THE AUSTRALIAN METROLOGIST

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MSA 97

CONFERENCE ISSUE

Melbourne in the Spring: Too good to miss

In This Issue:

FROM THE PRESIDENT

The mutual recognition agreements reached by NATA in recent years with the national laboratory accreditation organisations of other countries are extensive. Examination of NATA's Web site (http://aaa.com.au/nata/) shows that this network now includes:

Austria (BMWA), Belgium (BELTEST and OBE-BKO), Denmark (DANAK), Finland (FINAS), France (COFRAC), Germany (DAP, DATech, DEKITZ and DKD), Hong Kong (HOKLAS), Ireland (NAB), Italy (SINAL and SIT), Netherlands (RvA), New Zealand (Telarc, New Zealand), Norway (NA), Singapore (SINGLAS), Spain (ENAC), Sweden (SWEDAC), Switzerland (SAS), United Kingdom (UKAS), U.S.A. (A2LA and NVLAP).

MRA's mean that each organisation recognises the equivalence of accreditations performed by its overseas counterpart. For Australia, this means that test results from NATA-accredited laboratories are recognised within the above countries. This is good news for Australian exporters who can use local test results without the need to have their products retested in the country of destination.

However, it is not necessarily good news for Australian NATA laboratories or the Australian measurement infrastructure. It's the "M" in MRA that's the problem. "Mutual" means that test results from accredited laboratories in other countries are also recognised in Australia. And there's the rub!

We are now seeing calibrations being offered in Australia by overseas laboratories at prices so low that it's hard to believe they are commercially sustainable. Even allowing for the cost of return freight and insurance, the prices are often much less than those charged by comparable local NATA laboratories.

Australian organisations and companies are, of course, beginning to take advantage of these low prices and I can only see this increasing. This will place further commercial pressures on local laboratories, already operating in a small market and in a business that requires high overheads with only modest returns. This could lead to the closure of local laboratories and an increasing reliance on overseas laboratories for our testing and calibration. The paradox is that we may end up losing those very Australian calibration and testing laboratories we hoped would be providing local test results for our exporters.

One of the key issues is price. How are the overseas laboratories able to offer such low prices? Certainly the answer may include larger markets overseas and perhaps greater efficiencies, coupled with lower wages. But I cannot accept that that is the whole answer.

What of subsidies, such as hidden government subsidies or cross subsidies within a company, where the calibration work is propped up by the sale of measuring equipment? What about quality? Do the auditing and accreditation processes used by the national laboratory accreditation organisations when establishing MRA's ensure that the same technical and managerial requirements are placed on all of the laboratories involved?

When the MRA's were drawn up, was there any thought given to ensuring a level playing field? If so, is there in place an on-going process for ensuring that the market is truly free? I suspect that the solution to this problem is not the equivalent of trade barriers or tariffs, both for political and economic reasons. I therefore do not advocate withdrawing from our MRA's and sticking our heads in the sand. But what to do?

At the individual laboratory level, perhaps we need to think laterally and adapt to the future. We should recognise that national boundaries are not as important as they used to be and that we all live in a global economy. Our measurement system is a valuable technical resource, the envy of many countries in the region. We need to capitalise on this resource by marketing our services worldwide, not just within Australia. We need to compete head-on with those laboratories that are undercutting us. To do this, surely we need to keep ahead of the game technically and to make greater use of resources such as the Internet. We need to tell our clients what we offer and why it's better than the cheaper alternative. We need to look for niches within the global testing and calibration market.

At the same time, organisations within our measurement system (NML, NATA, NSC, SA and the MSA) need to fight and win some political battles. We look to them to ensure a level playing field internationally and to ensure the quality of the overseas laboratory accreditation organisations. We need to convince our government that Australia needs a strong measurement infrastructure, free from the ravages of shortsighted economic rationalism. We need to argue that traceability should be primarily to Australia's measurement standards, and not to Switzerland's or Italy's or Singapore's.

If measurement traceability begins to shift offshore, the economic rationalists in the Canberra bureaucracy will surely pounce, questioning the need for Australia to have its own measurement infrastructure. Why do we need to spend the money on NML to establish and maintain our own standard for length if we can obtain length traceability from NPL in Britain via a UKAS registered laboratory? We need to show that the skills, knowledge and international standing that flow to the community from the process of establishing primary reference standards are indispensable in a modern, industrial nation.

Why should we have our own measurement infrastructure? We only need to point to most other countries in the world, and in particular, those in our region. While our measurement system languishes, Malaysia, Thailand, Korea, Singapore, Vietnam, the Philippines and Indonesia are all spending millions of dollars on their measurement infrastructures, particularly at the national standards level. They know the value of independence. They know they cannot necessarily rely on other countries in times of crisis or threat. They know that their survival depends on the strength of their scientific and technical base.

It seems to me that if in twenty years our testing and calibration laboratories have gone the same way as the clothing and textile industry, that we no longer maintain our own measurement standards and that most of our traceability is sourced from overseas, then not only are we in a very vulnerable position, but we have also lost something very important and worthwhile.

J R Miles

Editors Column

Here we are with the next issue of our magazine. This is our pre-conference TAM and a fair amount of space has been given to MSA97.

You will find that the conference committee has supplied text on the key-note speakers together with photographs.

I read with interest our Presidents column and relate to it very strongly. When I had a "real job" we found that it was less expensive to send Standards back to UK than have them re-calibrated in Australia. This was a real concern as it worried me that our expertise would diminish.

I guess that is happening if you consider the number of laboratories closed down by the government over the past four or five years.

Another instance of the situation was brought home to me recently when asked by NATA to check some worksheets and U of M calculations prepared by an overseas laboratory seeking NATA accreditation. (The laboratory was one which I had assessed about a year ago). The amount of work presented by the laboratory was enormous and it was obvious that the investment in manpower would have cost many dollars.

I question if any laboratory in Australia would be prepared to have people spend the amount of time necessary to carry out the work as shown by the overseas laboratories.

This issue also has some proposed changes to the MSA constitution and members are encouraged to study the changes and come along to the Annual Meeting on November 26th and vote.

I was disappointed that no correspondence was received relative to my question in TAM No.12 on why laboratories choose to issue non-endorsed reports on measurements for which they are NATA accredited. Maybe you all agree.

Jack Deller

The Uncertainty Calculator

In the last issue of TAM, Kimberlee Brown of the National Standards Commission had an article on a software program called Uncertainty Calculator. The article described some of the features of this software and where people could obtain a freeware copy.

The article has generated a great deal of interest, and my thanks to Kimberlee for bringing the software to our attention. Because I have received both positive and negative comments on the software from MSA members, I believe it is important to remind readers that the article does not constitute an MSA endorsement of the software. As it says on the back page of every TAM, opinions expressed in TAM do not necessarily represent those of the MSA. I would be happy to continue to receive member's views on the Uncertainty Calculator and then perhaps feed them back to members via TAM.

Ed.

A HISTORICAL LETTER

Captain Henry Kater and Standards of Length

✉

London Decr.16 1831

Dear Sir

I defered writing as long as possible in the hope of being able to inform you that the Russian Standards would be ready for you about the 20th Inst. I now find that they will not be all ready as the fourteen feet will require two or three weeks at least to finish it. The 28-inch & 1 foot have been ready sometime, and three tressels are made. The bar of 7 ft for carrying the microscopes is prepared for fixing them, but as I have not the exact sizes of the arms, and screws, that part must remain, I conclude until your arrival.

The seven feet will be finished about the end of next week and I conclude it to be your wish to have that, and the 14 feet packed in mahogany cases lined with Zinc, in the same way as those of shorter lengths.

I am very sorry that these things should have been so long in hand, and that their not being ready, should be of the slightest inconvenience to you my only apology is in the extreme difficulty I have found, in getting proper workmen to make them in Iron, had they been in any other metal they would have been done long since. I can only promise to forward them within the greatest dispatch, and the moment they are all ready, I will have the pleasure of writing to inform you that they are so.

I am dear Sir
Yours Obediently
G. Dollond

I find temperature of much greater importance when comparing these Iron Standards with my brass Scale, than I suspected. 20° of Thermometer will give nearly 1000th of an inch difference in their comparative lengths.

✉

(An explanation of the letter)

George Dolland, one of the leading scientific instrument makers in London, was writing to inform Captain Henry Kater of the progress in preparing a set of linear measures commissioned by the Russian government. Kater was the natural person to oversee such work having been involved in precision measurement for thirty years and having conducted much of the experimental work leading to the British Weights and Measures Act of 1824.

Henry Kater (1777-1835) was born in Bristol of German ancestry. Despite some legal training a mathematical inclination led him to the army which he joined in 1799. He was sent to join his regiment in India where he assisted William Lambton in surveying the country between the Malabar and Coromandel coasts for the Madras government. This initiated what became the Great Trigonometrical Survey of India later headed by Sir George Everest. In the course of this work Kater demonstrated his fine skill in precision measurement and his interest in the use of instruments generally, devising a novel kind of hygrometer.

The conditions of work were very taxing and after some years Kater returned to England in poor health. He remained in the army for some years more, undertaking further training at Sandhurst before being placed on half pay in 1814. He had by then published several short scientific papers and was elected a Fellow of the Royal Society of London before the end of the year. Through the Royal Society Kater became closely associated with many of the leading scientific figures of his day. It was also through the Royal Society that Kater gained prominence as a metrologist.

In 1816 the British government approached the Royal Society-its scientific adviser - for assistance in determining the length of a pendulum beating seconds in the latitude of London to provide a physical basis for a standard of length. The Society set up a committee with Kater as a member, and it was he who undertook much of the practical work involved. For the pendulum he devised and his subsequent experimental work Kater received the Society's Copley Medal in 1817. In subsequent years Kater pendulums were used in many parts of the world for gravity measurements.

The unsatisfactory nature of the British weights and measures was increasingly recognized from the mid Eighteenth century but had still not been resolved at

Cont' on Page 4

the beginning of the nineteenth century. In 1819 a Royal Commission was set up to report on weights and measures, Kater being one of several prominent Fellows of the Royal Society appointed. Again Kater undertook much of the practical work involved, making careful comparisons of several existing standards. The Commission presented its final report in 1821 leading to the introduction of Imperial Standards with the Weights and Measures Act of 1824. Multiple sets of the new standards were required, being ordered from a number of scientific makers in London. Over the following years Kater undertook the painstaking work of checking and adjusting the copies of the standards as they were prepared. Kater was one of the more active contributors to the Royal Society's Philosophical Transactions, many of his articles relating to the pendulum work and weights and measures.

Kater's work brought him in contact with numerous foreign scientists, particularly in relation to pendulum experiments and standard measures. So it was natural that he should be commissioned to supervise the making of the Russian linear standards. George Dollond, selected to prepare the standards, was a highly skilled optical instrument maker. Born George Huggins, he changed his name when he entered into partnership with his maternal uncle, Peter Dollond. George Dollond was himself elected a Fellow of the Royal Society in 1819. Kater was awarded the Order of St Anne in 1833 for his work on the Russian standards. Long afflicted by ill health, he died two years later.

Kater's name is now largely forgotten except in connection with the pendulum he devised and the azimuth compass he invented in 1811. Like many prominent figures in nineteenth-century Britain, one of Kater's sons migrated to Australia. When his other son died his scientific relics came to Australia. Some were given to Sydney Observatory and some to the University of Sydney. These have been drawn on for a display at the Macleay Museum in the University of Sydney. "Pioneer of Precision, Captain Henry Kater" surveys his scientific career and includes three line standards he used in the 1820sand the original letter from George Dolland. The display, sponsored by the National Association of Testing Authorities (NATA), was launched in March and runs until the end of January 1998. The Macleay Museum is open 9am to 4pm, Monday to Friday. Admission is free.

Julian Holland
Curator of Scientific Instruments
Macleay Museum, University of Sydney

METROLOGY SOCIETY MEMBER PROFILES

Johannes (Hans) Sieker founded and obtained NATA accreditation for ACM Laboratory Pty Ltd nearly 30 years ago in 1968. He had been working in the manufacturing area where he had seen both a lack of independent calibration facilities and the growing trend towards quality assurance requirements, which prompted him to start ACM Laboratory Pty Ltd to fill these gaps. The company's NATA registration base has expanded over the years from the few initial items to the current list that covers more than 80 types of measuring equipment. Hans' qualifications include a Masters Certificate in Toolmaking and a Diploma in Mechanical Engineering. These, along with a variety of jobs, including working in the Experimental Shop at General Motors Holden and as Head of the Drawing Office at Robert Bosch (Australia) Pty Ltd gave him the background to build his extensive knowledge in dimensional metrology. He was also a founding member of both the Australian Organisation of Quality and the Metrology Society of Australia.

Andrew Jackson currently manages the NATA accredited dimensional measurement laboratory at Marand Precision Engineering. He is responsible for maintaining their quality system, performing and organising calibration of measuring instruments and myriad other duties associated with such a position. Arriving in Australia from the UK in 1982 two years after completing his Apprenticeship in Toolmaking with G E Adams & Co (Machine Tool Equipment Manufacturers), Andrew worked in general engineering shops gaining valuable machining expertise. Several years later he moved to Fred Small & son where he ventured into the areas of gauging, machine tools and component manufacture. Inspection being mandatory in these fields led to a move into the Metrology Laboratory full time and his career in Metrology had begun to "measure up". This was further cemented in 1989 when Fred Small & Son was sold to Marand. Andrew then obtained NATA signatory status and later became a foundation member of the Metrology Society.

Endorsements and Affiliations

Several members have asked questions recently about the endorsements and affiliations the MSA has entered into. For example, we are a liaison organization with the NCSL, we will soon be Australia's Member Organisation on IMEKO and we have been asked by the National Committee for Automation, Instrumentation and Control (NCACI) to consider a closer liason between the MSA and NCACI. We have agreed to give Australian Quality Training Services (AQTS) our endorsement and support in running AQTS training programs in metrology and quality systems.

The guiding principle followed by the Management Committee when considering affiliations and endorsements is that the proposal should benefit the MSA. Affiliations with local and international organisations gives us a wider exposure and provide greater opportunities and services for MSA members. For example, our association with IMEKO has already gained access for one of our members to an IMEKO international technical committee.

Endorsements encourage and assist those organisations contributing to Australian metrology. For example, AQTS approached us in November 1996 with a request for our endorsement and assistance in publicising their metrology training programs. AQTS were to provide the programs, notes, testing and certification. The MSA were to provide endorsement, choose some or all of the courses, time table the courses and inform MSA members about the courses. The arrangement also involved the payment of a fee to the MSA for every AQTS course.

Committee discussion of this particular proposal was more complicated than usual as three members of the committee were associated with AQTS. Therefore, they did not vote or participate in the discussion other than to answer questions. Following an examination of AQTS course outlines and feedback on courses already conducted, the meeting unanimously accepted the AQTS proposal for the following reasons:

(i) The current lack of metrology courses in Australia, in particular those with a strong practical base;

(ii) The fact that many of the MSA's objectives involve the promotion and provision of metrology training and courses in Australia;

(iii) The quality of the AQTS staff, all of whom had many years of practical metrological experience;

AQTS have now run courses in Sydney and Melbourne and the committee believes that the MSA endorsement has been a successful one. Such endorsements should, of course, be subject to regular review. For that reason, we would be happy to receive feedback on AQTS courses, both positive and negative, from MSA members who have attended AQTS courses.

In general terms, the committee sees a need to further develop our mechanism for endorsing metrology education programs. Some of the questions that need to be answered are: Should we only include an examination of course documentation? Should we also send representatives to the courses? Who in the MSA is qualified to assess the value of an educational program? How often should the endorsement be reviewed? Should the MSA accept money for the endorsement? How much? Should the mechanism of MSA endorsement also be applied to the formal educational institutions? If so, would TAFE colleges and universities let MSA representatives review their courses?

It is apparent that MSA endorsements and affiliations will be increasingly sought after as the MSA continues to grow in size and importance. We will need to continue to develop and improve our procedures for entering into these arrangements.

J R Miles

MSA97. Can you afford to miss it?

MSA97 is shaping up to be a highlight of Australian metrology. The Conference Committee continue to do a magnificent job organising eminent keynote speakers, reviewing papers, scheduling events, planning tours, obtaining sponsorships, etc, etc, etc. The program is packed full of interesting papers, valuable information, tours, social events and opportunities for networking. This conference is what the MSA is all about.

The question is: Can you, as a member of the MSA, afford to miss this event? Remember there will not be another such conference for two years! Remember, Victorian members in particular, that the 1999 conference will involve the extra costs of travelling to Sydney!!

We have conference registrations from Europe, America, Canada, South Africa, Taiwan, Singapore, Korea, Malaysia, New Zealand, Fiji and China. One of the reasons these people are coming so far is to meet you. Will you be there?

So, come on. Support the MSA and register for MSA97 now!!

MSA97

This years conference is shaping up to be a major event on the world metrology calendar for anyone interested or involved in measurement.

Must see Melbourne.

Melbourne has been rated 'the worlds most livable city', and rightly so. With it's elegant tree lined streets and extensive green parkland areas, including the Royal Botanic Gardens, one of the world's finest landscape gardens.

Melbourne is multicultural with many nationalities mixing together to provide the diversity that makes everyone feel at home and the best variety of cuisine available anywhere.

Melbourne is also the arts capital of Australian with the best in theatre, opera, ballet and the National Gallery of Victoria adjoining the Victorian Arts Centre on the banks of the Yarra River.

One of the region's great industrial and financial centres, Melbourne is home to many large companies and major metrology facilities some of which will be toured during the conference.

Building on the very successful first conference in 1995, the response to both the trade exhibition and contribution of papers has been very strong. The conference has developed well and is now in the final stages of preparation

Held in the grounds of The University of Melbourne in the historic Old Arts building which provides the atmosphere of the event and links well with the special retrospective on the history of metrology in Australia.

There will be many examples of historical metrology equipment on display. Australia had a flourishing industry of Australian made electronic instruments and devices. These instruments are a pleasure to look at with the hand crafted wooden cases and polished brass adornments. Many of these pieces were excellent examples of the fundamentals of the measurement process that is often lost today with modern 'black box' electronics.

The University of Melbourne established in 1853 was the first university in Victoria and the second in Australia. The University of Melbourne is an international research based university offering education of the highest quality. Extensive links with industry has lead the research to produced many world firsts such as the bionic ear, semi-submersible survey vessel and a revolutionary hydrogen-gas powered car.

The links with industry emphasise the key aspect of the conference and that is the role and practice of measurement in the company.

This conference while having many papers presented by Australians is an international conference in every sense of the word. Metrologists are presenting many papers from all over the world.

The following article is an extract of a paper that will be delivered to the Chinese Metrology Society conference by our representative Dr. John Man. The Chinese Metrology Society conference will be held two weeks before our own and by reciprocal arrangement Dr. B.S. Harn (Deputy Director of Taiwan's Centre for Measurement Standards) will attend our conference and present an overview of the papers presented to the Chinese Metrology Society conference.

Melbourne in the spring ... too good to miss.
See you there.

Mark Thomas

Presentation to the
Chinese Metrology Society
on the
Metrology Society of Australia
and
MSA97 - International Conference on
Measurement Science,
Technology and Practice

Introduction

Thank you for the opportunity to talk to you today about the **Metrology Society of Australia** and **MSA97**, an International Conference on Measurement Science, Technology and Practice to be conducted by the MSA in Melbourne, Australia, in November.

As a **Special Delegate of the MSA** I would like, on behalf of the **Metrology Society of Australia,** to extend to the **Chinese Metrology Society** greetings and best wishes.

My attendance at this conference is part of an exchange of delegates between your conference and MSA97. A delegate from this conference, Dr Harn, will be attending MSA97 as the second part of the exchange. It is hoped that this will be a very effective

and efficient way of finding out more about each others metrology society and what is happening in metrology in China and Australia.

The President of the MSA, Dr John Miles, has asked me to convey to you his hopes that this exchange will be the first of many such contacts between our two societies. The MSA believes that developing links between the various metrology societies in the Asia-Pacific region benefits both the individual society members and the countries involved.

The Metrology Society of Australia, formed in 1993, is for people with an interest or involvement in the science and practice of measurement. It has struck an immediate chord with Australian metrologists, proving to be a very popular and exciting idea. Membership has grown rapidly since 1993 and grass root support has been very strong. We now have about 350 members, representing a large percentage of Australian metrologists.

The MSA National Management Committee consists of 12 elected officers, currently based mainly in Melbourne, Victoria. However, in 1998 the Management Committee will move to Sydney, NSW for the next two years. Each Australian State has a Branch of the MSA, administered by a small committee.

The aims of the Society are to;

(i) *To promote the importance of metrology within government, business, industry and the community and in particular the contribution that metrology makes to the quality of manufactured goods, and services, and hence to industrial development and international competitiveness.*

(ii) *To allow people involved in or interested in metrology to come together in a common body.*

(iii) *To provide a forum to enable members to exchange information relevant to the practice of metrology.*

(iv) *To provide formal recognition of the qualifications and expertise of those members engaged in the practice of metrology.*

(v) *To engage in and promote the advancement of knowledge in the field of metrology by means which include encouraging, sponsoring, promoting and participating in:*

- (a) *metrology courses in educational institutions;*
- (b) *seminars, lectures, workshops, symposia and conferences;*
- (c) *the circulation of literature to members including a quarterly newsletter.*

(vi) *To collaborate with other societies, associations and institutes if it is in the interest of the Society and the development of metrology.*

(vii) *To assist members to improve their qualifications, knowledge and expertise.*

(viii) *To encourage and assist with training of new members in the field of metrology.*

(ix) *To assist members to pursue related activities, including those of a more general social nature.*

Many of the objectives of the MSA involve education and certainly the MSA spends a great deal of effort in promoting, developing and improving metrology education in Australia. The society conducts many significant events and activities, including a national conference in Sydney in 1995 and now another (MSA97) in Melbourne in 1997. Technical workshops, seminars and social events are regularly conducted. A journal, "The Australian Metrologist", is published four times per year. We are also on the Web at http://www.ozemail.com.au/~ausmet.

Membership in the MSA is for individual metrologists rather than organisations and our diversity is a particular strength. Members include scientists, engineers and technicians working in industrial and government calibration and testing laboratories, accreditation organisations, universities and colleges. There are electrical metrologists working in the power industry, dimensional metrologists running one person laboratories, research scientists of international standing, mechanical metrologists from the automotive industry, chemical metrologists working in the pharmaceutical industry, testing officers working in quality control laboratories and flow measurement experts from the petroleum industry.

Overview of MSA97

Our theme for MSA97 has focussed on "the role of metrology in the company" reflecting a widely held view that ultimately the science, practice and outcomes of metrology are directed and expressed in their application to end-users. Around 60 papers and posters will be presented at MSA97, and the conference will include visits to industrial, calibration and energy utility companies, as well as a historical exhibition of some of the metrology equipment upon which our industrial and technical infrastructure has

been built over this and the previous century. Two workshops on "Metrology in the Asia Pacific", and on the "Measurement in Sport" teaching package will also be conducted.

A number of themes have emerged from papers submitted to MSA97, and whilst these are not entirely independent or mutually exclusive, they make a useful "map" by which the overall character and scope of the conference can be viewed. They not only reflect the traditional disciplines of metrology, but also some of the associated or underlying dialogue upon which the science and practice of metrology itself rests. The three days of the conference are broadly associated with the three major sub-themes of Application in the Company and the Industrial context, International and National Infrastructure Issues and the Practice of Metrology. The three days are led by the keynote speakers, Dr. Thomas Huttemann, head of Corporate Metrology for Eastman Kodak, Prof. Volkmar Kose, vice President of the German National Standards organisation PTB, and Dr. Barry Inglis, Director of the Australian National Measurement Laboratory (NML) and current co-ordinator of the Asia Pacific Metrology Programme. The three speakers address the themes of metrology systems for global manufacturing, and the international, regional and organisational elements required for worldwide measurement acceptability.

Papers in the area of Physical Metrology discuss the development and use of standards to support the industrially important measurements of flow, humidity, density, force and pressure and the development of novel sensors and calibration techniques in applications such as gas flow. Review papers from some of the major commercial suppliers of pressure equipment from Europe and the US will also be presented.

In Electrical Metrology papers addressing the emerging issues of traceable and reliable metrology in deregulated power supply industries in Australia and North America will be presented alongside papers on basic electrical standards work being undertaken in areas such as resistance, voltage and ac-dc difference calibrations.

Papers on temperature sensors and pyrometry developments, together with results of recent APLAC inter-comparisons and overviews of radiometry metrology form the Temperature and Radiometry session. Engineering Metrology at MSA97 will see papers on hardness technical developments and inter-comparisons, metrology issues in the manufacturing of precision gauges, the use of electronic theodolite measurement systems, and metrology in the production environment. The Dimensional Metrology session also reports on international inter-comparisons at the levels of lasers and gauge blocks, the calibration of Co-ordinate Measurement Machines and investigations into the stability of metrology-level digital still cameras.

Instrumentation warranted its own session at MSA97 with a number of papers presented from some of the major equipment manufacturers and papers on the metrology of simulation and control systems, and software for the total manufacturing system.

Uncertainty evaluation and compliance assessment papers will be presented across a range of metrology and user environments, countries and disciplines, together with papers on international traceability, national training and legal metrology in the Infrastructure part of the program.

Recent developments in emerging and evolving fields of Time and Frequency, Chemical Standards and Electromagnetic compatibility measurements will be presented, as well as papers on current work on fundamental constants such as the Avogadro constant N_A and the Newtonian gravitational constant G. We have also been fortunate in obtaining several very interesting papers from scientists and historians on the early history and development of precision instrumentation, particularly in Australia, and others of a more general nature.

An important part of MSA97 is the interaction between metrologists working in different parts of the total measurement system, and this is also reflected in the tours and visits which have been organised to take part during one of the half-days of the conference. Delegates to MSA97 will visit the Holden automotive engine manufacturing works to see on-line engineering metrology, the Victorian State Gas Corporation's technical laboratories which underlie the accurate measurement of energy flow from the source to the end users, the ADI laboratories, which is a large commercial NATA accredited facility providing calibration services across a wide range of areas, and the CSIRO - NML's Melbourne Branch which provides National Standards level calibration services to calibration laboratories and industry.

Concluding Remarks

The issues faced by metrologists at MSA97 are universal to metrologists around the globe, particularly in the evolving international perspective of our work. The MSA plans to make several copies of the MSA97 proceedings available to the CMS library, for those members of the CMS who wish to read the papers in more detail, and as a step towards making the scientific and technical content of our conferences more accessible to each other.

The MSA is not just directed at Australia or Australian metrologists. The MSA is a liaison organisation with the National Conference of Standards Laboratories (NCSL) in the United States and in 1998 will become Australia's Member Organisation for the International Measurement Confederation (IMEKO). We have established contacts with measurement societies and organisations in the Asia-Pacific region, including Thailand, Indonesia, Vietnam and now China.

Once again, I thank you for inviting me to address your conference, and with the MSA I look forward to extending and strengthening these contacts.

J.Miles, W.Giardini and J.Man

Opening Speaker and Keynote Speakers.

"PROFILES"

Mr. Bruce R. Kean AM was born in England in 1933 and came to Australia in 1950. He was educated in Melbourne where he studied Chemical Engineering and Economics. He served in the Australian Army (CMF) from 1951, in the Royal Corp of Signals and later The Intelligence Corps, retiring in 1970 with the rank of Major.

He joined Boral Ltd. in 1968, after working for seventeen years with The Gas and Fuel Corporation of Victoria in a wide range of positions. Mr. Kean was appointed Chairman of Oil Company of Australia in May 1987 and Chief Executive and a Director of Boral Ltd in June 1987. He retired from both positions in January 1994.

Mr. Kean was a member of the Prime Ministers Economic and Planning Advisory Committee from 1992 to 1994, a member of the Australian Committee of the American Bureau of Shipping from 1989 to 1994, and Chairman of the International Relations and Trade Committee of BCA from 1992 until 1996. He was also a Director of Generation Victoria during 1994.

Since retiring Mr. Kean has been active as a non-executive Director of several Public Companies and Chairman of a number of Industry and Government Committees. He was Chairman of the Commonwealth Governments Committee of Inquiry into the Standards and Conformance Infrastructure of Australia handed down in March 1995. In July 1996 he was appointed by the Minister for Foreign Affairs to the "Advisory Panels for the White Paper on Foreign and Trade Policy". In July 1997 he was appointed by the Institution of Engineers, Australia to conduct a review of the processes of formation and delivery of Continuous Professional Development into the next century. He holds current Directorships in many well known Companies and is a Fellow of several professional Institutes in the fields of Engineering, Science, Management, and Manufacturing.

In February 1994 he was awarded The Order of Australia for service to Industry. In November 1994 he was the recipient of the Sir John Allison Award for achievements in Export and Trade.

Dr. Thomas J. Huttemann Jr. received a Doctorate in Inorganic Chemistry from Iowa State University in 1965, Tom Huttemann joined the Research Laboratories of Eastman Kodak Company. He has worked in the areas of Synthetic Chemistry, Novel Imaging systems, Product Development, Patent Liaison, Human Resources, Image Stability, Quality Assurance and Corporate Metrology. He is currently Director of the Corporate Metrology Center and Chairman of the Kodak Metrology Council.

Thomas Huttemann has chaired and served on a number of ANSI Standards Committees and was Chairman of the Board of Advisors of the Image Permanence Institute of Rochester Institute of Technology. He has nine technical publications, two U.S. patents and has given over 100 technical and non-technical presentations. He is a member of SPSE, ASQC, CORM and the National Conference of Weights and Measures. He has served as NCSL Region 2 Coordinator, Director of Regions 1 & 2, V.P. for the Measurement Science and Technology , CORM Liaison and is currently V.P. of Conference Management. He has been a member of the NCSL Board of Directors for seven years. He enjoys both water and snow skiing, aerobics, dancing, bowling, racquetball, cards, and reading.

Dr. Barry D Inglis was born November 23, 1940, in Sydney, Australia. He is a graduate of the University of New South Wales, Australia, receiving a B.E.(Hon.) degree and a Ph.D degree in electrical engineering in 1962 and 1967, respectively.

From 1966 to 1968, he was employed as a development Engineer in the Muirhead Research Centre, Muirhead and Co., Beckenham, Kent, England. In 1968, he joined the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia, where he undertook research on measurement standards for ac-dc transfer, electrical power and energy, and electrode surface effects in precision capacitors. He was Manager for the Applied Electricity and Magnetism in the CSIRO Division of Applied Physics from 1988 to 1994, and Deputy Chief of the Division from 1995 to 1996. He is presently Director of the National Measurement Laboratory - National Facility, within the CSIRO Division of Telecommunications and Industrial Physics.

Dr Inglis is a Fellow of the Institution of Engineers Australia, a Fellow of the Institute of Electrical and Electronic Engineers, and a Fellow of the Metrology Society of Australia. He is a Director of the National Association of Testing Authorities, Australia (NATA), a Commissioner on the National Standards Commission and a Council Member of Standards Australia. He is also currently Regional Coordinator for the Asia Pacific Metrology Programme (APMP).

Prof. Volkmar Kose was born 1936 in Germany, studied physics in Gottingen and received his Ph.D. in 1967. Except for a one-year stay at the NBS, Boulder, USA, he since then has been with Germany's National measurement institute, the PTB. For 12 years he headed the Electricity Division of PTB, and since 1989 he has been Head of the German Calibration Service DKD. In 1993 he became Vice-president of the PTB. He is Honorary Professor at the Technische Universitat Braunschweig, has published about 100 papers in the field of metrology, has written a book about Electrical Quantum Measures and is editor of several scientific and technical books.

MSA97 Conference Organising Committee

Back Row from Left:
Randell Anderson, Steve Jenkins Leigh McKinnon, Mark Thomas
Front Row :
Helmi Salem, Walter Giardini, Ron McBain
(Ron Breen has recently joined the conference committee since the photo was taken)

MSA Management Committee 1997

The outgoing Committee of management all smiling. Could it be that they realise they have attended their final management meeting for the foreseeable future. Of course this is not so for Dr. Jim Gardner (President elect) and Dr. John Miles (Immediate Past President)

From Left Back Row:
Jim Gardner, Jane Warne, Jack Deller, Alex Smart, Carol Sieker
Front Row:
Bill Cerruty, Colin Wagg, John Miles, Ron McBain
Absent: Stuart McDonald, Richard Duncan, Barry Inglis

NEWS FROM THE STATES

NEWS FROM THE STATES

NSW

Visit to Australian Government Analytical Laboratories

On 20th August a substantial contingent of NSW members and interested friends turned up at AGAL's modern chemical analysis laboratory complex at Pymble, Sydney. The Director of R&D, Dr Bob Wells outlined AGAL's organisation and structure and discussed contemporary measurement challenges of chemical analysis, such as trace contamination of foods, the problems of forensic analysis in an era when much criminal activity, especially relating to illicit drugs, is very high-tech and the sophistication of modern performance enhancing drugs in sport. Dr Sandra Hart, the Australian Government Analyst then outlined the rationale and latest news and planning in the development by AGAL of the National Analytical Reference Laboratory as a national and regional centre of reference for chemical analysis.

After refreshments (thanks AGAL) Bob took us on a guided tour of the current laboratory facilities, including the R&D section which develops new methods of practical analysis, some impressive mass spectrometry instrumentation, the IOC accredited Sports Drug Testing Laboratory which is developing world's best capabilities for the 2000 Olympics, and the forensic section where the ingenuity of the n'ere-do-well meets its match in AGAL's chemists.

The fact that so many MSA members from so many other fields were so interested underlines the simple truth that our common interests in the problems of measurement transcend disciplinary boundaries. Metrology is truly the interdisciplinary science.

The Westmead Hospital visit to see the metrology behind medical physics was most interesting. Lee Collins and his staff provided us with an insight into a situation where calibration and the skill of the person doing the calibration can have a life or death outcome. Fortunately the level of skill within the laboratory is extremely high and the equipment is constantly monitored and calibrated. Their success rate in treating many of the cancers is as high as 85%.

We had a brief look at how custom designed software is being used to view areas of the body in 3 D, then produce a diagnosis and finally develop a treatment plan for patients. This is then reviewed by the doctor who either approves or moderates the dose recommended by the program. All of this was science fiction 20 years ago. Many thanks to Lee Collins for a most informative and interesting visit.

Marian Haire

QLD

The **'Uncertainty of Measurement'** discussion presented by Max Purss of NATA was well received. A planned 2 nights was extended to 3 nights due to the enthusiasm of members (22/7, 5/8 and 19/8197). The discussion was attended by more than 20 members on each night. Many thanks go to Max for his persistence and patience. Thanks also to the Queensland Manufacturing Institute for its continued support in providing a conference room venue and their much-adored snacks.

The next event is the biennial conference in Melbourne. Queensland will be well represented at the conference, see you there.

A tour of the 'XXXX' (pronounced beer) factory has been arranged for Tuesday 7112/97, which after the biennial conference, should be the correct measure. Attendance is limited; those interested should contact (during business hours):

Shane Brann Ph: 07 3893 0800 Fax: 07 3893 0399
Geoff Barnier Ph: 07 3810 6386 Fax: 07 3810 6366

The MSA Queensland annual dinner is scheduled for February/March 1998 with the date yet to announced. Any suggestions for a venue or upcoming events for 1998 are most welcome and may be forwarded to the above contacts.

SA

The next meeting is planned for Tuesday, 18th of November when a laboratory visit is planned to International Testing and Certification Services. This laboratory is NATA accredited and does a wide range of approval tests on electrical appliances and accessories. They have recently moved into a new custom designed laboratory and are part of the Clipsal Group.

NT

Believe it or not, there is a small MSA group in NT. After all these years, the prospect of a free feed at one of Darwin's finer restaurants and the presence of the MSA president and Secretary in Darwin finally saw the majority of NT MSA members at Beaufort Brasserie. (Absent members were: Col Maclachlan and Frank Osborne.)

VIC

A forum on **Uncertainty of Measurement** was conducted by the Victorian Branch on Wednesday evening, 10th September 1997, at the CSIRO National Measurement Laboratory, Melbourne Branch, Clayton, Victoria (see accompanying photographs).

The forum was very successful, with more than fifty people attending, including MSA members from Queensland and Tasmania. The President, Dr John Miles opened the evening by welcoming everybody and thanking Ron McBain, Jack Deller and Alex Smart for organising the evening and CSIRO NML Melbourne for their hospitality.

Alex Smart spoke first, emphasising the importance of the ISO Guide to the Expression of Uncertainty of Measurement (GEUM). He pointed out that while the GEUM was initially difficult to understand and perhaps expensive to implement, ultimately the adoption of the principles of the GEUM leads to an increased understanding of the relative importance of the various influences quantities on a measurement. This in turn leads to improved performance for a calibration laboratory and to financial savings as management decisions are now based on more quantitative and rational grounds.

Three examples of GEUM uncertainty calculations were then presented by John Miles (external micrometer), Stuart McDonald (electrical power) and Randall Anderson (pressure gauge). This was followed by supper and then a general discussion on some of the issues associated with measurement uncertainty. The discussion was excellent with many questions asked and discussed. The MSA would like to thank all of the speakers and organisers for their contribution.

The forum was videotaped by Jane Warne and is of excellent quality. It is available to members throughout Australia. The notes and overheads used by each of the speakers will be supplied with the video. If you wish to borrow the videotape, please contact John Miles on (03) 9542 2964 or john.miles@mst.csiro.au.

Question: If you are lost and lonely in Taiwan's capital, are you experiencing a ***Taipei*** *uncertainty?*
(Attributed to Ron Cook, NML Melbourne)

Our President Dr.John Miles making a point at the U of M forum in Victoria with other panel members Stuart McDonald, Randall Anderson and Alex Smart.

Attendees deep in thought during the forum

Members continue the discussion during refreshments

METROLOGY SOCIETY OF AUSTRALIA

Announcement of the 1997

Annual General Meeting

The annual general meeting of the MSA for 1997 will be held in conjunction with the MSA97 Conference. In the main Lecture Theatre of the

Old Arts Building
Melbourne University

On the 26 November 1997 at 5:15pm.

The meeting will include confirmation of the minutes of the 1996 AGM, committee reports, election of the committee for 1998, discussion and voting on the amendments to rules of the Association outlined in this issue of TAM and general business.

All nominations for Officers of the Association and ordinary committee members must be made on the form provided and received by the Secretary by close of business on the 19 November 1997.

Come along and have your say!

Amendments to the Rules of the Association

The committee of management recognises that there are a number of modifications to current rules that are required to ensure the society does not become stale or insular and to enable the committee of management to be responsive and operate efficiently. To this end a number of modifications to the existing society rules are proposed.

❑ **Fees**

The committee believes that it is cumbersome for the fees of the association to be enshrined into the rules of the association. Therefore it is being suggested that the rules be modified to allow change of the fees by a vote at an Annual General Meeting but not require the rules to be amended as

Modify
O 5. (1) The entrance fees for Associate Members, Members, and Fellows are $25, $30, and $35 respectively.
To
N 5 (1) The entrance fees for Associate Members, Members, and Fellows are **to be set by vote at the annual general meeting as required**.

Modify
O 5 (2) The annual subscriptions for Associate Members, Members, and Fellows are $25, $30, and $35 respectively

and are payable in advance on or before the 1st day of January in each year.

To
O 5 (2) The annual subscriptions for Associate Members, Members, and Fellows are **to be set by vote at the annual general meeting as required** and are payable in advance on or before the 1st day of January in each year.

❑ **Quorums**

The current committee feels that the Society would benefit from both movement of the committee of management to different states and from more interstate representation on the committee. This will facilitate the expansion of a national profile on the committee and therefore the national perspective of the society. However regular attendance by all interstate members is difficult and is likely to result in the current quorum of 6 not always being achieved. The committee believes that the diversity of ideas and distribution of workload achieved with a committee of 12 people is effective but that attendance by all members to all meetings is not essential. It is therefore being proposed that the quorum for a committee meeting be reduced from 6 to 4. This would, it is hoped, result in a more flexible, representative and responsive committee of management.

Modify
O 27. (4) Any 6 members of the Committee constitute a quorum for the transaction of the business of a meeting of the Committee.
To
N 27. (4) Any **4** members of the Committee constitute a quorum for the transaction of the business of a meeting of the Committee.

❑ **Maximum Terms of Office for Members of the Committee of Management**

The second change proposed is to ensure that committee does not become insular and to encourage a regular cycling of expertise and new ideas. To this end the committee is proposing that no person can serve more than six years in eight (or seven years in nine for a President). Their services would still be available to the committee through sub-committees but they would not be driving the agenda of the Society.

Modify
O 23. (3) Each officer of the Association shall hold office until the annual general meeting next after the date of his or her election but is eligible for re-election.
To
N 23. (4) Each officer of the Association shall hold office until the next annual general meeting **in the year that coincides with the end of his or her term of office**.

Modify
O 24. (2) Each ordinary member of the committee shall, subject to these rules, hold office until the annual general meeting next after the date of his or her election but is eligible for re-election.
To
N 24. (2) Each ordinary member of the committee shall hold office until the next annual general meeting **in the year that coincides with the end of his or her term of office**.

Modify
O 23 (4) In the event of a casual vacancy in any office referred to in sub-clause(1), the Committee may appoint one of its members to the vacant office and the member so appointed may continue in office up to and including the conclusion of the annual general meeting next following the date of his or her appointment.
To
N 24 (4) In the event of a casual vacancy in any office referred to in sub-clause(1), the Committee may appoint one of its members to the vacant office and the member so appointed may continue in office up to and including the conclusion of the annual general meeting **in the year that coincides with the end of the term of office**.

Modify
O 24 (4) In the event of a casual vacancy occurring in the office of an ordinary member of the Committee, the Committee may appoint a member of the Association to fill the vacancy and the member so appointed shall hold office, subject to these rules, until the conclusion of the annual general meeting next following the date of his or her appointment.
To
N 24 (4) In the event of a casual vacancy occurring in the office of an ordinary member of the Committee, the Committee may appoint a member of the Association to fill the vacancy and the member so appointed shall hold office, subject to these rules, until the conclusion of the annual general meeting **in the year that coincides with the end of the term of office**.

Add
N 23. (4) An officer of the Association shall only hold officer for a maximum of 6 years (or part there of) in any 8 year period, excepting an officer who has held the office of President who may serve a maximum of 7 years (or part there of) in any 9 year period.
N 24. (3) An ordinary member of the committee shall only hold officer for a maximum of 6 years (or part there of) in any 8 year period.

❑ **Immediate Past President**

The third modification is the designation of one of the ordinary committee member officers as the immediate past president. This would be filled by the immediate past president and who would act as an advisor to the new president, providing the officer has not been elected to another Office of the Association such as Secretary or Treasurer. This would ensure a smooth transition between Presidents. The membership would, when electing a President, assume that they would serve for the period of their term plus one year as past president. The officer could still nominate for re-election as president or any other position at the end of their term and could serve as president for up to 6 years plus one year as past president. The officer would be subject to all the existing rules and could be removed from office under these rules if necessary.

Modify
O 24. (1) Subject to section 23 of the Act, the Committee shall consist of:
(a) the officers of the Association; and
(b) b)8 ordinary members each of whom shall be elected at the annual general meeting of the Association in each year.
To
N 24. (1) Subject to section 23(1) of the Act, the Committee shall consist of:-
(a) the officers of the Association; and
(b) (b) 8 ordinary members including the Past Presidents each of whom shall be elected at the annual general meeting of the Association **in the year which coincides with the end of a term.**

Add
N 24. (3) On election to the position of President, that officer becomes eligible to continuation on the committee for the subsequent year to the end of their term, as an ordinary member of the committee without the need to be elected to this position.

❑ **Two Year Terms**

The fourth modification is the introduction of half senate style of election to office. It is recognised that with movement of the committee between states and maximum terms of office that the society could end up in the situation of having few or no experienced officers on committee. To encourage planning for this situation it is suggest that a partial "half senate" style of election be introduced. This would involve some of the positions on the committee being two year terms with elections of positions in alternate years. It proposed that the President, Secretary and Treasurer be two year terms and the vice-president and ordinary members be one year terms. The President and Treasurer would be elected in odd years (i.e. 1997, 1999, 2001, ...) and the Secretary to be elected in even years (i.e. 1996, 1998, 2000,). All other positions on the Committee would remain as one year terms with the vice Presidents position being treated as a training year for the person to take on the Presidency at the next election. If an office became vacant part way through a term then the committee would appoint a member of the association to fill the vacancy until the next general meeting where the position would be up for election to finish the existing term.

Modify
O 23. (3) Each officer of the Association shall hold office until the annual general meeting next after the date of his or her election but is eligible for re-election.
To
N 23. (4) Each officer of the Association shall hold office until the next annual general meeting **in the year that coincides with the end of his or her term of office.**

Modify
O 24. (2) Each ordinary member of the committee shall, subject to these rules, hold office until the annual general meeting next after the date of his or her election but is eligible for re-election.
To
N 24. (2) Each ordinary member of the committee shall hold office until the next annual general meeting **in the year that coincides with the end of his or her term of office.**

Modify
O 23 (4) In the event of a casual vacancy in any office referred to in sub-clause(1), the Committee may appoint one of its members to the vacant office and the member so appointed may continue in office up to and including the conclusion of the annual general meeting next following the date of his or her appointment.
To
N 24 (4) In the event of a casual vacancy in any office referred to in sub-clause(1), the Committee may appoint one of its members to the vacant office and the member so appointed may continue in office up to and including the conclusion of the annual general meeting **in the year that coincides with the end of the term of office.**

Modify
O 24 (4) In the event of a casual vacancy occurring in the office of an ordinary member of the Committee, the Committee may appoint a member of the Association to fill the vacancy and the member so appointed shall hold office, subject to these rules, until the conclusion of the annual general meeting next following the date of his or her appointment.
N 24 (4) In the event of a casual vacancy occurring in the office of an ordinary member of the Committee, the Committee may appoint a member of the Association to fill the vacancy and the member so appointed shall hold office, subject to these rules, until the conclusion of the annual general meeting **in the year that coincides with the end of the term of office.**
Modify
O 23 (1) The officers of the Association shall be:-
(a) a President
(c) a Vice President
(d) a Treasurer and a Secretary

MSA97

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Contact either your State Coordinators or the Secretary, Mr Colin Wagg on (03) 9329 1633 or fax (03) 9326 5148, or write c/o:

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	$25 Annual Subscription

Contributions

Articles, news, papers and letters, either via email, disk or hard copy, should be sent to:

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Letters should be limited to 200 words. Authors will be contacted should editorial changes be considered necessary.

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