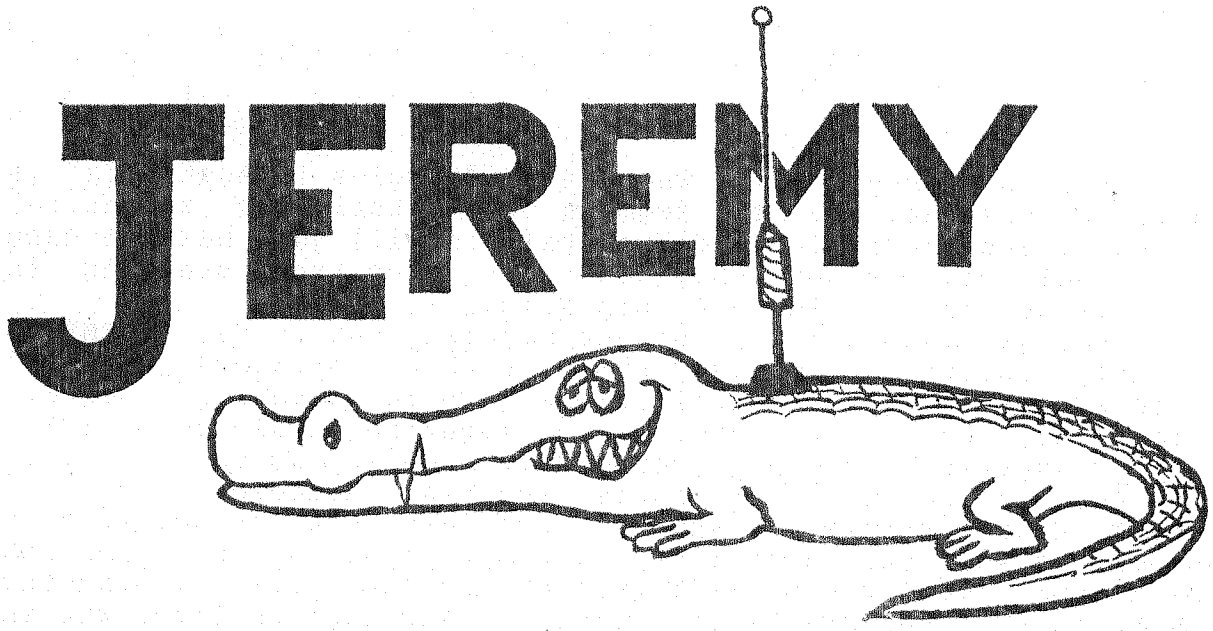

JEREMY : The Journal of the Physics Society

Volume 2, Number 4

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EDITORIAL

Welcome to the fourth and final issue of JEREMY for 1987. It was suggested at our last meeting that this issue be inserted into your Physics examination papers to give you something to do during the exam. The idea was hastily rejected.

If you never saw issue number three, you should not be surprised; we have been plagued by supply problems, which meant a large number of first year students didn't get their copies. Hopefully, the problem is now under control. If you're really desperate for a copy, you might try pestering your demonstrators or lecturers. Our apologies to the poor unfortunates who missed out.

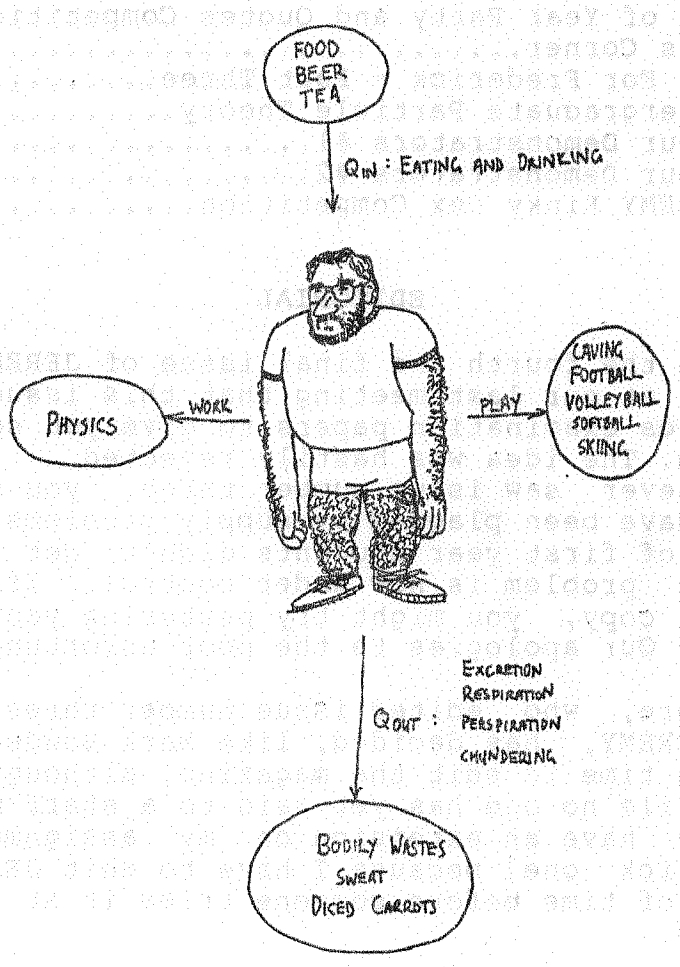
Kevin Moore, who edited issue number three and does the cartoons for JEREMY, has decided, like Mark Bowden, that he does not have enough time to edit the magazine, although he will still contribute. While no one has yet said to a staff member, "Can I please, please have an extension on my assignment/report/project/thesis [tick one] because I have to edit JEREMY?", it is only a matter of time before someone tries it at the rate we go through editors.

For this reason, Mark, who writes "Biggles in Australia" is unable to complete the next segment of his thrilling adventure, and the lives of Biggles and von Stalhein will just have to hang in the balance. We hope they don't get tired from standing in Professor Millar's office all this time.

Finally, a word to the silent majority out there. JEREMY is currently sustained by a very small (although growing) group of people who make regular contributions. While we have no shortage of material, this is not the way the magazine should run. JEREMY is <u>your</u> magazine, and you should have some say as to what goes into it. We welcome your ideas, quotes, articles and your letters. Every article you submit means less work for us; we have degrees to work on, just like you, but if we can spare enough time to put together a whole magazine, you can certainly find the time to contribute. JEREMY is one of the few opportunities within the School of Physics you have to express your literary creativity and share your ideas with others. You aren't going to waste it, are you? Deadline for the next issue is February 1, 1988, and submissions can be left in the Physics Society mailbox opposite lecture theatre 8 in the Physics Building.

Eugene Seneta, Physics IIID
[editor in chief]

The Standard Thermodynamic Model of an Animal



THE END OF YEAR PARTY AND QUOTES COMPETITION

On Friday the 18th of September, the Physics Society held its second annual hugely successful end of year party in the building's back yard. While we brought a great many cases of beer and an enormous supply of snags, we didn't anticipate the enormous staff and student flux past the door, and the food ran out before the appetites did. In spite of this, everyone had a great time (or they were superb actors).

The highlight of the night was the judging of the quotes competition. For those who didn't go, everyone was given three jellybeans to vote for the year's best quotes upon entry. Ian Johnston made a killing, winning both the Kit Kat quote rate and the quote of the year. Dr Johnston wins a Physics Society T-shirt for his sterling efforts, and keeps the Physics Society's perpetual trophy within the Theoretical department for the second year in a row, while David Mar of Physics IID gets a society T-shirt for his last minute submission of the winning quote.

Here are the finalist quotes, together with the voting statistics :

"This solution is a subtle one...I'm always amazed myself that it actually works." - Neil Cramer, 16 jellybeans

"This is a desperate attempt to make the second year lab seem relevant." - Ian Johnston, 27 jellybeans

"Let me reveal something. I am not God. Now this may come as a shock to some of you." - Ian Johnston, 26 jellybeans

"These are Xerox photocopies, not tablets of stone." - Ian Johnston, 7 jellybeans

"We look at Chemistry as a small sub-branch of Physics." - Brian McInnes, 23 jellybeans

"You're taught this nonsense, you know it's nonsense, and you start to learn." - Don Melrose, 22 jellybeans

"...if we had x-ray eyes like Superman or γ-ray eyes like...God." - Laurie Peak, 23 jellybeans

"If you could get a one tonne truck through a gateway of width 6.6×10^{-38}m, then you would expect to see truck interference." - Laurie Peak, 10 jellybeans

"I'm not sure of the etymology of this word bolometer. Bolo is probably Greek for the noise cows make at the sunset or something." - Murray Winn, 10 jellybeans

Some will notice that this is the second time the winning quote mentioned second-year students. Perhaps the voting was skewed by the second-year hordes that came down for something to eat after their labs finished.

Many thanks must go to Brendan Casey and Kevin Moore for

their help, and a special commendation goes to the School's technical staff, who loaned us their gas barbecue for free.

But that's not the end of the quotes; we have received a great many in the last few weeks, and there are some that for one reason or another didn't make it to previous issues. Here are the latest pickings. The Johnstonia is as usual at saturation levels, but we also bring you a rising star - Steve Simpson of Electrical Engineering, who makes his debut.

Local quotes

"The mathematics is nice, but not important - I'd much rather guess the answer." - Ian Johnston

"Two is equal to one, pi is equal to one, e is equal to one, any damn number you like is equal to one." - Ian Johnston

"In a crystal lattice we have 10^{23} differential equations, and we can solve those." - Ian Johnston

"[Angular momentum diagrams] are not very useful. By the time you've worked out what the diagram means you've forgotten what the question was." - Ian Johnston

On the difficulties of working with quantum mechanics : "Of course, the arithmetic is easy. It's knowing what to do." - Ian Johnston

"This situation here corresponds to reality." - Brian McInnes

"If the pressures were the same it would be a happy coincidence...no, a bloody miracle." - Brian McInnes

Foreign quotes

"We solve this equation with a sneaky trick. I know it's sneaky because I got it from a textbook." - Steve Simpson (Electrical Engineering)

"If we listen to Madonna on a loudspeaker, we're hearing a sine wave." - Steve Simpson (Electrical Engineering)

"This method always works, except that it doesn't always work." - Charlie Macaskill (Applied Maths)

And please, those of you who are not submitting quotes (mainly first and fourth year are to blame), it's hardly fair on your lecturers, who are no doubt doing their best, to be handicapped just because you can't be bothered writing their gems of wisdom down! If this goes on, they'll go and teach other classes where their talents are wanted and leave you with someone who can't entertain you nearly as well. Remember there's a prize for the best quote of the year.

SHRINK'S CORNER

Have you ever wondered what your lecturers and postgraduates are really like under the calm prosaic facades they choose to present to the world? Our society president, Meredith Jordan, decided to investigate the matter at our second term party. She asked some of the partygoers the following questions :

1. What is tne first animal you can think of? (This is meant to show how you see yourself.)
2. What is the second animal you can think of? (Supposed to symbolise how you think other people see you.)
3. The third animal? (How you would like others to see you.)
4. How would you describe the ocean? (This is meant to reflect your views upon life.)
5. You are on campus one day when a black helicopter lands beside you. A man dressed entirely in black, with a black balaclava, points a gun at you and says "Get in the helicopter." He forces you inside and flies you to an impenetrable jungle (variants include deserts, desert islands, and so on) and abandons you there. You have no resources. No rations. Nothing. How would you react, and what would you do? (This is supposed to indicate your reaction to death.)

Here are the results. What do you make of them?

Tony Beazly

1. zebra
2. rabbit
3. possum
4. blue
5. I'd stand up and think, "Where the f--- am I?"

Anton Garret

1. snake
2. monkey
3. cat
4. big
5. I'd think "s---" and stay where I am.

Leon Poladian

1. cow
2. fish
3. kangaroo
4. wet
5. I'd think it was a practical joke and would wait for the rest of the postgraduates to come and pick me up.

Neil Cramer

1. aardvark
2. lamb
3. giraffe
4. wavy
5. I'd think, "Dick Smith is a filthy bugger."

Neil Cramer on DEATH!

A SPELL FOR FREDERICK - PART THREE

As Fred approached the tea room, he could hear the most appalling racket of voices, but suddenly a chuckle rose above it all, like a tsunami among lesser waves. Kevin Moordred suddenly knocked Fred to the floor in an expert flying tackle, and Fungus Bran lunged for a corner with equal alacrity.

"Moordred, what the bloody...", Fred began to protest.

"Cover your ears!" was the reply. Such was the panic of Fungus that Fred complied without hesitation.

The chuckle increased in volume, became a full-blown laugh. "Ho ha ha HA HA HO HO HA...", it went. And went on. And on. The intensity became unbearable, like a physical blow to Fred's head. He twisted in agony. The building started to tremble. Bits of plaster began to fall. Cracks appeared in the floor. Fred began to entertain seriously the possibility that he would die from the sheer power of the thing, when it slowly but surely levelled off and tapered to nothing more than a chuckle he could barely hear through the ringing of his ears. Fungus and Moordred were already up, dusting ineffectually at plaster in their hair. The entire debacle had lasted scarcely a minute.

Fred could see people in the tea room taking off earmuffs (they were obviously used to this kind of thing happening) and crawling out from under tables. But there was one man with blond hair and a sharp nose, giggling faintly still, who looked as if he had never abandoned his chair.

"Who is that?", Fred asked Fungus. He had to shout in Fungus' ear to make himself heard.

"That", said Fungus, replying in kind, "is Anton Garrulous. His talent is laughter. He can use it to kill people with."

They entered the room (not without trepidation) just as people were seating themselves. Fungus took it upon himself to introduce the people with whom they shared a table.

"Anton Garrulous you already know", he said. Anton nodded at Fred. For a desperate moment, Fred thought he was going to laugh again, but he only smiled at him. "This is Dick Follicle. He can see the magic in the most mundane of objects. That's his talent." He gestured to a man with a dazzling pate who was dragging his coffee cup across the table and was observing with wonderment the standing waves generated in it. He stood up and solemnly greeted the newcomers (his head nearly scraped the ceiling as he did so), then resumed his investigation of the coffee.

"And here's Ian Tombstone, whose examination papers have shocked many students to death. We keep paramedics outside the examination rooms now."

Fred could sympathise, having suffered at the hands of many a lecturer who always seemed to know <u>exactly</u> what he hadn't studied. But apart from that, Tombstone seemed a likeable man. He had bright, birdlike eyes, a short white beard and a warm smile.

"Quote, quote, quote, quote, quote", he said.

"Pardon?" Fred was bewildered.

"This is a desperate attempt to make the second lab seem relevant:"

"I'm terribly sorry, I don't understand."

"Let me reveal something. I am not God. Now this may come as

a shock to some of you. Quote, quote, quote."

"Er..."

"These are Xerox photocopies, not tablets of stone."

At this point Moordred interrupted and gently drew Fred away to explain. "He's usually quite sane, but occasionally that person over there in the corner" - he gestured - "writes down what he says for the local student magazine, and if he sees him doing it, he starts spouting all kinds of nonsense. Nobody knows what it means. Some say he's cracked under the pressure of lecturing to hundreds of apathetic students every year for decades. Others think he's possessed by a ghost with a sense of the absurd. No-one knows for sure."

"Oh."

Fungus pointed to the last member of the party, who was smoking a cigar so large it bent under its own weight. "This", he said in a hushed voice, is the most powerful magician of us all, the great Harry Messiah." At that, everyone, even Dick Follicle, left their chairs and did pay homage to Him, while He said "Gawd dammit, I thought you'd never get to me, Fungus! Now, boy...", he pointed his cigar at Fred, who could have warmed his hands with the heat radiating from it, "...betcher wondering what makes this crazy bunch do that."

"Uh..."

"Course you are! Well, look, I won't keep you in suspense. See, my hand's empty, right?"

"Uh, yeah..."

"Now my talent's money, see?" A wad of banknotes appeared in His hand. "Now if you have enough money, you can move mountains, build empires, have thousands answering your slightest whim. Now that's a pretty powerful talent. But I use it more constructively." And He put the banknotes into a small box labelled "Science Foundation for Magic" that had apparently been placed there especially to ensure that such whimsical acts of munificence were not thwarted by a lack of outlets. Everyone else at the table beamed.

Fred took a seat, and endeavoured to outline what had happened to him. He told them of the extremely unusual Big Mac that had knocked him out. He waxed lyrical on how he awoke to find he was somewhere else, where there were magic carpets and solid state crystal balls, and where Kevin Moordred had discovered him and brought him to the School of Magic (populated, of course, by magicians), which had looked disturbingly like the Physics Building. He concluded with how he had been attacked by a triffid, and saved by Fungus Bran. He had to field many questions.

"Did anything else unusual happen before you, er, arrived here?" asked Follicle. He had excellent diction.

"Well, not really. No, hold on. I'd just finished my laboratory work for the day, but I couldn't get my book marked because my demonstrator was mauled by a crowd of students wanting their books ticked off and had to be taken to hospital."

Garrulous chipped in : "Well, that does seem pretty strange, but where does it fit in..."

"Oh, no, that's not the strange part. You'd be amazed how many bones get broken in the mad rush on Wednesday evening. The weird thing is, my demonstrator was the worst possible person for

the job; he was filling in for someone else. Bob Hewitt was his name. Nothing works when he's around, not even the power points. Small wonder my experiment failed..."

He broke off suddenly. Everyone was staring at him. Tombstone said, "Fred, do you know what a Pauli field is?"

"Sure, it's the thing around Bob Hewitt that makes experiments die slowly and painfully."

"A Pauli field a whole Hewitt strong!", breathed Fungus, shaking his head in wonder. "A stronger field than has ever existed in the history of the universe!"

"It explains a lot of things", said Follicle. "When the man lost consciousness, a large part of his field must have been transferred to Fred, and Fred's universe spat him out as best it could. And the Big Mac - such a concentration of the field would warp events very strange ways, like making the hamburger look like it was good to eat...but how do you shield against a Pauli field?"

"Well, you can kill the field carrier...", Tombstone began.

"Kill, kill, kill!", Moordred shouted. At the curious glances, he calmed down. "Sorry", he muttered.

"...or you can send him back to his own world. If a Pauli field got him here, an antiPauli field should get him back. Everyone knows that technicians have strong antiPauli fields - experiments never work unless they're around. Send for the technicians!"

"Yeah, the technicians!", Messiah shouted.

The cry was taken up all over the tea room. "The technicians! The technicians! Send for the technicians!"

A swarm of men in grey wizards' cloaks surged into the room, waving power drills and spanners in magical incantations at Fred. "Hey, guys, wait! I don't wanna go! I never even got to drive a magic carpet!"

The room was already fading into mist, and the chanting grew very far away, and stopped altogether after some minutes, leaving Fred in a deafening silence. After some time, he realised that it was very dark and he was standing in the burnt out hulk of the restaurant where the weirdness had all started. He looked around. Overturned tables. Little piles of fast food dropped in the panic. A blue police car light flashing outside. The reek of rain on burnt wood. Over in the corner, he found his bag, untouched, and the remains of his hamburger, which were still glowing softly. It was very quiet.

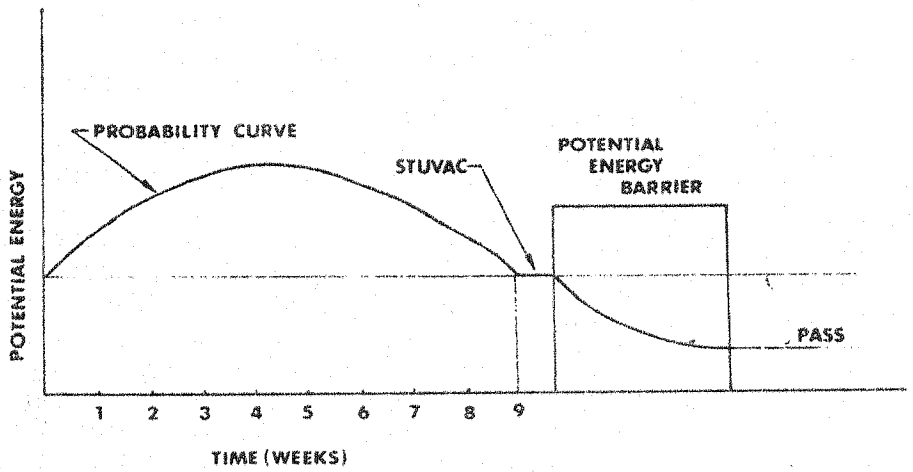
He felt extremely bitter, having been kicked out of the world with the fifth fundamental force. All those lost chances to experiment with magic! But, he considered for a moment, had he really lost anything? What was physics if not powerful magic? It enabled him to see into the very knotty fabric of matter and to the edges of the universe. It could shield and protect, or destroy cities. It just took a lot of work, that was all, before one could wave one's magic wand and set the thing in motion.

Fred picked up his bag, slipped past the police car, stopped and looked back. "Bunch of bloody raving loonies", he muttered under his breath, and slowly made his way to Central.

THE END

THE UNDERGRADUATE PARTICLE THEORY

Third term undergraduate students can, it seems, be likened to a particle in a 1-dimensional box (see the diagram) where time, in weeks as term progresses, is plotted against the potential required to pass third term exams. This results in a probability function which describes the probability at any instant of the student passing the exam. The curve shown is the solution for a typical n=3, ℓ =1 (3 passes, 1 credit in first year) student.[1]



Having failed most of second term (due mainly to reduced brain activity resulting from sitting through Pure Maths at 9 am every morning in Wallace Theatre in below zero temperatures), the student realises that a mammoth effort and great dedication is required in third term. With such an attitude the student begins the term with a definite positive potential which is, however, well below the potential needed to pass. This is due mainly to the fact that he or she knows nothing of what went on in first or second term.

The solution predicts that this dedication and enthusiasm will last about four to five weeks - and then, the dreaded "Mid-Term Slump".

The "Mid-Term Slump" is a strange phenomenom resulting in immense apathy and redirection of energy, bought on by the mention of the words "Study Leave" or "STUVAC". It has the following symptoms :

- a sudden feeling of tiredness overcomes the student, resulting in more time spent sleeping through lectures.
- more "very important" and "very urgent" birthday parties, engagement parties, weddings, babies etc., [not to mention editing student magazines - Ed] seem to come up in the last four weeks of term.
- the phrase "never mind, I'll learn it during stuvac" becomes increasingly popular.[2]

And so the student's potential begins to fall, until in the last week he or she is well below the potential needed to cross the 'pass' barrier (N.B: A similar solution for lecturers shows that they, too, suffer "mid-term slump". This has, however, never been documented because no students ever noticed: they were

either absent, asleep or didn't care anyway).

The curve shows a dramatic decrease in the amount of energy spent on study during this period. But energy must be conserved, so where does it go?

There are some who advocate that this extra energy results in a sudden gain in weight of the student in accordance with the conservation of mass-energy law, and this is certainly true in some cases. It is, however, obvious to me that most of this energy is used up attending important parties, football games, keeping urgent appointments with the bar, and the like. Another large portion of this energy is spent thinking about the $2\frac{1}{2}$ months following the exams, a small portion on the famous phrase "never mind, I'll learn it during stuvac" and the rest convincing everyone that you really don't care, because if you fail you'll just come back and do it again next year.

On the first day of stuvac the student realises his or her mammoth task, and the diagram shows clearly the enormous leap in potential required to pass the exam. This is, however, not entirely unlikely, and is in fact well documented in the bizarre case where a student was observed to sleep through the entire three hour duration of his third term Physics exam, and was awarded a distinction. When approached about this, the only conceivable explanation the markers could offer went something like this : Since the student had left his paper completely blank, he had in fact done nothing wrong. This, they deduced, implied an almost infinite probability that, had he bothered to answer any questions, he would have done them correctly. It was then left to the markers to decide how many questions he would have answered had he not been asleep. They began by citing the first commandment:

$$\Delta t \Delta E \approx \hbar$$

They knew Δt to be exactly three hours, hence

$$\Delta E \approx \frac{\hbar}{3}$$

Then by a complex formula which was later presented as a post doctoral thesis, they worked out that this corresponded to someone who knew what they were doing answering seven out of eight questions correctly. This was of course a HD, but one last problem remained : the paper had no name on it. After getting the paper dusted for fingerprints, the student's identity was established, but the board decided to scale his HD down by an annoyance factor (similar to the "-1" you get for not stapling your maths assignment to your folder), and awarded only a distinction.

It has been brought to my attention that since then certain flaws in the marking system have been pointed out, and measures taken by the board to ensure that this sort of incident does not occur again. In light of this, the author sincerely urges you not to consider this as a viable way of passing third term.

A typical student, having spent most of his stuvac practicing for the holidays, cries "What should I do?" the night before the exam.

The answer is of course clear from the diagram to anyone who managed to stay awake when Associate Professor Laurie Peak lectured 2D on "steps and barriers" late in first term.

All you have to do is spend your stuvac meditating. If you can convince yourself that you are an imaginary particle, you will tunnel through the energy barrier and pass with no problems.

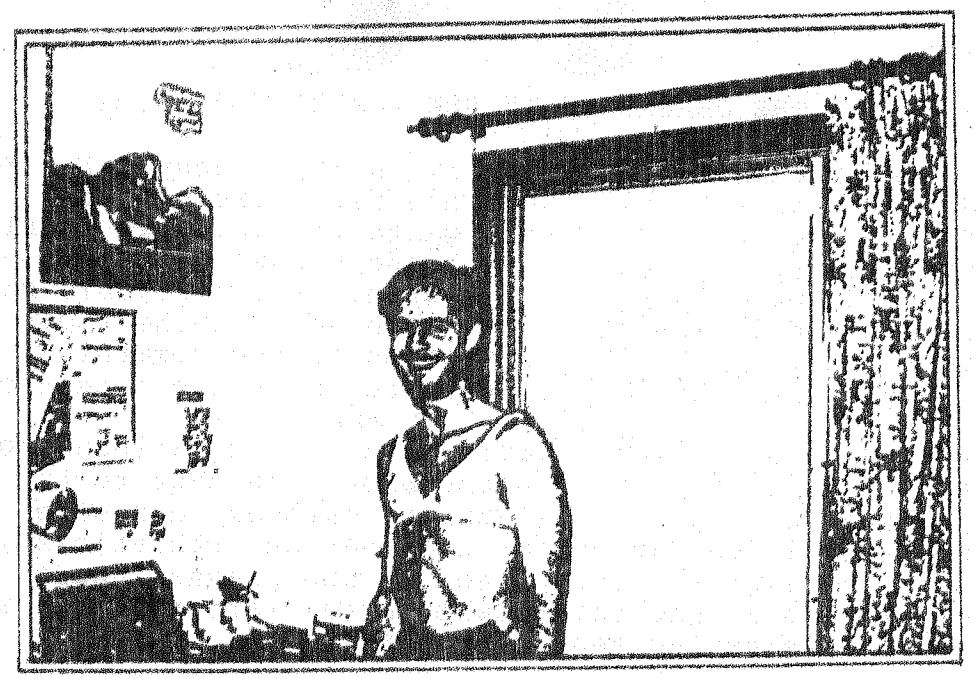
So happy meditating, see you all in Physics IIID.

1. Similar solutions can be obtained showing "credit", "distinction" and "high distinction" barriers for atypical students.

2. Of course no one ever believes anyone who says they study during stuvac, as it is a well known fact that this week is spent practising for the holidays.

KNOW YOUR DEMONSTRATORS #1

We strongly suggest that second year students refrain from reading this until after their lab has finished. Physics Honours students are most commonly found tucked away in a lab in the Physics building, playing with expensive toys or putting red lines through the brilliant work of second year students. However, some lead a Jekkyl and Hyde existence, or should we say Jekkyl and Heidi? [Hyde is on the next page - Ed.] An example of such a one is Pal Fekete, as shown Below. Would you call this guy your pal?



KNOW YOUR DEMONSTRATORS #2

A great many students will be familiar with Kevin Moore, who is often seen gnawing the bones of hapless undergraduates or engaged in the apparently pointless task of hitting a white sphere over a net on the Square. In a JEREMY exclusive, we reveal Kevin's hitherto unknown recreational pastimes. Why is he wearing his gridiron outfit? What is his connection with the young lady? Why are they both smiling so much? Perhaps we'll never know.

THE JEREMY KINKY SEX COMPETITION

A film which appeared recently in the Sydney Film Festival inspired the Sydney Morning Herald's film critic to the following : "The love play between a gangster and his girlfriend, involving live prawns, an egg yolk and a bowl of cream, left me speechless." Speechlessness, of course, is a desirable state for film critics and lecturers alike, and so, in the hopes of inducing this state in the latter section of the community, JEREMY invites imaginative Physics students to enter its latest competition :

Creative and at least semiprintable suggestions for love play using all of the above props should be sent to the JEREMY editors, care of the Physics Society mailbox opposite Physics LT8. Entries will be judged for imagination, athleticism, artistic effect and avoiding the spines on the prawns' heads. Prizes will be awarded at the third term party, after which we will visit a very interesting seafood restaurant in....

[The above was submitted anonymously. Kevin Moore has this to say about it: "The cream and tne egg yoke I can take, it's just the prawns that I can't handle." The Physics Society shall award a prize yet to be determined (probably a king prawn) to the best entry, provided it is of sufficient merit - Ed.]