

# ***THE AUSTRALIAN METROLOGIST***



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## **February 1999 Issue**

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## FROM THE PRESIDENT

Elsewhere in this issue is the President's Report that was given to the members at the Annual General Meeting. It contains a summary of the last year's MSA happenings, which won't be duplicated here.

The focus for the coming year will primarily be on MSA99, our biennial conference that provides the opportunity for MSA members to group, renew old acquaintances and to make new ones, all in the interests of improved metrology. We hope that you all have your calendars marked with the dates and have a trip to Sydney figured into your travel plans and budgets.

The other business of the MSA of course still requires attention. By the time you read this we will have held a separately notified meeting to address anomalies in the constitution, most importantly those relating to financial reporting and taxation requirements. Continued focus on education and states interaction will also be occupying committee thoughts.

The society is fortunate to have a history of active Web-masters, currently Mark Thomas. While the world of metrology doesn't have daily breaking news, activities and related interests are constantly changing. The web site is the place to look for current happenings on a regular basis.

We would particularly encourage the states to foreshadow their activities, and report on their success, through the web site.

The web is a wonderful place to find information, both for vital requirements and for satisfying curiosity.

On the latter, I've been mystified in the past about BSF and BSW bolt head sizes. This came to the fore in my current "spare" time interest of restoring an old Series I Land Rover vehicle, aiming for the 50th anniversary celebrations of the Snowy Mountains Scheme next year.

Spanners for these types are marked by the bolt diameter, not head size, and old spanners are marked differently to modern ones.

It didn't take much net searching to discover that the marking anomaly on BSF/BSW spanners was due to a steel shortage during WW2, when

it was decided to reduce bolt-head sizes by one unit. This wasn't formally approved until 1953.

To paraphrase a well-known advertisement, "standards ain't standards".

The reason for the poor fit of AF spanners on BSF/BSW bolts is that Whitworth, the consummate engineer, calculated his sizes and chose a fractional dimension along the flats, rather than across the flats.

It's now 123 years since the signing of the Convention of the Metre – how much time and effort would have been saved over the years if the metric system and related standards had been adopted and followed world-wide for manufactured goods!

- Jim Gardner

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## FROM THE EDITOR

TAM16 has had an unusually long gestation period – a combination of many things. I don't propose to bore you all with the reasons for the delays, but offer a sincere apology that two consecutive issues have been late appearing! Now that teething problems have been ironed out I hope to get back to the normal frequency of publication.

If you think this issue is rather short, you are right. Input from individuals and branches has been almost zero, with the management committee providing most of the input. I must congratulate Julian Holland for submitting a further contribution in the *Metrology in Retrospect* series! Any other budding authors out there?

Production of TAM has now moved to Adelaide, and Jack Deller is to be thanked for the time he spent developing TAM's style and carrying out all the other myriad tasks somehow left to editors.

You may see some changes in style, which are due to my perceptions of how it should all fit together. But the textual content I must leave for others to submit – we need to satisfy a diverse group of members. And of course the photos which are noticeable this issue by their absence must come from somewhere!

- Maurie Hooper



## NATIONAL STANDARDS COMMISSION NEWS

### Update to the National Measurement Act

Within the first half of 1999 another important milestone will be achieved in the development of Australia's National Measurement System. Recent changes to the National Measurement Act, and imminent amendments to the National Measurement Regulations, will enable the appointment of Certifying Authorities and the implementation of a metrological control system for utility meters.

Certifying authorities will then have the ability to produce and/or certify reference materials. These certified reference materials will be traceable to the Australian National standards of measurement. These certified reference materials will be used in the metrological control of legal measurements. This will help to ensure that chemical measurements are legally traceable and provide confidence in any measurements produced using these standards. This will facilitate the use of such measurements provided in court cases and reduce time spent by expert witnesses discussing the validity of measurements. Examples of areas enhanced by this development include environmental measurements, alcohol breath testing, drugs in sport, health and medical diagnostic testing, contractual obligations and many other regulatory measurements.

The National Standards Commission will be responsible for appointing certifying authorities. Bodies seeking such appointment will be required to be appropriately accredited by NATA, and then to apply to the Commission for appointment. For further information contact Marian Haire on 02 9888 3922 (e-mail mhaire@nsc.gov.au).

As mentioned in the February 1998 issue of the Australian Metrologist, for some years the Commission has been consulting with utility authorities, regulators and manufacturers, on metrological control systems for meters used for billing purposes and a large measure of agreement on principles and systems has been achieved. The 1995 Report of the Committee of Enquiry into Australia's Standards and conformance Infrastructure (Kean Review) recom-

mended that the National Measurement Act be amended to provide for mandatory requirements for utility meters and legal measuring instruments.

In anticipation of the successful passage of these amendments through parliament a final version for the pattern approval and verification of electricity meters is expected to be published by the Commission early in the New Year. A number of different NSC appointed test houses will perform pattern approval testing of electricity meters, so the need for uniform test procedures and report forms to accompany this document has been identified. An initial draft for these procedures and reports will be completed in early January 1999. A similar process for gas and water meters will be adopted.

### National Flowmetering facility

The Commission's national flowmetering facility provides traceability for volume measurements of both petroleum products and liquefied petroleum gas (LPG). It is also used for the pattern approval testing and calibration of flowmeters. In January 1997 the Commission adopted the OIML international requirements for the pattern approval of measuring systems for liquids other than water. As our facility for testing LPG flowmeters was inadequate it underwent a major upgrade during the past year.

The design of the LPG facility is essentially the same as that used for petroleum products. The facility caters for dispensers used in the retail market and it also provides traceability for measuring instruments used by wholesalers where high flow rate is used.

#### *Petroleum Products*

Flowmeters for petroleum products can be tested and calibrated over flow rates from 7 to 4 000 L/min using two types of hydrocarbon-based test fluids:

- test liquid A has a density of 750 kg/m<sup>3</sup> and a kinematic viscosity of 2.6 mm<sup>2</sup>/s at 15°C; and
- test liquid B has a density of 842 kg/m<sup>3</sup> and a kinematic viscosity of 6 mm<sup>2</sup>/s at 15°C.

(continued)

## *Liquefied Petroleum Gas*

Flowmeters for liquefied petroleum gas can be tested and calibrated over flow rates from 4 to 1 700 L/min using two blends of liquefied petroleum gas. One blend consists mainly of propane and the other is 50% propane and 50% butane.

## **OTHER FLOWMETERING FACILITIES**

### *Water Meters*

Water meters can be tested and calibrated over flow rates from 10 to 1 000 L/min.

### *Thermometers*

Thermometers are tested and calibrated over temperatures from -50 to +250°C ±0.02°C.

### *Pressure Gauges*

Pressure gauges are tested and calibrated over pressures from 100 to 3 500 kPa ±0.01%.

### *Fluid Viscosity*

Dynamic viscosity of fluids can be measured from 0.2 to 1 000 mPa.s ±0.01%.

## **Legal Metrology Training in the Asia-Pacific**

Some 30 participants from 16 different economies within the Asia-Pacific Region attended two workshops jointly presented by the Commission and the China State Bureau of Quality and Technical Supervision (CSBTS) last September, in Shanghai. The first was an introductory workshop on high capacity weighing to meet OIML recommendations. The workshop was presented by Ian Hoerlein, NSC and Wang Zhenwen, CSBTS, and covered high capacity using train weighing-in-motion weighbridges, totalising hopper weighers and belt weighers. The participants saw many different examples of high capacity weighing in action during a visit to a major steel manufacturer in Shanghai.

The second was a train the trainer workshop on the pattern approval of non-automatic weighing instruments in accordance with OIML R76. The workshop was presented by Kerry Marston and Keith Mann from NSC and Shi Changyan and Wang Zhenwen from CSBTS. During the course each participant practiced many of the basic test procedures and was required to deliver a practice training session to the rest of the group, using the training module they each re-

ceived as part of the course. This training module, complete with a training video in a choice of seven different languages, is the result of a three year cooperative project between NSC and CSBTS involving technical staff from both organisations. For further information about the training module contact Kerry Marston at the Commission on (02) 9888 3922 (e-mail: kmarston@nsc.gov.au). □

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## **FROM THE MSA 36th NATIONAL COMMITTEE MEETING – 21 Oct 1998**

The **Subcommittee on Education** has been reconstituted with the membership now being:

Helmi Salem, Chair  
Jane Warne  
Marian Haire  
Laurie Besley  
Alex Smart  
John Mitchell  
Stuart Macdonald  
Dennis Batiste

Together with representatives from Swinburne University, this group would make up the advisory board for the graduate course in metrology proposed by Swinburne. Alex Smart would chair that board.

A meeting had been held between Laurie Besley, John Miles and Helmi Salem from the MSA and Brian Costello and Pio Iovenitti from Swinburne University to discuss the plans for this course.

A four-module course outline was agreed and it was further decided that Swinburne University would develop one module themselves, but rely on external contractors to develop the other three. The possibility of the MSA being such a contractor was specifically excluded by the MSA representatives.

Subsequently, a full draft proposal was presented by Swinburne University to the Subcommittee for comment and a slightly revised version has since been submitted to the University administration for approval to proceed with the setting up of the course. □

## President's Report to the AGM 30 October 1998

*The previous year has been one largely of consolidation and operating the MSA as a truly National body. The move of the committee function from Victoria took longer than most people expected, but a positive outcome has been recording much of the detail for inclusion in a procedures manual to make this task easier for future moves. A fresh look at the operation of the society has also made it clear that the rules of the society need amendment to remain practicable and a true record of the method of operation. Very familiar territory for those associated with Quality Systems and a "say what you do and do what you say" background. Changes to the rules are foreseen as a considered activity for a special meeting in the near future.*

Communication with members, particularly those in the smaller states, remains a priority. We have one committee member who acts as the States' liaison officer, and an active Webmaster who is seen as driving a key means of current communication through electronic access, one which will surely grow in line with general community access to the net. Many thanks to Adrian Ward, our retiring webmaster, for his efforts in starting the process. Thanks also to Jack Deller, who has relinquished the job of editing *The Australian Metrologist*. TAM remains the primary and archival communication link for MSA members. Our new editor is Maurie Hooper in South Australia, and we wish him well in this task.

Membership of the society continues to grow. One early task completed by the committee was the generation of a strategic planning document, where recruitment and retention of members was a key outcome. The strength of the Society remains in NSW and Victoria, where numbers are sufficiently high to run successful technical events and visits. We all recognise that this is much harder in the smaller states. On membership, the committee recently undertook to take over administration of the CMM Users Group, as a technical interest group within MSA, akin to the Pressure Technical Group.

The Education Sub-Committee of the society, chaired by Helmi Salem, has been progressing plans for a graduate certificate in Metrology

through Swinburne University. A course outline has been developed and accepted, and there are real hopes that this effort will succeed where the industry-based courses in the past have not. Another key subcommittee is that of the MSA 99 Conference, chaired by Kerry Marsden. They have been making significant progress towards the next bi-annual conference of the Society, to be held at the University of New South Wales from September 21-23, with the dinner to be held at Taronga Park Zoo.

On the external front, MSA is now officially the Australian representative of the International Measurement Federation (IMEKO). The next IMEKO congress is in Osaka in November 1999. It is hoped that some MSA members will be able to attend. The committee have made one submission on your behalf, to the parliamentary Enquiry on Greenhouse Gas Trading, stressing the need for accurate and traceable measurements.

Finally, I'd like to thank the outgoing committee, particularly retiring members John Miles and Jane Warne. It has been a pleasure working with you all, and the general MSA membership have been well-served by your efforts.

- Jim Gardner

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## FROM THE MSA AGM

### *Some brief notes:*

A feature of the **Treasurer's Report** was a recommendation that subscription and nomination fees for 1999 be increased by \$10 for each membership grade. This was passed unanimously.

**Election of Committee for 1999** - the positions of Vice-President, Secretary and all ordinary committee members were declared vacant. The nominations received for these positions exactly matched the number of positions available and therefore an election was unnecessary. The following were declared elected:

Vice-President            Ilya Budovsky  
Secretary:                Laurie Besley  
Committee members: Mary Ryan, Mark Spillane, Fred Emms, Barry Deeth, Pat McErlain, Jim Miles, Gary Price and Jeffrey Tapping (from South Australia). □



## *Metrology in Retrospect*

Contributed by Julian Holland,  
Macleay Museum, University of Sydney

### Getting Results

These days the cost of operations is closely monitored and how much is needed to achieve the desired result finely determined. Even in the gathering of measurements this is so. But how do we come know when a quantity of measurements is sufficient? The "professionalisation" of science has been a slow process of discovering methods and procedures as well as phenomena and theories.

Two hundred years ago measurements could be recorded as much as pleased the recorder, for he was an amateur. John Dalton, then a young schoolmaster in Kendal in the north of England, began keeping daily meteorological records in 1787. As Partington remarks, the Cumberland town provided "ample opportunities for studying rainfall".<sup>1</sup> With limited means Dalton constructed his own rain gauges, barometers, thermometers and hygrometers. In 1793 Dalton published tables of rainfall, barometric pressure, temperature, wind and humidity in his *Meteorological Observations*. This was hardly the end of the matter. He continued to record his observations until the morning of the day that he died in 1844: "little rain this day".<sup>2</sup> Dalton's daily devotion to meteorology had lasted 57 years.

At the beginning of the nineteenth century, meteorological phenomena were little understood. Not much information was available, and deriving patterns and theories from scattered data about large-scale phenomena was an uncertain business. The British Association for the Advancement of Science, founded in 1830, included meteorology among the sciences that it intended to advance. The leading figures in the Association were quick to recognise the need for the standardisation of instruments and for theoretical frameworks to guide the gathering of data. The foot soldiers of science whom they

recruited were not so sensitive to the larger issues.

The case of William Snow Harris shows how zealous industry could get out of hand. Harris responded to the Association's call in 1831 for hourly temperature observations to be taken in southwest England. Exercising his diligence at Plymouth Dockyard, Harris began to accumulate data. At the 1835 Meeting of the Association he reported that he had recorded and reduced 26,000 temperature observations for the previous two years. At the next year's meeting he received financial support and began to keep pressure and humidity records. By 1838 he could reflect with satisfaction on the 70,000 thermometric observations of the previous five years. And still the volume of data mounted. Where was it all leading? At the 1839 Meeting Harris sought to have his 120,000 observations printed so that others could analyse his data. But after several years no funds were forthcoming to publish the huge quantity of data. As Morrell and Thackray comment: "These observations proved an expensive venture in inductive science, in which data were gathered on a colossal scale, reduced, tabulated, and the mean results exhibited by graphs. The work certainly revealed the daily and annual changes in certain meteorological features, but it gave no purchase on or stimulus to theory."<sup>3</sup>

Digesting a large accumulation of data was a trying task, even where a much smaller set of data than Harris's ample gathering was concerned. As John Scott Russell complained in 1838: "Besides the labour of the original observations themselves, I have been nearly three hours a day for the last four months employed in classing and discussing them and arranging the results.... I get up at six o'clock in the morning and work at your report till nine and shall continue to do so until it is finished; but it will be some time before I again undertake the discussion of 30,000 observations."<sup>4</sup>

Grand schemes for gathering data about physical phenomena spread far and wide in the early decades of the nineteenth century, and Australia played some part in these. About the time that Harris was beginning his meteorological observations an international program of geomagnetic

<sup>1</sup> J.R. Partington, *A History of Chemistry*, Vol. 3, (London, 1962), p. 761

<sup>2</sup> *Ibid.* p. 760

<sup>3</sup> Jack Morrell and Arnold Thackray, *Gentlemen of Science* (Oxford, 1981), p. 522

<sup>4</sup> Morrell and Thackray, p. 275

research was also getting under way. Promoted by Carl Gauss and Alexander von Humboldt, the *Magnetische Verein* (Magnetic Union) was involved in the establishment of magnetic observatories in many parts of the world. British scientists participated in the scheme, resulting in observatories at Toronto, St Helena, Cape Town and Hobart Town. James Clark Ross set up the Hobart observatory in 1840 during the course of his Antarctic voyage.

Rosbank Observatory, as it came to be known after its founder, was equipped with a range of magnetic and meteorological instruments. All the observatories operated on Göttingen Time so that their results could be correlated. The three magnetometers - for vertical and horizontal force and declination - were to be read hourly except on specially designated days known as 'term days'. On these term days, which occurred once a month, the instruments were to be read at five or ten minute intervals, necessitating a measurement every two and a half minutes. To achieve these 576 observations in the course of 24 hours, the Director of the Observatory, Lieutenant Joseph Kay, and his two assistants were supported by a team of volunteers including the Lieutenant-Governor of Van Diemen's Land, Sir John Franklin. The only relief from the relentless schedule of observations came on Sundays.

Britain's Royal Navy contributed much to scientific discovery in the nineteenth century, not least in the vicinity of Australia. Writing in March 1842 to Professor Humphrey Lloyd at Trinity College Dublin, who was closely involved in the project, Kay expressed the stamina of naval officers for such demanding pursuits: "I can exultantly state that 18 months has already transpired and I do not feel my zeal in the least abated; on the contrary, the more I become conversant with the subject, the more does my good intention increase. In that I will not yield to either Civilian or Soldier - I must beg to inform you that Naval men are accustomed from an early age to habits of great regularity and self-restraint and perhaps our present task sits lighter upon us in consequence than it would have done upon young men, who all their lives have been seeking pleasure rather than useful employment. To say that it is not highly monotonous to a degree, would be untrue, but I assure you my dear Mr Lloyd that I trust myself and my assistants are stimulated by a far higher motive than the

pursuit of indolent ease or the idea of merely doing what one is obliged to do..."<sup>5</sup>

The intellectual isolation, the lack of professional advancement and the monotony of routine eventually began to tell on Kay. He reported to Ross in December 1847 that while the work of the observatory "proceeds with the greatest regularity... I cannot conceal from you that beginning with myself all are tired and weary of the continued and unvarying routine day and night, without any cessation. I have now completed seven and a half years of observatory work with hourly observations and am become very much of a machine wound up to go to Göttingen mean time... the monotony of the pursuit has at last conquered my determination not to express or allow that I felt fatigue and it has fairly beaten me."<sup>6</sup>

The demanding schedule was reduced and Kay stayed on until 1853. Rosbank Observatory continued to operate until it was closed down at the end of 1854. As the magnetic observatory closest to the South Magnetic Pole, Rosbank made a significant contribution to understanding global magnetic phenomena. Its results mirrored those at Toronto, similarly situated near the North Magnetic Pole.

In reflecting on the pursuit of scientific understanding in the nineteenth century we can see that at times the gathering of data became very nearly an end in itself. Other tedious and exacting work made a fundamental contribution to knowledge. With insight and imagination the pursuit of knowledge could on occasion have remarkable consequences. John Dalton's interest in atmospheric conditions led him to consider vapour pressure and the mixing of different gases. This in turn led him to develop the chemical atomic theory, one of the foundations of modern chemistry.<sup>7</sup> □

<sup>5</sup> Ann Savours and Anita McConnell, 'Return to Rosbank: Magnetism and Meteorology at Hobart in Theory and Practice, 1840-54', in Joan M. Kenworthy and J. Malcolm Walker (eds), *Colonial Observatories and Observations: Meteorology and Geophysics* (Durham, 1997), pp. 49-58 (at p. 51)

<sup>6</sup> Ann Savours and Anita McConnell, 'The History of the Rosbank Observatory, Tasmania', *Annals of Science*, 39 (1982): 527-64 (at pp. 540-41)

<sup>7</sup> Arnold Thackray, *John Dalton: Critical Assessments of His Life and Science* (Cambridge, Mass., 1972), Ch. 5

**MSA 99 Conference– Update**

***Measurement for a Sustainable Future***

The Conference Committee is working hard to have everything in place for the big event later this year and is pleased to fill you in with the following details. For the latest information on all details including the Program, Registration Details, and Accepted Abstracts, visit the conference web site at:

<http://www.metsoc.aust.com/~confmsa>

**Venue**

The conference is to be held in Sydney, New South Wales on 22-24 September 1999. The venue for Australia's Premier Conference on Metrology will be at the Square House at the University of New South Wales, Kensington.

**Final Call For Papers**

- Instrumentation and equipment
- The role of metrology in environmental management
- Metrology and the community
- Metrological control in medicine
- Calibration, measurement, traceability and procedures
- Monitoring, sensors and remote techniques
- Measurement and economics
- Innovations in metrology
- Quality assurance
- Skills and training
- International development and globalisation

**Measurement topics to be covered include:**

<b>Physical</b>	<b>Chemical</b>	<b>General</b>
Dimensional	Process	History
Electrical	Legal	Globalisation
Environmental	Medical	Accreditation
Legal	Sport	International +
Process	Environmental	Regional
RF + Microwave	Agricultural	Organisations

**Deadlines**

- Abstract (150 words) by the 28 February, 1999
- Abstracts to be mailed, faxed or e-mailed to:  
Dr Suzanne Thwaites  
National Measurement Laboratory  
PO Box 218  
LINDFIELD NSW 2070 AUSTRALIA  
Tel:(02) 9413 7416  
Fax:(02) 9413 7161  
e-mail: suszanne.thwaites@tip.csiro.au
- Final papers by the 30 May, 1999. A sample of the required format will be mailed to the authors.

**Trade Exhibition**

There will be a trade exhibition focusing on the area of metrology and related instrumentation and services.



Service providers and equipment manufacturers are encouraged to display/demonstrate their latest services/products employed in the field of metrology.

Display booths located within the conference venue are available.

For more information contact:

Mr. Julian Wilson  
NATA  
7 Leeds Street  
Rhodes NSW 2038  
Tel: (02) 9736 8267  
(02) 9707 3950 (AH)  
Fax: (02) 9743 5311  
email: julian.wilson@nata.asn.au

## Technical Visits

A number of technical visits are being organised during the conference. For more details see the conference web site.

## Registration Fees

Includes: Conference proceedings, conference welcome cocktails, lunches, morning and afternoon teas.

### Registration before 1 July, 1999

Speakers and MSA members	\$350
Non members	\$410
Full time students	\$170

### Registration after 1 July, 1999

Speakers and MSA members	\$410
Non members	\$460
Full time students	\$200
Day pass	\$170
Conference dinner	\$80

## Available Accommodation

A wide range of hotel, motel or hostel accommodation is available near the conference venue, or if you prefer the centre of Sydney, it is just a short bus ride away. For more details visit the web site or contact:

Mr. Mark Spillane

Tel: (02) 9612 57327  
(02) 9862 0635 (AH)

Fax: (02) 9612 5670

email: micky\_spillane@one.net.au

**Please note:** you will need to book your own accommodation directly through the hotel itself.

# WANTED

Contributions for *The Australian Metrologist* -

Photos to show the diversity of our activities.

Member profiles.

Letters to the Editor.

Etc, etc...

## The IRIS Graduate Certificate in Metrology and Quality

– a new initiative in the development of practicing metrologists.

The MSA is assisting in a new and important initiative in education and training. Recognition by the MSA of the need for further training of metrology practitioners has led us to welcome the development of a new educational offering - the Graduate Certificate in Metrology & Quality. This program is being put together by the Industrial Research Institute Swinburne (IRIS), situated in suburban Melbourne, and is aimed at serving a specialist group, career metrologists, whose needs are not currently being adequately addressed by the education sector. The course will be conducted remotely, that is, students will be able to study most modules of the course from their own location.

The role of the MSA in this development has several aspects. Through our Education Subcommittee we will serve on the Advisory Committee for the course. In addition we will attempt to highlight the need for a course of this type through the holding of several seminars on education in metrology and by publicising the existence of the course through other media. The first two such seminars are currently being planned for Melbourne and Sydney in the second week of February, 1999. Details will be made available through the MSA state committees and on the Society's website. Lastly, some of our members may well be involved in developing and perhaps delivering some of the course content.

The IRIS course is aimed primarily at individuals already working in metrology who require greater rigour in their understanding of the principles and practices involved - although it will also be suited to others desiring to transfer into the area from other industry positions. A distance mode of delivery has been chosen to allow those students who are employed in this field to learn in the workplace and while continuing to work.

In addition to providing training and experience in specific areas of metrology, it is anticipated that some individuals completing the Graduate Certificate will go on to higher, formally recognised, programs. Indeed, industry needs analysis conducted by the MSA suggests that

there may be a need for a Masters qualification in this area - but this would operate initially only in the form of a Masters by Research.

The industrial relevance of the program is assured by the continued collaboration of the IRIS and the MSA, and by ensuring that development and presentation of the program is undertaken by experienced metrology practitioners.

### Program Details

The Graduate Certificate (Metrology and Quality) being offered by IRIS is made up of four subjects of equal weighting. It will normally be studied part-time over two semesters. Three of the subjects are delivered by distance education:

- Experimental Analysis
- Measurement Systems
- Calibration, Documentation and Laboratory Management,

whilst the fourth subject:

- Metrology and Quality Practices

involves face-to-face contact between students and presenters through lectures, workshops and laboratory exercises conducted at central locations.

This fourth subject provides the student with an opportunity to specialise in one of four different areas of metrology:

- Dimensional & Mechanical
- Electrical & Time & Frequency
- Chemical & Temperature
- Optical & Radiometry

### Program Entry Details

The normal entry to the Graduate Certificate program will be a Diploma in Engineering or Science from a TAFE institution and relevant industry experience, or a Bachelor Degree in Engineering or Science and relevant industry experience. Some candidates will be accepted on the basis of other qualifications and industrial experience deemed to be appropriate by the course committee.

Fees are \$1000 per unit.

Further details and application information may be obtained through the course convenor, Brian Costello, at IRIS.

Ph: (03) 9214 8005 Fax: (03) 9214 5050

Email: bcostello@swin.edu.au

## Feedback from MSA members

The Society requests members to give us their opinions on a number of matters associated with this question, including:

Do you agree that there is a need for this type of course?

- Do have any comments on the structure of the course and its likely content?

Would your organisation consider enrolling students in such a course? If so, how many and how often?

- Would you yourself be a candidate to do the course?

- One proposal is that students be given credit towards the Graduate Certificate for other short specialist courses that they have already attended. Can you nominate any such courses that should be considered in this manner?

Any comments on these questions or indeed on any other issue relevant to the education of metrologists should be sent to Helmi Salem, Convenor of the MSA Education Sub-committee, at:

P.O. Box 267, Box Hill, Victoria 3128

Fax - (03) 9897 1147

E-mail - shsalem@netspace.net.au

It is also probable that the MSA will circulate a formal questionnaire on these issues to those who attend the planned meetings in Melbourne and Sydney. Your input in advance will help us to shape this questionnaire. Please note that negative responses are equally as valuable to us as positive ones.

## News from IMEKO

The MSA is now a member of IMEKO, the International Measurement Confederation. Our membership was approved at the last IMEKO General Council meeting in Vienna in September last year. We plan to be represented at the next IMEKO Council meeting in Osaka in June.

As part of our involvement, we will be publishing a regular column in TAM that summarises some of the news from IMEKO. This will include a summary of the contents of the issues of the IMEKO journal, *Measurement*, that may be of interest to members. The MSA receives a copy of each issue of this journal and on request will make articles from it available to any MSA members who require them.

### IMEKO World Congresses

The next IMEKO World Congress is to be held in Osaka, Japan from June 14 to 18 this year.

The topics to be covered include

Education and training in measurement and instrumentation

- Photonic measurements
- Measurement of force and mass
- Measurement of electrical quantities
- Hardness measurement
- Measurement science
- Traceability in metrology
- Flow measurement
- Technical diagnostics
- Metrological infrastructure
- Thermal and temperature measurements
- Measurements in biology and medicine
- Measurement of geometrical quantities
- Experimental mechanics
- Pressure and vacuum measurement
- Measurement in robotics
- Human function measurement
- Environmental measurements



Any MSA members interested in attending can contact

IMEKO-XV Office  
 Prof T Ono  
 Osaka Prefecture University  
 1-1, Gakuen-cho, Sakai  
 Osaka 599-8531, Japan  
 Email: ono@ctrlab.mecha.osakafu-u.ac.jp

Subsequent World Congresses are planned for Vienna in 2000 and Dubrovnik in 2003, with a possible joint congress with the ISA in New Orleans in 2001.

**Technical Committees**

IMEKO functions largely through a number of technical committees that deal with specialist areas. A new committee has just been formed, TC 18, to deal with Measurement of Human Functions. It will be chaired by Prof. Koji Ito of Japan, with a deputy from Italy and a secretary from France.

The TC3 has changed its title to Measurement of Force, Mass and Torque and its new chairman is Dr Sawla from Germany.

**MEASUREMENT**

**Journal of the international Measurement Confederation IMEKO**

**Vol. 23, No. 3, April 1998**

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**Journal of the international Measurement Confederation IMEKO**

**Vol. 23, No. 4, June 1998**

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**MSA SPECIAL GENERAL MEETING – 16 December 1998**

*The following motions to amend the Rules and Statement of Purpose of the MSA were passed by the meeting.*

**1. Rules 2(1) INTERPRETATION**

**Amend:** "Financial year" means the year ending on 31 December.

**To:** "Financial year" means the year ending 30 June.

**2. Rules 14.(2) PROCEEDINGS AT MEETINGS**

**Amend:** "50 members or 10% of the membership, whichever is the less, personally present constitute a quorum ....."

**To:** "20 members or 10% of the membership, whichever is the less, personally present constitute a quorum ..."

**3. Rules 23 (1) (d) OFFICERS OF THE ASSOCIATION**

**Amend:** "a Secretary – 2 years elected in even years"

**To:** "a Secretary – 2 years elected in odd years"

**4. Rules 23 (5) OFFICERS OF THE ASSOCIATION**

**Amend:** "An officer of the Association shall hold office for a maximum of 6 years (or part thereof) 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 thereof) in any 9-year period."

**To:** "An officer of the Association shall hold office, including a committee position, for a maximum of 6 years (or part thereof) 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 thereof) in any 9-year period."

**5. Rules 25 (6) ELECTION OF OFFICERS AND VACANCY**

**Replace:** "A nomination of a candidate for election under this clause is not valid if that candidate has been nominated for another office for election at the same election."

**With:** "Election of executive officers will precede that of the committee and, when due, will proceed in the order President, Vice President, Treasurer, Secretary. A candidate can be elected to only one executive or committee position."

**6. Rules 35 WINDING UP OR CANCELLATION**

**Amend:** "In the event of the winding up or the cancellation of the incorporation of the Association, the assets of the Association shall be disposed of in accordance with the provisions of the Act."

**To:** "In the event of the winding up or the cancellation of the incorporation of the Association, the amount which remains after such dissolution and the satisfaction of all debts and liabilities shall be paid and applied by the Association in accordance with its powers to any organisation which has similar objects and which has rules prohibiting the distribution of its assets and income to members. "

**7. Statement of Purpose 10**

**Amend:** "To operate as a *not-for-profit* organisation while pursuing the preceding objectives."

**Add:** "The assets and income of the Association shall be applied exclusively to the promotion of its objects and no portion shall be paid or distributed directly or indirectly to the members of the Association except as bona-fide remuneration for services rendered or expenses incurred on behalf of the organisation." □

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Contact either your State Coordinators or the Secretary, Dr. Laurie Besley on (02) 9413 7770 or fax (02) 9413 7202, e-mail address laurieb@tip.csiro.au or write to:

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The MSA website ([www.ozemail.com.au/~ausmet](http://www.ozemail.com.au/~ausmet)) is worth visiting.

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