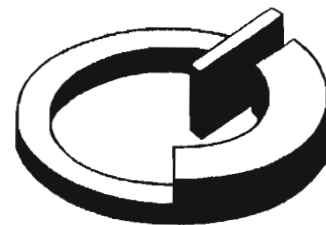


THE AUSTRALIAN METROLOGIST



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FROM THE PRESIDENT

This issue of TAM sees a change in editor following the resignation of the founding editor, John Mitchell. John finds he can no longer give the time required to keep TAM at its currently high standard, a standard he has set himself. I am pleased to announce that Jack Deller is the new editor.

On behalf of all MSA members, I would like to thank John for his magnificent effort during the past three years in establishing TAM as our primary form of communication. The national committee realised from the beginning that TAM would be critical in establishing the MSA. I am certain that the continued growth and success of the MSA are due in no small part to John's editorship of TAM. In the first issue in February 1994, John set out his vision for TAM. This was that it should *develop into something which is professional, respected and influential in the metrology community*. John has already taken TAM a long way down that path. We all owe it to him to continue to bring his vision to reality.

"We" is the important word above. The last issue called for volunteers to take over the editorship of TAM, offering extra support such as using the services of a professional newsletter publisher. The response, from a membership of more than three hundred, was disappointing. There were several offers of help, but no-one willing to take over the essential and overall role of editor. This left the national committee in a dilemma. We were rescued when committeeman Jack Deller volunteered to take on the editorship of TAM.

Jack is already the convenor of the Membership Qualification Sub-Committee, a member of the Communication Sub-Committee and a Victorian State Coordinator. Some of these duties must now be given to others on the committee. I know Jack will do an excellent job, as always, as editor of TAM.

I also know he would have preferred someone from the general membership to step up and take on the task of editor, leaving him to continue his excellent committee work. Personally, I would like to thank Jack very much for taking on one of the most important jobs in the MSA. I know we will be giving him all the support we can.

Nevertheless, surely the point is this, and I know we have all heard it before. (That's because it's true!) A successful organisation, society, club, whatever, needs the *goodwill and support of most of the members*. Without that, it will not survive. So, if we believe the MSA is important, and I expect most of us do, then we all must be prepared to give something.

I know we are all working hard, perhaps harder than we ever have, and it's always difficult to find the time. It often doesn't take much, though; an article or letter to TAM, enrolling a new member, organising a site visit or technical function, volunteering to help with a mail-out. If you don't know how to help, contact the national committee or State branches and I am sure you will be welcomed with open arms. Another truism is that you only get out what you are prepared to put in!

On a more positive note, an example of how general goodwill and support lead to success was surely the 1995 MSA national conference. The conference organising committee did a remarkable job themselves, but were also able to draw on the support of many members (and non-members!), all working together to achieve a remarkable result.

I am therefore delighted that an excellent committee will again organise the next national conference, to be held in Melbourne in December 1997. The committee is again composed mainly of members who currently do not hold formal positions in the MSA. I wish the committee, chaired by my CSIRO colleague Walter Giardini, all the best and thank them all for volunteering for this exciting, challenging and demanding task. A report on the current progress of this committee appears elsewhere in this issue.

Beware the Jabberwocky, my son!

One has to be so careful these days. In the last issue I innocently, and in passing, mentioned physicist Arthur Stanley Eddington. Imagine my surprise when I received a letter regarding Eddington from Gary Price of the National Standards Commission.

Gary is an active foundation member of the MSA, having contributed significantly to (continued page 4)

THE AUSTRALIAN METROLOGIST

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

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

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Sponsorship

Would you or your company be interested in sponsoring a future issue of *The Australian Metrologist*? If you are a Member or your company is in the metrology business, a contribution of \$350 goes a long way towards covering the printing costs and permits the sponsor to include a relevant insert (up to A4 in size) in the mail-out. Write or fax the Editor if you are interested.

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Write to or fax the editor with your details including years of experience and qualifications. This service is offered free of charge.

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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 be 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.

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EDITORS COLUMN

I keep asking myself "Why " but here I am acting as Editor of our magazine. As Dr. John has said the task was accepted very reluctantly as I feel to follow John Mitchell will be an arduous task, and I am going to need your support in filing articles and comments on a regular basis.

In fact I would like to gather around me some sub-editors who will assist to gather the information for each issue and my job will be to position it in each issue.

The sub-sections would be as follows:

1. Presidents Column (President)
2. State News (Nat. State Co-ord)
3. Technical Paper (?)
4. Industry News (?)
5. Committee News (?)
6. Letters to the Editor
7. Conference Update (Conf. Committee)
8. Profile on Members (?)
9. Items for sale, Jobs wanted/available
10. Any other items members feel necessary.

As you can see from the above there are positions available as sub-editors, so if you feel you would like to be involved please give me a call. Hopefully by next issue I will be accessible via E-mail so the transfer of information should be easier.

The management committee appreciates the role TAM plays as the major communication device within the society and will give us all the support required to continue to improve the magazine, but, it is still up to you to contribute.

Thanks John for your tremendous contribution in getting TAM to where it is and please don't go too far away as I will be looking for your guidance.

Jack Deller

THE AUSTRALIAN METROLOGIST

FROM THE PRESIDENT (Continued)

our submission on the Kean Report and to raising the status of Chemical Metrology in Australia. He also wrote an honour's thesis in his student years on Arthur Stanley Eddington!

Gary's letter suggests links between Eddington and the philosopher Wittgenstein via Cambridge mathematicians Russell and Whitehead. Cripes! Gary also sent me several papers which illustrate a long and rich tradition in the history and philosophy of measurement. This leads me to my point. (Yes, I do have one).

Metrology is viewed by many as a dry and colourless activity, populated by the conservative and unimaginative. Metrologists are seen to be concerned more with the number of decimal places than manufacturing exciting products or discovering fundamental laws of nature. Sadly, our colleagues from other fields often hold this view. They really should know better, as this is the way they themselves are often viewed by the general public.

We need to begin to change this view of metrology by pointing out that many of the most momentous discoveries in science have come from work beyond the third or fourth decimal place. We need to show that metrology is full of intellectual challenges and fundamental questions. Try to define *measurement* and you will see what I mean!

The history and philosophy of measurement shows us that metrology has a long tradition, with heroes and villains, triumphs and tragedies. We need to understand this ourselves first and then tell others. In this way, we raise the status of metrology as a profession and an intellectual endeavour, a basic objective of the MSA.

Finally, a challenge. The ISO GEUM lists the incomplete definition of the measurand as a source of uncertainty. For example, if the length of a 1 metre steel bar is to be determined to micrometre accuracy, its specification should include the temperature and pressure at which the length is defined. If the bar does not have parallel ends then the line of measurement must also be specified, and so on.

The question is this: Is there any measurand that can be simply defined in a few sentences so completely that there is absolutely no associated uncertainty? Send your thoughts to me or to the editor by mail, or E-mail at miles@mst.csiro.au. We will publish the best ideas.

John Miles

LETTERS TO THE EDITOR

Has the President lost it?

Dear Editor,

Where is our highly respected President, Dr. John Miles leading us? Did you read his Editorial in the last issue? Did the altitude over the Timor Sea affect him? Or was it a case of Bali belly going to his head? Or is there really some connection between metrology in Indonesia, Einstein's general theory of relativity, Sir Arthur Stanley Eddington, Alfred Russell Wallace, Charles Darwin and the benefit to Captain William Bligh of a global positioning satellite system for navigation?

While still considering Dr. Miles rambling's my concerns became deeper when that renowned physicist Mr. Ron Cook actually stood up in an MSA meeting and proclaimed that "Physics could be taken to be natural philosophy" Wow! - - - and all these years I thought that metrology had to do with measurements and reproducible results allowing for some uncertainty or now lots of uncertainty, about whether MSA is a technical, scientific, philosophical or gastronomical society. The safest position I can now adopt is to pledge my support for the forthcoming M.S.A. Annual Dinner.

Some particular points in Dr. Miles Editorial warrant further discussion.

1. On Captain Bligh, Dr. Miles sees only the technological solution, eg GPS, whereas a Dale Carnegie book on "How to Win Friends and Influence People" may have been a softer, greener solution.

2. On Darwin, Dr. Miles paraphrases the work of an entire voyage with the observation that "Animal populations of various species have easily become isolated in different *habitats* on various *islands*, and have differentiated into new species". Now please read that quote again inserting *laboratories* for habitats and *committees* for islands. Thank You.

In conclusion may I point out that Darwin's theory "The survival of the fittest" may itself be a victim of evolution. In the case of MSA we demonstrate "survival by co-operation". As individuals our efforts would be less effective as a force for good in the world than the results achieved when we co-operate with each other across laboratories, across disciplines and even across state and national borders.

Alex. Smart

S.G.Prittie Precision Gauges Pty. Ltd.

Time for Constitution Upgrade

Dear Editor

I believe the time is now right for an upgrade to the MSA constitution. We presently have a very competent and hard working executive. They have achieved much and have brought the organisation to a mature state in a very short time.

However we should not expect that the same people will be available to carry us forward to the next stages of consolidation and growth and the decades ahead. Apart from the benefits of new blood, we must avoid overloading these special people.

Further, they have inevitably used time and other resources of their employer. While the employer probably has willingly agreed to this, I suggest that no person or employer should be expected to carry the costs indefinitely. To ensure that the situation is not left to drift, I propose that the constitution should be amended as soon as practicable to allow planned succession of executive committee positions.

I suggest that the terms of future presidents be limited to two years maximum. In order that there be a planned and orderly succession and minimal loss of corporate knowledge, there would need to be two new positions created on the executive committee, namely Immediate Past President, (IPP), to allow for continuity, and President Elect, (PE), at the level of vice president to provide for orderly succession.

At the end of his term the president would remain on the committee as the IPP and the PE would become president. A new PE would then be elected. The IPP would not be eligible for this position while filling the IPP position. The previous IPP would be free to retire from the committee or take another position.

Other key positions such as the secretary and the TAM editor involve a heavy work load and succession planning should be considered for these as well. A maximum term with no extension could be a way of dealing with these. The incumbent would then know that they had a commitment for, say two years and could have a minimum break of the same time.

Executive committee members should expect to be able to stand down after a term without feeling pressured into staying on. Perhaps a period of five years might be considered as the maximum that should be served in one continuous period.

There is no reason why, after a break, some recycling of people could not occur.

Most professional organisations now have a similar arrangement. The Institution of Engineers uses a one year term for Presidents, PE and IPP positions. The Optical Society of Australia uses a two year term for the President, as does the Instrument Society of America. One variation used by another body is for the secretary to be the PE. This reduces by one the number of people who would be office holders, but provides training for the task of President.

What do other members think?

Ron Cook

By a certain coincidence, the national committee has been thinking along similar lines. As the following article points out, changes are being drafted. How's that for being tuned in to our member's thoughts!! - Ed.

CHANGES TO THE MSA CONSTITUTION

Jane Warne is currently preparing a working draft of modifications to the MSA constitution. The aims of the changes are to ensure that the Society does not become stale or insular, to build in proper succession planning and to enable the committee of management to be more responsive and operate more efficiently.

The most important proposals involve the introduction of:

- . 6 year maximum terms for all committee members;
- . designation of one ordinary committee member as the Immediate Past President for a 1 year term;
- . introduction of a 2 year term for the President, Secretary and Treasurer;

Terms for the Vice President and ordinary committee members would remain at 1 year.

A "half senate" style of election is envisaged, with the President and Treasurer elected in odd years and the Secretary in even years. The Vice President position would normally be seen as a training year for the Presidency the following year. The new position of Immediate Past President allows the outgoing President to remain as an adviser to the new President.

The draft of the suggested modifications, prepared by Jane, will be considered at the next meeting of the Management Committee in November. Following possible revision and acceptance of the draft by the Management Committee, they will be distributed to all members for comment and discussion and then formally presented at a properly constituted general meeting, most likely the 1997 AGM.

METROLOGY AT THE SPEED OF LIGHT

Introduction

For the last year or two I have been looking at better ways of calculating the speed of light, and have been forced to refresh and extend my knowledge of a great deal of basic science. I thought that it might be interesting to describe just how much is involved in such an investigation, and why such a task is ideally suited to a national standards laboratory and a semi-retired physicist.

"But", I hear you exclaim, "everyone knows that the speed of light is a universal constant, fixed once and for all in 1983". Well yes, but *that* speed of light ($c = 299,792,458$ m/s) is the one in vacuum, and I am referring to the speed in air, which is not only less than c , but depends on the frequency (colour) of the light and the composition and density of the air.

I am talking about calculating the speed of light with an uncertainty of a few parts in a hundred million. Who needs to know it so accurately, and what is wrong with the present calculations?

Length metrologists and surveyors (now re-titled Geomatic Engineers) have a variety of instruments that can measure the *time* it takes light to travel over a particular distance (be it the length of a gauge block or the distance from here to there), but to convert the result to distance, they need to know the speed. The *precision* of some of these instruments and techniques are better than a part in ten million, so if comparable *uncertainty* is wanted the conversion factor must be very reliable.

The equations to calculate the speed of light commonly used at present are based on very old experiments, obsolete units and temperature scales, and limited ranges of wavelength, and have been shown by work at the National Physical Laboratory in Britain (NPL) to conflict with careful modern measurements.

A Working Party of the International Association of Geodesy (which is concerned with very precise large scale surveying) was established last year by my colleague Jean Rueger of the University of NSW, and I have been working as a member of this group. My background in standards made it appropriate for me to investigate the changes that were needed to allow for the changes in units, but I have tackled some other aspects of the revision as well, with support from several colleagues. Some of my conclusions were anticipated and published by workers at NPL, but with some errors, which they have since acknowledged.

How to slow a speeding light wave

Despite what I said before, light *does* always travel at the speed c , at least when there are no atoms in its way. However every time a light wave meets an atom or a molecule, it spends a little time interacting with it, so its *average* speed (v) is less.

It is convenient to use a quantity called the refractive index (n), which is the ratio c/v , and is, therefore, greater than one. Translating this to physics, the refractive index depends on to what extent the components of the air (mostly nitrogen, oxygen, water vapour, and carbon dioxide) interact with the wavelength of the light, and how many molecules of each there are, which is measured by their partial densities.

Now school chemistry teaches some simple rules (or did when I was a boy), such as Boyle's Law, that allow us to calculate the density of any gas, given its temperature and pressure. The trouble is that these rules are only approximations, and are inadequate when we need to know the density to very high accuracy. The reason for this is that they assume that molecules are just points, and so never collide with each other; this is just not true for real gases at ordinary pressures, and more accurate rules are needed.

In 1981 and 1991 the BIPM very conveniently summarised a large amount of modern data in a set of equations that were just what I needed, at least over a limited range of atmospheric conditions. It turned out that the data used by BIPM covered a much wider range than BIPM had been interested in. (Their need was to apply buoyancy corrections in precise weighings, which are not usually done in tropical rain forests or on Antarctic mountains, where surveyors are likely to be.)

As an aside, the early equations assumed that the concentration of carbon dioxide in the atmosphere was 300 parts per million (ppm), but measurements at NPL showed that it is now 450 ppm and rising, and often much higher in enclosed or industrial environments. They also showed, as both the BIPM and I had found many years ago, that vapours of solvents and oils could seriously affect the refractive index. The new equations allow any measured or estimated value to be inserted. So now I had my modern density equations, expressed in the latest units.

The next problem was that the connections between the wavelength and the refractive index of each of the component gases were based on very old experiments (up to 80 years old), and that for some atoms there were several contradictory results. Also, some of the data covered a wavelength range rather smaller than

that needed in modern measurements, which is about 350-1500 nm. It was necessary to make some assessment of the relative merits of the data. This was the trickiest part of the exercise, and the part most likely to provoke dispute; indeed there is already some argument within the Working Party.

It is interesting that NPL (note the dominant role played by the standards laboratories in all this) found a major discrepancy between their new equations and their very precise measurements on water vapour, which they were able to associate with a defect in the procedure used by their predecessors (in the 1930s!) to prepare their sample. My own equations for water vapour gave similar discrepancies when applied to the NPL data, and I had to introduce a similar correction factor, assuming that the NPL measurements were valid.

There is a moral in this - a full description of every significant piece of apparatus and every procedure must be published when you are making critical measurements, so that any subsequent discrepancies can be traced to their source.

The state of play

Putting all this together, I have derived a rather lengthy set of equations that reproduce the NPL measurements over a range of ordinary laboratory conditions to within the accuracy of the measurements, and should be valid over quite extreme ranges of atmospheric conditions.

It would be helpful to have experimental results in these conditions with the accuracy of the NPL measurements, but there seems to be no-one equipped or willing to produce these. My results were published¹, and perhaps this will encourage someone to do the experiments.

There is a further complication that arises when pulsed or modulated light is used, because then the effective speed of light is smaller than for continuously emitted light. The corresponding property of the air is called the group refractive index, and its calculation turned out to be rather messy. I included some approximate equations in my paper, but a colleague in the USA pointed out that an exact solution was available, so I added these to the software.

There are still some issues to be resolved, particularly how best to include the effects of carbon dioxide and the absorption of light by some of the gases in the atmosphere, which can produce significant changes in n at wavelengths far from those at which absorption occurs. Several research groups are working on these topics, and we hope that the new equations, possibly with these refinements, will eventually be adopted by

those working in precise metrology, spectroscopy, and geodesy.

I do not think that I could have completed this study if I had needed to write conventional computer programs for the large number of different types of calculation required. I used a PC software package called Mathcad², which allows one to write equations in ordinary algebraic form, to enter data without input/output statements, and to display the results in tabular or graphical form with minimal effort.

In effect, the user has the benefits of a spreadsheet, but with a full display of all formulae, integrated with text. A disadvantage is that the files can only be read by the Mathcad software, and so are not as readily exchanged as standard spreadsheets. Nevertheless, I highly recommend the use of this or similar packages (Mathematica, Maple etc.) to anyone contemplating extensive calculations.

Philip Ciddor

References

1. P.E. Ciddor, "Refractive index of air: new equations for the visible and near-infrared", *Applied Optics* **35** (9), 1996, 1566-73.
2. Mathcad Software, Mathsoft Inc., Cambridge, Mass. 02139, USA.

About the Author

Philip Ciddor was leader of the length standards section of NML CSIRO for a number of years, retiring in 1994 after 42 years work with lasers, optics, interferometry, electromagnetic distance measuring (EDM) instruments and length standards. Philip continues to work at an Honorary Fellow at NML and is a Fellow of the MSA.

**Don't forget to put the
Annual General Meeting
in your diary!
Full details on the back page.**

TRAINING SURVEY

To assist us in compiling a directory of metrology training in Australia, you should find a survey form inserted with this issue. (If not, please contact the Secretary for one.) Could anyone who has done or is aware of a metrology course(s) please complete the form and return it to the Secretary even if you think that we might know about it. Thankyou in advance.

NEWS FROM THE NATIONAL MEASUREMENT LABORATORY

Collaboration in the Philippines

A collaborative project to develop international recognition for the Philippines national standards is underway between NML and the Philippines national measurement laboratory, Industrial Technology Development Institute (ITDI).

Training at NML was provided for three ITDI staff members in the areas of dimensional, temperature and electrical metrology. The training in dimensional metrology covered laser interferometry and CMM techniques, while radiation pyrometry and thermocouple measurements were covered in temperature, and ac/dc transfer techniques in electrical metrology.

Drs Nick Brown, Mark Ballico and Ilya Budovsky have visited ITDI to continue the training, set up calibration systems and initiate bilateral intercomparisons. The first round of intercomparisons in the three areas have been completed and the second round is in progress.

AusAID is continuing to fund this program for another year. During this period, the present programs for dimensional, temperature and electrical metrology will be expanded, and a new program for time and frequency measurement initiated.

Vietnam Metrology Receives NML Assistance

As part of the Australian government's support for APEC, a new AusAID project has been approved. In this project, NML will be assisting the Vietnam Metrology Institute (VMI) gain international recognition of their national standards of measurement.

The main functions of VMI are to establish and maintain Vietnam's standards of physical measurement and to establish and manage the system for the dissemination of these measurement standards throughout Vietnam. A staff of 100 (including 40 graduates) are involved in the maintenance of standards in ten fields of measurement (length, force and hardness, mass, pressure, volume and flow, physico-chemical parameters, temperature, electricity, time and frequency, and electromagnetics).

During the first year of the AusAID project, NML will offer assistance and training in the fields of length, force and temperature. The training will lead to the performance of intercomparisons between VMI and NML in these fields.

The Asia-Pacific Metrology Program

The Taiwan APMP member laboratory, Centre for Measurement Standards/Industrial Technology Research Institute (CMS/ITRI), has recently published the *APMP Directory of Calibration Facilities*, providing details of measurement standards and calibration facilities and services in a number of Asia-Pacific laboratories. A copy of this document can be obtained from the APMP Secretariat, Australia.

Name Change for CSIRO Division of Applied Physics

Due to the recent Federal Government decision to merge the roles of CSIRO Division of Applied Physics and Division of Radio Physics, the new name will be "**Division of Telecommunications and Industrial Physics**". It is hoped that the name National Measurement Laboratory (NML) will be retained for standards related activities.

NEWS FROM THE NATIONAL STANDARDS COMMISSION

Measurement in Sport

Measurement in Sport was officially launched by the Hon. Peter McGauran the Minister for Science and Technology on July 11 at the Australian Science Teachers annual conference. Measurement in Sport is a teaching resource developed by the National Standards Commission with the aid of a Department of Industry Science and Tourism grant. The resource aims to increase technological literacy and raise awareness of the role of measurement in our society.

Sport has been chosen as a motivating and appealing topic for the target audience of 14-16 year old students. The material forms the basis of a unit of work to be used by secondary science teachers.

The resource will assist with the development of outcomes from the Profile strand Working Scientifically (organisers - Planning Investigations, Conducting Investigations and Processing Data).

Every secondary school in Australia has received a complimentary copy of the Students Booklet along with a Teachers Manual. Schools will then have the opportunity to purchase additional copies of the Students Manual at \$6.00 each or \$50.00 for sets of 10 or more.

Schools are recognising the value of this resource with sales of more than 2000 copies in the first four weeks.

While the resource was developed for science teachers both Mathematics and Physical Education teachers are ordering copies. This will provide opportunities for faculties to work together to provide an integrated and relevant approach to this most topical issue.

The development of this resource was guided by a steering committee with representation from the NSW Department of School Education, the Australian Science Teachers Association, The Australian Sports Commission and the Science Teachers Association of NSW.

Measurement in Sport has been organised into four sections:

Measuring for Competition which sets the context and focuses on the limitations of measuring devices, past and present. As well as the need for accuracy to maintain the comparability of sporting records.

Measuring for Improved Performance focuses on human physiology including physical fitness, training, energy systems, nutrition and drug abuse.

Measuring for Innovation focuses on the impact developments in science and technology have on sport, including the design of new sporting equipment, clothing and communication systems.

Measurement Fundamentals which contains some background on measurement fundamentals and measurement standards.

The resource is designed with flexibility in mind. Teachers can use it as a whole unit or dip in and out as they choose.

Copies of the Students Manual are available from the National Standards Commission at a cost of \$6.00 or the complete Kit can be purchased for \$15.00.

Contact Marion Haire on (02) 9888 3922 for further information.

LET PEOPLE KNOW YOU'RE AN MSA MEMBER

The management committee feel the society is now established to a point where members may like to purchase items which will promote the MSA and give them a feeling of belonging. The items being considered at present are:

Ties with logo@ approx.\$20

Tie Pins / Lapel Badges\$5

Jumpers (Super Wash Wool) with logo\$50

COMMITTEE NEWS

The following are just some of the points discussed at the Committee of Management meeting on the 18th September 1996.

- . Letters have been sent to several members indicating that their membership will be terminated if outstanding fees are not paid immediately.
- . Following the very successful NSW meeting on Uncertainty of Measurement, a letter has been sent to Standards Australia recommending the adoption of the ISO GEUM as an Australian Guide. (This will make it more readily available and cheaper)
- . The Committee agreed that National Conference should be every two years.
- . TAM is to publish names and addresses of 1995 conference attendees in a future issue.
- . The Committee is considering the MSA becoming a private provider of metrology modules. This is not as straight forward as first thought, however.
- . The production of badges, ties, tie pins, pens, and other merchandising items is being investigated by Horst Sieker.
- . Planning for 1996 AGM has been initiated.
- . A proposal to introduce national metrology awards in time for 1997 conference is under consideration.
- . A laser printer has been purchased for use by the Secretary and other members of MSA.
- . New A4 envelopes and MSA certificates of appreciation have been printed.
- . The conference committee has been initiated and is to be chaired by Walter Giardini (see report elsewhere).

If you have anything you would like to discuss or would like to present an agenda item for consideration, please get in contact with any of the members.

As we will need to purchase minimum quantities we would like to get an indication of member interest prior to committing the society to the financial outlay necessary to achieve the above prices.

Please call, fax, or email Horst Sieker with a short message indicating which and how many items you may be interested in ordering.

Phone: (03) 9555 0671 or Fax: (03) 9555 6589
email: horst_sieker@mypostbox.com

Any ideas on other products you think may be more appealing would also be welcomed.

THE AUSTRALIAN METROLOGIST

2ND AUSTRALIAN NATIONAL METROLOGY CONFERENCE

**November 26 - 28, 1997
Melbourne, Australia**

The Metrology Society of Australia will hold its second National Metrology Conference in Melbourne, Victoria on November the 26th to the 28th, 1997. The venue for Australia's premier conference in Metrology will be Melbourne University, in the geographical heart of Melbourne's commercial centre and centrally located to all of Melbourne's major industrial, technical and scientific centres.

The aim of the conference is to promote the importance of Metrology within government, business, industry and the community and in particular the contribution Metrology makes to the quality of manufactured goods, and services, and hence to industrial development and international competitiveness.

This second National conference will build on the highly successful first conference in bringing together members of the measurement community such as industrial measurement specialists, students, engineers, researchers and teachers. The program will include technical visits, workshops and a variety of social events.

Scope of the Conference

The conference will welcome contributions in all areas of measurement science and technology (eg dimensional, electrical, mechanical, chemical, biological, process and primary industries etc).

Particular emphasis will be given to the practical application and operational issues of measurement and associated areas such as uncertainty, measurement in quality systems, the role of metrology in the company etc. Forms of presentation can include

- . oral and poster papers;
- . workshops;
- . practical demonstrations.

Submissions will be reviewed on the basis of their relevance to the aims of the conference and to the development of metrology skills. The broad theme of the conference will revolve around the role and practice of metrology in the firm.

Submission Guidelines

Authors are required to submit by **30th March 1997** three (3) copies of a 1 page summary clearly describing the scope of the work and the preferred form of presentation (oral paper, poster paper, workshop,

practical demonstration, etc). Successful applicants will be notified by 30 April 1997 when they will receive instructions for the preparation of camera ready manuscripts.

MAIL TO:

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The 1997 MSA conference committee invites input and contributions from all metrologists, towards ensuring another very successful conference which will address the needs, hopes and aspirations of our field. Please contact any of the members of the committee if you would like to discuss a possible contribution.

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TELSTRA RESEARCH LABORATORIES - GOING, GOING, ?

A few of you may have read the article by Helen Meredith in the *Financial Review* of 22 October on the state of health of Telstra Research Laboratories at Clayton in Victoria. What you may not have heard is that one of the best electrical metrology laboratories in the country has been closed down.

The standards laboratory at Telstra Research Laboratories has been dismembered with all but one of the limbs sent off to other Telstra laboratories. Only the time and frequency standards remain but there is talk about that these may not live much longer.

The PMG's research laboratories came into existence in the mid-1920s. The laboratories have been involved in a broad range of telecommunications related research activities ever since and there is no argument from anyone that they have contributed significantly to Australia having one of the best telecommunications networks in existence.

The standards laboratory was a later development but established itself as a centre of metrological excellence

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under the leadership of people such as Max Warner, a man whose passion for and knowledge of metrology has made him something of a legend (but that's another story). Originally located in Melbourne's CBD, the standards laboratory relocated in the 'eighties to the magnificent TRL facilities at Clayton where it was provided with the sort of accommodation most metrologists dream of.

It served as a reference laboratory for many other calibration laboratories in the organisation and maintained some of the highest level standards outside of the National Measurement Laboratory. Indeed, it was the first NATA-accredited laboratory to be granted a best measurement capability of ± 1 ppm for dc voltage standards.

With a review of TRL's activities, management decided that maintaining electrical reference standards was not a core activity.

The writing was probably on the wall a few years earlier when a review of the facilities at TRL saw one area of the standards laboratory converted to a conference room; mind you, it is a conference room with ± 0.5 °C temperature control!

Unfortunately, it appears that worse is yet to come. On a 1993 visit to the US Bellcore (the research laboratories of the "Baby Bell" telephone companies), a senior executive of Telstra indicated his intention to handoff to Bellcore parcels of R&D which would have otherwise been done in Australia by Telstra.

This was reinforced by this same executive's public statement last February in Melbourne to the effect that Bellcore would perform the software research for the "full service network" and that this would be the "first step of" many towards Bellcore performing more R&D for Telstra.

While it can only be hoped that Telstra's management reconsiders its approach, the damage to the laboratories that ongoing cuts to staff is causing may yet be terminal. Not surprisingly, morale at TRL is not good.

In the grand plan of privatisation of the national telecommunications carrier, it is apparent that one of the most respected scientific and engineering research facilities in Australia may be a casualty.

Perhaps the *Financial Review* article summed up the situation best. *"More embarrassing is the perception that developed countries carry out research and own intellectual property, and cash-strapped developing nations outsource everything, buying off the shelf and leaving foreigners to build and manage key projects."*

John Mitchell

STATE NEWS

NEW SOUTH WALES

There was a very successful visit to the Qantas Jet Base on the 9th of October. Twenty-two people attended. They were shown the Standards Laboratory, co-ordinate measuring machines, the precision turning area and finished off by visiting the flight simulator. A dinner followed the tour.

The next activity will be the NSW annual meeting to be held at NML on 22 November. Subject to the response from members, a dinner will follow this meeting. Please contact your NSW co-ordinators to voice your interest in food - and the meeting.

QUEENSLAND

A visit to SIMTARS in August was marred by poor attendance due to a road accident blocking the main access to the venue. It was decided to postpone the meeting of members to allow the staff at SIMTARS to give their presentation. Those members who were able to attend had a very interesting look at the functions and facilities of SIMTARS.

The Next meeting will be on the 12 November and will be held at the Swanbank Power Station. This will consist of a tour of the plant with a full-time guide and then a run-down on the laboratory function within the plant.

SOUTH AUSTRALIA

There was a successful meeting on 22 of August where Mr Richard Duncan addressed the members on the subject of the ISO Guide on uncertainties. Over twenty members attended.

There will be a technical visit to the TELSTRA calibration facilities on 23 October. This will include both the electrical and temperature laboratories.

VICTORIA

The annual dinner for Victorian Members was held on 23 October at Capers restaurant. A little over forty people attended which was perhaps a little disappointing. The food compensated!

There will be a technical night following the annual general meeting of the MSA at the CSIRO Division of Telecommunications and Industrial Physics on 21 November. The technical night will cover the calibration of balances and pressure measuring devices. A tour of the other facilities at the site is included in the evening's activities. To assist in catering, please advise Ron McBain (03) 9852 0466 or Jack Deller (03) 9741 5446 of your intention to attend.

METROLOGY SOCIETY OF AUSTRALIA

NOTICE OF ANNUAL GENERAL MEETING

THURSDAY 21ST NOVEMBER 1996

AT

**SOUTHERN SEMINAR ROOM
NATIONAL MEASUREMENT LABORATORY
DIVISION OF TELECOMMUNICATIONS AND INDUSTRIAL PHYSICS
NORMANDY ROAD, CLAYTON VICTORIA**

COMMENCING AT 7.00 pm

The business of the meeting will be:

1. Confirmation of the minutes of the Annual General Meeting held on 29 November 1995
2. Receive Committee Reports
3. Election of officers of the society and ordinary members of the Committee
4. General Business

In accordance with the constitution, the Committee is calling for nominations of candidates for election of officers of the MSA or as ordinary members of the Committee.

The nominations must be made in writing, signed by two members of the association and accompanied by written consent of the candidate.

(see nomination form enclosed herewith)

**The nomination forms must be received by the
Secretary no later than 14 November 1996**