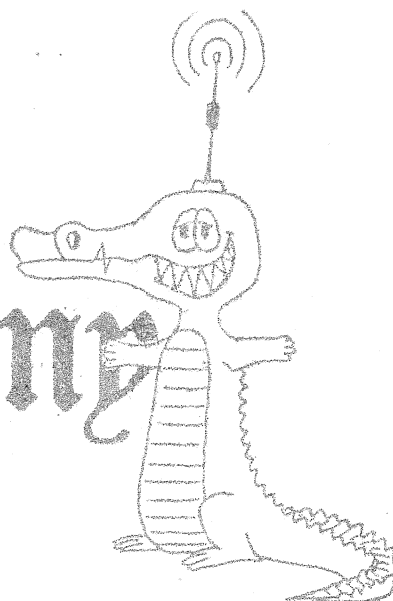


Jeremy



The Journal of the Sydney University Physics Society March 1988

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Editorial

The editors and compilers of *Jeremy* wish to extend a very warm welcome to all physics students, both those of you who have been here in previous years and those who have enrolled at Sydney University for the first time.

To the latter group, you may be wondering with some puzzlement what this collection of cartoons, news and obscure physicist jokes is doing on your desk. For you, some words of explanation:

Jeremy is the journal of the Sydney University Physics Society. This is a student organisation (although it has a large staff following) dedicated to fostering an interest in physics in the university and to bringing those with such interests together. The Society organises frequent informal lectures, parties and occasional excursions (for our 1987 activities, see the president's report elsewhere in this issue).

The name of our journal has often been queried, as has the "crocodile rampant" logo adopted by the Society. To quote from our first (March 1985) issue: "It was decided a name related to physics or a physicist would be desirable, so this first issue has been named 'Jeremy - the Physics Society Journal' after the almost unknown and sadly neglected Jeremy Rutherford, second cousin to Ernest Rutherford and long serving ticket collector on the London Underground." This appears to have had something to do with an obscure joke that did the rounds of Physics IV at the time (and which the current editors are ignorant of). As for the crocodile logo, you will learn about that soon enough!

Jeremy is produced four or five times a year. We cannot put whole issues together by ourselves - like you, we have our degrees to think

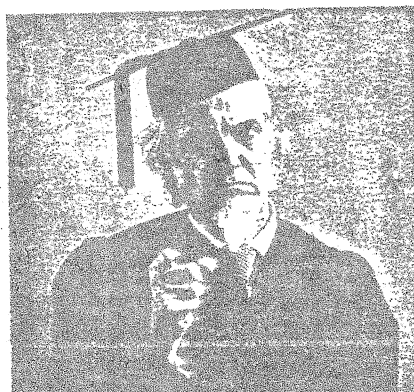
of - so we need your help to keep the journal going. This magazine is produced for you, after all, so you should have some say as to what goes into it. All contributions may be posted in the Physics Society mailbox opposite lecture theatre 8 in the Physics Building or addressed to the Society, care of the School of Physics, University of Sydney, 2006. If you are not sure what we'd like, browse through this issue and you'll get a pretty good idea. We particularly like light humour - articles, cartoons, stories, letters, whatever.

Because many of you are reading *Jeremy* for the first time, we shall try to avoid too many "in-jokes". We look forward to hearing from you. Once again, welcome.

Eugene Seneta
Physics IV (Astronomy)

This advertisement appeared in *Mad Magazine*, Super Special number 32, Fall 1980, but it doesn't really help our School of Physics in its recruitment drive for honours students. If you think you can do better, submit your advertisement via the society mailbox. Submissions by staff are also most welcome. Stick up for your department! There are no prizes, just the satisfaction of seeing your artwork in print, and knowing you have done your part to ensure that physics remains as popular in the future amongst students as it is today.

I'M LOOKING FOR MEN!



Not Boys, Not Adolescents, Not
Pimply-Faced Teenagers

BUT MEN

Who've Got the Guts to Take My
Grueling, Mind-Crushing Course

**ADVANCED
ASTROPHYSICS**

Sure, it's tough, but who ever said life was easy? If you're looking for a challenging and brain-wracking course you'll remember with pride in years to come, apply now and maybe I'll consider you.

Prof. T.H. "Ironhead" Terhune
3 p.m. Mondays & Wednesdays
Science Building

NOT FOR SISSIES OR COOF-OFFS!

1987 President's Report

1987 got off to a wonderful start for the newly reformed Physics Society. After an eventful and exciting 1986, early in 1987 the Physics School was raided for interesting and exciting demonstrations and the orientation week stall was set up. With these drawcards, not to mention a band of enthusiastic, if somewhat strange, people wearing "Who is this Jeremy Anyway?" T-shirts, we were still not prepared for the onslaught of freshers wanting to join the Society.

The Sydney University Physics Society has the noble aims of fostering interest in physics and related subjects and promoting staff-student relations; it is also a very good excuse for a party - a slightly intoxicated staff member is much more likely to divulge information to a "keen" student. A party is also a good opportunity for students in different years to get together, and a lot of unofficial information about courses, options and pracs is dispersed in this way.

After a wonderful Orientation Week, the Society was inundated by enthusiastic first year students. This enthusiasm was apparent at the Annual General Meeting held at the beginning of March when first year students were elected to the posts of secretary and treasurer.

The Physics Society's activities in 1987 were putting together lunch-time lectures, given on a variety of different subjects, ranging from the Earth's magnetic field to the structure of the atmosphere. These talks were attended by a small (about thirty) group of interested listeners and were held regularly throughout the year.

The society also put on three very successful parties. The first was a welcome to first year barbeque, and gave an opportunity for first year students to informally meet the Physics School, as well as various "ex-physicists". The party was a big success and migrated to Glebe Point Road and onwards.

The second term party was not quite so well attended, probably because it clashed with an Alchemists function, but for the students who attended it gave the opportunity of seeing the physics postgrads in an entirely different light.

The third term party, also a barbeque, was very well attended and involved the judging of the quotes competition, with the traditional currency of jellybeans. Ian Johnston managed to sweep the others aside. This feat may have been due to the large number of second year students present at the party (*the winning quotes for the two years the competition has been run have both concerned second year students. It is worth noting that this may in part be due to the fact that many second-years attend our parties to let off steam after their four hour laboratories. I personally don't blame them - Edl.*

The Physics Society Journal *Jeremy* was published (by a variety of overworked editors) throughout the year. As well as giving the lecturers an opportunity to practise tautologies and *faux pas* for the quotes competition, the submissions by students destroyed the myth that science students are illiterate. *Jeremy* was enjoyed by all of the university's physics students and was often more entertaining than the lecture or prac in which it was distributed.

Unfortunately, a proposed Text-Book and Exam Paper (past exams of course!) Exchange failed to get off the ground in 1987, a major factor being the School's decision to change course structures and textbooks! Perhaps this venture would be more successful in 1988.

After a successful 1987 I wish the Society an even bigger and better 1988.

Meredith Jordan
President 1987
(formerly Physics IID)

Society News

The Society's orientation stall got off to a slow start this year - until the giant Jacob's Ladder that normally resides in the second year labs was brought into action. It brought in potential new members like mosquitos to a mozzie zapper. A special thank-you must go to Richard, the Society secretary, for running the stall for most of O-week single handed.

The first PhySoc...



...for 1988 will be held on the afternoon of Friday the 18th of March. It will be in the Physics Back Yard (behind the main building). The first party of the year has traditionally been a time when new students get to know their lecturers and students of other years on an informal basis. We hope to see a big turnout this year as well. Turn to the back page for details.

The Physics Society is this year planning...

*** The Physical Revue (Volume One)! ***

It is likely to be held in LT8 some time in second term. This is your chance for revenge! Those who want to help should contact Darren Kelly, Physics IV (Astrophysics), room 569 in the new wing. He doesn't bite (at least there have never been any reliable sightings). Alternatively, fill out the form below (or a piece of paper if you can't bear to cut up *Jeremy*) and place it in the Society mailbox.

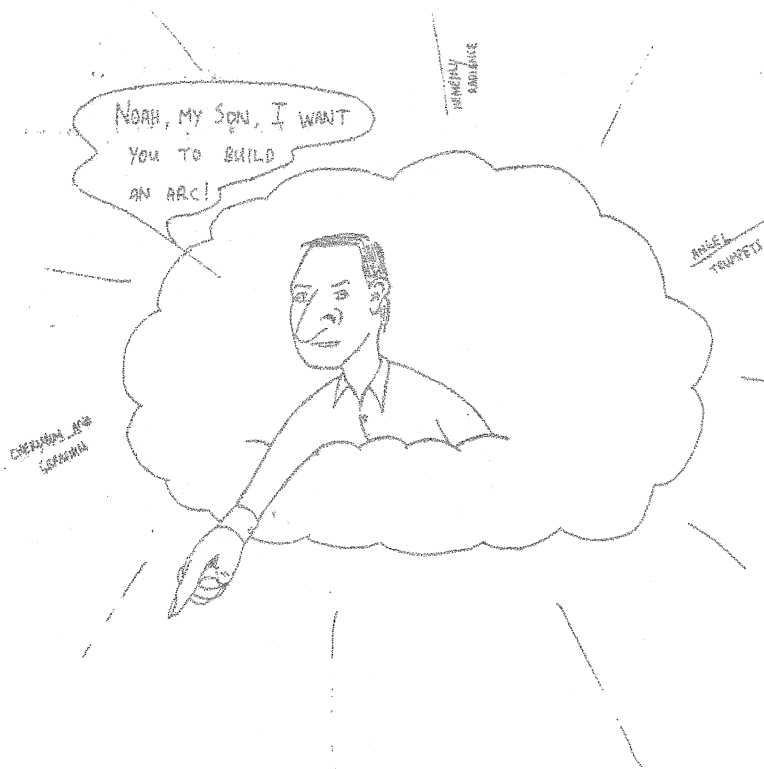
Dear Darren, I would like to help out/act/perform in the Revue.

Name:

Address:

Phone number:

The editors of *Jeremy* would like to take this opportunity to wish "Uncle Bob" Hewitt and Max Brennan well in their new positions as Dean of the Science Faculty and Head of the School of Physics respectively. We are sure you shall both excel.



Dr. Bob Ascends To Dean!

Science & Society Hour

A group of ideologically sound types from all over campus meet about once per month for prepared talks (followed by casual discussion) amidst the soft seats of Room 318 (top of stairs, 1st floor) during lunch (1pm-2pm) on Thursdays.

Previous talks have included:

- Solar Energy - Fact, Fiction or Fantasy
- Toxic and Hazardous Chemicals
- Mining in the Kakadu Region
- Fast M^cFood. The Facts.
- Communicating Science
- Technology Transfer

It is not a group just for physicists, and is certainly not just for greenies. The topics are of interest to anyone who is interested in the impact of science on society and the relationship between them (and that should mean all of you).

Keep your eyes open for details of our first talk for '88.

For more information see : Darren Kelly, Room 569 (Astrophysics)
Stuart White (Applied Physics)

The Third Annual Kit-Kat Quote Competition

As you have probably already noticed, physics lecturers don't always say what they mean, sometimes try to pull a fast one on students they hope don't know any better, or make some other comment that for one reason or another is worth remembering. We believe that this material should be preserved for posterity, not only so that researchers a thousand years from now can gain insights into the behaviour of ancient scientists, but also because it will mean our lecturers are embarrassed for a similar period of time.

To this end we announce the Third Annual Quotes Competition. We ask students to send in the very best of their lecturers' wisdom, which we shall record in these pages. Here are the rules:

1. The best quote of the year is decided by vote at the end of year party. The winning lecturer gets the Physics Society perpetual trophy for one year (currently held by Dr Ian Johnston of the Theoretical Physics team) with the winning quote and its author immortalised upon it. The person who submitted the quote wins a Physics Society T-shirt worth \$10.
2. The member of staff who has the most quotes printed in *Jeremy* per lecture given (the Kit-Kat Quote Rate) wins a T-shirt as well.
3. We will happily print quotes from lecturers outside the School in our "foreign quotes" section, but the lecturers concerned won't win anything because they are not physicists. We think it serves them right.

To give those of you new to the game a start, here are some of the quotes that were submitted too late to be entered in last year's competition:

Submitted by David Mar, formerly of Physics IID:

Ian Johnston: "You can see inside your ear if you pull your head apart."

"I want to go even further away from the type of mathematics that you are able to handle."

Dick Collins: "Although the theory we develop here is very wrong..."

"We had a great untruth before, so now this small untruth looks plausible."

"To solve this we apply the general physical principle of making things as easy as possible."

"I'm going to obviate any further discussion on the algebra by not doing any more."

"We get four equations, which I won't write down because my hands are tired."

Submitted by Andrew Studer, formerly of Physics IIID:

Murray Winn: "We're getting the old curving overhead transparency problem."

"In the old days of steam AM radio..."

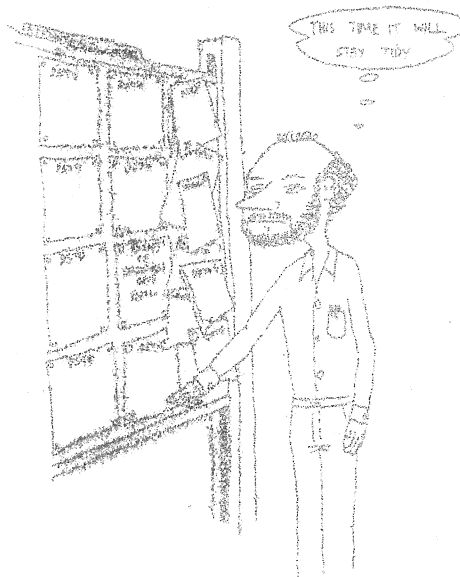
"You've got this cable connecting it to the mains. You've probably seen one of these, it's got three wires in it."

"I'd like to talk about the RS232 interface. I don't know what RS means."

Bruce McAdam: "That has no answer. It shouldn't even be a question."

"As some of you know, the Earth turns."

Brian James: "You can expand this using a well known vector identity...if I just look at my notes to find out what this well known identity is..."



Maxwell's Demon makes not
another particle move against
the second law of thermodynamics

Experiments with Physicists

If you have heard a great deal about experiments with physics - but what about experiments with physicists? Here are a few suggestions: our apologies to all the first-years who don't know who we're talking about. All shall become clear to you pretty soon - Ed.1

Angular Momentum: Ask any theoretical physicist to explain anything to you. Guaranteed to send you 'round in circles.

Perturbation Theory: Tell Murray Winn you've broken his Gould Storage CRO. Sure-fire method of generating a perturbation.

Catastrophe Theory: Tell Max Brennan you've busted his tokamak. No more need be said.

Resonance and "Beats": Get Kevin Moore and Anton Garret to sing together. [Alas, Anton has left us - Ed]

Absolute Zero: Don't do any experiments all term and look at your final mark.

High Frequency Accoustics: Watch a theoretical physicist scream as he tries to use an oscilloscope.

High Energy Physics: Lectures by Ian Johnston, Dick Collins and Max Brennan.

Low Energy Physics: Lectures by most of the rest.

Rigid Body Collisions: Get seven professors in a room and tell them you can only fund six of them.

Entropy: The Plasma Physics Department.

Magnetic Attraction: Honours year students and Astrophysics.

Andrew Studer
Physics IV (Plasma)



Buzzwords and Catchphrases in Physics:

When and how to use them

[This article first appeared in the second-year clandestine press some years ago. We reprint it in Jeremy as part of our service to all our new readers - Ed.]

By inspection: Used when there is a factor of two in the answer that shouldn't be there. Correct the answer and remove the the factor in at least three of the preceeding lines, chop out two steps and write "By inspection" in their place.

Clearly: Used to chop out more than ten lines from a proof. If at all doubtful of the validity of a section of your proof, remove the offending portions (leaving the answers) and write "clearly".

Wlog (without loss of generality): An all-purpose tool for avoiding difficult questions and replacing them with easier ones. This, along with "wcmc" ("with considerably more clarity") is often seen in mathematics courses as well. Wlog is particularly useful for making dubious assumptions, and has the advantage over the word "assuming" that you do not have to do the hard bit later.

Obviously: Of similar usage to "clearly", it has the advantage that if the answers are of a somewhat vague connection with the previous remaining step, the marker takes it as an indictment on him/herself that it isn't obvious.

But the two vectors are antiparallel: This is an excellent means of changing the sign of an answer. Pick two quantities that can be turned into vectors, and instead of multiplying their magnitudes, take their dot product using the phrase "but the two vectors are antiparallel, so", thus changing that nasty sign.

By symmetry: If you have a point, a line, a sphere, toroid, cylinder or plane, this neat little phrase can be used to get away with avoiding 99.99% of the work required to answer the problem. Simply say "By symmetry we find that" and write the answer. Can only be used to find directions, not magnitudes.

Renormalisation: No theoretical physicist worth his or her salt hasn't used this one. This is an incredibly long process, into which one is initiated in the dead of night on a full moon in the cemetery, in which one can hide the addition and subtraction of infinity, and pull the right answer out, or at least one which, although its dimensions are wrong, has the numbers right. This problem can be fixed by using the SI system, in which one can convert a heap of letters and powers into a single suffix which is defined by the answer you want. Another method is multiplying by h , which has a similar effect.

From the diagram: This allows you to transfer the blame for the dubious nature of the next statement to the indistinct and undecipherable scribble in the top left hand corner of your page. Used to get a statement from which the answer immediately follows.

By definition: If you are completely stymied for how to prove an intermediate but necessary result, simply write "by definition" and quote it. A desperation measure only, as it leaves your proof somewhat dubious; "clearly" and "obviously" are better.

By convention: Of more general use than "but the two vectors are antiparallel" this little phrase allows you to rotate your answer through any angle you like. Simply correct the direction of your current, velocity or force and write "By convention".

Normalisation: This is of similar application to "renormalisation" but is simpler in its application. Find the answer you want, and integrate the answer you have over all space. Set this to one by saying "but the probability is one" and dividing by the appropriate factor to get the required answer. Differentiate and your answer miraculously corrects itself of all strange constants, signs and other little problems.

But there are N degrees of freedom: If your result is out by an integer, N , or by N' , then this nifty little phrase can be used to justify the appropriate division or multiplication and thereby relieve you of that embarrassing factor.

Kevin Moore
Plasma Physics

Members - Non-Members

THE PHYSICS

SOCIETY Presents....

Don't be there
You'll be
not

{ A PARTY }

[α Labish]

• Ann Roberts
• will look at
• apertures
• really
• really
• really
close up.

Friday 5:30pm Mar. 18th

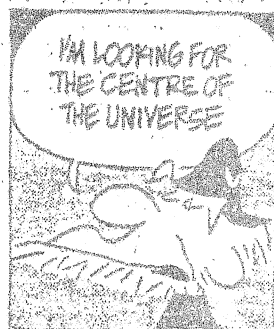
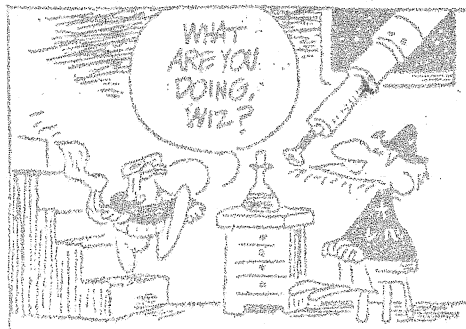
Beer, wine, women, physicists.
All Welcome. (Calculators will be confiscated
at the door.)

Shaun will be there to explain RS-232
interfaces. Eric will teach the freshers to drink.
Ian Johnston will stand in his own aura.

At the Physics Backyard

THE WIZARD OF ID -

By Parker and Hart



(Follow the arrows)