THE AUSTRALIAN METROLOGIST

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FROM THE PRESIDENT

It is difficult to balance the need for regular changes in a committee against the negatives of breaking up a good team. I therefore had mixed feelings when the 1996 AGM elections saw Grahame Harvey, John Mitchell and Horst Sieker step down from the national committee, to be replaced by Jim Gardner, Carol Sieker and Alex Smart. Grahame, John and Horst have served on the committee since the MSA began in 1993. They each have made a unique and invaluable contribution to our Society in its formative stages and should be proud of their achievements. I would like to thank them on your behalf and I shall personally miss working with them very much.

On a more positive note, it is gratifying to see people of the calibre of Jim, Carol and Alex agree to serve on the national committee. This augers well for the future of the MSA. Backgrounds on the new committee members will be found elsewhere in this issue. I look forward to working with them in 1997.

The election also saw Barry Inglis step down as Vice President, remaining on the national committee as an ordinary member. Barry is Australia's Chief Standards Scientist and is universally respected in both the Australian and international measurement communities. His support and influence have been critical to the establishment and continuation of the MSA and I would personally like to thank him for his wise counsel as Vice President.

The election of Jim Gardner as Vice President is significant for several reasons. Firstly, Jim will bring to the committee many years of experience in measurement in Australia, being the Project Leader in Optics and Radiometry at NML. Secondly, as discussed in the last issue of TAM, there are currently changes to the MSA constitution being drafted that will introduce, among other things, succession planning for executive committee positions. Assuming these changes are passed by the membership, a one year term as Vice President will become essentially a training year for a two year term as President, beginning the following year.

Jim has accepted the Vice-Presidency with the understanding that he will take on the role of President next year and that the 1998 national management committee will consist mainly of members from NSW. The challenge for NSW members is to organise a national committee from their membership by the end of 1997 to ensure a smooth transition of the national committee to NSW in 1998.

The Committee, from the very beginning, have recognised that to establish the MSA as a truly national organisation, the location of the Committee needed to be shared between the States, initially Victoria and NSW. We are therefore delighted with these developments, particularly that a person of the calibre of Jim Gardner has agreed to take on the role of President. I will step down as President at the end of 1997.

Finally, I wish all members the best for 1997. It certainly promises to be another significant year in the life of the MSA. Constitutional changes, the move of the committee to another State, the Biennial conference in Melbourne, the development of our Web site (see elsewhere in this issue) are just some of the events to look forward to.

John Miles

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.

Membership Enquiries

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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Membership Fees

Members	$30 Joining Fee
	$30 Annual Subscription
Associates	$25 Joining Fee
	$25 Annual Subscription

Contributions

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

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The deadline for the next issue is **20th April 1997**

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Write or fax the Editor if you are interested.

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If you have a position vacant, write to or fax the editor with the details. A charge of $20 for up to 10 lines applies. The circulation may be small but it is well targeted!

The deadline for positions wanted/vacant is five days before publication.

Letters to the Editor

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

Editorial Policy

The editor welcomes all material relevant to the practice of Metrology. Non-original material submitted must identify the source and contact details of the author and publisher. The editor reserves the right to refuse material which may compromise the Metrology Society of Australia. Contributors may by contacted regarding verification of material.

Opinions expressed in *The Australian Metrologist* do not necessarily represent those of the Metrology Society of Australia. Material in this journal may be reproduced with prior approval of the editor.

IN THIS ISSUE

The Metrology Society of Australia now has its own "Home Page" on the internet.

See the article by Adrian Ward on page 5 for more details.

Homepage

http://www.ozemail.com.au/~ausmet/

Email

ausmet@ozemail.com.au

Editors column

In Issue 9 of TAM I made a request for assistance in putting our magazine together. I am pleased to announce that some help has been forthcoming and we are slowly gathering a team of sub-editors to cover various columns in the magazine.

Neville Owen has agreed to find a Technical Paper for each issue while Carol Sieker will be asking members for a profile of themselves. (See profile on our new committee members in this issue).

This issue has been a bit of a problem to compile, what with the Christmas break and members being on leave etc. However with some real help from Marian Haire (NSC) and our ever available President we finally got to print.

Future issues **will** be published May, August, November and February each year with copy deadlines by the 20th of each preceding month.

Another issue which, as Editor I would like to have members consider, is to have companies and organisations advertise their products in TAM.

If we are going to improve the magazine by going to colour, photographs, etc. the cost without some financial assistance will be prohibitive. Even now each edition costs the society about $900, and while the committee sees that money as being well worth spending if we are to go more "up-market" some advertising may be the answer. Your comments and thoughts on this matter would be appreciated. I have suggested a cost structure for advertising on page 4 for your comments.

On a different subject, I was recently fortunate enough to be asked by NATA to perform an assessment in Manila. It was very interesting to compare Manila with Australian cities from both a cultural and the laboratory aspect. Culturally we appeared to be different in many ways, but, when looking at the laboratories of the two countries we have a lot in common. The people are all very interested in their craft and are willing to listen and learn and give of their knowledge to us.

The Filipino's are a very humble and courteous people and those of them who have been to Australia speak highly of both our country and metrologists. It was interesting to hear them speak of their colleagues in Australia, many of whom are also colleagues of mine. (This Metrology world is not really such a big place.)

Jack Deller

NEW COMMITTEE MEMBERS

The Annual General Meeting last November regrettably saw three of our original committee members (John Mitchell, Grahame Harvey and Horst Sieker) leave. All of them have made a significant contribution to the Metrology Society and I'm sure we all extend them our sincere thanks.

However, three new people have joined the team and we thought you might like to know a little about them.

Dr Jim Gardner is our new Vice-President and his experience and expertise will undoubtedly be put to good use. Armed with a PhD in Physics involving work in the field of vacuum-ultraviolet photoelectron spectroscopy, Jim joined the CSIRO National Measurement Laboratory in 1976 to work in Radiometry and Photometry. He is currently leader of the Optics and Radiometry project with measurement interests extending from temperature (pyrometry) to the design of special purpose lighting for the measurement of cracking in road surfaces. He has been a NATA assessor for a number of years and is the current Vice-chairman of NATA's Optics and Radiometry Registration Advisory Committee. He is also a member of a number of professional societies and represents Australia on the Consultative Committee For Photometry and Radiometry at the International Bureau of Weights and Measures.

Mr Alex Smart quoted as "currently enjoying his 59th voyage around the sun" is a welcome addition to the committee. His interest in precision measurement extends from the beginning of his training at the Ammunition Factory, Footscray. He then went on to set up a NATA accredited Metrology Laboratory for W.A. Deutsher Pty Ltd. Becoming General Manager and later owner of S.G. Prittie Pty Ltd he has recently moved premises from Coburg to Airport West and built a very impressive new Metrology Laboratory. Here the environment, equipment and expertise allows him to carry out very precise measurements and he is well recognised as being at the forefront in the area of screw thread manufacture and measurement. Alex is also a foundation member of the Metrology Society of Australia, active on Standards Australia committees and an assessor for NATA.

Ms Carol Sieker is continuing a recently started family tradition and has replaced her husband on the committee. Carol originally worked as an engineer with the airlines in the avionics area but was recruited by her husband, Horst, 10 years ago to work in the family dimensional metrology business - A.C.M. Laboratory Pty Ltd. This started an interest in metrology that has also extended into its relationship with Quality Systems and she does some consulting in this area. The laboratory itself calibrates a wide range of dimensional and physical measuring equipment and is also involved in calibration and calibration system training. She is a member of several professional societies including a foundation member of the Metrology Society.

Member comments welcome

MSA ON THE WEB

by Adrian Ward, MSA Webmaster (award@suburbia.net)

Well it had to happen. With all and sundry - from pizza restaurants to car manufacturers, computer systems to pay television - on the World Wide Web, the MSA has also joined the throng.

We now have our own Home Page at http://www.ozemail.com.au/~ausmet for all to see.

Just before Christmas we went live with version one of our Home Page. What you see today is just a start as we plan to add more information about the MSA and its members. All this takes time AND member input.

Currently our Home Page has the following pages -

- About the MSA
- How and why you should join
- Membership grades and fees
- Who, what and where are our members
- An electronic version of TAM
- MSA 97 information
- Useful links

We will soon have the following additional pages -

- All about Metrology
- The MSA Bulletin
- MSA Committees
- Events diary
- What's new

One page of particular interest to members may be the "Who, what and where" page. On this page we plan to have a listing of all MSA members and their organisations. At the moment only two member organisations are listed. These are NATA and Australian Calibrating Services (my own organisation - oh well, you have to start somewhere).

Another page worth looking at is the "MSA 97" page. Here you will find current information on the ***International Conference on Measurement Science, Technology and Practice*** which will be held during November this year.

By now I guess you are saying to yourself "how do I see all this?". If you are lucky enough to have a fibre-optic link to the net or simply have a dialup Internet Service Provider, get along to http://www.ozemail.com.au/~ausmet and put that browser to good use. For those members that have yet to don their wetsuits and go surfing the superhighway but are keen to do so, contact the editor* of this esteemed journal and I am sure he will help you in the right direction.

I know that after seeing our society's Home Page you will be rushing to submit contributions. These can be sent by email to either the editor of TAM, Jack Deller, at ausmet@ozemail.com.au or directly to the Webmaster of our Home Page at award@suburbia.net (that's me).

*You will get much better assistance from our webmaster. *(Editor)*

See you on the Net ...

NEWS FROM THE STATES

Unfortunately State news and events has been slow coming in for this edition so if you feel you want some more info on what is happening give your coordinators a nudge and remind them that the MSA is a National Association and the way to get your message heard nationally is to provide the National State Coordinator (Bill Cerruty) with an Up-to-Date diary of coming events.

NSW proposed schedule of visits for 1997

March 19:-	Macleay Museum University display of precision instruments
May:	Aircraft corrosion control & NDT testing facility.
July:	Astronomy
August:	Drug testing
October:	Medical measurements
November:	Aircraft operations

Victorian Members Technical Night

Arrangements have been made for all MSA members to visit the facilities of Australia's leading gauge maker, **S.G. Prittie Precision Gauges Pty. Ltd.**

The company is recognised for its excellence of manufacture and exceptional product quality and the MSA is privileged to be given the opportunity to visit this exciting manufacturer.

The visit will cover all aspects of the SGP operations and will include a tour of the manufacturing facilities and the NATA Metrology laboratory.

Included in the evening will be a technical session on the following topics:

- The reality of AS 1997, Plain Limit Gauges by Alex Smart
- The introduction of "Computers" in preparing NATA reports. by Jack Deller

This promises to be a very interesting evening and members should get their names in early.

When:	**9th April 1997 from 7pm to 9.30pm**
Where:	**21 King Street, Airport West**
Reply:	**Ron McBain on 9852 0466 or 9850 3919**
By:	**No later than 4th April 1997**

Supper will be served after the technical session

Letters

The Perfect Measurement

The following letters were received from Neville Owen and Gary Price regarding, amongst other things, the Presidents's challenge in the last issue of TAM, namely can *anyone come up with a measurand that can be simply defined in a few sentences so completely that there is absolutely no associated uncertainty.*

Thanks for your response Neville and Gary and I hope it prompts some more jottings from our membership.

Editor

Dear Editor,

The problem posed by John Miles in the November TAM, of defining an absolute measurement without uncertainty brings to mind my long term desire for the measurement of the quantity of energy passed through a gas meter. Present metering technology usually relies on the determination of a volume of gas, which is metered at a known or estimated pressure and an estimated temperature. These pressure and temperature estimates allow the volume to be converted into a mass. Further a knowledge of the gas heating value at the metering location then permits the determination of the amount of energy metered. This is a very lengthy process susceptible to many measuring errors.

Natural gas is composed of the lower order hydrocarbons and other gases. The other gases do not usefully contribute to the energy and may be ignored so any metering system need not meter them. (It could be argued that they would affect the efficiency of the appliance; however, a prudent gas seller would only guarantee to supply the material. How it is used by the customer is beyond the seller's control.) Each hydrocarbon is capable of evolving a well-defined quantity of heat, determined using fundamental physics. The problem is then to count and identify each molecule as it passes the metering sensor. The metering problem has been reduced to a digital system and can be reproduced without error.

Some problems do remain however. It would be necessary to count and identify the hydrocarbon molecules at approximately 10^{22} per second to run a hot water service. Once this minor problem has been overcome, this new gas meter will operate without error.

If this discussion is taken further it can be realised that very many of the measurements we commonly make are of macroscopic phenomena that have a microscopic origin. Identification of that origin and measurement in those terms will often give a much more useful answer with consequently little or no error. The major hurdle still being the actual enormous quantity or rate involved. This discussion is unfortunately very philosophical as the likelihood of achieving these outcomes is very remote. This then brings me full circle on the discussion by our President in the November '96 TAM.

Metrology is not dry and colourless when treated seriously. It requires an enquiring mind to help find better ways to do what we have to do.

Neville Owen

Strewth! Whats wrong with this Measurement?

Our esteemed and venerated President, in between exhorting us (quite rightly) to contemplate and discuss the awesome intellectual, social and economic implications of metrology[1] has issued some substantial challenges and pretty puzzles. One of them was to define measurement and much was the giddiness induced in the nation's laboratories as we all wandered around in ever decreasing circles. The other challenge was to come up with an example of a measurand with zero identification uncertainty. The following not entirely original definitions and example are offered.

A physical quantity is the group of operations that may be used consistently to measure it.
A measurement is an operation assigning a number to identified objects or events in a commonly understood, rule-governed way.

Our intrepid ultra-high accuracy metrologist armed with the very latest of precision instruments (language, pencil and paper) walks into the local greengrocers where a bin is to be found. There is a sign over the bin which reads "apples 20^{c} each". Our metrologist examines one of the contents. It is red, shiny and looks like an apple. Just to be sure, a small bite is taken. It tastes like an apple. The metrologist writes the number "1" on the piece of paper and puts the apple in a bag. The metrologist examines another of the bin's contents. It is green and flat and looks a bit like a leaf and is placed back in the bin. Another object is selected. It looks like the first object, is subjected to the same tests and passes. The metrologist takes pencil and paper, adds 1 to the previous number and puts that apple in the bag. The process is iterated until the number "5" appears on the paper. The test report for this ultra-high accuracy measurement of amount of substance reads "5 ± 0 mol^{-1} mol apples" but the cashier simply says "that'll be a dollar luv" (there's the crunch).

Descartes postulated an evil omnipotent genius intent on misleading us all regarding our empirical knowledge and concluded the only thing of which he was completely certain was that he could think. Bishop Berkely suggested that there was some considerable doubt as to whether a tree falling unapprehended in a forest makes any sound. To find an uncertainty in the above measurement procedure requires scepticism of the same order.

Perhaps we should just say that when we are buying apples or bus tickets or putting on our shoes or setting the table (all activities requiring similar accuracies in measurements of amount of substance) we are dealing in moral (rather than logical) certainty. But this is exactly what we are dealing with in metrology. As the ISO GEUM says: "The quality and utility of the uncertainty quoted for the result of a measurement .. ultimately depend on the understanding, critical analysis, and integrity of those who contribute to the assignment of its value."

Gary Price

[1] It is rumoured (you heard it here first) that the CGPM is to consider a new SI unit and quantity, the baffle (baf) as the measure of the amount of ignorance contained in a zepto mole of economists. Lawyers, once secure in the knowledge that what you can't measure you can't control, are observing these developments with increasing unease.

John responds:

There are several points I would like to comment on. Firstly, regarding Neville Owen's letter, even if we assume that we could correctly identify and count the number of molecules passing by per second with zero uncertainty, the energy content of each molecule, and hence the total energy, would still have an associated measurement uncertainty. The energy evolved by each hydrocarbon molecule may well be *determined using fundamental physics*, but the physical constants involved in these calculations will all have measuring uncertainties.

Gary's claim that a "*physical quantity is the group of operations that may be used consistently to measure it*" is a challenging one. It follows that physical quantities cannot exist without their measurement, so that length, mass and time did not exist until we measured them. OK, suppose we accept that. Gary also defines measurement as "*..assigning a number to identified objects or events...*". Doesn't it follow that a physical quantity cannot exist unless a number has been assigned to it. But surely physical quantities don't necessarily have to have numbers assigned to them before they exist. Using a beam balance we can determine if "*A car has more mass than an ant*" without having to put numbers on the mass of the car or the ant?

Both Neville and Gary claim that a number of things is a measurand with no associated uncertainty. I too thought along similar lines when I first thought about the issue. For example, if I define a measurand as the number of hydrocarbon molecules passing through a hot water service, or the number of apples in a bag, or the number of human beings in a room, then surely there is no uncertainty associated with these definitions. Surely there is no ambiguity specifying a measurand as the number of human beings in the room and so there will be zero uncertainty arising from the definition of the measurand. Or will there?

I might count ten human beings in a room. Someone else may count nine human beings and one lawyer! Similarly, Gary's apple counting requires someone to look at and taste the apples to confirm their appleness. Who is this person? What if they are colour blind? And do we count fractions of an apple? Half an apple? One tenth of an apple? If we continue to cut an apple up, does it ever stop being an apple, or do we end up with apple molecules, like Yahoo Serious's beer molecules? If we ask for five apples and the fruit seller gives us a rotten apple, are we justified in refusing the apple? Perhaps we have not specified the measurand carefully enough and have therefore ended up with some uncertainty in the final result!

I look forward to further correspondence.

JRM

Annual Meeting of the MSA

The 1996 Annual General Meeting was held in November at NML in Melbourne.

The meeting was attended by approx. 40 members and was followed by an illuminating evening of excellence in Metrological Wonders and Philosophy (Ron McBains eloquent wording) by members of NML Melbourne Branch.

Senior staff members, Ron Cook, John Miles and Walter Giardini were assisted by MSA members Colin Wagg and Jack Duce in an evening in which members were **pressured** into **balancing** their technical expertise by the formentioned members. It proved to be a great evening full of technical instruction in the various aspects of Pressure and Balance calibration due to the exceptional efforts of the instructors.

Lively discussions took place during the refreshments afterwards.

And now another teaser from Dr. John

What is a Metrologist?

Some time ago, I asked MSA members to try and define a metrologist. This is obviously very relevant to the Metrology Society of Australia. After all, if we don't know who we are, then who does?

I haven't been exactly overwhelmed with suggestions.

I therefore offer the following, taken from an official guidebook produced by the Employment and Training Administration of the US Department of Labor.

A Metrologist:

"Develops and evaluates calibration systems that measure characteristics of objects, substances, or phenomena, such as length, mass, time, temperature, electric current, luminous intensity and derived units of physical or chemical measure. Identifies magnitude of error sources contributing to uncertainty of results to determine reliability of measurement process in quantatative terms. Redesigns or adjusts measurement capability to minimize errors. Develops calibration methods and techniques based on principles of measurement science, technical analysis of measurement problems and accuracy and precision requirements. Directs engineering, quality and laboratory personnel in design, manufacture, evaluation and calibration of measurement standards, instruments and test systems to insure selection of approved instrumentation. Advises others on methods of resolving measurement problems and exchanges information with other metrologist personnel through participation in government and industrial standardization committees and professional societies."

Any comments?

John Miles

News from NSC

Metrology in Chemistry - International and National developments

Interest and activity in bringing a metrological perspective to quantitative chemical analysis has been increasing rapidly around the world in the past few years. The mere trickle of work and papers in the field of a couple of years ago has turned into a flood. The primary driving force for improvement in analytical quality and comparability has been international trade and it is not surprising to find vigorous regional organisations such as EURACHEM producing important work in areas such as analytical uncertainties, the UK Valid Analytical Measurement (VAM) program and a great deal of attention to analysis by international and regional laboratory accreditation bodies and by standardisation organisations.

That there exists a serious global problem with the comparability of chemical measurements cannot any longer be denied - rigorous interlaboratory studies have confirmed it beyond expectation. Terry Quinn (Director of BIPM) succinctly illustrated the problem: "To the question; is the amount of lead in our drinking water greater or less than it was ten years ago?, no reliable answer is possible." It will be a significant test of chemistry, and of the scientific ethic and attitude, to provide an answer to that question when it is asked in ten years time. The old excuses are rapidly declining in credibility: "What has accuracy got to do with me? All my clients are interested in is precision."

Influential papers by some of the world's most eminent analysts and an international workshop in 1993 amounted effectively to a "call to arms" to the world's analytical chemists and an important international collaborative organisation (Cooperation in International Traceability in Analytical Chemistry, or CITAC) was formed to undertake technical tasks. In 1994 the CIPM founded the Consultative Committee for Amount of Substance (CCQM). It meets for the third time in February this year and has before it a surprisingly vigorous program of work and research to the year 2000, in close collaboration with the above mentioned organisations. Another indication of the increasing pace of developments in metrology in chemistry was the appearance of an important international journal from Springer-Verlag - *Accreditation and Quality Assurance. journal for quality, comparability and reliability in chemical measurement.*

It can truly be said that a major cooperative international enterprise is underway to integrate in practical fashion quantitative chemical measurements (or measurements of amount of substance) with the international measurement system. There is still a long way to go and ultimately the solution to the problems of chemical analysis will involve complex interactions between leading edge science and technological innovation with organisational, institutional, economic, social (including especially education), and legal factors. But a promising start has been made.

Australia has well and truly engaged these developments and it is very much in the national interest to do so. In 1992 the National Standards Commission convened the Chemical Metrology Committee, chaired by the Government Analyst, to advise and coordinate and its members have made

quite significant national and international contributions. A person well known to many of us, Alan Squirrell from NATA is Chair of CITAC, which is planning to hold a major meeting in Australia in 1998. NATA hosted in 1995 an important international conference on quality assurance in the analytical laboratory. NATA, as is so often the case, is leading the international pack in the accreditation field. It has long had a vigorous accreditation program in chemical testing and is now putting the finishing touches to an accreditation program for the certifiers of traceable reference materials - a significant element in any national chemical measurement system (and another world first).

The MSA itself (and Kerry Marston in particular) should take great pride in the promotion of metrology in chemistry in the program and invited speaker (Paul De Bievre) of the first MSA conference in 1995 and from which important work is still flowing. Last year the first (after many a long and barren year) major Australian Research Council grant was made in the field of analytical chemistry and University of NSW School of Chemistry is now commencing its investigation into the sources and propagation of errors in analytical chemistry. The Royal Australian chemical Institute has made the challenges facing analytical chemistry in the 21st century the theme of the 14th Australian Symposium on Analytical Chemistry, to be held later this year. Measurement and measurement related issues feature prominently. Education and training of analysts are also beginning to receive serious attention.

However perhaps the most important development was a proposal in 1995 for a National Analytical Reference Laboratory (NARL) centred on the modern analytical laboratories of Australian Government Analytical Laboratories (AGAL) in Pymble, Sydney. The proposal created a deal of international attention and some other nations are now seriously considering the establishment of such reference laboratories. Although the requisite (modest) funds needed were not forthcoming from government at that time, discussions and planning for this national facility have continued to this day. It would be premature and impudent of me to make a definitive statement regarding the future of this project of central importance to the national measurement system - that is rightly the prerogative of AGAL which has worked hard and quietly in a difficult economic environment to advance the cause of traceability, accuracy and comparability in analytical measurements. I can however, express quiet optimism and say the prognosis is good. Watch this space.

Gary Price
NSC

Water Meters

During 1991-92 the Commission undertook a study to ascertain whether or not measurements made by water meters are accurate and traceable. The Commission also analysed relevant legislation setting out the requirements for water meters. Of particular interest to the Commission were the requirements for ensuring the accuracy of the meters. This study found a lack of uniformity between the water authorities and the standards they apply to their meters. It also found that only a few water authorities have systems to ensure the in-service accuracy of their meters or could demonstrate the traceability of these measurements.

Discussions with the water authorities, water meter manufacturers and other industry bodies concluded that the best option to ensure a nationally uniform metrological system for water meters was to incorporate requirements for them in the National Measurement Act. Consequently, two committees were established, the Water Metering Committee (WMC) which comprises the Commission and representatives of all the water utilities, the water meter manufacturers and the water meter industry. The second was a technical subcommittee of the WMC which comprised technical experts nominated by members of the WMC.

As a result of a number of meetings of the technical subcommittee of the WMC, documents containing the requirements for pattern approval, verification and reverification of water meters have been drafted. They have been circulated for comment to members of the technical subcommittee. The comments that the Commission has received have been consolidated and circulated for further comment. Once these documents are finalised, they will be circulated for final comment to the Water Metering Committee and all other interested parties.

Zuhier Elhassan
February 1997

TIME

Background
Dr Richard Brittain is a member of the MSA who is employed as a scientist at the National Standards Commission. His duties include providing advice to the Government on legal metrology and policy issues relating to the national measurement system. A majority of his work is in the field of industrial measurements, utility meters and Australia's time system.

On Friday 31 January Dr Richard Brittain appeared on the ABC Radio Adelaide talking to Julia Lester on 5AN. He appeared as Secretary of the National Time Committee and answered the following questions:

1. Will The Year 2000 Be A Leap Year? And How are Leap Years Calculated?

Yes the year 2000 will be a Leap Year. In 1582 the Gregorian calendar replaced the Julian calendar which was instigated by Julius Caesar in 46 BC. The Gregorian calendar, which is the calendar currently used by a vast majority of the world, was introduced by Pope Gregory XIII in consultation with the astronomer Christopher Clavius. The Gregorian calendar was introduced to regulate the ecclesiastical year and in particular the date of Easter which was gradually moving through the year due to inaccuracies in the Julian calendar. One of the fundamental differences between the Julian and Gregorian calendars is the method employed for the calculation of leap years.

Under the Gregorian calendar every fourth year is a leap year with the exception of centurial years which are only Leap Years if they are exactly divisible by 400. This means that the years 1700, 1800 and 1900 were not leap years but the years 1600 and 2000 are Leap Years.

2. Why Does February have Less Days Than Any Other Month?

Julius Caesar decided that he wanted to be immortalised by having a month of the year named after him and so decreed that what was then called fifth month (called Quintis) would be called July. In order to make July a special month he decided to make it one day longer than any other month of the year. At that time all the months were 30 days long and the year began on 1 March (named after Mars) so he decided to take a day off the last month of the year i.e. February to extend July.

When Augustus followed Julius Caesar he decided to repeat the exercise with what was then the sixth month of the year (called Sextus) to create August leaving poor old February with only 28 days!

3. Why Does The Date of The Chinese New Year Vary So Much Each Year

Every Chinese New Year begins with the second new moon after the December solstice and this occurs between 21 January and 19 February in the Gregorian calendar.

"Thank you very much that's all we have time for now."

MSA '97 METROLOGY CONFERENCE UPDATE

In this issue of TAM, you will find a couple of brochures notifying the MSA conference and calling for papers. We hope the conference will draw all Australian metrologists as well as many from further afield to make this a truly productive and "not-to-be-missed" event on everyone's calendar. Please use the second brochure to publicise the conference and circulate the information to your colleagues, clients and associates.

We have all experienced that feeling of excitement when we meet someone who works in the same area, and at last can talk about the technology, the science, the achievements, the possibilities, the highs and lows of our work in detail. In a field such as metrology, in which we are all specialists and widely dispersed, the opportunity to do this does not come often enough. Please take a moment to consider whether there are aspects of your work which other metrologists would find of interest, and would be suitable for presentation as a paper or as a poster at our conference. Remember one of the main purposes of the MSA is to facilitate our working together to develop as individual metrologists and together to drive our field into the next millennium.

Some of the things to look for in the conference brochures are: Focussing on the role and practice of metrology in the company; link up with the Asia Pacific Metrology Conference; trade exhibition subscriptions and sponsorships sought from companies; a fine photographic view from the Melbourne Royal Botanic Gardens, the venue for the conference dinner *and* the Internet Web address for the MSA and the MSA'97 conference. So start writing those papers and sending in those registrations, and lets all make this a great metrology conference.

MSA'97 Committee

MEMBER ADVERTISEMENTS

MEASURING EQUIPMENT FOR SALE

Carl Zeiss Universal Measuring Microscope
Capacity 200mm x 100mm, C/W Accessories, Optics Rotary Table etc.

Hommel Werke model t1, Surface Roughness Tester c/w worktable.

81 piece Gauge Block Set (Matrix) Inch (Inspection Grade)

Gauge Block Accessories, (small set) comprising: 3 sets radius anvils, 3 clamps,
1 straightedge

Diatest Sets, (3 only):
Comprising: 1 Set 0.0375 - 0.061 inch
1 Set 0.0185 - 0.038 inch
1 Set 0.0625 - 0.394 inch

Surface Plate (granite) 600mm x 600mm

All of the above equipment is surplus to existing requirements and is in good to excellent condition, prices are negotable.
Contact is R.McBain on Tel: 03 9852 0466

JOB FOR A DIMENSIONAL METROLOGIST

The Nylex Corporation is seeking a Metrology Officer for their Frankston plant.
The successful person would be responsible for all dimensional metrology functions and the control, registration and calibration of all test equipment. Compilation of reports and capability studies for new and existing products would also form part of this role.
The company is requesting that a person who has completed a course in measurement science/metrology, with a knowledge of statistical applications and who can work without supervision in a friendly team environment should apply to:

Mrs. P Stuart
Quality Manager
Nylex Corporation Limited
PO Box 307
FRANKSTON 3199

NML Talyrond Model for Disposal!!

Dr. Nick Brown from NML (Sydney) has requested members be advised that a Talyrond Model 1 Roundness Measuring Machine (about 1955 vintage) is being disposed of.

The machine is available at no cost but the procurer would be up for removal and transport costs from the laboratory at West Lindfield.

Please contact Nick at:

Dr. Nick Brown (Leader Length Standards Project)

CSIRO, Division of Telecommunications and Industrial Physics National Measurement Laboratory

Address: Bradfield Road, West Lindfield NSW 2070

Phone: (02) 9413 7157

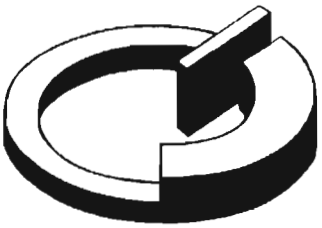
Fax: (020 9413 7200 / (02) 9413 7631

email: nick@dap.csiro.au

Membership Fees for 1997

An Invoice for your 1997 membership fees is included with this issue of TAM. Please note that the due date of February is extended to March as the mail out of the magazine was delayed.

Remember your association rely's on the finance of membership to keep it afloat so prompt payment of fees would be appreciated.



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