



MEMBRANE STRUCTURES ASSOCIATION OF AUSTRALASIA NEWSLETTER

AERIAL VIEW



**AUSTRALIAN BICENTENNIAL
EXHIBITION**

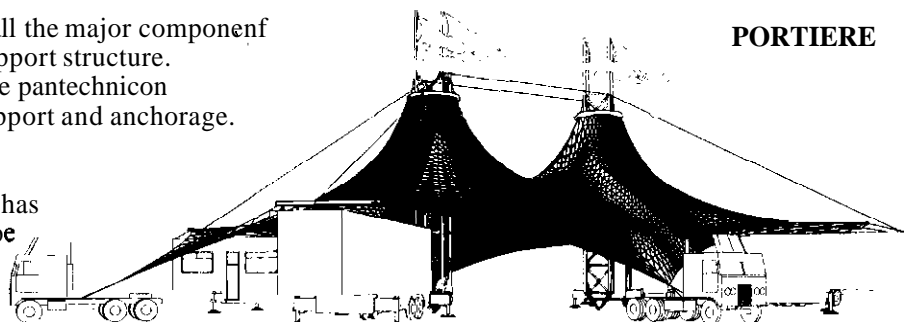
Fabric at Forefront of Bicentennial Exhibition

Work is progressing at a frantic pace on the large number of structures comprising the Australian Bicentennial Exhibition.

Currently, contracts have been let for all the major component parts of the fabric structures and their support structure. All of the fabric structures utilize the large pantechnicon vans and their prime mover trucks for support and anchorage.

At present, one of the Arcade modules has been completed and successfully prototype tested at a site in Melbourne. The 1200 square metre area Portiere structure is currently in fabrication.

PORTIERE



Editorial B. T. Davis, President, M.S.A.A.

Like all Associations the MSAA sees a need to promote its industry, and recently issued a media release. Now, the best gauge of success is the number of enquiries for information which come back.

Well, we have had quite a few, so many in fact that I could spend much of my time writing articles for special interest groups and supplying transparencies. To put it mildly we were very pleased with the result, and members can look

forward to their work and message being published in various magazines throughout the Country.

Alongside this, and I wonder how many of us are aware of it, is the increasing number of 'non-membrane' publications presenting photographs of projects with a membrane structure as centre piece. One promoting the use of steel arrived on my desk the other day - yet there we were in full colour right in the middle of the front page.

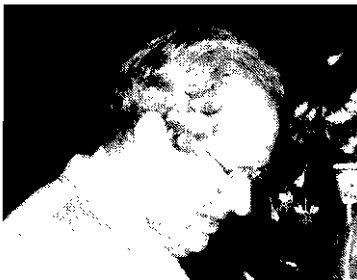
Membrane structures are then attracting much attention and it is for us all to hone up and sustain this attention.

While we set about it, however, let us keep in mind a wonderfully simple message from one of my mentors - 'in this business to sustain success make sure each project you complete is just that much better than the last.'

Valuable words for an industry seeking recognition!

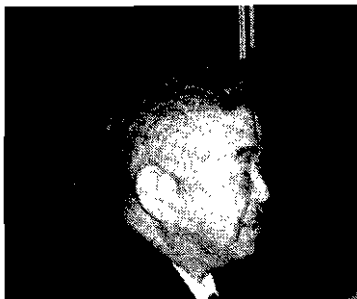
Honorary Life Members

WALTER BIRD



Retired founder and past president of **Birdair Structures Inc.**, a division of Chemfab, Buffalo, NY. Graduate of MIT in Aeronautical Engineering and Sloan Fellow in Business Administration. Entire career devoted to work on air structures and other lightweight structures including design of early streamlined trains for Pullman Standard Car Co., Chicago, and design of aircraft at Curtiss Wright, Buffalo. Developed air-supported Radome and other membrane structures while at **Cornell Aeronautical Laboratory, 1946-56**. Adjunct Professor at the School of Architecture, Buffalo, and consultant in the field of membrane structures.

RYOTARO NOHMURA



Ryotaro Nohmura chairman of the board of the Taiyo Kogyo Company Ltd., with its head office located in Osaka, Japan, and 25 subsidiaries located throughout Japan and the United States. Taiyo Kogyo Company Limited was established by him in 1946 and is one of the world's largest producers of membrane structures, from small to large scale, including Expo '70 in Osaka and Expo '85 in Tsukuba. Mr. Nohmura has been president of the Japanese Membrane Structures Association since its establishment in 1978. He has received several awards presented to him by the Japanese government through the Ministry of Construction and the Ministry of Science and Technology for outstanding achievement in the development of membrane structures.

FREI OTTO



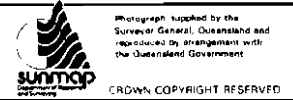
Studied Architecture at Berlin Technical University 1948-52 and University of Virginia with Wright, Eames, Mendelsohn, Severud, et al. 1950-51. Doctorate in Berlin 1954, Doctor of **Arts** in Architecture from Washington University, St. Louis, 1973. Special interest in natural and lightweight architecture and minimum energy forms. During 1950 to 1972 he pioneered prestressed tent and pneumatic membrane structures in co-operation with L. Stromeyer & Co. and introduced new concepts into lightweight structures such as cable net, gridshell and branching structures. Established Institute for Lightweight Structures at Stuttgart **1964**. Lectures and publishes widely. Spiritual leader of the largest interdisciplinary research programme on lightweight structures to date: **SFB64** 'Widespan Structures' (1970-85) and leader of **SFB230** 'Natural Structures' (1984-) at the University of Stuttgart.

Expo Structures Complete

Mid '86 saw the final tensioning of the seven large Expo '88 membrane canopies. As the photograph shows, they totally dominate the 40 hectare site. Indeed it is not easy to find many of the two-story pavillion buildings shaded by them.

While the dominant fabric colour is white, strips of the four official Expo colours have been included. The large expanses of white fabric will be used for sound and light displays at night.

For the record, the highest mast is 70m and the largest clear span is 65m.



SAA Action on Structural Fabrics

Work has commenced on preparation of an Australian Standard for Coated Fabrics used in structural applications.

The Committee is chaired by Bernie Davis representing M.S.A.A., with active members John Curiskis of the School of Textile Technology, George Clark Consulting Engineer and Les Thorogood of Chemfab Pty. Ltd., all with strong experience in the Membrane Structures field. Lee Miller of the New South Wales Grain Authority and Vince Sedlak (R.A.I.A.) add further dimension to the group.

The Committee's tasks presently involve identification of required material properties and selection of suitable test methods.

Several suppliers have already offered data on their materials and the Committee would appreciate hearing from all other Suppliers in the field, both local and overseas.

We wish the Committee well in this rather daunting but very important activity.

Into the Covers!

Have you ever stopped to think of the damage done by Aussie Rules players to a wet cricket pitch!

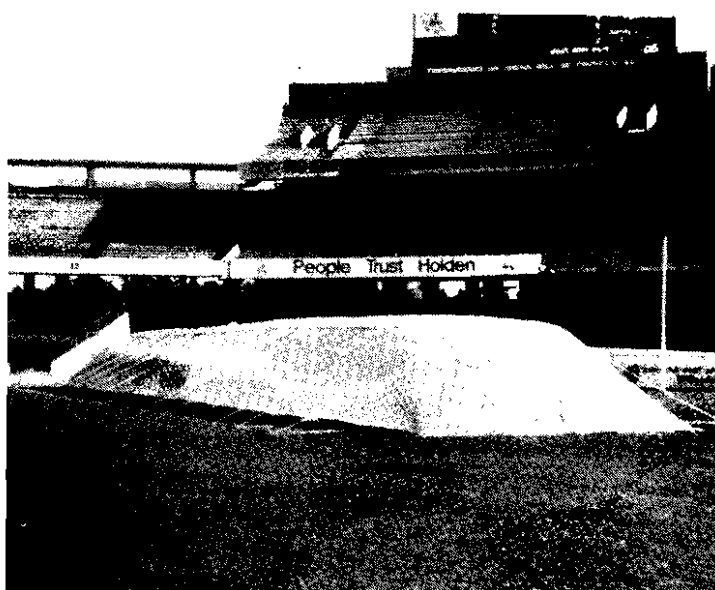
Some years ago a portable cover in Rheem's 'FABRICON' was provided over the wicket area of Melbourne's cricket centre. Now the famous W.A.C.A. is about to get one.

The Cricket Association's Engineers, Breuchle Gilcrest & Evans Pty. Ltd. saw a highly translucent fabric air house an ideal solution. Keys to its success are the ease and speed of its deployment when needed, sustained grass growth through solar transmission and continual air circulation.

Measuring some 34m square it is no mean structure.

Success at the W.A.C.A. following the Melbourne experiment should ensure that more cricket palaces will want one.

Then there are lawn tennis courts, golf greens, etc. — need we go on — membrane structures will provide the answer.



Duty Rates on Architectural Fabrics: A Personal View.

Attempts have been made to determine the current status of duty rates applicable to architectural fabrics imported into Australia. As a result of enquiries to the Customs Service, certain inconsistencies became apparent. For example, an anomaly appears in the Custom's ruling whereupon PVF laminated PVC coated polyester can be imported at a duty rate (including made up structures) of 2% due to the T.C.O.* on PVF laminations and the description under this T.C.O. does not refer to the PVC coating to the polyester. The author is not aware of any wholly Tedlar coated polyester being made anywhere.

A further inconsistency arises in the ruling on PVDF coated polyester fabric which may still be manufactured by some coaters, but has received less attention lately and the T.C.O. can be considered to also cover PVDF lacquer on a PVC polyester substrate.

Each of these then are wolves in flouride coatings and, as such, avoid the 30% duty at this stage.

The author's opinion is that all architectural fabric structures' material are of a similar nature, regardless of the criteria imposed by the market place, such as permanent and temporary, and differences in flammability ratings and cleanability. One could therefore conclude that a single duty level should be struck for the entire field of these fabrics and this duty would provide some form of protection for the local market.

On this issue, one wonders where is the local market and what precisely is being protected in terms of manufacture of coated fabrics? There is a demonstrable capacity to engage in all processes in the fabric structures' field in Australia other than make high quality architectural fabrics.

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Accordingly we may be protecting an industry which does not want protection.

These are contentious issues and warrant further discussion.

David McCready,

* Tariff Concession Order.

Coming Events

M.S.A.A. Seminar, June, 1987 Melbourne

Anyone interested in publishing information on recently completed fabric structures projects in the forthcoming seminar in June 1987 should note that time has been made available for a presenter to show visual images of recent projects and read from prepared descriptions as a way of maintaining the flow of information on current works.

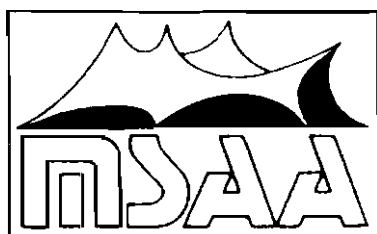
Forward no more than five x 35mm transparencies, along with text on each structure, amounting to no more than 200 words of description to David McCready, P.O. Box 434, Moorabbin, Victoria, 3189. Because a substantial number of project reports are expected it will be necessary to select from the slides and edit the text into a form suitable to the time allocation and number of projects given. No limit is placed on numbers of projects or size. The material should be made available by mid-June 1987

to enable compilation and will be returned immediately following the conference.

International Colloquium on Space Structures for Sports Buildings.

Oct. 27-30, 1987
Beijing, China

For details contact China
Civil Engineering Society,
P.O. Box 2500,
Beijing, China.



This Newsletter is produced by rhr Membrane Structures Association of Australasia. Address all enquiries and articles to:

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Mall Projects Use Fabric

Rockhampton City Council has recently signed up **Covertex (Qld.) Pty. Ltd.** to supply a 20m diameter tension membrane roof for its East Street Mall. The roof, of regular semi-cone form, will be stressed from a central concrete tower to a concrete ring beam supported by cantilever arms from the tower. Engineers for the project were **M.L. Hallahan & Associates** of Rockhampton.

Construction has just commenced on the Pitt Street Mall in Sydney which involves colourful banners and shade panels supported by as many as 24 masts.

Not to be outdone Alice Springs will soon boast a modern pedestrian **Mall** with much needed shade from a series of eye-catching tension membranes. Design for both Malls is in the hand of Geodome Space Frames.

New Roof at North Sydney

Six years ago the North Sydney Olympic Pool received an air-support enclosure for winter usage. This year, because of the success of the experiment, the roof is being replaced along with upgrading of electrical and mechanical services.

The air house is of conventional form measuring 66m by 27m and **8.5m** high.

Vesl Membrane Systems of Brisbane is the principal Contractor. A specially formulated **PVC/polyester** fabric from Shelterite will be used.

The project is particularly challenging as the new design has to incorporate many of the restraints built in with the first structure. Installation is **planned** for mid 1987.

Three to New Zealand

The recent Papal tour certainly roused up activity in various areas. Not least of which was the demand for temporary roofs.

New Zealand's leader in tension structures, Hood Structurflex, successfully constructed two membrane roofs for the open air mass in Auckland. While their covered area of **200m²** was fairly small they were produced in the usual hopeless timetable.

Building on the experiences of this and numerous other tension and air support **projects**, Tony Bouzaid and his team have recently started work on two significant tension membrane projects. The first is a retail garden centre in Auckland of some **900m²**, while the second involves two grandstand structures for a Pacific island group.

The significance of these structures is that their designs are fairly sophisticated, and when completed, are certain to spark interest amongst Authorities and Developers in the region eager to add the zest of membrane structures to their projects.

Technical Sub-Committee Report and News

The Technical Sub-committee proposes to use **WARP AND WEFT** as its forum to communicate with all members of the Association and other interested parties. You are invited to volunteer information through this source.

A report is being prepared on high temperature effects on fabric welds. We ask your assistance in providing either experiences, anecdotes or real test results which relate to these matters. The general area for consideration relates to the extreme temperatures experienced in Australia and the resultant high level surface temperatures which may cause deterioration of welded seams.

Please forward your comments, suggestions or data to **David McCready**, P.O. Box 434, **MOORABBIN**, VICTORIA. **3189**.

Major Rail Redevelopment Complete



For decades the Toowong Rail Station area in Brisbane's near west suburbs has been in the Developers' sights. That is no more since the new Toowong Village opened a few months ago.

The normal pile of concrete and steel has in this case a central atrium area covered by a gleaming white tension membrane roof.

Supplied and installed by the Thiess Contractors team responsible for the Expo '88 canopies the roof of some 1200m² is supported by steel tube arch frames clad in teflon/glass fabric stressed in over the

In addition to the roof a range of PVC/polyester fabric have been used on awnings and sunhoods about the project.

As the project is going on both sides with project of this type, it is hoped that Developers will see the value in adopting membrane roofs for their covered areas. It is only a matter of time as the new

Chemfab Extends Australian Activities

Since its first break into the local scene with the teflon/glass roof of St. Anne's Church in 1978, Chemfab Pty. Ltd. has chalked up a number of successful and significant structures, its latest being the large air-supported roof at Burswood, Perth.

Its previous reliance on overseas support has now been markedly reduced by the installation of extensive computer facilities in its Sydney Office.

Along with this design backup Chemfab have completed agreements with a local manufacturer to establish fabrication facilities in Melbourne.

These significant steps should lead to greater interest in teflon/glass structures in this corner of the Pacific.

Overseas, the Dow Corning Corporation recently announced it has signed an agreement in principal with Chemfab for the sale of the assets of the ODC construction business. ODC will continue manufacturing architectural fabrics.

M.S.A.A. Guests of M.S.A.J.

A small but by no means insignificant function took place at the completion of LSA '86.

About ten M.S.A.A. members were guests at a cocktail party hosted by our Japanese conference delegates. Following a word of welcome by the affable Mr. Ryotaro Nohmura, Vince Sedlak outlined for the visitors the history and present status of our industry in Australia.

So strong were the bonds of friendship and common interests that the language barrier was readily overcome as small groups gathered about for informal discussion and 'note comparing'.

The M.S.A.A. records its appreciation of the recognition made by Mr. Nohmura, Prof. Ishii and the members of the Membrane Structures Institute of Japan, and looks forward to further social and technical contact of mutual benefit.

It is noted that the M.S.A.J. is preparing an article for 'Warp and Weft' in the near future and we are looking forward to that with much pleasure.

Crocodiles and All That

An interesting project just going up in the dense rain forests near Cairns is a tourist retreat, where the roofs for some 19 buildings will be all fabric.

The project will tap the down-to-earth short term economy visitor market in contrast to the fairly opulent accommodation provided on many of the Reef resorts.

About 2000m² of jungle green PVC/polyester fabric will be stressed over timber pole structures reflecting the natural surroundings.

High temperatures, high humidity, torrential rain storms and the occasional cyclone will challenge these structures over the coming years.

And while we are at it, no small amount of fabric screening will be installed to keep the jungle's biting insects at bay!