THE AUSTRALIAN METROLOGIST

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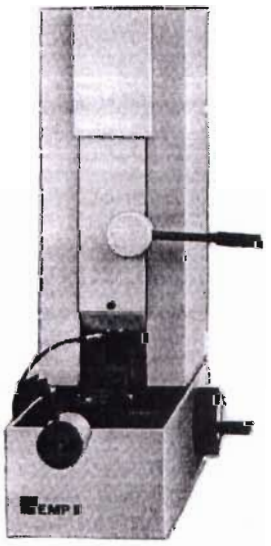

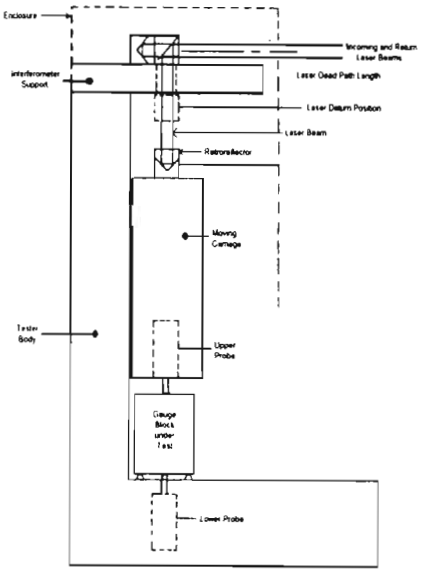

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From the President (cont')

In TAM14, Glen Hay from Rebtec responded with comments on the financial imperative which led his laboratory to buy artefacts from overseas

I can't agree with his final comment about Australian calibration laboratories wanting to make money quickly, as this overlooks the very real investment in equipment and experience which is the backbone of calibration, where the market is small.

As an aside, Glen commented on his previous experience with calibration of setting rods by NML. This is one area where NML investment in CMM equipment, for basic standards and techniques, has recently improved the efficiency of this particular task, reducing both turn-around time and cost.

The trade-off in calibration, as always, is performance vs cost. Overseas laboratories may be able to offer a cheaper alternative, either through subsidisation or through efficiency in capturing a large market share to amortise the cost of experience and equipment over a larger field. However, globalisation of the economy is a fact of life, and it makes sense to use a low cost supplier, provided they meet the accuracy requirements and the user is satisfied that the traceability of the measurement is demonstrated, through international comparisons and accreditation by a recognised body. Mere existence of an MRA is not sufficient - this is recognised by the key-comparison scheme, where results will be published in the open literature, but where the process will take several years to complete the planned comparison program.

The danger in the localisation of metrology skills in a highly subsidised or highly efficient (on a particular test) laboratory is that the skills pool diminishes elsewhere, and what used to be routine calibrations in a laboratory will become special orders, driving the cost even higher or making them unavailable. There is no argument when the cost-saving is substantial, but in marginal cases, the user is encouraged to use a local laboratory to maintain the local skills, which may be easier to access than the overseas single-test specialist for the difficult calibration or consultation on measurement methods.)

In other words, do a global accounting of your measurement needs, rather than focussing on a single item.

We'll endeavour to publicise the outcome of the NATA survey; members are encouraged to use the letters page of TAM, as Glen did, to comment further on the issue of international recognition, both advantages and pit-falls.

Jim Gardner

EDITORS COLUMN

Well Jim you really didn't need to worry about deadlines as your editor has been rather slack with this issue.

I guess that you have been constantly checking your mailboxes looking for the May edition of TAM. Well unfortunately there have been some problems getting things together this quarter and for the lateness of this issue I apologise.

This brings me to my next point. I feel that after 2 years and a recent change to my employment situation the time has arrived to hand on the TAM editors job. I have spoken to Jim Gardner and he will raise the matter at the next Management Committee meeting. If there is a member out there with a flair for putting the magazine together I can assure you that while it does constitute a fair amount of work it is also very rewarding to see your effort come to fruition in the form of a magazine.

With today's technology most of the articles can be e-mailed and then reformatted and placed into TAM. Therefore location is less important than it was in the early days of the MSA.

I can also say that both the previous and the present committees have given me the utmost of support in assistance with the magazine.

So, if you can spare a few hours every 3 months and you feel you would like to take on the job of TAM editor why not put your hand up and offer your services.

I feel that TAM is one of the more important functions of our society and its continued publication is vitally important to the long term success of the MSA.

Give Jim Gardner a call if you are interested.

Jack Deller

Better Measurement : Gateway to Innovation

Ansett Australia is convinced that measurement skills can improve their bottom line. The team at Ansett's engine division have used world class traceable measurements to save the company more than half a million dollars. This division is responsible for the care and maintenance of the engines that keep business going. Down time for an aircraft engine must be kept to a minimum and no risk of including a defective part in the engine assembly is allowed. If there is any doubt then the part must not be used. The determination of whether a part is suitable or not is made by examining the measurements produced when the part is tested. Metrology skill and capability play a key role in such decisions.

Replacement parts are costly and often need to be imported from the United States. An example of one such part is a thermal shield which carries a warranty credit from the manufacturer valued at USD $65,825.00. During 1994 Ansett had 12 of these parts tagged as unserviceable. They had each been tested using traditional measurements and were found to have dimensions which were non-conforming. Their replacement value was close to 1 million dollars. However these measurements were not acceptable to the US manufacturers for warranty purposes as they were not considered to be traceable to agreed standards. Ansett could not risk using the shields but could also not claim the warranty so lost out on two fronts.

The decision was made to seek assistance from an outside laboratory who had sophisticated coordinate measurement machines capable of producing an acceptable certified result for warranty purposes. Australian Defence Industries(ADI) performed the measurements on the 12 thermal shields that were classified as non-serviceable. The total cost was A$1,440.00. The result showed that 5 of the shields were again rejected, 3 were unserviceable and subject to a warranty claim, and the last 4 were returned to service as operational. The return on the investment being close to a whopping 32,000% with the benefit-cost ratio for this measurement being 320:1. Even if one took a conservative approach and included all possible costs the return on the investement would be 22,800%. The US company was now happy to honour the warranty due to the integrity of the results produced by ADI and Ansett is extremely happy with the initiative taken by the team at the engine division. The current price of this part is USD $78K. To date the total number of shields saved by incorporating this innovation into standard practice stands at nine.

This example is evidence that high integrity measurements yield a substantial productivity improvement that might otherwise pass unnoticed. It also emphasises the necessity to develop a highly reliable accept/reject decision process in a high precision industry such as engine maintenance. If you have similar stories about how measurement has saved money or has the potential to save money within your industry sector please contact Marian Haire at National Standards Commission.

Thanks to Ian Ogilvie, Special Projects Engineer at Ansett for providing the information contained in this article.

MSA Achievement and Excellence Award 1997

(The following paper was presented to the MSA "Achievement and Excellence Award" sub-committee by Mr. Horst Sieker (ACM Laboratory) and duly won the inaugural competition. Horst was presented with his award at MSA97.)

LASER ASSISTED GAUGE BLOCK CALIBRATION

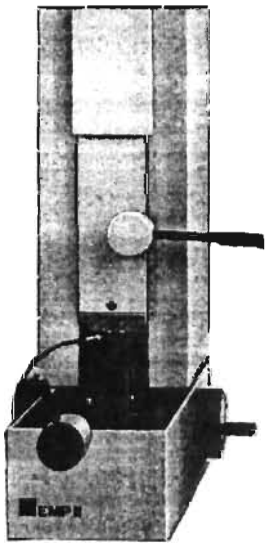
At last years second MSA International Metrology Conference I was honoured to receive the Inaugural Metrology Society Award for Achievement and Excellence in Metrology for my development of a Laser Assisted Gauge Block Calibration system. In this article I would like to explain the reasons for developing this system and the broad workings of the system.

The calibration of gauge blocks is one of the pinnacles of achievement for a dimensional calibration laboratory as gauge blocks form the most common means of disseminating the unit of length to the industrial community. As gauge blocks appear close to the top of the traceability chain the required uncertainty of measurement must be kept appropriately small and this imposes stringent demands on the calibration laboratory.

Apart from the highest grades of gauge blocks, which are calibrated by direct interferometric methods, all other grades are traditionally calibrated by direct mechanical comparison against reference blocks of very similar size in specially designed gauge block testers, which use two high resolution probes to contact the gauge blocks in question. To achieve the required resolution of 0,00001mm, these probes have very short working ranges in the order of a few micrometers, which in turn means that the reference block and work-piece need to be similar in size. As there are a few hundred different gauge blocks sizes in common use, in both imperial and metric units, the calibration laboratory must possess a large range of calibrated reference blocks in order to be able to offer a comprehensive service to potential customers. The purchase price and ongoing recalibration costs associated with these reference blocks is the most prohibitive barrier to entering this field of calibration and was the main reason for developing our system of laser assisted gauge block calibration.

The first problem in developing an alternative method of calibration of items covered precisely by various national and international standards is that most of these standards define the features of the article in question in relation to the most common methods of measurement. In the case of gauge blocks, the definition of both length and parallelism for the lower grade blocks in question are defined with reference to the block being contacted by two inductive probes. Due to these definitions it was decided to use a standard gauge block tester to remain in conformance with these definitions, but to modify the tester in some way to reduce the number of reference gauge blocks required. By using an existing gauge block tester the method of contacting the gauge blocks remains the same.

After some searching, a gauge block tester suitable for modification was found. This EMP II tester is manufactured in Germany and is shown below.



The pertinent features of this tester in this context are the very long guideways for the upper measuring carriage and the surrounding frame which allow fitment of a laser interferometer. Other designs of gauge block tester do not have these features and retrofitting lasers would not be as effective. The EMP-II tester design ensures very accurate movement of the upper carriage with respect to pitch, roll and yaw errors. It also allows fitting the laser optics in line with the measuring probes thus confirming to Abbe's principal. The arrangement of laser optics in the tester can be seen in the schematic figure on page 5.

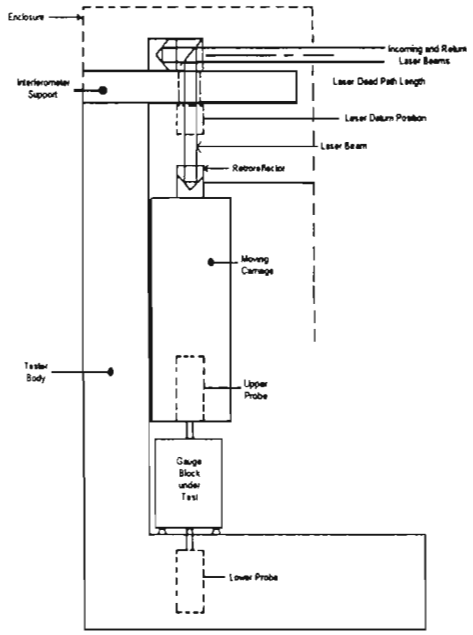
The laser used for this project was a Renishaw ML10 laser interferometer with EC10 environmental compensation facility. The Renishaw laser has a best resolution of 0,00001mm. For gauge block calibration a resolution of 0,00001mm is required and with the enclosed laser beam a very stable reading to this resolution is easily achieved.

Although in detail a different method of gauge block calibration, it was decided from the beginning to adhere to the principal of measurement by comparison. The difference here being the use of the laser to interpolate between two reference gauge blocks smaller and larger than the gauge blocks being calibrated. This set up has the following advantages:

1. Traceability comes from the reference gauge blocks and not the laser itself.
2. The method is still essentially one of comparison and not of absolute measurement, making measurement and knowledge of temperature less critical.
3. Very few reference gauge blocks are required, reducing initial and ongoing calibration costs.

1. The ability to calibrate imperial as well as metric gauge blocks with the one set of reference gauge blocks and various blocks of non standard size such as those found in micrometer calibration sets.
2. Time saving in reduced handling of gauge blocks - ie. no need to handle a reference block for each block to be calibrated.

The disadvantages of this method were seen to be:
1. It requires the use of a relatively expensive laser interferometer.
2. Extra knowledge, care and the development of special software is required to minimise the effects of short term temperature drifts.



For us at ACML the first disadvantage was not important as we already owned the required laser interferometer. As noted under 2 above, considerable work and development was required to reduce the effect of short term temperature drifts appearing in the results. After considerable evaluation, a method of "reduction to the mean instant" was developed, which compensates for small drifts due to temperature changes occurring between the initial and final readings on the reference gauge blocks.

The measuring procedure we use with this system is as follows:
1. Take readings on two reference gauge blocks, one smaller and one larger than the blocks being calibrated.
2. Take readings on the gauge blocks to be calibrated - the software monitors temperature drifts and flags the operator if the drift reaches a preset limit.
3. Re-take readings on the two reference gauge blocks.
4. Calculate calibration constants and drifts from the before and after readings on the reference gauge blocks.
5. Flag any drifts or variations detected in step 4 that are larger than acceptable limits.
6. If no unacceptable drifts/variations are detected, calculate the calibrated sizes of the gauge blocks in question using the specially developed "reduction to mean instant" algorithm.

This procedure is now controlled by a program written by Graeme Smith in Microsoft Quick Basic 4.5. The software collects all necessary readings from the laser and gauge block tester probes, as well as temperatures of the gauge block tester itself. The only operator inputs required, except for block manipulation, are for such items as:
- job description
- gauge block serial numbers (used later in the report)
- nominal sizes of the gauge blocks being calibrated - for later calculation of errors from nominal.

We have found from experience that the optimum batch size is approximately 10 to 15 blocks between readings on the reference blocks. Fewer blocks than this requires too many readings on the reference blocks and more than this allows temperature drift problems to become too large.

We have also found that the method is most suitable for calibration of gauge blocks up to a length of about 25mm (1") as most of the gauge blocks to be calibrated are below this length. Above this length, gauge blocks come in larger increments of either 10mm or 25mm. Due to the small number of gauge blocks above 25mm it is more efficient to calibrate these by direct comparison with a reference block of the same size.

Tests on known reference gauge blocks have shown that this system can achieve uncertainties of:
$U_{95} = 0{,}08\mu m$ ($U_{99} = 0{,}11\mu m$); $k = 2$; $\upsilon_{eff} = 40.2$
for gauge blocks up to 10mm in length. This is within that required by AS 1457-1989 for Accuracy Class 2 of:
$U_{99} = 0{,}18\mu m$.

Development and acceptance of the above method of gauge block calibration has allowed us to enter this precision area of dimensional metrology and hence to provide another service to our customers and Australian industry. The exercise has also provided a worthwhile learning experience that has flowed into other areas of our laboratory.

And a note at the end to let everyone know that ACML has moved to a bigger and better laboratory at 1 Kinwal Court, Moorabbin as of 1st June 1998. Our phone and fax numbers will stay the same and we hope that the next 30 years will be good as the last.

Metrology in Retrospect

(Another contribution in the series from Julian Holland of the Macleay Museum NSW)

Public Time

The first readers to follow Phileas Fogg's breakneck journey 'around the world in eighty days' were startled to find 80 days for one person were not necessarily 80 days for another. Jules Verne's novel, first published in 1872, was a lesson in the relation between time and space.[i] Fogg's servant, Passpartout, carries with him a watch set on London time. By the time the travellers reach Suez, Passpartout finds his watch reads 'eight minutes of ten' when the local time is noon. When advised to reset his watch in each place he comes to, he won't hear of it. "It don't vary five minutes in the year. It is a genuine chronometer," he boasts. "Well, then," he is told, "it will not agree with the sun." "So much the worse for the sun, monsieur! The sun will be wrong then!"

After many adventures, including the rescue of an Indian princess at the expense of a day's travelling time, our heroes are crossing the Pacific. After 'deeming incorrect the time of the various countries that he traversed' and without resetting his watch, Passpartout makes the 'joyful discovery' that his venerable timekeeper agrees with the ship's chronometers. And so, against all odds, and at the end of 80 days' travelling, Fogg and Passpartout arrive in London moments too late to claim the prize. Only Fogg *does* claim the prize! How can this be? Travelling east against the sun, their days were always a little short, so when their eightieth day expired, London had only seen 79. What a fine puzzle![ii]

Today, clock time is ubiquitous. Mantle clocks and watches are kept in check by radio time signals. Microwave ovens and video players chart the passage of the hours. Computers not only monitor the time but ask us to check that they have adjusted correctly for the beginning or end of daylight saving. International travel and telecommunications have made us sensitive to time differences around the world. Clock time pervades our lives. This international framework of time has been achieved only gradually.

Public time was first manifest in Australia in 1797 when Governor Hunter ordered the erection of a clock tower overlooking the western side of Sydney Cove. The subsequent multiplication of clocks only served to multiply confusion. 'There are but five public clocks in Sydney [observed the *Sydney Morning Herald* nearly fifty years later], three of which have not shown any symptoms of movement for the past five or six days.' About the same time, Hobart had three church clocks which kept very different times. As an observer commented: 'There was no mean time in Hobart, the ordinary difference between the faces of the clocks varying according to whether it was a fine or wet day, and seldom exceeded more than forty, and never less than twenty minutes'.[iii] Having only one clock from which all others were set was clearly an advantage, but how could one know if the time was correct?

The clockmaker Benjamin Greening maintained Melbourne's town clock from the later months of 1846. He 'was unable to ascertain the precise time of day, in consequence of the impossibility of taking observations without the aid of an artificial horizon, which he could not procure'. In February 1847 he got one and 'discovered that the town time was fast by 18 minutes 7 seconds'. Greening put the clock back accordingly and the public were advised to regulate their clocks and watches in conformity.[iv] Such precision probably mattered little compared to the maintenance of a common standard of time within the community, at least until the coming of the railway and the telegraph.

To be able to record the time accurately was one thing, to have a clock that could maintain time accurately was another. The erratic behaviour of the Melbourne Post Office Clock was pointed out in the press in 1853.[v] In the middle of that year an observatory was set up at Williamstown 'to obtain such observations as are necessary for giving time signals, rating chronometers, and generally to afford facilities to masters of vessels for testing and adjusting their nautical instruments'.[vi]

The combination of an observatory and a telegraph network enabled precise and uniform time to be distributed daily. The dropping of time balls for people to reset their clocks and watches occurred

precisely at one o'clock every day. At first the telegraph signals were operated manually from the Observatory but from May 1862 the telegraph was connected directly to one of the Observatory clocks. Before long the telegraph lines were used for directly controlling public clocks such as the platform clock at Spencer Street Station. (One of the finest clocks at the Observatory, made by Frodsham in London, arrived in March 1865. This sidereal clock, no. 1062, was transferred to Mt Stromlo Observatory when Melbourne Observatory closed in 1944. After more than 130 years in public ownership Frodsham 1062 was sold at auction late last year. One can only wonder what procedures, if any, government departments have to assess the heritage value of items before thay dispose of them.)

With the spread of railways and telegraph, public time reached into the interior. Post offices and court houses were prominent buildings in major country towns and were often graced with clock towers. Many of these clocks in New South Wales were installed and maintained by Angelo Tornaghi. If public time increasingly shaped people's lives, they still had some say in how it was presented to them. At the western end of the GPO in Sydney, public time was provided by a digital clock erected by Tornaghi in 1874. The hour was given in large roman numerals filling the centre of the dial, the minutes around the rim indicated by a ponter.[vii] 'This clock the public failed to appreciate [recalled the Colonial Architect, James Barnet] and it became so unpopular that it was removed' in 1878 and replaced by the familiar three-faced clock, also made by Tornaghi.[viii]

It is now possible to travel around the world in very much less than eighty days. The relation between time and travel remains an intimate one. It was the need for coordinated timetables for trams and trains that made the maintanance of a multitude of local times impossible. That Warrnambool should be ten minutes later than Melbourne was of no consequence until they were linked by train and telegraph.[ix] At an intercolonial conference in 1893 it was agreed to divide Australia into three zones of standard time. This was implemented for most of Australia in February 1895. This meant a great deal of changing of clocks. While 'time' stood still in Sydney for five minutes, in Melbourne the clocks advanced 20 minutes in an instant. Perhaps Greening need not have bothered nearly fifty years earlier!

Today, like Passpartout, our days are regulated by the clock, not the sun. And now it is time for me to go....

Julian Holland
Macleay Museum

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[i] Jules Verne, *Le tour du monde en quatre-vingt jours* (1872); English translation, *Around the World in Eighty Days* (1873).

[ii] This, of course, has nothing to do with Einsteinian relativity. By travelling east at the rate of a little more than 4.5 degrees each day, Fogg and Passpartout experianced days on average 18 minutes short of 24 hours. Air travellers today are familiar with shortened days to a much more dramatic extent.

[iii] Both quotations from Davison, *The Unforgiving Minute, How Australia Learned to Tell the Time* (Melbourne, 1993), p. 36

[iv] *The Port Phillip Herald*, 9 February 1847. An artificial horizon enabled the angle between the sun or a star and its reflection to be measured with a sextant and bisected to give altitude above the horizon. A mid nineteenth century example is on display in the Macleay Museum.

[v] See Davison, p. 37

[vi] First Annual Report of the Board of Visitors to the Astronomical and magnetical Observatories', *Victorian Parliamentary Papers*, 1860-1, vol. 3, no.18, p. 11

[vii] For a photograph showing the western facade and the clock see Australia Post, *The City's Centrepiece, the history of the Sydney G.P.O.* (Sydney, 1988), p. 30

[viii] Memorandum, James Barnet, 16 June 1893 (typescript copy, unprovenanced photocopy in author's possession)

[ix] Table of time differences in Davison, p. 64

From the States

VIC

The Victorian Committee will be holding the following technical nights:

Flow and Pressure Technical Evening
at: Gas Technology Service laboratory in Highett
in: August/September 1998
Time: Time to be advised
This evening will provide a venue for technical exchange and an opportunity to raise awareness of the methods used in flow and pressure measurement, Gas Technology Services will hold a Technical Evening on flow and pressure measurement used commonly in industry. The evening is not proposed as a training session but rather as an opportunity to gather professional measurement people together to share common measurement technology and problems. As one of the leading gas flow calibration laboratories in Australia with a diverse history in the calibration of various flow meters from common diaphragm gas meters and variable area meters to the latest ultra sonic and coriolis meters it is hoped to discuss the features and problems associated with different meter types without any brand references.
The pressure measurement field is very large and diverse however the poorest understood component is very low pressure, typically below 10 kPa. The intention is to discuss the problems facing industry in making accurate measurement in this range and what type of instrumentation will best suit this work. No Technical Evening on measurement would be complete without a discussion on uncertainty and the methods used. This evening is planned for August at the Gas Technology Service laboratory in Highett. Any one interested in this MSA technical evening should contact Mark Thomas to enable venue arrangements to be made.

Mark Thomas,
Phone: 9244 4042, Fax: 9244 4042,
E-mail: mthomas@netspace.net.au

NOTE: This night was held on Tuesday 24th August and approx 25 members attended.

SA

Report on Meeting of South Australian Meeting 29 April 1998

South Australian members met and discussed a number of issues relating to the Society.

First, Richard Duncan gave a brief review of the recent national conference, and then added a few comments about a couple of papers which were presented there. By chance Richard was the only local conference attendee who was available on the night, so we had to accept his version of events.

Richard also reported on the new system for local representation, and asked members if they had any concerns about it. There were no protests, and the general view was that we should wait to see how it works.

Jeffrey Tapping gave a summary of the activities of the national Management Committee.

The minutes and other documents were transmitted by email, and a discussion ensued about using this medium to keep members informed. It was noted that the Committee had carried out some actions in the name of the Society without members being aware of it. In some cases confidentiality or expediency probably made this necessary, but some members indicated they would like to know what was happening, at least in general terms, particularly where they might be able to contribute. It was decided to try to set up a communication system based on email, and a questionnaire is to sent to local members to check contact details.

Other matters discussed were possible speakers, venues and membership. Questions on these matters is to be included in the questionnaire.

QLD

The annual meeting of the Queensland branch was held on 24th march 1998 at the Abbey hotel in Brisbane. Twelve people attended and 13 members tendered their apologies. The meeting was chaired by Geoff barnier who gave an account of the years events which included visits to various facilities, uncertainty training and attendance at the MSA97 conference in Melbourne.

The office bearers for the 98 committee were elected, namely, Geoff Barnier, Shane Brann and Jeff Mitchell.

Shane called for possible ideas for the year and Brian Phillips offered to arrange a visit to the Museum workshop and John darling suggested a Calibration demonstration at SEQEB or SITMARS.

Roy Hood requested that the current membership status of MSA Queensland be provided at the next meeting.

NSW

CALIBRATION INTERVALS - DO THEY MAKE A DIFFERENCE?
SEMINAR & DISCUSSION

Friday 30 October 1998, from 2 to 7 pm (nominally) at the National Measurement Laboratory, Bradfield Road, West Lindfield, NSW.

Open to MSA members and non-members

Chairman: Dr Barry Inglis (NML, Sydney)

Speakers: Mr Richard Duncan (Duncan Tool & Gauge Pty Ltd, Adelaide)
Assoc. Prof. Stephen Dain (University of New South Wales, Sydney)
Mr Barry Sutcliffe (Australian Communications Authority, Sydney)
Mr Ian Ogilvie (Ansett Airlines, Melbourne)
Mr Ron Cook (NML, Melbourne)

Program:
Opening comments by the Chairman
Talks by the first 3 speakers
Interval with light refreshments
2 further talks
General discussion
Light supper and informal discussion

Topic Outlines:

CALIBRATION INTERVALS - UNDERSTANDING OR LET'S DO IT AGAIN
Richard Duncan (Duncan Tool & Gauge Pty Ltd, Adelaide)

Richard has been involved in a NATA dimensional metrology laboratory since 1969 when he started the Duncan Tool & Gauge laboratory. He believes the important issues are gaining an understanding of the factors that affect the value of a calibration artefact or a piece of equipment and having in place a means of trapping changes caused by dropping and other "acts of God".

CALIBRATION INTERVALS FOR OPTICS AND RADIOMETRY
Stephen Dain (School of Optometry, University of New South Wales, Sydney)
Stephen's laboratory provides a calibration service which includes photometers, colorimeters, optical filters and surfaces. To do this he, in turn, has to source calibrations from NML, NPL and NRC (Canada). Most of the calibration periods laid down by NATA are based on experience, although whose experience it was may sometimes be lost in antiquity. He will illustrate some of the problems which can occur with the typical materials.

CALIBRATION INTERVALS - WHAT CAN WE AFFORD?
Barry Sutcliffe (Australian Communications Authority, Sydney)
Barry has worked in the calibration field since 1979 in military standards and civilian laboratory environments. The setting of calibration intervals can cost organisations both in financial and legal terms if set or managed incorrectly. The evaluation of the risks and consequences is essential in determining effective and practical calibration intervals. He will discuss some of the pit falls, practical examples and ramifications of setting and managing calibration intervals.

CALIBRATION INTERVALS IN CIVIL AVIATION
Ian Ogilvie (Ansett Airlines, Melbourne)

Ian has spent his entire career devoted to civil aviation and is presently located within AN Engine Overhaul facility Garden Drive, Melbourne, monitoring metrology dimension of US FAR Part 145.47b compliance status. He will discuss the problem of aligning calibration intervals with reality at appropriate levels of confidence and an approach to developing guidelines & protocols for civil aviation.

CALIBRATION INTERVALS, WHY, WHO, and HOW.
Ron Cook (NML, Melbourne Branch)

During his times working in a factory, a defence laboratory and CSIRO, Ron regularly confronted the problem of determining calibration intervals for a wide range of measuring and testing instruments and machines. In this talk he will presents some fables and facts. He will attempt to answer the questions of why we need calibration intervals, who should decide what they are and how we might decide what they should be.

Further Information:

Cost: Members - $10
Non-Members - $20

MSA web page at
http://www.ozemail.com.au/~ausmet/index.html

or contact Mr Brian Pritchard at NML, Lindfield.
E-mail: Brian.Pritchard@tip.csiro.au
Fax: (02) 9413 7202
Please contact Brian Pritchard by 15 October to indicate your attendance for catering purposes.

The CMM Group - The Way Ahead

(from Carl Sona)

Although the local activities of **The CMM Group** have been less than vigorous over the last couple of years the group's dynamic past has had a strong influence overseas and I have been actively assisting in the formation of similar groups in Italy and Canada with potential groups also in South Africa and the Philippines. **The CMM Group** is however now at the crossroads of its development. I have enjoyed being the main driving force behind the group with the generous assistance of a number of committee members but because of increasing work commitments I have had less time available for the not inconsiderable effort in running the group and organising functions of the calibre that have given us our international reputation.

Since the formation of the **MSA** there have been a number of proposals to amalgamate **The CMM Group** and the **MSA** in some way. All members of the group's committee countenance the desirability of an amalgamation and a formal proposal was put to the **MSA** in the form of a discussion paper late last year. The proposal to be discussed by a joint sub-committee is that **The CMM Group** becomes a group within the **MSA** along the lines of the Pressure Group. There will need to be agreement as to how best to accommodate **The CMM Group's** finances, the primary role of which is to sponsor overseas experts to talk at meetings etc.

The CMM Group will benefit from the secretarial, publicity and administrative capability of the **MSA** as well as being covered by the **MSA**'s incorporation.

This amalgamation is recommended to all members of **The CMM Group** in the interests of continuing the good work of the past and ensuring its future.

If plans go to schedule then the first activity under the new arrangements will be in early February 1999. The ISO TC213/WG10 technical committee's working group which has a number of the world's CMM and metrology experts as members will be meeting at NML in Sydney at this time and as many experts as possible will be encouraged, or have already offered, to give presentations at a special **CMM Group** meeting to coincide with this event.
As part of the amalgamation process the Coordinate Measurement Assurance Program (COMAP) will become a wholly NML function. The 300mm ball-plate and a new 600mm ball-plate as well as the 600mm step-gauge will still be available for hire for CMM performance checking directly from NML.

Interested parties are asked to consider the above proposal and forward any comment to myself or to the MSA Secretary.

Carl Sona
Secretary, The CMM Group
c/- NML
PO Box 218
Lindfield NSW 2070.

MSA Membership Strategy

The following article is the first draft of a strategy document being developed by the Metrology Society of Australia's National Committee aimed at increasing MSA membership and creating a greater awareness and appreciation of the MSA in the broader scientific community.

The National Committee would love to hear your views on the current proposals and suggestions on ways to implement them. **Any ideas** you may have on other ways to increase our membership and/or raise awareness of the MSA and suggestions as to how to implement them would also be very welcome.

We would also like to know what prompted you to join the MSA. What benefits did you expect from membership? What benefits do you think being a member has brought you? What benefits should we be "advertising" to non-members to entice them to join? Are you glad that you joined? Why/Why not? What else do you think we could be doing as a society?

So, get out your notebook and pen (or your PC), get comfortable and read on.

Please send any comments and/or suggestions you may have to Mary Ryan at 7 Leeds Street, Rhodes NSW 2138 or to her email address: mryan@nata.asn.au.

The Metrology Society of Australia

HOW CAN WE GET MORE MEMBERS?

PURPOSE

At the National Committee Meeting of April 21st 1998 the Committee identified three major short-term goals for the MSA. This paper deals with the first of these:

1. To increase the membership of the MSA and broaden its base.

And the longer term goal:

1a. To extend interest in the MSA to a broader group of people in the community, particularly to other technological areas such as medicine and environmental science.

During the discussion, it was acknowledged that there were large differences in membership numbers between the states and this, combined with geographic distances had an affect on the opportunities for members to interact and to encourage more members. It was agreed that any strategic plan would have to take into account the differences between the "big" states and the "small" states and possibly consider different strategies for both.

BACKGROUND

The MSA has been formed in a time of rapid technological change and where increasingly technical measurements are required. There is also a significant increase in automation of measurements in some areas, which means that often possibly only one metrologist is responsible for overseeing the work of a number of lesser skilled operators. However, there are a number of areas where "hands on" measurements are still current practice. The current economic climate is such that in order to cut costs many companies are closing their metrology laboratories and subcontracting out the work. Metrology work is regularly seen as an "overhead" by "bean counters" who do not understand the importance or significance of this work in the whole process or to the community at large.

These days it is not uncommon to have metrologists working either alone or in very small laboratories or consultancies. These people are necessarily careful about what they are prepared to spend their money on. They will not be found by huge one-page advertisements in glossy scientific journals. They cannot spend lots of money jet-setting to all relevant conferences. They will not necessarily be targeted by sending a flyer to all the large companies likely to be engaged in measurement activities. They are located all over Australia and not necessarily in the capital cities.

What is Metrology?

There is the additional problem that the word "metrology" in the broader scientific community is largely associated with the "higher" level measurements; i.e. those performed by organisations such as the National Measurement Laboratory, defence organisations and large industrial laboratories and only within the technologies associated with such establishments. This is being reinforced in NSW by the relatively large proportion (compared to other states) of NML members in the MSA. For laboratories in the NATA community the term "Metrology" only applies to calibration of equipment and only in the areas of pressure, force, mass, balances, flow meters, volumetric equipment, testing machines and engineering metrology. There are probably many people out there who don't think that what they are doing is "Metrology". No wonder they haven't joined! And then of course there is the not insignificant number of Enquirer's who think that "Metrology" is predicting the weather!

Thus, we need to educate the wider scientific community as to who is eligible to join the MSA and why they "should" join the MSA. To do this we need to answer the following questions and then plan our strategies.

What is Metrology? What does it cover?
What constitutes a Metrologist?
Who should be members of the MSA?
Who do we want to be members of the MSA?
What can the MSA offer potential members? Why would they want to join?
What image does the MSA want to give to potential members?
What sectors of the scientific community {which includes research organisations/laboratories, manufacturing, process control, small calibration and testing laboratories, consultancies, "standards organisations" (organisations such as Standards Australia, NML, NATA, National Standards Commission, etc), educational institutions, students} should we be targeting?
What areas of measurement are we interested in?
Who becomes a metrologist?
How do they become a metrologist? Who trains them?
What qualifications do metrologists have?
Do the identified measurement areas already have societies to which people can belong? What is the status of those societies? How did they achieve that status?
What status does the MSA want its members to have?
Who do we target first?
How do we target them?
What kinds of targeting can we afford?
What skills do current members of the MSA have that could be used to target members?
What kinds of activities will appeal to the wide range of backgrounds that members are likely to have?
What influences and impact can the MSA have?

POSSIBLE TARGET GROUPS

The following is a list of some possible target groups and some suggestions as to how we might target them. We need to identify some specific target groups - such as high level metrologists, students, industrial metrologists, Chemical metrologists and Biomedical metrologists. Each group will have different needs and different focuses. How do we target them as efficiently as possible? They may already have societies that represent them. What journals do they read? Do any current members have suitable contacts? Is it cost effective to target them?

1. Educate NATA and other sectors, Engineering, Physics, Chemistry and Biomedical

This could take the form of one or a series of articles in NATA News on metrology and measurement, the history of metrology, current issues, etc. The aim is to broaden the perception of both NATA and more importantly its affiliated laboratories as to what metrology is.
Publications of similar articles in the journals of societies such as the AIP, RACI, IEEE, etc, would also be of benefit.

2. Universities/TAFEs

There is a growing need in universities to make their courses more relevant to the work force. This is typically achieved through advisory committees on course content and common courses on the philosophy of science and common skills. Through participation in these committees the MSA can have a direct impact on the training and direct access to potential members. Similarly metrology is a grass roots discipline common to all fields of study. Providing lecturers for these courses would both ensure students leaving University are aware of measurement as a discipline and may develop a younger student base to our membership.

3. CSIRO

Although the society is well represented by people from the NML division of CSIRO, almost all other areas of CSIRO are poorly represented. An example is the Division of Atmospheric Chemistry, which is doing leading edge metrology, but staff appear unaware that they are at heart metrologists. Once again this could be achieved through articles in newsletters and the like or through distribution of TAM to tearooms.

4. Industry - big laboratories

We could target specific business with regular mailings of TAM (once or twice a year) when articles relevant to them appear. For example in South Australia there is SOLA Pty Ltd. and in Victoria there is Hella both of which are heavily involved in optical metrology. This could help to attract people to the society.

5. Small laboratories

A relevant, informative and friendly flier could be sent to laboratories identified in the NATA Annual Directory for accredited laboratories and the Yellow Pages or scientific magazines for non-accredited laboratories with contact names for enquiries. They could also be reached by articles and advertisements in NATA news and scientific magazines.

6. Us

Most importantly we need to think more broadly and educate our own members on metrology outside their own field. Once again TAM could be used in this role. Members in more "isolated" areas of metrology could be targeted to write articles on the idiosyncrasies of their areas or fields of work. "Isolated" could be either "geographically" or "scientifically". The broader we make TAM the easier it will be to convince others that the MSA has something to offer but we need to encourage more members to provide articles.

POSSIBLE STRATEGIES

There are a number of ways we can increase our membership.

1. Use the skills of current members

The current MSA has a core of highly skilled metrologists in a number of different sectors of the scientific community. These people each have access to a number of organisations in their area of expertise, which employ metrologists who are currently not members. Some members are good at giving talks and/or networking. Others would perhaps be happier if they could give out a handout and/or refer the inquirer to someone who they know would be happy to talk to them about it.

2. Direct Recruitment

On a more personal level, if every member recruited one other member, the membership of the Society would double. Perhaps a prize could be offered to the member who recruits the most members, maybe free membership for two years.

3. Use TAM to attract a wider audience

Clearly a lot of the suggestions involve communication of metrology and metrology ideas through TAM. It would be advantageous to plan the content of the journal over the next 6 to 18 months so that the society could target different groups for mail outs. It is clear that this will not just happen by hoping the right articles will come. However, if the management committee, the TAM editor and state liaison officers were to get together and identify key topics and people to write the articles it could work. It is also noted that the authors would not necessarily have to come from the MSA membership.

Once the medium term plan for TAM has been developed, specific societies and employers can be identified for mail-outs, and joint meeting and discussion nights can be planned. The state coordinators will be crucial in the execution of these ideas and need to be included at an early stage.

4. Further development of the website

Development of the website needs to done in conjunction with the planning of TAM.

We need to encourage more members to use the website and contribute to it. The dates of all upcoming events need to be included and identified as open to members only or the general public.

5. Better dissemination of information about the MSA

This could be in several forms:

- a friendly colourful information sheet about what constitutes metrology and the purpose of the metrology society.

This should include -

the definition of metrology

some examples covering a wide range of technologies and levels (accuracies, whatever), so that people see that it is relevant to them

the purpose of the MSA

what being in the MSA can do for them

a contact name/ph.no/fax/e_mail and website address.

This sheet could be available to all members and distributed at relevant conferences, exhibitions and industry nights that members happen to attend in the course of their work. It should also be on the website. In addition, fliers could be sent to conferences being held in areas outside the current membership. Information on these conferences could be obtained by reading relevant journals. Staff at NATA and in some of the larger laboratories would also have access to journals covering a wide range of science/industry.

- **Advertise in selected journals and NATA News**

6. Public discussion nights

Hold technical nights with topics of interest to all or to specific groups and get the members to invite as many relevant people as they can, members and especially non-members alike. Have fliers and application forms handy. These do not have to be large occasions. Dinner, with a speaker or two is a variation on this theme.

As the MSA matures it would be advantageous if we could budget to send key speakers, both local and international, to a number of states to participate in technical nights. In the more remote parts of Australia this would help to sure up the membership.

7. Produce a voluntary membership directory

This could contain name, employer, areas of interest, skills and contact details (ph/fax/email). This would

enable people to identify and contact other members in their field and/or state and would be another benefit of membership, which could be advertised to outsiders. It would also enable members in smaller states to communicate more frequently and perhaps arrange visits or technical nights when someone was going to be in the city on other business.
This would be the tool that enables the management committee and the editor of TAM to identify the MSA's strengths and utilise them.

8. Joint technical visits with other societies
Due to the wide range of expertise that is covered by the MSA, there are many areas where a site visit would be of interest to another society as well as to MSA members. This would be particularly advantageous in the small states where it is difficult to get numbers to go to site visits or hold technical nights. And it is also a good way of informing people of the existence and purpose of the MSA. The NSW coordinating committee recently organised a joint visit to a Biosensors unit with the RACI. The organiser reported members of both groups interacted well and there are now six more people who have heard of the Metrology Society of Australia and participated in one of their activities.
A second method of reaching these people would be to offer to provide speakers on metrology but targeted to their field of interest. These could be either members of the Society or international visitors such as Professor Paul de Bievre.

9. Affiliation with other relevant societies or joint recognition of membership (or recognition of joint membership)
We currently have or are developing affiliations with a number of related organisations these include the CMM users group and NSCL. These need to developed and some cases, activated. Thus far these affiliations have not delivered much back to the society. We need to firm up the relationships and make sure the grass roots members of these groups know what the MSA is and what we can do for them. Partly this can be achieved through articles in the other societies' journals, both technical and ones descriptive of the society and its functions.

10. Visits by members of the National Committee to the states
This is to improve communication between the National Committee and the state coordinating committees and state members. Ideally, the visit would coincide with an event organised by the state committee. This could even be an event open to the "scientific public". The visitor could speak at this event but if not, they would still meet the state committee and other members of that state. There would be an opportunity to observe and discuss the kinds of interactions that are being organised, discuss the positive aspects and problems and other states' ideas and discuss ways to recruit new members most appropriate to that state.

11. Joint prizes for excellence in measurement related academic subjects
This would provide students majoring in a measurement related field with an awareness of the Society.

Other interfaces with universities could be explored in the longer term.

PRIORITIES

There are two main targets which the Society could aim at in the short term. These are:

1. Geographical Priority
To increase membership in all states outside Victoria and the Northern Territory. Currently, membership in Victoria and the Northern Territory represents approximately 32-33 per million population and this could be considered as some sort of target figure.
However, this should by no means discourage Victorian and Northern Territory members from attempting to recruit more members. Perhaps that will set the target for all states a little higher.

2. Base Broadening
To increase the spread of our membership, particularly in two areas:
Those employed by private companies or in the education sector
Those in areas of technology other than physical metrology such as chemical, biological, and environmental sciences.

Geographical priority
Current Australian state values for memberships per head of population are, in members per million people,

Northern Territory	33
Victoria	32
South Australia	23
New South Wales	17
Queensland	13
Tasmania	13
Western Australia	11
ACT	6

A suggestion is that for the next 18 months, the MSA target one state with the aim of increasing the number

of its members in that state, with a target figure of 32 per million population, that current for Victoria.
If the effort proves successful in that state, it is suggested that in the following twelve months we concentrate on another state with the same ratio as the target. The MSA Biennial Conference could be held in a different state each time and used as a means of encouraging more members in that state through participation in the conference committee, sponsorship and advertising. The conference committee does not necessarily have to be in the same state as the National Committee.

Base Broadening

The background of members can be divided into four broad categories:

Private Sector
Federal Government Bodies
Education
State Government bodies

The percentages of members in each category varies from state to state. Each state could look at the spread of its membership and decide which is the most appropriate group(s) to target. For example, 77% of Victorian members are from the private sector, whereas in NSW this sector only represents 36% of the membership. Clearly this is one area that NSW could target.

One suggestion is to hold a gala night in each state and invite as many people as possible and advertise it as widely as possible. The idea is to include activities that are sure to attract people from the chosen target group(s). The target group may be different from state to state.

Topics could include measurement and quality, uncertainty calculations, traceability, new international developments in Standards, ISO Guide 25, NATA policies, etc and any other topics especially relevant to that group. This could be followed by a social occasion on the same night (finger food so people can circulate) and attendees later sent follow up letters. *We would love to hear any comments and/or suggestions regarding this and we would especially love to hear from people willing to volunteer their services to deliver one (or more) topics (either one of the topics proposed above or another suggested topic). Please indicate the topic and which state(s) you will be available in.*

In conjunction with the two priority areas above, planning of the content of TAM over the next 6 to 18 months as discussed earlier should also begin as soon as possible. ***But we need a volunteer for editor first!***

New Editor Wanted

Jack Deller has indicated that he wishes to resign from the position of TAM editor after producing the magazine for 2 years.

We are asking members who feel they have the time and energy to put their hands up and assist the society in this very important task.

It will take approximately 20–30 hours every 3 months and help the society to convey to the membership the events and happenings over the upcoming and preceding periods.

The management committee will give you every assistance in getting the magazine out and looks to TAM as being one of the Society's major assets.

We will provide:

- ***E-mail and Internet access***
- ***Colour Scanner***
- ***Necessary financial assistance (all out of pocket expenses).***
- ***Any other help the new editor feels is required.***

Most of the articles are transferred through e-mail thus saving the time of re-typing etc.

We would like a volunteer from the general membership who feels they may have a talent for producing TAM to contact the secretary Laurie Besley on:

Phone: ***(02) 9413 7770***

Fax: ***(02) 9413 7202***

E-mail ***laurieb@tip.csiro.au***

MANAGEMENT COMMITTEE

The following is a summary of the meeting of the management committee held on 21st April 1998

Mariane Haire reported that Bryce Thornton, Financial controller NSC, had volunteered to act as Honorary Auditor for the MSA.

MSA99 Conference Sub-committee
The President formally thanked Kerry Marston for undertaking the role of chair for the MSA99 Sub-Committee. It was agreed that a committee of about 5 people would be needed and Kerry was charged with the task of recruiting people from a list discussed.
A venue for the conference needs to be booked urgently.

MSA Website.
Adrian Ward (Webmaster) has requested input from all states and would like photographs and some "spotlight" articles on members.
Membership information kits and application forms are to be made available online.

Committee Minutes
It was agreed that a copy of the Management Committee minutes will be sent to all State coordinators.

Education Sub-Committee
The president gave the committee a summary of the activities of the Education committee and the key efforts to this point. The committee, through chairman Helmi Salem, is having negotiations with Swinburne Institute of Technology in Melbourne to establish a course in Metrology. The negotiations now require input from individual MSA members or other bodies associated with metrology to establish the course content.
The general feeling of the National committee was that Helmi had created a significant opportunity for the MSA and should be supported. The committee feels that Helmi should be invited to the next meeting to present the developments thus far.

Strategic Planing
Jim Gardner chaired a one-hour session to establish strategic goals for the MSA in the Short and Long terms.
The first outcome of these discussions was the identification of three major short-term goals that are to be given priority:

- To increase the membership of the MSA and broaden its base
- To strengthen the links between the National Committee and the State Coordinating Committees.
- To develop a viable education policy for the MSA.

The next meeting to be held on 16th June 1998 will be reported on in the next issue of TAM

EDUCATION COMMITTEE

The education committee of the MSA is made up of the following:

Mr. S.H. (Helmi) Salem PCMM (Chairman)
Mr. M Skarajew BHP Research
Ms. A Carpenter Moldflow International
Dr. R. Mahalinga Iyer Qld Univ. of Technology

NEW MEMBERS

The following new members have been accepted into the Metrology Society since the last issue of TAM.

Dr. Stephen Boronkay

Ms Kitty Fen

Dr. Mark Gross

Mr. Lawrence Hope

Dr. Leigh Johnson

Mr. Julio Mondragon

The MSA welcomes these members and hopes they enjoy the technical and social fellowship of the society.

Left at MSA97

A ladies green jacket was left behind during MSA97. The jacket is with Carol Sieker and can be claimed by giving Carol a call on:
(03) 9555 0671

More News from the National Committee

The National Committee met on June 16th at the National Measurement Laboratory, Lindfield. Some of the issues that were discussed at the meeting were as follows:

Coordinate Measuring Machine Group

Negotiations on the incorporation of the CMM group into the MSA were proceeding well. A draft policy for the amalgamation would be considered by the Committee at their October meeting.

New Members

The composition of a membership subcommittee chaired by Ilya Budovsky was approved. On the Subcommittee's recommendations, Ian Miller and Marco Rossi of South Australia, Jack Brown of New Zealand, and Alexander Katkov of Russia were accepted as members of the Society.

MSA'99

The Committee received a report on the progress of the organisation of the next metrology society Conference, MSA'99, from the Organising Committee chairperson, Kerry Marston. She reported that an Organising Committee of eight people had been formed. MSA'99 would be held either at the Australian Technology Park in Sydney from October 13 to 15th, 1999, or at the University of New South Wales in late September of that year. A final decision on the venue and date was imminent. The budget for MSA'99 was about $115,000. The theme of the Conference was to be "Measurements for a Sustainable Future" with three major strands – social, economic and environmental. Three keynote speakers would be sought, one from within Australia, two from overseas. A float of $5,000 was given by the MDSA to the Organising Committee.

The Australian Metrologist

Jack Deller had notified his intention of resigning from the editorship of TAM because of the pressure on his time of his expanded work responsibilities. A new Editor is being sought. The Committee acknowledges the superb effort he has put into making TAM the quality publication that it is and thanks him sincerely on behalf of all our members.

Report from the Education Sub-committee

A special report was received from Helmi Salem, chairperson of the Education Sub-committee, on negotiations with Swinburne University of Technology on the formation of a course in metrology. It was agreed by the Committee that

The MSA is willing to assist in the establishment of a course in metrology at SUT by

(a) providing representation on the advisory committee for the course,
(b) providing to SUT a list of MSA members who might be approached to assist in course development and delivery,
(c) providing to SUT an outline of the possible course content.

IMEKO Representation

The MSA has applied to be a member of the international measurement confederation IMEKO. It was agreed that we will sponsor the travel of a (as yet unidentified) representative to the IMEKO Council meeting in Geneva in September to the tune of $500, if required.

MSA Policy on Endorsements

A policy for the endorsement by the MSA of commercial products and courses was approved. A copy is available from the Secretary to any member interested in this issue.

Strategies for Expanding the MSA Membership

The health of the MSA varies substantially in the different geographical regions of Australia and in the different areas of professional activity. A draft document on how best to address this issue is being prepared and should be part of the content of this edition of TAM. All members are invited to comment and provide input to the National Committee on this issue.

MEMBER PROFILES

Pat McErlain founded, works in and is the NATA signatory for a dimensional calibration laboratory in Sydney called Calibration Laboratory. Pat had completed his trade training in general engineering in Northern Ireland when he proceeded to come to Australia for a "prolonged " visit in 1972 . He worked initially in the general engineering area for E.G. Bishop and then with a company called Ausonics, who developed the ultrasonic scanner for the medical industry. Pat then took up a position with AWA in their Metrology facility. Over the 15 years he worked there Pat undertook courses in Metrology, Quality Control, Laboratory Management and Assessing as well as building up experience in general metrology practices. When AWA closed their metrology facilities Pat started his own company and gained NATA accreditation for it in 1996. As well as being a member of the Metrology Society of Australia Pat now holds a position on the new executive committee.

Amongst other things **Walter Giardini** has been a high school teacher, a concrete and asphalt scientist and for the last dozen years a metrologist with NML in Melbourne. Walter's current work is in the maintenance, development and dissemination of standards in physical metrology. A large and very interesting part of this is in the measurement and characterisation of form, particularly spheres and piston –cylinders, which are important fundamental artefacts used in those fields. Walter's early childhood as a migrant in both directions, and the subsequent varied experiences with places people and work have shaped his basic philosophy that the universe is fundamentally a subtle and mysterious place and science is the best way we have to understand some of it. Walter has studied for physics, maths, education and more recently computer systems degrees at Monash University. He lays claim to being a fairly typical late 20th century Australian working middle class male in his quest to fit in family, personal, social and professional life inside an interval of time whose elasticity is too well exercised. For Walter, the MSA is a place where some of us can get together occasionally, and share the wonder of it all. His efforts in heading the MSA97 conference committee were well visible and appreciated by all who attended.

FORCE MEASUREMENT SEMINAR
Friday, 23rd October 1998

CSIRO National Measurement Laboratory. Sydney will host a meeting of the CCM Force Working Group scheduled on 20th and 23rd October 1998. The program will include a one day seminar (23rd October) on ***force measurement*** *. The seminar is mainly concerned with force comparison measurements. Distinguished members of the international metrology community will give talks covering currentpractice and developments in force measurements.*

The seminar is open to members of the measurement community and interested parties are invited to attend.

Information will be available in August/September
Contact Jim Man Phone: +61 (0)2 9413 7125
Fax: +61 (0)2 9413 7238
email John.Man@tip.csiro.au

First Circular:
3rd CCM Pressure & Vacuum Conference

Pressure Metrology From Ultra-High Vacuum to Very High Pressure (10^{-} to 10^{9})
The conference will be held in Turino, Italy from 3rd to 7th May 1999 – Contact John Man (as above) for a copy of the first circular.

MORE NEWS FROM VICTORIA

REPORT ON M.S.A. VICTORIAN BRANCH TECHNICAL MEETING 20.05.1998

Despite the poor weather conditions approximately 25 people turned out at to a most interesting evening held at JR Systems in East Kew.

Mauer Engineering's Ricardo Mauer demonstrated the Alufix Modular Fixturing System. Many of the points discussed were also demonstrated including the easy transportation to the site and the rapid building of the sample fixture in under one hour. Alufix is a revolutionary system used in dimensional Metrology and prototyping applications. It offers more than 2,000 different components to build measuring fixtures for the most complicated shapes of workpieces. Great for CMM Fixturing. Stephen Roeding, Sales and Marketing Manager for Asia Pacific of Horst Geraetebau, Germany, was also there and able to answer some of the questions asked about the Alufix product.

Martin O'Malley from JR Systems demonstrated and discussed the Faroarm Portable Co-ordinate Measuring Machine (CMM). The unit demonstrated was the four foot unit giving an eight foot hemisphere of operation. The Faroarm is a counter-balanced, temperature compensated, six degree of freedom articulated arm, constructed of anodised, aircraft aluminium with precision bearings. Its utility software package was also shown.

Mark Thomas

REPORT ON M.S.A. VICTORIAN BRANCH TECHNICAL MEETING 30.06.1998

There are not many brilliant moments in metrology. However I feel it was a great privilege to be present on one such occasion.

At a meeting of the MSA Victorian Branch on 30th June 1998 Frank Griffiths and Geoff Gillingham of the Otis Engineering Centre - Australia, described the development, operation and calibration of a rail survey unit for assessing the alignment of the rails which guide lifts in multi-storeyed buildings.

Len Kerwood, MSA foundation member and proprietor of the Gawler Instrument Company spoke as the sole world manufacturer of the rail survey units for which Otis holds worldwide patents.

The tales of the search for answers to the many different measurement problems faced, made for interesting listening and the solutions to some of the problems were elegantly simple. Australian ingenuity at its finest with an overall simplicity of the final product.

The ingenious design enables measurements for say a 200M high lift to be made and recorded in 30 minutes. This compares with conventional methods taking 2 or 3 person days (during which time the lift is out of service) and provides less reliable results with much lower accuracy.

The rail survey unit is portable and rugged, yet contains sufficient electronic hardware and embedded software to store measurements for up to 5 km of lift rail. The data is downloaded to a PC where it is processed and presented in a graphical from enabling most economic corrective action.

As with all new developments there has been stiff competition, even from within Otis, where there were alternative designs in development. The obstacles that were required to be overcome included, political, budgetary, and engineering.

The final stages of development were also interesting as the unit was required to meet EMI/EMC requirements as well as environmental tests, with temperature extremes, and vibration. Modification of the rail survey unit was required to meet these requirements, which resulted in a tough and reliable unit.

These Australian devices are now in production having been used in Australia, Malaysia, Singapore, China, Hong Kong, India, Kuwait, UK, Germany, USA, and Canada.

Almost thirty members attended, and two special guests were Phil Gawler, founder of Gawler Instruments and Hans Sieker, founder of A.C.M. Laboratory. Both of these gentlemen, who are 78 years of age, can be justifiably proud that the businesses they founded continue to grow from strength to strength.

Alex Smart

METROLOGY SOCIETY OF AUSTRALIA

Conference

22 - 24 SEPTEMBER 1999, SYDNEY, NSW

CALL FOR PAPERS

MEASUREMENT FOR A SUSTAINABLE FUTURE

As we approach the year 2000 the debate surrounding what constitutes a sustainable future becomes increasingly urgent. Any useful outcome to this debate depends on establishing an agreed balance between the pressures of ***economic***, ***environmental*** and ***social*** forces. Planners, managers, manufacturers and users have to weigh up the competing issues and reach the optimum outcome.

Currently measurement methods and philosophies across these three areas have little in common. However, measurement can be one of the most objective and acceptable tools for working towards a balance provided there is broad agreement between the interested parties abut the suitability and accuracy of the methods employed. The relevance of measurement extends from international political issues, through to the viability of particular industries down to processes operating within a company or organisation.

This conference will explore these issues to promote the importance of metrology within government, business, industry and the community and in particular the contribution metrology makes to the community through quality manufactured goods, environmental monitoring, services and hence to industrial development and international competitiveness.

This is the third national forum within Australia which will enable all members of the measurement community such professionals, students, researchers and teachers to meet and share experiences. The program will include technical visits to a variety of sites and a number of social events. For more up to date information visit the MSA website at http://www.ozemail.com.au/~ausmet.

SCOPE OF THE CONFERENCE

The conference will welcome contributions from all areas of metrology (e.g. dimensional, electrical, mechanical, chemical, biomedical). Particular emphasis will be given to the practical application of measurement and associated areas such as uncertainty, measurement for quality systems, etc. Forms of presentations can include oral and poster papers; workshops; and practical demonstrations. Submissions will be reviewed on the basis of their relevance to the aims of the conference and to the development of metrology skills.

SUBMISSION GUIDELINES

Authors are required to submit, by 30 November 1998, three copies of a one-page summary, clearly describing the scope of the work and the preferred form of presentation (oral paper, poster papers, workshop, practical demonstration, etc). Successful applicants will be notified, by 15 March 1999, when they will receive instructions for the preparation of camera-ready manuscripts.

Mail to: Dr Suszanne Thwaites
Conference Committee, MSA
CSIRO Telecommunications and Industrial Physics
National Measurement Laboratory
PO Box 218
LINDFIELD NSW AUSTRALIA 2070
Tel: (02) 9413 7416
Fax: (02) 9413 7161
e-mail: suszanne.thwaites@tip.csiro.au

MSA 1998 Annual General Meeting

The 1998 AGM will be held at the CSIRO National Measurement Laboratory, Bradfield Road, West Lindfield, NSW at 6 pm on October 30, following the NSW MSA Branch seminar on calibration intervals. Nominations are invited for all positions on the MSA Committee with the exception of president and treasurer, whose terms expire in November, 1999. Notice of any nominations or any motions to be put to the meeting should be sent to the Secretary beforehand. The meeting will be followed by supper.

August meeting of the National Committee of the MSA

The National Committee met on August 18. Some of the issues addressed at that meeting were:

- The incorporation of the Coordinate Measuring Machine (CMM) Group into the MSA was likely to occur before the end of 1998.
- Five new members (Xihu Jiang, Kim Nguyen and Alastair Thompson of NSW, and Silvia Zola-Blair and Mike Warren of SA) were admitted to the MSA.
- At its next meeting the Committee will consider a discussion on corporate membership of the Society and the conditions under which it might be offered to companies or other organisations
- Organisation of the MSA'99 Conference is proceeding. It will be held at the University of New South Wales at Kensington in Sydney from September 21 to 23, 1999. The conference dinner will be held at Taronga Park on the evening of September 22. A Conference website has been established, and the call for conference papers has been made. Abstracts must be submitted by November 30, 1998.
- The MSA approved a draft outline for a graduate course in metrology, likely to be offered by one of Australia's tertiary institutions after negotiations with the MSA Education Subcommittee.
- A number of initiatives to increase the value of membership of the MSA and hence increase our membership numbers were considered. Amongst the ideas that emerged were:
  - Sufficient price differentials between members and non-members for the MSA conferences and visits to make membership an attractive option.
  - Publicity-generating articles in the technical press
  - Distribution of publicity material through technical suppliers in the measurement field
  - An increase in the technical content of TAM, including possibly a technical forum
  - An increase in the amount of technical material on the MSA website
- Members will be surveyed to obtain further ideas as to useful strategies for increasing our membership before deciding on where to place our emphasis.

The next meeting of the National Committee will be on October 21. Members wishing for the Committee to address any particular issue should raise the matter with their State Coordinator or contact the MSA Secretary, Laurie Besley, on 02 9413 7770. We guarantee that the matter will get an airing provided sufficient notice is given (at least 1 week before the meeting).

Metrology Equipment for Sale

Micro-Vu 2 Axis co-ordinate measuring machine C/W:

- Large measuring range: 620 x 560mm;
- High resolution measuring scales; (0.002mm or 0.0001inch);
- Robust steel construction;
- Zoom lens mag on screen 15 to 100X;
- Micro-Vu Q16 Metrology computer and associated software;
- Dual R232 interface;
- Micro-Vu 905 video reticle, generates white or black cross lines; and
- Ikegami 22cm high resolution B&W video monitor.

Price by negotion: Contact Ron McBain on: (03)9852 0466

MSA Pressure Measurement Technical Group (PMTG)

Three of our technical working groups have been working with various degrees of progress in the areas of (1) Recalibration intervals for dead weight pressure gauge testers, (2) The Australian Standard for Pressure Gauges AS1349, and (3) The need for information and test methods in the low pressure field. Short reports from each group are given below.

Our technical group has operated by mailouts and face to face meetings, but this is becoming more difficult to fit into our normal work commitments, and as the complexities of the issues and the number of people involved in the group increase. With this issue of TAM we are exploring a different model to progress our discussions. The short reports below give a brief summary, but (with Mark Thomas's help) we plan to support these with full documentation on the MSA Web page. Also we will explore the use of E-mail lists for continuing communication, notices, feedback and perhaps discussion groups. There will always of course be the need for some hardcopy items and face to face meetings, but this should be much reduced. We hope to have some documentation on the MSA Web page within the next few weeks, but the plan would be to keep up regularly updated, so keep an eye on what is happening there.

For further information or comments please e-mail or fax to the numbers below, and in preparation for these developments you might like to send in your e-mail address at this time as well, for inclusion into an electronic mailing list.

For further information:
http://ozemail.com.au/~ausmet , then follow the PMTG links.
Walter.Giardini@mst.csiro.au
fax: +03 9544 1128

Report of technical group on: "Recalibration Intervals for dead weight pressure gauge testers"

The aim of this group is collect data, get input on, and discuss suitable intervals for the recalibration of dead weight pressure gauge testers which would then be recommended to NATA for adoption. Agreement on suitable recalibration intervals has not been reached. We are discussing models in which dead weight pressure gauge testers are classified into "accuracy" classes, with different recalibration intervals. We are aiming to produce a relatively simple, convenient and practical schedule for recalibration intervals but this conflicts with the need to take into account a very wide range of instrument types and end-uses. We have however collected quite a bit of data about the behaviour of different types of instruments, and whilst we have had some written submissions already, (in response to the last mailout to the pressure group), we plan to continue our current deliberations and soon widen the dissemination of our data/deliberations so far, and the opportunity for input through the MSA Web page as described above.

MSA - PMTG, WORKING GROUP NO.3
Australian Standard AS 1349
"Bourbon Tube Pressure and Vacuum Gauges"

In Issue 12 of TAM (Aug 1997 we reported that a group had been formed to investigate AS 1349 as a result of many informal observations from people within and from without the pressure community.
These comments indicated that the standard did not adequately reflect the current needs of the market.
The working group used the new European standard EN 837 as a basis and met on four occasions to work through the standard clause by clause. Having completed the task to this level it was felt that the wider membership of the MSA should be given the opportunity to assist with their views. To allow this to happen the MSA have agreed to put the "draft" on the MSA web-site for interested parties to access.
It is hoped that many members will take this opportunity to involve themselves.
Standards Australia have been kept informed of the progress and after we have had the opportunity to review any comments received it is most likely that we will ask Standards Australia to accept our proposal as a draft for discussion.

MSA Pressure Measurement Technical Group: Working Group No.2 (Low Pressure Group)

The group has met intermittently since its inception 3 years ago. MSA members and others who have been involved include:

Allan Ward, Ken Wrighton, David Fotheringham, Jane Warne, Tony Tossel, David Roberts,
Neville Owen, Kevin Davidson

The original purpose of this group was to:

1) Draft a document for NATA outlining the requirements for artefacts in the low pressure range.

2) Prepare a paper defining the specific problems of the Low Pressure metrology field, the requirements for standards, procedures and specifications.

Subsequent meetings have discussed the scope of the groups activities and has achieved basic agreement in most matters. It was generally felt that the document should include barometric pressures down to absolute zero but excludes vacuum pressure measurement. This would include instruments like manometers, digital pressure indicators and transducers, and special purpose or precision gauges like helical, diaphram, capsule and aneroid gauges. The group recognise there is a danger in becoming too broad or overlapping with existing standard; however there was agreement that there is a pressing need for standard broader in scope and more modern than AS1349 (Bourdon Tube Pressure and Vacuum Gauges). There are currently no Australian standards for the manufacture or calibration of instruments in this general range or category and very little international reference exists in the general measurement community. Rather individual industries define very specific measurement equipment and strategies that suit their needs. Industries that have produced task specific documents include mining, environmental, air flow and sampling, meteorology, automotive and aeronautical.

Through the activities of this group we hope to determine the scope of any need to improve this area of measurement and to raise the profile of this measurement industry to one of generally recognised respectability with well defined standards and consumer industry expectations.

The group has also identified an apparent lack of any comprehensive text or training material to assist selection and use of low pressure instrumentation. Also the pressure equipment manufacturing industry has moved significantly ahead of the knowledge base in Australian industry thereby exposing industry to poor decisions in selecting equipment and techniques.

This group will meet again soon but requires input from other people in the measurement community to help add an achievable focus to the directions of the group. Questions that present themselves include:

Does Australia need an Australian Standard like AS1349 covering the manufacture, calibration and use of Low Pressure Equipment?
What should be the upper limit of a low pressure group: 10kPa, 110kPa?
Is further training required in the selection and application of low pressure measurement equipment?
What industries use low pressure measurement as an input to other measurements?
Do those industries believe they adequately perform low pressure measurements or do they just rely on the manufacturers instructions?

Your contributions and thoughts are welcome and required to help determine if these issues are real or simply perceived. Feed back should be addressed to:

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1136 Nepean Highway
Highett 3190
neville.owen@gastechnology.com.au
OR:
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J.Warne@bom.gov.au

Letter to the Editor

Here is a brief letter in response to a letter from Glen Hay of REBTEC in Mackay regarding the costs associated with laboratories in Australia.

In Issue No 12, Glen Hay of REBTEC made some valid points regarding the costs attributed to calibration in this country. It unfortunately is a fact of business that pricing must reflect the capability of an industry to sustain growth both individual and commercial, along with the overheads and profit required to continue.

The problem lies in the fact that, I believe, there are insufficient calibration facilities in this country to create a competitive pricing structure, and that those that exist are so far apart it becomes a matter of what the industry can pay more so than what the work is worth.

As an operator of a small but growing testing facility in the same town as Glen, I am continually competing in pricing from outside areas such as Brisbane, Sydney and even Adelaide for support of my customers, not from this region.

With most of the custom from the mining & engineering industry, there is already an infrastructure for transport to and from these areas. This means that they, the customer, is already willing to send out of town if the pricing is better.

Competition is the driving force I feel that will stabilise the dollar factor within this industry. We see more and more industry and businesses seeking calibration of equipment, along with the need to conserve the cost involved.

I recently received a call from a major engineering company that wanted a quote for calibration of their equipment - ranging from dimensional to electrical - items such as setting rods some 600 odd in quantity, in addition to other items. The gentleman I spoke to indicated that he was currently paying $10 per rod, traceable reports, and was looking for a better price. How many members out there would look at the price requested. Let me know and I will sub to you.

We as a specialist field need to ensure we do not price ourselves out of existence and at the same time must realise the time, effort and profitability of our industry. Glen's comments regarding overseas calibration of his equipment may be correct, but traceability, safety of the equipment to & from, handling and delays, possibility of loss must be taken into account.

Why send an item to England for calibration, when it can be performed here in Australia, to save even a couple of hundred dollars. Negotiation is paramount, labs I have found are willing to negotiate on pricing for others in the same field. By sending items overseas are you not doing exactly what you argue against, destroying our own industry from within.

The unfortunate part of all this, no matter what happens the costs associated with calibration will increase, along with the price of equipment, support from suppliers, availability of training and all the commercial requirements of business.

I believe we as an industry need more regulation, acceptance and recognition of the industry. A lack of knowledge and understanding by our customers and others, places us in a precarious situation. By hiding from the fact we do ourselves a disservice and just add to the problem.

We as an industry and MSA as an association need to resolve the discrepancies and maybe develop a regulatory agreement on generic price structures for equipment, maybe for interlab cals to support each other.

I have had several customers complain about other establishments pricing but to my bank balance that was good because I now am some of those businesses sole provider of calibration services.

I believe the saying goes "What goes around, comes around". All calibration facilities in this country need to look at their pricing especially if we wish to grow. Business is business and where the customer can save they will go. Unfortunately to the detriment of ourselves.

Regards
Gary Want
Calibration & Testing Services: Mackay

THE AUSTRALIAN METROLOGIST

The Australian Metrologist is published four times per year by the Metrology Society of Australia Inc., an Association representing the interests of metrologists of all disciplines throughout Australia. Membership is available to all appropriately qualified and experienced individuals. Associate membership is also available.

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The Secretary Metrology Society of Australia
c/o:CSIRO (NML)
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