available to the cook, due to an ample supply of Christmas cake this was enjoyed on most nights as well.

Some items were noteworthy for their popularity. The expedition's cashew nuts were consumed in a relatively short time. Several bags of liquorice also proved popular. Snack foods such as chocolate bars, peanuts, corn relish, salami and Salada crispbread were also particularly appreciated.

Water collection and waste disposal.

Several tasks assigned by roster during the last expedition were assigned to volunteers for the duration of this trip. This system worked well as people were matched more equitably to tasks. Estelle Lazer and Julia Searle looked after setting and clearing the table and washing up, Alasdair McGregor, Ian Godfrey, Rob Easther and David Little formed two shifts to deal with waste and waste water disposal and Ted Bugg looked after rubbish disposal and water collection.

Fresh water was again drawn from Alga Lake and carried in jerrycans back to the hut. This task was made much easier by the provision of a small hand pump devised by Ted Bugg. In general water was boiled before consumption, although it was difficult to keep up with demand and the practice was eventually discontinued. No ill effects were reported from the batches consumed without having been boiled. Hot water for hand washing was provided as often as possible. The pump has been left behind in the hut for the benefit of future expeditions.

Another dramatic improvement to hut life was the provision of a kitchen sink, again by Ted Bugg. This simple innovation made the task of washing up much simpler despite the terrible mess made by the cook on a nightly basis.

Liquid kitchen and toilet waste disposal was made easier on this expedition by the presence of a quad trailer to cart the drums to the ice edge and the provision of lids to prevent spillage. Since there was a fair number of drums and lids it was possible to carry out the disposal of liquid waste once every few days, as weather permitted.

The disposal of solid toilet waste was also much improved this time around thanks to the efforts of Alasdair McGregor to find a sturdy yet biodegradable bag which could be sealed before being dumped in the sea. These paper bags were placed inside a plastic garbage bag while in use and made the disposal of toilet waste a much less unpleasant task, I am reliably informed.

Packing up

The breaking down of the kitchen and removal of surplus food was accomplished in the orderly fashion that characterised the end of the expedition. Two days before the intended departure all excess items which were to be removed from the Sorensen Hut were packed into boxes and stockpiled near Alga Lake for removal to Boat Harbour. A selection of items intended to provide basic food for a field party has been left behind at the hut. A list of these items is provided as appendix C to this report.

Surpluses, shortages, and failures.

Catering arrangements during the expedition seemed to pass the ultimate test - the satisfaction of the expeditioners. On this basis, the success of the cooking arrangements far outweighed the several minor problems experienced during the two weeks spent ashore. Several point made below are intended to be off assistance for any further expedition visiting the area.

The greatest omission from the Sorensen Hut and the cook's equipment was the lack of either a cheese grater and a potato masher. The absence of these two items was not a great inconvenience bur irritating nonetheless. Future expedition would find them useful.

Several frozen items considered essential to the expedition were inadvertently left on the ship. These included fresh garlic, pizza bases, spinach and some pastry. It was disappointing that several requests for these to be brought ashore were not heeded.

We ran out of several items, particularly minced garlic due to the problem mentioned above. All of the cashew nuts were consumed.

Apart from the fresh fruit already mentioned, there were surpluses of several items. The quantity of butter in particular was about double that required despite careful planning. There was also a similar of excess thickened cream, museli and tinned fish. To my knowledge none of the quick oats or Ryvita crisp bread taken by the expedition were consumed and very little of the Weet Bix.

The quantities of the expedition's staple items - most importantly meat, cheese, bread, pasta, chocolate, biscuits, milk powder, coffee, tea and fruit juice were generally correct allowing for a small reserve supply. Thankfully also the quantity of toilet paper proved more than adequate and a reasonable supply (about three dozen rolls) was left behind.

The nature of the unloading operation meant that several items were missed until almost the end of the expedition. These items were somehow overlooked despite a number of attempts to transport all food items near the Sorensen Hut. None of these items was considered essential, although all would have been useful. All were backloaded onto the ship. More efficient packing, or the transporting of all food stores to the vicinity of the Sorensen Hut would have alleviated this minor problem.

Frozen bread and meat were stored in two caverns in the ice prepared by Ted Bugg. The meat locker in particular was a fine piece of work with a most excellent door. The warmer than anticipated conditions lead to some spoilage, some of the bread was saturated by melt water while some of the meat was found to have spoiled in the meat safe on the second last day ashore. Deeper storage pits with some allowance for melt might have had some greater measure of success although on this occasion the minor problems experienced served only to slightly reduce the surplus at the end of the expedition.

Communication Officer's Report
David Killick

Preface

Radio communications operations during the 2000/01 Mawson's Huts expedition were largely successful, with only some minor glitches. This was mostly due to the excellent support provided by the Antarctic Division's radio technicians who put together a kit of equipment which was able to meet the expedition's needs perfectly. Their patience in explaining the myriad aerial wires and leads was of great assistance to the smooth functioning of the expedition's communications. Satellite telephone communications were subject to the usual vagaries of this medium, although for the most part successful for voice and wholly successful for data calls.

Packing.

All the communications equipment was sealed inside double plastic bags and packed into a single wooden box and marked priority one. The handheld radios and the satellite telephone were kept aside with the 'Wanted On Voyage' equipment to ensure the former were available during the unloading operation.

Equipment list

A full list of the equipment provided by the Antarctic Division is set out below:

HF radio equipment

1x HF 90 Mains Chargers
1x HF90 Hard cover and gel cell battery
1x 7 metre longwire HF antenna
1x 30 metre longwire HF antenna
1x100m (roll) longwire antenna
1 foldable HF antenna
1x 1.5m battery charging lead

VHF base station equipment

1X Midlands VHF base station radio with microphone
1x Polaris casette desk
2x gel cell batteries
1X mains charger with switch panel
2 car speakers + leads
1 VHF whip aerial

VHF handheld equipement

6 Icom M12 Handheld VHF radios
6 Icom BP2 battery packs
6 Icom BP5 battery packs
6 Icom BP 8 battery packs
2 Icom M12 battery chargers

Misc

2x 6 volt deep cycle batteries
1x 2 metre 12 volt battery to clamp lead
1x 2 metre bannana plug to clamp lead
1x 1 metre banana plug to 3x DC plug lead
Additional equipment
2x Digital laptop computers
1x Canon BJ10ex Bubblejet printer
1x six plug powerboard
2X rolls gaffer tape

VHF Radio Operations

In general the VHF handhelds worked without trouble throughout the entire expedition and proved a boon to field operations. About midway through the expedition there was an incident of simultaneous mass battery failure. It appears that one of the battery chargers supplied was inoperative and had failed to charge any of the BP8 batteries in use on that day. When expeditioners switched to the smaller BP5 batteries it was discovered that the gel cell trickle charge method had also proved inadequate and the expedition was left without VHF radio communication for around two hours. This problem was eventually overcome by the use of the sole functioning charger.

The VHF handhelds were extremely useful for communications between the Sorensen Hut and the field and between field parties and the ship. Channel six was used almost exclusively for all communications by the expedition, the ship, the ship's inflatable and the ship's shore parties. A listening watch was kept on this frequency.

The VHF base station functioned as the hub of the radio net, allowing expeditioners to communicate their movements and allowing the expedition to communicate with the Sir Hubert Wilkins when it was somewhat distant and even the US science support vessel Nathaniel B Palmer which was offshore for some of the expedition.

On several occasions the base station was able to act as a relay between shore parties and the ship. The whip aerial survived the entire expedition secured to the roof of the

Sorensen Hut only by two pieces of gaffer tape! This unit also experienced some minor problems with battery charging, although none sufficient to put it out of action.

One radio on the handheld radios was dropped into the sea in the last hour of the expedition. Although it was recovered it was unserviceable.

HF Radio operations

By contrast with the VHF radios, the HF radio was little used. It was anticipated this radio would be used for communications with the Sir Hubert Wilkins when the ship was outside of VHF range. Several tests were carried out and the unit was shown to be operational, however no skeds were arranged and the ship did not maintain a listening watch on the agreed frequency so the unit was little used. Attempts to contact Casey station also failed, probably due to my lack of familiarity with the unit.

Satellite Voice operations

The satellite phone loaned to the expedition by Don and Margie MacIntyre functioned without fault throughout the expedition. The unit was set up on Christmas Eve, when the dish was slotted straight into the marks left by the previous expedition and reasonable reception obtained immediately. The phone provided reasonably reliable voice links from the next day. Each expeditioner was able to make calls as they wished, albeit with some minor assistance from the radio operator with the somewhat complicated dialling procedure. In general, most calls were successful within the first few attempts, although several were delayed a few hours by poor satellite reception and some calls suffered from poorer than normal reception. A number of radio interviews were carried out over the telephone.

In a departure from the previous expedition, the satellite telephone was generally left on during daylight hours. This was intended to allow incoming callers to reach the expedition with greater ease, although several reported having great difficulty in doing so. This was probably attributable to satellite conditions.

Satellite data communications

The expedition's main form of communications was via e-mail. A standard Telstra Bigpond dial-up account was set up and tested prior to departure and functioned satisfactorily throughout the expedition. More than 300 e-mail messages were sent and more than 120 received during the expedition.

As e-mail was the expedition's main form of communication some priority was given to sending and receiving messages. This was generally done twice a day - around 11am and around 7pm. Because of the nature of satellite conditions, many frustrating hours were spent trying to send important e-mail as attempt after attempt failed. Sadly, this situation

was as common as a trouble-free connection. It is unlikely much can be done to improve this, although I suspect that a better antenna might help matters somewhat.

Incoming messages were printed out on a printer I brought from home. This printer proved inadequate for the task. Combined with the reception problems outlined above, many otherwise productive hours were lost pursuing what should have been the simple task of receiving and printing the expedition's mail. Such is the 'A-factor'.

On the final day of the expedition a problem with fuel contamination prevented the sending of several important messages when the generator failed and could not be revived.

Journalist/Photographer's Report
David Killick

Preface

Reporting and photographing the expedition often took a backseat to cooking and communications operations during the expedition, but nevertheless were largely successful. Three press releases, six stories and more than 300 photographs were produced during the expedition.

Press Releases

Two press releases were written prior to the expedition's departure, and one after. Of these the first was the most successful, generating dozens of calls from media organisations across the country. The final draft of this press release is reproduced in appendix D below.

Stories

A total of six stories were send back to AAP Sydney during the expedition. These are reproduced in Appendix D at the end of this report. The stories received a good run in newspapers around the country, although at the time of writing a comprehensive list of impacts has not yet been compliled.

Photography

There were several factors that limited the success of the digital photography program during the expedition. A lack of familiarity with the camera equipment proved to be a slight impediment, as did a lack of time to get out in the field. The accidental deletion of the first three days photographs was also regrettable.

The greatest impediment to the successful use of the digital cameras was the inability of the expedition to transmit photographs back to AAP's Image Desk in Sydney. On the previous expedition this was accomplished via a transfer to a bulletin board which allowed transmission to resume where it was lost when the satellite phone dropped out. The Image Desk has since switched to transmission via the Internet – a method that does not allow the resumption of incomplete files. There was insufficient time to organise an alternate method. Several attempts were made to transmit photographs back to Sydney during the expedition without success.

Website

The Foundation's website (www.mawsons-huts.com.au) was updated with stories and images several times during the expedition and afterward. The process was somewhat complicated by having to e-mail the photographs back to Sydney for manual upload to the server. The process would have been easier with direct access to the webservers, which would have allowed more frequent and extensive updates, however times restraints would have still limited the amount and frequency of updates to the website.

Appendix D: Stories and media releases written during the expedition.

(MEDIA RELEASE)

RESCUE EXPEDITION IS LAST CHANCE FOR MAWSON'S HUTS

A small team will sail from Hobart next week on a difficult and dangerous mission to save one of Antarctica's most historic buildings.

The AAP Mawson's Huts Foundation expedition represents what is perhaps the last chance to ensure the survival of Mawson's huts as their centennary approaches, Foundation chairman David Jensen said.

The eight-person team will have to endure sub-zero temperatures and howling winds in the place Sir Douglas Mawson dubbed "The Home of the Blizzard". Mawson's abandoned 1911-14 Australasian Antarctic Expedition base at Commonwealth Bay is the windiest place on earth at sea level and has been visited only infrequently in the last 90 years.

The expedition will have just 18 days to complete vital conservation work on the huts and clean up rubbish in the area to leave the site as Mawson's men did when they left it in 1914. Rubbish and artefacts left behind by Mawson's men are considered a great archaeological resource and will not be disturbed.

Mr Jensen said the expedition was the last chance to ensure the huts survived intact until their centennary.

"Mawson's Huts are the birthplace of Australia's Antarctic endeavour. Five years ago they were in danger of being blown into the sea. This expedition will ensure they remain a living monument to Mawson and his men," he said.

"The conservation management program is the result of experience gained on three expeditions, extensive study and wide public consultation on the future of the huts."

Expedition Leader Rob Easther said the small team would have to live in tents pitched on the icecap and would depend on each other for their survival and for the success of the expedition.

"Each of these people has been chosen because they thrive in impossible conditions, is psychologically stable and an expert in their field."

"The team has been given a very difficult task in a hostile place but they are tough and experienced and I am confident they are equal to the task," he said.

Ranging in age from 27 to 56 the team of six men and two women have made more than 30 trips to Antarctica between them.

This summer's expedition represents the end of a five-year quest by the Mawson's Huts Foundation to ensure the historic site is preserved for future generations. This is the third and final expedition to be mounted by the AAP Mawson's Huts Foundation.

For more information or interviews please contact David Jensen on 0414 333 381 or Rob Easther 0419 337 169 or visit the Mawson's Huts website at www.mawsons-huts.com.au.

The Mawson's Huts Foundation 2000/2001 expedition team is:

Rob Easther, 56, Hobart TAS; Expedition Leader

David Little, 49, Terrigal NSW; doctor.

Ted Bugg, 42, Sheffield TAS; carpenter.

Aladsair McGregor, 46, Sydney; NSW, photographer.

Ian Godfrey, 44, Perth WA; materials conservator.

Estelle Lazer, 44, Sydney, NSW; archaeologist.

Julia Searle, 27, Canberra, ACT; heritage specialist.

David Killick, 32, Sydney NSW; cook/journalist/photographer.

ends

By David Killick

HOBART, Dec 15 AAP - An expedition to one of Antarctica's most hostile places leaves Hobart tomorrow to finish urgent conservation work on Sir Douglas Mawson's historic huts.

The eight-person AAP Mawson's Huts Foundation team is expected to spend three weeks at Cape Denison 2,500 kilometres south of Hobart working to ensure the iconic 90-year-old huts survive.

Cape Denison - which Mawson dubbed "the home of the blizzard" - is part of the Australian Antarctic Territory and the wndiest place on earth at sea level.

Expedition leader Rob Easther said the work would hopefully help ensure the historic huts' survival until their centennary in 2012.

"This site is highly significant in the history of Australia's interest in Antarctica: our claims to 42 per cent of the continent had their genisis during Mawson's 1911 expedition," he said.

"Although very few people will ever see the huts they are of great symbolic importance as part of Australia's Antarctic heritage.

"If we don't complete this vital work the huts may blow away and be lost forever."
An engineer's report three years ago found that Mawson's main hut was in imminent danger of collapse despite the efforts of several conservation parties during the 1970s and 1980s.

A Mawson's Huts Foundation expedition to the site in 1997/98 carried out the most urgent repairs - this summer's work is planned to complete the the conservation program and remove any post-Mawson items from the conservation zone.

The large main hut - the base for Mawson's 1911-14 Australasian Antarctic Expedition - is one few surviving buildings errected by the early Antarctic explorers and is listed on the Register of the National Estate.

It is also nominated as a historic site under the Antarctic Treaty which requires it to be maintained on site.
It was to this small wooden shack that Mawson returned after both his companions died on a sledging journey and he was forced to eat his dogs during a 500 kilometre trek to safety.

As he returned to the hut, he saw his expedition ship sail over the horizon, leaving him behind for another year in Antarctica.

This summer's expedition follows a successful conservation expedition to the site in 1997/98.

Two-time expeditioner Alasdair McGregor said that despite having to cross the world's roughest seas in a small ship he was looking forward to taking part in the conservation project.

"It's good to be going back to actually finish the job," he said.

Mr McGregor said that the howling winds, the sub-zero temperatures and the discomfort of living in a tent pitched on solid ice were minor inconveniences compared with the satisfaction of working on the hut.

"The rewards are greater than the sum of all those things.

"Mawson's Huts are one of a handful of priceless buildings remaining from the heroic era of Antarctic exploration and with ongoing care should survive as a monument to intelligent inquiry, resourcefulness, and above all sheer courage."
AAP dk

Conservation team lands at Home of the Blizzard

By David Killick
Cape Denison, Antarctica December 26 AAP - An expedition to one of Antarctica's most hostile places has set up camp to finalise restoration work on Sir Douglas Mawson's historic huts.

The eight-person AAP Mawson's Huts Foundation team landed on Christmas Eve at the place Mawson dubbed "the Home of the Blizzard" and plan to finalise conservation work on Mawson's main hut to ensure it survives until its centenary in 1912.

The hut and several outbuildings are in almost the same condition and his men as they were when Mawson and his men left them behind after the 1911-14 Australasian Antarctic Expedition.

Expedition leader Rob Easther said it was good to be at Cape Denison despite sub-zero temperatures and 50-knot winds which made even walking short distances difficult.

"I can actually imagine the men of the Australasian Antarctic Expedition working around the area and I can sense the hardships they endured in this inhospitable place" he said.

"We're here for a short time with a lot to do, the team is fired up and ready to start work despite the conditions.

"The repairs from our last expedition in 1997/98 have held up well so we have the sense that
the future of the huts is secure.

"To our relief our base camp hut was also intact so we can stay somewhere out of the wind."

Cape Denison is the windiest place in the world at sea level.

One of the major focuses of the expedition is removing rubbish which has been left at the historic site after Mawson's expedition departed, expedition archaeologist Estelle Lazer said.

"Mawson's Huts are absolutely unique - there are absolutely no sites like this anywhere else in Antarctica," she said.

"In the 1960s, the huts associated with other explorers of that period were visited and 'cleaned up' because people didn't see the value of what they saw there as an archeological resource, they didn't see that the context was as important as the object.

"By having all that (rubbish) over the site we get really useful insights into how Mawson's party operated - you can look at the object and the relationships between them, it is like a time capsule."

The expedition is expected to remain at Cape Denison for three weeks.

AAP dk

By David Killick

Cape Denison, Antarctica December 28 AAP - An Australian scientist has become the first person to reach the South Magnetic Pole.

Geoscientist Charles Barton aboard the expedition vessel Sir Hubert Wilkins located the pole at 64 degrees south, 138 degrees east in the Southern Ocean early on Saturday morning (AEST) and was able to close to within 1.6 kilometres of the its location.

The measurement is the closest-ever approach to either of the magnetic poles and the end of a long quest for the Canberra scientist.

"It was a bit of a dream come true," he said.

"The initial planning started about 16 years ago for this so to get to very, very close to the South Magnetic Pole - much closer than anybody has ever been before - is a very exciting thing."

Unlike the geographic poles, which are fixed, the magnetic poles move under the influence of terrestrial and atmospheric conditions, making attempts to find its exact location frustrating and difficult.

Atmospheric influences induce short term variation in the pole's position, causing an erratic and unpredictable movement of as much as 1,000 kilometres a day in any direction, making direct observation a matter of patience and some luck.

"It was moving very fast when we started our measurements on Thursday - much faster than we could go," Barton said.

"We tried to set up an interception course with the expected trajectory of the pole but we missed it, we got there first.

"We moved along and tucked in behind it and we were both going at the same speed for a while and then suddenly the magnetic conditions became much more quiet and then it was very easy to catch up with the pole and make measurements of where it was."

"We set ourselves a target of five kilometres ... we hit hit four kilometres which was very exciting and we had a big celebration but when everybody had settled down and the champagne bubbles had gone flat we actually did a few more measurements and we actually got within 1.4 kilometres which is extraordinarily close."

In addition to the short term variations, long-term movements in the earth's molten core have seen the pole drift steadily away from its first reported position in Antarctica's

George V Land during the last 100 years. At present rates it will reach Adelaide in around 600 years.

Dr Barton also holds the distinction of being the closest to the North Magnetic pole as well: to within fewer than 10 kilometres in 1994.

British captain James Clarke Ross was the first to seek the pole during his 1840 expedition to the Ross Sea.

Famed Australian explorer Sir Douglas Mawson is popularly credited with having visited the pole on a sledging journey during Sir Ernest Shackleton's 1909 expedition, although review of his results revealed that he had only come to within 50 kilometres of the actual point.

A overland attempt by members of Mawson's 1911-14 Australasian Antarctic Expedition was also unable to reach the exact location of the pole.

Several subsequent attempts have come closer, although with nowhere near the same degree of precision as this latest attempt.

The north and south magnetic poles move independently, are not diametrically opposite on the earth's surface and contrary to popular belief are not the precise locations to which all compasses point.

AAP dk

Australians in Antarctica first to see New Year's dawn

By David Killick
Cape Denison, Antarctica, Dec 31 AAP - The residents of a remote Antarctic field camp will be the first Australians to see the light of the New Year.

The eight members of the AAP Mawson's Huts Foundation expedition at Cape Denison, Antarctica will celebrate the dawn of the New Year and shortly after midnight Sydney time will watch the sun rise over the polar plateau behind their campsite.

The group is spending part of the summer at the site carrying out conservation and cleanup work of Sir Douglas Mawson's historic Antarctic Huts.

Despite the sub-zero temperatures, the group is planning to celebrate the event with an outdoor bar-b-que.

Cape Denison is in the eastern sector, the "thin slice" of the Australian Antarctic Territory, which in total
makes up 42 per cent of the continent.

Expeditioner Julia Searle said she was thrilled to be seeing in the New Year in Antarctica. "It's exciting to be doing something different, to be tying what we're doing which is so extraordinary in with a celebration we would be having if we were at home," she said.

Expedition photographer Alasdair McGregor said the location had a special significance. "This is the end of the century in which Antarctica was fully expored, from the first party to spend a winter - it has been the century of Antarctic exploration and Australians have been involved from the start," he said.

Expedition doctor David Little said he felt lucky to be seeing in the New Year in Antatctica.
"There could be no more exciting place to begin mankind's most exciting century to come," he said.

Cape Denison, 2,500 kilometres south of Hobart, was the site of the 1911-14 Australasian Antarctic Expedition led by famed Australian Antarctic explorer Sir Douglas Mawson.

AAP dk

Australian team cleaning up Mawson's Huts

By David Killick
Cape Denison, Antarctica, Jan 4 AAP - In one of Antarctica's harshest places a small team of Australians is carrying out what is perhaps the world's most remote cleanup operation.

The eight members of the AAP Mawson's Huts Foundation expedition are spending the part of the summer removing rubbish from the Mawson's Huts Historic Site at Cape Denison, 2,500 kilometres south of Hobart.

The cleanup work is intended to return the site to the condition it in when it was the base for Australia's first and most famous Antarctic expedition: the Australiasian Antarctic Expedition of 1911-14, expedition leader Rob Easter said.

"These days environmental standards are quite different from Mawson's era - it's now unthinkable to simply throw your rubbish out the door - due to the potential adverse effects on the natural environment," Mr Easther said.

"The rubbish is the result of several private, government and foreign expeditions visiting the area since the 1960s, probably as result of having to make a hasty retreat due to the extreme weather.

"There are numerous cases of birds and seals being caught up in cables and wire left by expeditions and toxic waste can affect the meagre flora that inhabits such an extremely hostile environment.

"The sight of rusted fuel drums and abandoned campsites diminishes the cultural and wilderness value of the area."

The Main Hut and its three outbuildings at Cape Denison are among the first erected on the Antarctic continent and are among just a handful which survive from the early heroic era' of exploration - the expedition will also carry out some structural work to ensure the huts are structurally sound.

Of the few which still stand, Mawson's Huts have been subject to the least human interference since their abandonment and tell an eloquent story about how the men of the AAE lived their lives.

Mawson's peppermints still lie untouched on his bedside shelf, his boots are still sitting in the drying space above his cubicle and his pillow still lies on his bunk.

"It is a snapshot, virtually untouched, of the lifestyle and conditions in which the expedition of 20 men lived," Mr Easther said.

"It was the first Australian-led scientific expedition to Antarctica using the latest technology of the times and yielded an enormous quantity of information about the geology, biology and geomagnetics of the region that filled several large volumes and took many years to write up," Mr Easther said.

"It is still considered a model for Antarctic exploration - the foundation of Australia's modern Antarctic program; their efforts still inspire Australian endeavour."

Mawson, aged 32, lead the Australasian Antarctic Expedition which sailed from Hobart in 1911.

Despite an array of impressive scientific achievements, the expedition is best remembered for Mawson's lone trek of survival across the Antarctic icecap after his two companions perished on a sledging trip.
Although terribly debilitated and well overdue, Mawson managed to hobble back to the hut at Cape Denison, only to find his ship had sailed for home earlier the same day.

Mawson dubbed Cape Denison 'The Home of the Blizzard' because of the ferocious and never-ending winds that blow there - a constant of cold air which flows down from the polar plateau under the influence of gravity.

It is the windiest place on earth at sea level with peak gusts recorded at more than double hurricane strength, in excess of 400 kilometres per hour.

The site is seldom visited because of its harsh environment, although three attempts at conservation work have been attempted over the last 40 years.

However, each of these expeditions has left their mark on the environment of Cape Denison - rusting fuel drums, leftover rations, radio aerials and field huts - and the latest expedition is trying to remove all this rubbish.

Ironically the rubbish left behind by Mawson and his men is considered a great archeological resource and will not be touched.

The men of the AAE simply threw any rubbish out the nearest door and today this collection of 'junk' stretches away in a plume on the windward side of the hut.

This artefact field gives a wonderful insight into the lives of the men who lived in the hut during the AAE, according to expedition archaeologist Dr Estelle Lazer, who first began studying the rubbish at Cape Denison 16 years ago.

"The rubbish extends across the site - wherever Mawson's men went the dropped things," she said.

"They managed to leave traces of themselves everywhere, they turned one of the wildest places in the world into a cultural landscape.

The items left behind by Mawson's men helped to amplify and sometimes correct the historical record, Dr Lazer said.

"It's interesting because Mawson's party documented their expedition to within an inch of its life ... it's
incredibly well documented, but what people say they do and what they actually do are sometimes quite different," she said.

The men of the AAE didn't share today's environmental sensibilities which helped give a clearer insight into how they lived, she said.

"It's the only historic hut where the rubbish hasn't been cleaned up so you get a very good picture of how it was when they left it - Mawson himself described the plume of rubbish extending out from the hut ... so they recognised it and they weren't particularly disturbed by it."

"You get a range of stuff, you get domestic stuff nearer the hut but you also get things that relate to their scientific work, there's a sectioned seal skull where they've removed the brain and there's scientific equipment and there's bits of old stove, boots and clothing."

The AAP Mawson's Huts Foundation Expedition is expected to complete its work at Cape Denison by January 10.
AAP dk

PHOTOGRAPHY

Photography

Following on from the programme of the 1997-98 work party, I was involved in the following photographic/video tasks:

- Recording the state of external deterioration of the huts in the intervening three years (still).
- A detailed survey was made inside the main hut to record the pattern of ingress of snow, ice and meltwater since 1998 (still).
- Documenting day to day progress of the work programme and domestic activities (still/video).
- Assisting with archaeological recording. With more artefacts exposed around the hut than last time, advantage was taken of the opportunity for a more thorough survey, particularly to the north of the main hut. A detailed survey was made of the contents of the Magnetograph House. Inside the main hut some arterfacts were reshot to assist with assessing deterioration over the three years. "Rex" the dog was again photographed (still/video).
- Sponsors banners and/or products were shot in a number of locations - inside the main hut, with a backdrop of penguins and seals or the hut itself. David Little gave valiant assistence with the Yalumba shots, dressed in his dinner suit (still/video).
- A Quick-time VR tripod head on loan from the Antarctic Division Multi-media Unit was used on several occassions - 360 degree panorammas were shot inside the main hut, on the ridge near the Memorial Cross and from Anemometer Hill (still).
- I assisted Gregory Haremza (professional photographer accompanying *Sir Hubert Wilkins*) in making a series of large format flash photographs inside the main hut (still).

The following film stock was used:

28 rolls 135/36 transparency film - Fujichrome Velvia and Provia II
10 rolls 120 transparency film - Fujichrome Provia II

8 x 1hour digital video tapes

Alasdair McGregor
February 2001

ATTACHMENT A

The Illustrated London News p 901, May 30, 1931

And extracts from Commonwealth Bay Visitors Book

JACK FROST, DECORATOR: AN ANTARCTIC HUT EMPTY MANY YEARS.

DECORATIONS BY JACK FROST AND CO.: THE 1911-1914 AUSTRALIAN ANTARCTIC EXPEDITION'S HUT AT CAPE DENISON, AS FOUND (AFTER IT HAD BEEN UNTENANTED FOR EIGHTEEN YEARS) WHEN RECENTLY REVISITED BY THE SECOND B.A.N.Z. EXPEDITION.—THE KITCHEN ADORNED WITH A SCHEME OF CRYSTAL "ICING" AND SNOW ARABESQUES.

SNOW SCULPTURES REMINISCENT OF THE PREHISTORIC OR THE ULTRA-MODERN MANNER: REMARKABLE FORMATIONS IN THE WORKROOM OF THE OLD HUT, AS THEY APPEARED WHEN IT WAS REVISITED AFTER HAVING BEEN LEFT EVER SINCE TO THE UNDISTURBED OPERATIONS OF JACK FROST.

"During the recent voyage of the B.A.N.Z. Mawson Expedition to the Antarctic, in the 'Discovery,'" says a note on these interesting photographs, "a landing was made at Cape Denison, King George V. Land, where, after a lapse of eighteen years, Sir Douglas Mawson revisited the old winter quarters of his Australian Antarctic Expedition of 1911-1914. No foot had been set inside the hut since 1914, when the door was forced a remarkable scene was displayed. Jack Frost had covered bunks, shelves, utensils, and everything else with layers of scintillating crystals and snow arabesques." The upper picture shows "a general view in the kitchen, where Jack Frost had been icing on a large scale"; the lower illustration gives "a glimpse of the workroom, encumbered with delicate festoons of snow." In the right-hand formation, there is vague suggestion of a human figure, in the prehistoric or ultra-modern style of sculpture.

8

Feb 62 · Note found in Magnetic Hut ·

15-16/2/62

Messrs A. Hanley & A. L. Burrows of the New Zealand Dept of Scientific and Industrial Research landed at Cape Hennison by helicopter from U.S. Burton Island (AGB-1) on Feb 15 1962.

magnetograph House free of ice & drift. ~~as~~ Main living hut at head of Boat Harbour full of ice & drift. two ceiling skylights missing. Absolute hut 100 yds South of mag. hut full of drift ice & one wall only is standing. ~~as~~ owing to lack of time & weather conditions a dip observation was made using Russian 3102 Earth Inductor ~~made~~ in the magnetograph hut & a total Intensity observation was done with a precession magnetometer in the hut.

~~as~~ owing to blizzard conditions the mag. hut was used as a living hut.

Good luck to future measurers.

A. L. Burrows

A. Hanley

Dec 67 - Dec 68 Note found in Magnetic Hut.

21 December 1967

Magnetograph hut revisited this date by Paul Emile VICTOR, Director of Expeditions Polaires Françaises, Paris and a group of the 18th French Expedition to Adelie land, on board M/S. Thala Dan, Captain H. Nielsen —

— was found in perfect shape

* - Mawson's hut filled with ice because some stupid "antarctic explorer" (unknown) forgot to close it properly between January 1959 and February 1962

† - In January 1959 I got easily into the hut. There was some ice in it but everything was still in shape -

Paul Emile VICTOR

Paul Emile VICTOR
EXPEDITIONS POLAIRES FRANÇAISES
PARIS