# lab lines

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## President's report Term 4 2008

This has been a difficult year in many ways, but it has also been a very successful year and we have, as an organization achieved a great deal.

Since our incorporation and change of name at this time last year, we have continued to offer the same high level of service to our members that they have always enjoyed. Lablines has continued and, Svetlana, the editor is to be congratulated on the quality of the publication.
The listserve has also continued to be a valuable resource to our profession and regional meetings and professional development have also continued.
Our annual conference, LABCON has not only continued but is now bigger and better than before and offers more flexibility and more choice to all delegates.
This year has also been one of financial difficulties due to STAV's refusal to reach a negotiated settlement over our assets, which, in our view, they have no justification in holding. The dispute will now have to be resolved by means of legal proceeding, though we are still open to discussions that might avoid this option. We will, even in the absence of a settlement finish this year essentially debt free and projections are that we will have recovered the level of financial security we previously had achieved by the end of 2010 even without a settlement.
As an organization we owe a great deal to the efforts of the this years committee who have worked very hard to make it all happen. Especially to our treasurer Dianne and our secretary Mary who have worked tirelessly in all our best interests.
This year has also seen the first tangible results of our review of our publications with the publication of the completely new edition of the Chemistry manual and I am happy to be able to tell you that the revision of the Physics manual is well under way. The lab management databases are also under review and a second edition of these will be available sometime in the next year. The only thing incomplete on that project being a script to migrate the data fro those who are upgrading rather than simply starting from the beginning.
The transition to being an incorporated association was done smoothly and the introduction of a membership fee has been managed passably well this year and we have streamlined the process for next year to make it easier for all members. Despite dire predictions from some, we have not had a decline in membership and, in fact are a healthier and more dynamic organization fro these changes.
In summary, despite some hardships this year has overall been a success and we can look forward to building on this success in coming years.

**Geoff Gleadall**
**President**
**Laboratory Technicians Association of Victoria (inc)**

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**FUN SCIENCE FACTS:**

**Did you know that there are 206 bones in the adult human body and there are 300 in children (as they grow some of the bones fuse together).**

**The most dangerous animal in the world is the common housefly. Because of their habits of visiting animal waste, they transmit more diseases than any other animal.**

**Snakes are true carnivorous because they eat nothing but other animals. They do not eat any type of plant material.**

**The Hubble Space Telescope weighs 12 tons (10,896 kilograms), is 43 feet (13.1 meters) long, and cost $2.1 billion to originally build.**

http://www.hightechscience.org/funfacts.htm



**VISIT OUR WEBSITE:**
www.ltav.org.au

## Lablines deadlines for 2009

**20 February for March 2009**
**20 May for June 2009**
**20 Ausgust for September 2009**
**20 October for December 2009**

# Smiley Face

**EDITORIAL:** **Svetlana Marchouba, Camberwell Grammar School**

A very rare event in the skies happened on the 1/12/08, as planets Venus and Jupiter were in conjunction near the moon. The gap between the two planets was of approximately 2 degrees, which is the space taken by four full moons.

Photo: Elise Marchouba

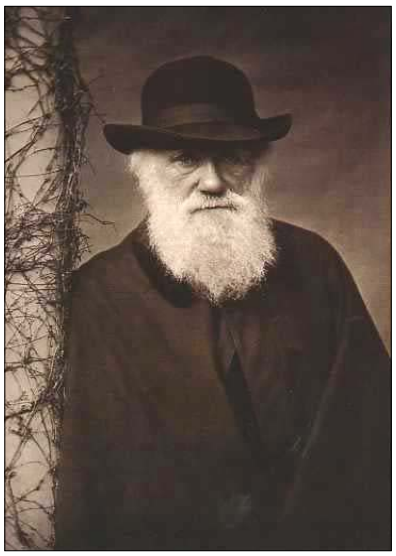
Although the three objects looked very close together, they were really far apart. The moon orbits just 405,000km from Earth. Yet right now Venus is nearly 400 times from Earth and Jupiter is roughly 6 times farther than Venus.

The best places to see the conjunction as a smiley face was Australia, but in Europe and the US, the formation appeared as smiling down. Anyway, it was hard to miss because Venus, Jupiter and the moon are the three most visible heavenly bodies, after the Sun. Venus is particularly bright, as it is the nearest planet to the Earth.

Even these kinds of events happen quite often, many of them are not visible to the naked eye because of the light from the Sun. The fact that the moon was in its crescent phase made these two events to be so special, as they could have easily been seen with binoculars or even with the naked eye.

Astronomers guess that a similar conjunction between Jupiter and Venus happened in the year 2 BC.

The next visible conjunction of Venus and Jupiter will be on March 14, 2012, but it will be less spectacular, as they will be farther away from each other.



www.noelkingsley.com/blog/archives/Charles%20...

**The year 2009 is the 150th anniversary of the publication of *On the Origin of Species* (24 November 1859) and the 200th anniversary of Darwin's birth (12 February 1809).**

**How is your school celebrating it?**
**Please send in the photos of the displays, articles, etc.**

**In each edition for 2009 we will publish the best article and there will be a prize a prize for the winner!**

**Forward your entries to Svetlana Marchouba sm@cgs.vic.edu.au**

# TESTING BALANCES

## By Peter Henderson



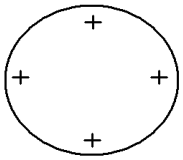
NATA has a Technical Note 13 "User Checks of Balance Calibration" should be the starting point for any lab that is serious about their weighing accuracy.

Before testing starts, the balance must be set up correctly, which includes being clean, level, right location, etc – see Lablines June 2008 or our web site www.phentron/downloads.

There are 3 main functions to be tested on a balance – reproducible, accurate & linear

**Reproducibility**

A test weight (of known accuracy & weighing at least 50% of the balances capacity) is weighed 5+ times, by placing the weight on & off the centre of the balance pan – record each weighing value & also note that the balance displays zero between each reading (if the zero readings vary by more than 1 – 2 units of the balances resolution then the balance will need servicing). The repeatability is the difference between maximum & minimum weights obtained – an acceptable value will depend on what the balance is being used for?



4 more weighings are now made with the test weight placed near the edges of the weighing pan – the variations in readings should be no more than was obtained above.

**Accuracy**

The values obtained from the reproducibility test are now subtracted from the true value of the test weight – the largest difference in these figures is an indication of the accuracy of the balance,

**Linearity**

For an analytical balance you will need a set of calibration weights of known accuracy, to make a combination of weights which equal 20, 40, 60, 80 & 100% of the balance's capacity. The readings of each calibration weight are plotted against the actual (true) value of the calibration weights & the result should be a straight line.

Note: This article only covers the basics of balance testing & should be the minimum requirement for routine 'in house' testing of balances. Proper calibration of balances should be done by one of the many companies that specialise in calibrating **and** servicing balances. I recommend that you use a NATA registered company (even though schools do not require a NATA certificate) because their calibration weights & methods are routinely checked.

Next edition of Lablines: Air Buoyancy & the minimum weight that a balance can weigh

## HANDY HINTS

For those doing electronics pracs, do the students (or time) break your solder joints ?
Soldered joints may be reinforced with nail hardening 'paint' from the manicure counter. I use "Hard as Nails", cost about $8-9 for a small bottle which lasts for years. This paint is similar to nail polish and sets very hard when dry protecting the solder, but will melt if you need to work on the connection in the future. **Andrew Wolfe, Santa Maria College, Northcote**

**Iron stains : from the list-serve by Alasdair Bryant**

I use a dilute solution of phosphoric acid/orthophosphoric acid (1M). I'm told oxalic acid removes rust from most things. Alternatively, conc. HCl in a fume cupboard and wearing gloves, etc. of course.

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I soak them in dilute (e.g. 1M) Hydrochloric acid.

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50% phosphoric acid should do it.

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2M Hydrochloric acid will do it. I keep a bottle of 'recycled' 2M HCl for just that purpose. Add enough acid to cover the stain on the glassware and allow to stand, preferably overnight. Return 'used' acid to the bottle. It usually has a yellow tinge, but can be reused over and over.

--

I just soak them in a strong lab detergent solution like Decon for a few hours. The stain should lift off fairly easily then.

--

I made up a bottle of 10% oxalic acid for removing rust and potassium permanganate stains. A quick rinse removes light stains, and a soak overnight removes most stubborn stains. I re-use the solution until it becomes a bright yellow colour ... about a year's worth of stain removal for me. Since it doesn't have any nasty fumes, I keep the bottle under the sink along with the other cleaning agents, and leave the soaking glassware on the sink overnight.

## Nillumbik & Banyule Regional Laboratory Technicians Meetings 2008

**Joanne Schlegel**
**Regional Representative - Nillumbik / Banyule**
**Catholic Ladies College**

***Term 1 Meeting***

On March 13, fifteen laboratory technicians attended our Term 1 meeting which was kindly hosted by Julie Stallwood and Jenny Kelly from Ivanhoe Grammar. This meeting had a show and tell theme where laboratory technicians brought items and ideas to the rest of the group. We also had the opportunity to tour their newly refurbished laboratories and display cases. At this meeting, Joanne Schlegel from Catholic Ladies' College was appointed the Regional Representative for Nillumbik and Banyule who has replaced Lois O'Meara and Marg le Grys after many years of dedicated service.

*Marg le Grys, Lisa Hazelwood & Aryen Issafarzam at the Term 1 meeting*

***Term 2 Meeting***

The Term 2 meeting was hosted by Jackie Hamlet at Macleod College on the 11th June where again fifteen laboratory technicians attended and it was fantastic to see some new faces. At this meeting Australian Instrument Services (A.I.S) conducted a digital microscopy workshop followed by a discussion on caring for and repairing microscopes.

***Term 3 Meeting***

The Term 3 meeting was held at Catholic Ladies' College in Eltham on 11th of September, where the theme was again "Show & Tell". We had eleven laboratory technicians in attendance.

## Lab Tech Meeting - Term 3 items for discussion and /or demonstration

**Electrical repairers including balances – contacts & reliability please**
Australian Instrument Services (AIS) (03) 9729-9399 Kevin Smith - Microscopes
Industrial Equipment & Control (IEC) (0)3 9497 2555 Van de Graaff, waterbaths etc
pHentron Peter Henderson 0408305325 or 93978723 – all school equipment & electronics.
James Bennett from Challenge Electronics is NOT recommended due to reliability and time for repairs.

**Banned chemicals in schools** – the list & query on the use of nickel.
No such list of banned chemicals exist, but DEET has a document from 2005 with a list of "Restricted Chemicals" – e-mail Jo if you would like a copy sent to you.
Nickel is fine to use in schools.

**Where to buy metal sheets from including nickel.**
Westlab or Livingstone

**Making glass delivery tubes.**
Don't bother making. Just use straight pieces of glass with rubber tubing (high density polypropylene works best) attached.

**Eye, heart and brains suppliers.**
Research Butchers are very good.
*Biodynamic butcher* in Melbourne (340 Belmore Road. Balwyn) is very good for hearts and plucks – not slashed, costs a little more though.

**VCE Physics experiments.**
Usually no set up or preparation required. Physics teachers tend to look after themselves.
Rockets can be obtained from Dynamic Science.

**Lunchbox electrophoresis**
Marg showed us her "Electrophoresis in a lunchbox" demo which is used in their forensic unit. If anyone would like a copy of the handouts I can fax you a copy.

**Waterbath prototype**
Penny showed us a new prototype for a waterbath that is used in conjunction with the IEC hotplate. It's cheaper than a new waterbath and is temperature controlled with a thermostat.

Talked about precipitation reactions – some use spotting tiles and Aryen had a great method using laminated A3 size paper (black or white depending on reaction) and having a checkerboard set up on the paper with the chemical names and squares for the reaction to take place. Can be rinsed and reused. Excellent idea.

**Circuit kits**
Wendy brought in her circuits kit which is a lunchbox containing all the circuit equipment necessary for junior science. Each kit is numbered and keeping tract of faulty equipment is a breeze. Each kit contains: 2 x lamp holders, 2 x 6V light globes, 1 x switch, 6 x leads – alligator, 2 x leads – banana plugs.
Electronic equipment can be bought cheaply from Dick Smith Electronic Wholesale or Jaycar electronics.

Joanne Schlegel also arranged for a regional chemical disposal day (provided by Envirochem Technologies) on Tuesday 25th November. Five schools participated and enjoyed a discount on transportation costs as a result of a multi-school pick up.

DO IT YOURSELF
Please send in your ideas.

**Andrew Wolfe, Santa Maria College, Northcote**

## Potentiometers/Rheostats

To purchase class sets of these is quite expensive, the big old type from science supply rated at 80W are only 3.5 Ohm and cost $90.
The Dick Smith type are only rated at 3W and burn out easily.
I have found a good compromise unit from Jaycar Electronics is a 15W, 5 Ohm pot which worked really well in our physics classes (part number RP-3975, $9.95 each or $82.50 for 10).


Picture 1

**Mounting**
For the Dick Smith pots a good mount is a standard plastic sample vial. Drill three holes in the lid, and mount the pot and two banana sockets after soldering. The wiring is protected inside the container (see picture 1).


Picture 2

For the Jaycar pots I used the cases of some old student ammeters which were beyond repair, swapping the terminals around for the correct colour scheme and drilling a 9.5 mm hole in the centre to mount the pot (see picture 2). A plastic knob would neatly complete the unit.

## LTAV GIPPSLAND REGION 2008

**Webb Sussan Kurnai College**

The Gippsland lab techs had a professional development day in June at Monash University Gippsland Campus. We joined Gippsland VCE science teachers for a keynote address about the Synchrotron. Many of our questions were answered during this presentation including: What is a synchrotron? Why build one? And applications and statistics of the synchrotron. We then joined the teachers at morning tea and browsed at displays from many of our suppliers. After morning tea the lab techs went their own way. The rest of the day was spent learning how to use Chemwatch. Arthur, from Chemwatch, guided us through all the aspects of the program. We managed to get funding from the region to cover the cost of Arthur running this session. I would recommend having Arthur at any regional meetings where there are lab techs who want to learn what Chemwatch has to offer. He really seems to understand our role and what we are looking for from the program.

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# LTAV Publications

Three laboratory reference manuals and a conference CD-ROM are available from LTAV. Interstate lab staff, Victorian lab staff on leave and Science teachers etc should use this form for annual subscription to *Lab Lines* (4 editions)

... **Biology Reference Manual**: $16.50 (incl. GST). This handbook contains information on biological techniques, reagents, stains and culture media commonly used in secondary schools.

... **Chemistry Reference Manual for Laboratory Technicians:** $27.50 (incl. GST)

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... **LABCON 2001-2007 CD-ROMs**: $15.00 (incl. GST and postage). Limited numbers of the conference CD-ROMs are available. The CD includes all session notes by presenters and other information.

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*Please feel free to contact any member of your committee with any queries or concerns. Members are welcome at committee meetings. Contact The Secretary for more information.*

## LTAV Committee Meeting Dates 2009.

Committee will meet at Brighton Grammar School from 6:30 – 9:30 p.m. on the following dates:

**To be advised**

All members are most welcome to attend.