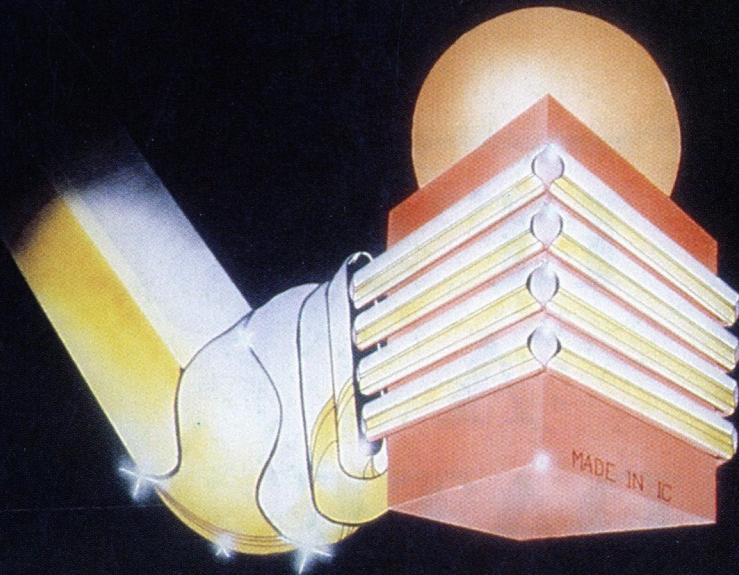
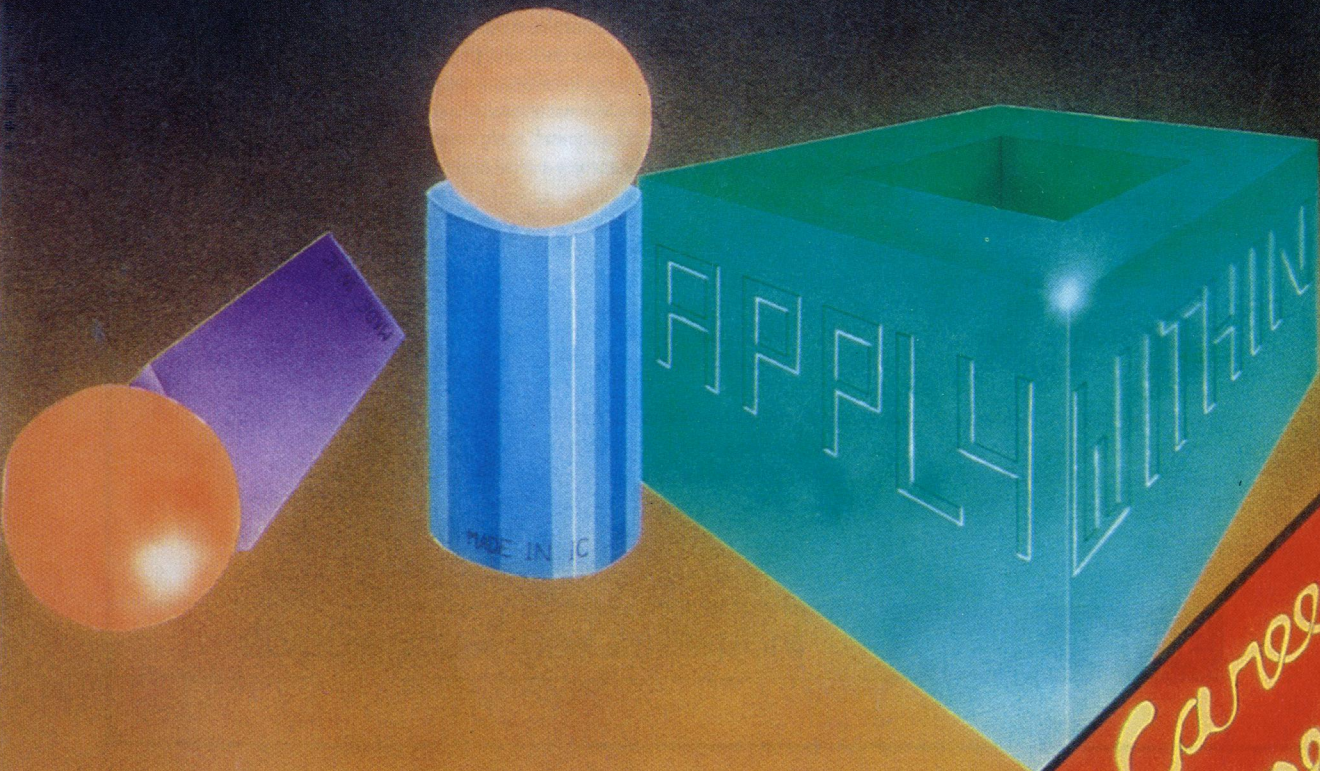


Felix



MADE IN IC



MADE IN IC

Careers
Special

November 1988
Wednesday 30th

IT'S A DATE

ENGINEERING GRADUATES

That's when we'll be with you in the Imperial University and we're looking forward to meeting you then. It's the perfect opportunity for you to find out more about what we do – and to demonstrate the kind of technical and personal expertise that could take you a long way with one of the world's most successful technological organisations.

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Whatever your specialisation – Physics, Computer Science, Electrical, Electronic, Mechanical or Production Engineering – your good ideas will be rewarded with an exceptional level of budgetary and technical support.

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We'll be holding an informal presentation at the Imperial University on Wednesday 30th November at 6pm. talk to your Careers Service or contact us directly by calling Rosie Gray on (0202) 893535 for further details. Alternatively, write to her at: Schlumberger Industries and Technologies, Ferndown Industrial Estate, Wimborne, Dorset BH21 7PP.

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Editorial

Student Loans. The introduction of student loans, announced on Wednesday, represents another nail in the coffin in which the Robbins principle of freely available education has been laid to rest.

The Government has presented the scheme as an attempt to help students. In reality it provides the Government with the excuse it needs to first freeze, then phase out student grants completely.

Any move which leads to a reduction in the number of highly educated people in a country can only be detrimental to the country's interest.

Alternative Prospectus. The College, with some hesitation, has released the mailing list which will allow the Union to send out this year's batch of Alternative Prospectus (AP) supplements. The supplements are likely to cause a few raised eyebrows amongst those College academics who cannot believe that the ivory towers in this centre of excellence are anything less than sparkling.

Whilst the AP has always proved controversial, the reaction of some academics when it comes to criticism can only be described as childish.

Two years ago the Alternative Prospectus Editor, Sunny Bains, received open threats from one of the lecturers within her department because the lecturer did not approve of her editorial comments. The meeting left Sunny in tears and she was told that she would have to 'accept the consequences' of her actions. What those consequences were was not made clear, but whether they would have affected her degree class, references, or any application to take a second degree is an open question.

This year, departments were unhappy with the first version of the Alternative Prospectus Supplement edited by Martyn Peck. They were quite correct; the supplement was inaccurate and later completely rewritten.

Nevertheless the paranoia generated by the AP is illustrated by a letter circulated by an academic in the Mathematics Department. The letter accused Paul Shanley of writing the article on Mathematics which it described as 'clear libel'.

The academic based his assumption on the fact that the name 'Shan' had appeared in the credits 'for providing endless hours of amusement'.

But the article was written by Martyn Peck.

whether or not the incident had anything to do with the department's refusal to let Mr Shanley re-sit some of his exams when he was entitled to do so, is a moot point.

Given the attitude of members of the College staff to the Alternative Prospectus, I do not think the Union can continue to expect individual students to take on its entire production. An editorial committee seems to have a lot in its favour; protection from victimisation and a greater input of student views. It is something that the Union should seriously consider.

Apologies. The Union President Nigel Baker is quite right to point out two factual errors in last week's editorial and I would like to take the opportunity to set the record straight.

The questions raised in the editorial revolved around the election of a Chairman for the Union General Meetings (UGM's) and the

fact that the Union Executive had decided that a part-time student, Paul Shanley, was not eligible for the post.

The rules to determine the validity of all elections are contained within the 'Blue Book' - the 'Bible' by which the Union operates.

The particular rules concerning the eligibility of part-time students to take up Union posts are not clearly defined, and this is where the dispute originates.

Having read Nigel's letter there are two points I would like to correct. Firstly, the decision concerning the Blue Book was made by 5 members of the IC Union Executive not 4 as stated in the editorial. Secondly, and this is a major point, the Executive did not over-rule the Blue Book, they interpreted it.

As Nigel points out in the letters page, to change the by-laws requires the approval of two Union General Meetings (UGM) and the Governing Body of Imperial College. However the interpretation of the Blue Book is arguably a matter for the Union Executive.

In this case the Blue Book contained contradictory information and the Executive were free to interpret it however they wished.

I would therefore like to apologise to Nigel and the rest of the Executive for suggesting otherwise.

Loop Holes. Two years ago a precedent was set which allowed part-time students to take up posts in the Union. The case in point was the election of part time-student, Sydney Harbour-Bridge (name changed in aid of comic relief) to the position of Union President. The Exec of the day met and interpreted the Blue Book to allow part-time students to take up Union positions. Mr Harbour Bridge was therefore President for a year, his successor being Nigel Baker.

The fact that this year's Exec were

free to overturn that precedent illustrates the farcical state of the book which is supposed to govern the Union's operation. And this reflects badly on the Union itself.

UGM's. It is impossible to have sensible debates on UGM motions when the motions are distributed a few minutes before the UGM starts and students are not given adequate time to read them. It is even more difficult when the motions raised contain intricate clauses in small print. Moreover, it is all too easy for people to slip in clauses which have far reaching effects in motions— which on the surface seem innocuous.

The Officers who submitted the motion allowing a vote of 'no candidate' to the last UGM ought to have known better than to gloss over the accompanying by-law changes.

How many of the students attending the last UGM knew that, by voting in favour of a 'no candidate' option in Union elections they were also voting to prohibit part-time students from standing? This was an issue which some students may have wished to debate.

Credits. I am frequently amazed by the dedication shown by the FELIX staff. Many thanks to Sez Wilkinson, Liz Warren, Dave Smedley, Steve Mayfroidt for designing the cover, Nik Jones, Andrew Waller, Adrian Bourne, Adam Harrington, Sophie Wardle, Andrew Clarke, Summit Guha, Andy Player and 3rd World 1st, Noel Curry, Dave Griffiths, Paul Barton, John Briggs, Chris Edwards, Andy Banister, Caroline Scott, Darren Austin for the Science page, Roger Walker, Jeremy Biddle, the Sabs, everyone who turned up to collate on Thursday evening, and anyone I have forgotten. Doug



Whoops

Dear Bill,

I write to apologise for the confusion that seems to have arisen over SCABNITE this year. In last Friday's FELIX it was advertised with an incorrect starting time and subscription. SCABNITE will take place on **Saturday 12th November** in the **Union Concert Hall** commencing at **7.30pm**. The subscription will be £2.50 at the door.

This year's performances are as varied as ever with all the SCAB societies represented — OPSOC, CHOIR, CHAMBER MUSIC, DRAMSOC, FILMSOC and JAZZ & ROCK CLUB. The program includes Stoppard's '15 minute Hamlet' and a showing of 'Dead Men Don't Wear Plaid' with Steve Martin.

I hope to see lots of FELIX readers enjoying what is always an entertaining evening.

Have a happy Rag Week.

Roger Davies,
SCAB Chairman.

UGM Chair

Dear Bill,

I have always been a believer that you can write anything you like about me so long as views and opinions go under an 'Editorial' or 'Opinion' heading. In this way the readers will realise that this is your opinion and not a factual report, and can then make their own minds up as to whether they agree with it or not. I do however believe that if you are going to base your editorials on fact then you should at least get the facts right.

In your editorial, printed in issue 816, you go on to discuss the position of the UGM chairman. The whole of the section revolves around the Blue Book, the book that contains the Union Constitutions and By-laws. When I questioned whether you had looked at the Blue Book before writing your editorial I was not surprised to hear that you hadn't. Why wasn't I surprised? Because the facts that you base the whole piece on are totally incorrect.

The whole saga started when the person elected to be the UGM Chairman, Paul Shanley, failed his exams. Paul then decided to enroll as a part-time student so that he would still be eligible to undertake the rôle of UGM Chairman. When this was brought to my attention I consulted the Blue Book to see what the position was. If Paul had registered as a part-time student then he would have been an Associate Member of IC Union. According to the Union by-laws, 'Associate members shall have the same rights as full members except for the right to represent Imperial College in any team.' I then read what rights full members have and the last line read, 'only full members of the Union may hold elected Union posts representing students.' This was quite clearly a contradiction in the by-laws. On one hand Paul was entitled to be UGM Chairman and on the other he wasn't. No where in the by-laws does it say who was responsible for the interpretation of such by-laws. A decision had to

be made as to who was to make the necessary interpretation.

The date was now the middle of September and as the Fresher's UGM was planned for the first Thursday of term, I realised that the matter was quite urgent. I again consulted the Blue Book for the terms of reference for the Executive Committee. These state 'it shall concern itself with domestic matters and matters of urgency.' So, in my capacity as President, I called an Exec meeting to discuss the matter. When the Exec met, on 22nd September, there were five members present, not four as mentioned in your editorial, another factual mistake. Quorum for Exec is four and I thought that considering it was summer vacation, five out of six members was not a bad achievement. At the meeting we discussed that Paul was unable to take up his position. This was a unanimous decision.

In light of the above explanation I'm sure you will realise that your statements; 'four of the Union Executive decided that the Blue Book was incorrect and that Mr Shanley was unable to take up his post,' and 'the executive had no right to make such a decision' are totally wrong. The last statement in that section of the editorial was, 'the Union President does not have the power to reinterpret the Blue Book as he sees fit,' which itself is quite correct, however, in the context of the rest of the piece it implies that I did reinterpret the Blue Book as I saw fit, something which I have shown not to be true. I therefore hope that you have the strength of character to admit that you were wrong and print an apology. Next time you want to have a go at me, please get the facts right.

Nigel D Baker,
ICU President.

Fisher again

Dear Editor,

As the newly elected committee of Fisher Hall we would like to inform your readers on the state of affairs in our Hall and to take a view on the issues discussed in the two letters which appeared in the 28/10/88 issue of FELIX.

Fisher Hall is the newest Hall of Imperial College and is a pleasant place to live, situated in an excellent area, with new furniture and decorating, well-equipped common areas and many active and friendly people who have helped make several events a success since the beginning of term.

A lot of work is needed during the first term of full operation to establish procedures and maximise the use of space and resources for the benefit of the residents. It would be an oversimplification to assume that our Hall could simply copy the procedures of another Hall. One reason is that Fisher Hall is not situated within the main complex of Halls near the College. This means that we cannot have a messenger or security guard, for example, at a reasonable cost. Our subwardens have been coping with the additional burden responsibly and systematically and have shown considerable enthusiasm and ability in dealing with their normal duties as well as special events. They have the full confidence

of the committee and all the members believe that the views expressed in the anonymous letter do not represent the views of the majority of the residents.

On the specific subject of mail distribution, new ways are being considered and we will hopefully have a better procedure soon.

Our committee election was not particularly late—it has in fact taken place earlier than similar elections in several other Halls or Houses.

We feel that the intention of the authors of the letters in question was to point out weaknesses and to be constructive on the issues mentioned there. However, it is fair to say that there has been an element of exaggeration (extreme in the first letter) combined with a level of apprehension which is not normally expected in the first two or three weeks after moving in.

The committee is determined to see that a very happy, social atmosphere dominates and is backed by many other residents with lots of ideas and the will to make things happen. It encourages and welcomes the participation of all the residents, including the authors of the afore mentioned letters. We are delighted to add that we have already obtained a list of recommendations from the authors of the second letter, which confirms a constructive attitude on their part, and we invite them to become more involved.

Yours sincerely,
Theodore Theodoropoulos,
Hall Convener on behalf of the Committee of Fisher Hall.

War

Dear Bill,

I refer to the letter from IC Class War Group (FELIX, Nov 4). According to the members of that group Mrs Gross was 'murdered' by the police—in fact she died of a heart attack. PC Blakelock, on the other hand, was 'killed during a riot'.

May I suggest that Class War have mixed up the definitions of 'to kill' and 'to murder'. I doubt it, the real reason is that PC Blakelock was part of the 'oppressive' class and Mrs Gross was part of the 'oppressed' class.

Yours faithfully,
S D Cholerton.

Phones

Dear Bill,

I am writing to express my dissatisfaction with the College switchboard and its operators. On numerous occasions I have tried phoning either from externally or internally (to request a phone number), in the middle of the day, and have received no reply, despite ringing for 2 or 3 minutes. Even so the telephone is rarely answered in less than ten rings.

These people are paid to answer the telephones and they should do so! It must reflect very badly on IC when outsiders ring in and the telephone is not answered immediately.

Yours Irritatedly,
Liz Warren.

Loans by 1990

Speaking in Parliament on Wednesday, Kenneth Baker announced that the Government has plans to introduce student loans in October 1990.

His proposals, published in a white paper entitled 'Top-up Loans for Students', state that loans will be introduced to supplement the grant which will be frozen at the 1990 level. Grants will remain means-tested as at present.

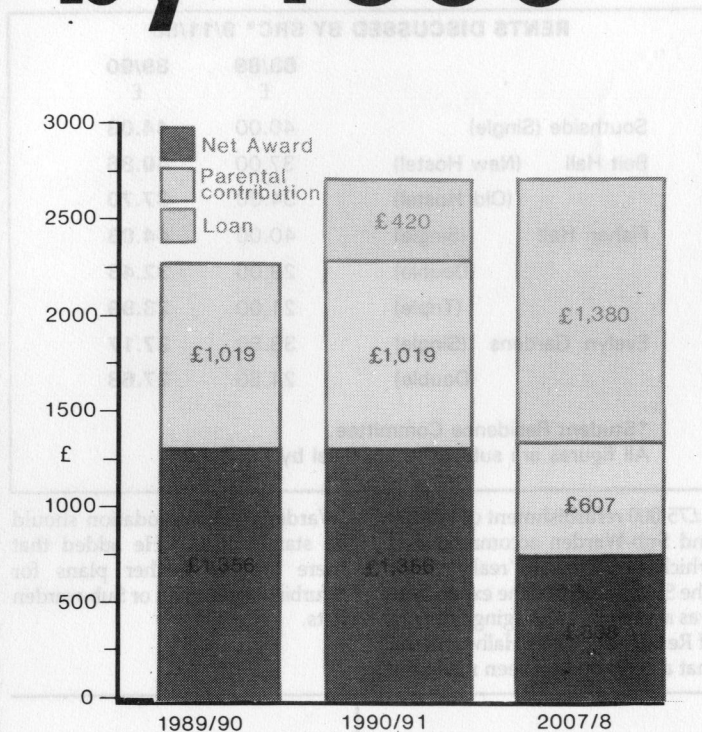
Under the scheme students will no longer be entitled to claim housing or unemployment benefits.

The loans will be interest free but repayment will be linked to inflation and initially cost an additional £120m. Students graduating on low salaries can have the loan repayment deferred.

The proposal allows a student living in London to borrow £460 per year, and £340 in their final year.

The scheme is designed to eventually save £200m per year, which would be used to make more places available and according to Kenneth Baker 'reduce the burden on parents and taxpayers'. He added that he believed it would make students more self-reliant and financially independent and would be 'a step away from the dependency culture'.

Jack Straw, the labour Shadow Education Secretary, retorted, 'In the future knowledge will be



Levels of grant, contribution and loan.

mortgaged' and added that it would reduce access and increase debt.

The white paper has been the subject of much press speculation recently, and was reported in FELIX two weeks ago when Kenneth Baker visited College.

The Government intends to establish three £5 million Access

Funds to provide discretionary bursaries. The funds will be administered by the Universities, Polytechnics and colleges of further education to enable students, to continue their studies in the face of 'real financial difficulties'. The bursaries will be available to both undergraduate and postgraduate students in addition to the loans.

Answering the critics

Criticism of the loan system has been in the form of five main points which Mr Baker's white paper attempts to answer.

The Government believes the debt burden will not discourage educational participation by disadvantaged groups, women and mature students. It claims this is an 'unproved cultural assumption' and that the lower social classes are increasingly dependent on credit.

Career prospects and the necessity to earn higher graduate salaries has been a contention of the loans issue. The opposition claims these factors will guide students' subject choice. The white paper argues that students should be free to choose, whilst 'preference needs to be informed by a better understanding of the employment market'. This is 'in the interest of the student and the economy' it adds.

Mr Baker believes academic excellence will not be undermined by students taking part-time work. He argues that the academic performance of students is already controlled by their standard of living.

The inflationary pressure of forcing graduate salaries higher, is dismissed in the report as being relatively small.

The issue of default on repayment of loans is addressed in the paper. In the USA, where a much more advanced system is present, loan defaults cost \$1.6 billion a year. The system in Britain would allow low income graduates to defer repayment. Graduates who left the country to avoid repaying top-up loans would be prosecuted on their return.

How it will affect the IC student

The report bases the requirements for a student's finance on the figures shown here.

The rent paid by students living in private accommodation at £40 per week, over a 39 week period, is £1560. Currently the difference between this figure and the rent allocation is made up by Housing Benefit, about £400 per year. In August 1990 this will cease to become available and poses a grave threat to study in London.

Rentals in London have doubled in three years so will very rapidly increase beyond the capacity of the loan. If rentals average only £45 per week in 1990 students will find they have a £600 deficit for each year at college despite the top-up loan.

By Robin Davison.

Break-down of a student's expenditure from top-up loans for students

	£
Rent	779
Food	462
Entertainment	399
Travel	227
Books	172
Clothing	132
Other	711
Total	2882



'Loans of money', said Ken Baker on his recent IC visit.

Rents to increase

The Student Residence Committee (SRC) has set rent levels for next year, with an average increase of 10%. The new rents will leave the College's Residence account in debt by £400,000 by 1991, according to Senior Assistant Finance Officer, Malcolm Aldridge.

The rents were set under fierce debate after IC Union President, Nigel Baker expressed fears that students would be driven away from Imperial by rising accommodation costs. Speaking after the meeting Mr Baker said the new rents 'will never work.'

Mr Aldridge told FELIX that he was 'concerned' over the matter and added that 'If there really are a large number of students who cannot afford to come to Imperial then we are failing in our central function.' He went on to say that he felt that students would continue to come to IC for the high academic standards and social life within London.

The increases come in the wake of

RENTS DISCUSSED BY SRC* 9/11/88		
	88/89	89/90
	£	£
Southside (Single)	40.00	44.03
Beit Hall (New Hostel)	37.00	40.86
(Old Hostel)	34.00	37.70
Fisher Hall (Single)	40.00	44.03
(Double)	29.00	32.43
(Triple)	21.00	23.99
Evelyn Gardens (Single)	33.50	37.17
(Double)	24.50	27.68

*Student Residence Committee.
All figures are subject to approval by the Rector.

a £75,000 refurbishment of Warden and Sub-Warden accommodation, which Mr Baker says 'really stinks.' The SRC found that the expenditure was a 'one-off'. Managing Surveyor of Residences, Peter Hallworth said that a decision had been made that

'Wardens' accommodation should be standardised.' He added that there are no further plans for refurbishing Warden or Sub-warden flats.

College Secretary's solutions to rents?

College Secretary, John Smith is to take a paper on possible solutions to the accommodation problem at IC to the College's Finance and Executive Committee meeting next Friday. The paper proposes the possible sale of one of the College's Halls, the transfer of funds from academic accounts to the residence account and the charging of a 'notional rent' for Wardens.

In the paper, Mr Smith points out students' financial difficulties and the high cost of accommodation at Imperial. On the subject of a transfer of funds from academic departments, Mr Smith argues that money paid in fees to the College above the minimum amount per student could be transferred into the residence account. He also suggests that some part of the money brought in by foreign students could be taken from their departments to help in the funding of residences. This proposal is similar to the one put forward by the last Union General Meeting.

In the document Mr Smith

acknowledges the concern displayed by Imperial College Union in its motion on rent levels. He expresses concern, however, that the idea of using money from overseas students' fees may meet with opposition under the Race Relations Act, and adds that overseas students are no longer guaranteed places in hall. How can IC justify a surcharge on such students for residences they may not use, he queries?

The suggestion of selling a Hall is not a new one. The Student Residence Committee has been considering the sale of Montpelier Hall, in Knightsbridge for some time. The postgraduate hall is estimated to be worth £4 million. The subject of its proposed refurbishment is still under discussion. Mr Malcolm Aldridge, College Senior Assistant Finance Officer told FELIX that no firm decision has been made on the £230,000 refurbishment since there are fears that the money will have been wasted in the event of a sale.

Maths room

The IC Physics Department is suffering from timetabling problems after a doubling in intake levels in the Mathematics Department. First year Maths lectures are being held in the Huxley Building, Room 213, a lecture hall previously used by the Physics Department. When asked about problems caused by this change, Dr Gareth Jones, Head of Undergraduate Studies for Physics, said that the resulting Physics timetable was 'inflexible' and that it was a 'disadvantage'. Speaking on the subject of room 213 in Huxley, Dr Berkshire of the Maths Department said, 'it's ours and we will use it as we see fit'.

Since leaving members of staff have not been replaced under present College policy, staffing levels in the Maths Department have dropped from 60 to 50 in the past year. Many tutors have been surprised to find they have 2 or 3 personal tutees instead of the previous 1 or 2. Commenting on the low staffing levels, Dr Berkshire said 'Well, they'll just have to work harder then, won't they?'. He also added that 'it would have been nicer if there'd been more' in this year's Maths intake.

BEST!

Two Chemical Engineering students represented Imperial College at a conference of European science students in Eindhoven, Holland last week.

The conference was held by the Board of European Students in Science and Technology (BEST) at the Technische Universiteit of Eindhoven. BEST was inaugurated at a similar conference in Grenoble in March of this year and plans to hold events in 1989 in Vienna and Berlin.

Students attended from the EEC, Scandinavia and the Eastern Block countries of Poland and Hungary. The purpose was to expose differing cultures and develop communication across national boundaries. Anyone interested in attending the 1989 event should contact Amy Blake and Michael Farry.

Southside till theft?

Fifty pounds 'went missing' from the main till in Southside Bar on Saturday. All staff working on Saturday are being interviewed by College Security. They believe the money is unlikely to have been lost in the system, and was possibly stolen by a member of staff.

The College has a policy of contacting the police over incidents of theft. The results of the investigation are likely to be made public after interviews have taken place.

And finally

Despite caring attention from Wendy Morris, his adopted father, Norman the Union rat sadly passed away last weekend.

Norman had been with the College for two months following eviction from his previous residence in Fulham. He soon became known as a chirpy, friendly soul around the office, who was always ready to stink the place out and get rid of any carried rice that one might have left.

Norman will be sorely missed by those who knew him as a friend and saviour.

Amen.

Nigel Reports on some bits

Welfare Survey

The survey has now finished and all the completed forms have been collected. Only 1000 forms have been returned and I will have to discuss with Audience Selection whether it is worth analysing the surveys. Can 20% of our students be called a representative sample?

Welfare Adviser

David Peacock and myself have met and interviewed a prospective candidate. We were both very impressed and so we are expecting to make an appointment in the next couple of weeks. It is anticipated that the Adviser will be in the post and the Welfare Service running by the beginning of February.

Rent Strike

The Rector is currently sunning himself in Singapore and so I have not been able to speak to him about

the motion that was passed at the last UGM. I am not very hopeful that we will get our proposals met this term and so I am turning my thoughts towards the threatened rent strike. To this end will everyone who seconded the motion come and see me so that we can sort out who is going to be responsible for what.

The seconders were: Martin Nicholson, Andy Jenkins, Alex Young, Fiona Heath, Sheila MacMahon, Edwin D'Sa, Stephen Blowes, Simon Burton, Simon Grove, Graham Butt, James Briant, P S Collins, Simon Cawthron, R Gattley, Andrew Haines, Edward Weaver.

Parking Permits

There are still about 20 permits that have not been collected so it is on a first name, first served basis. See me in the Union Office anytime!

Nigel D Baker.

Wendy schooners uncontrollably

Silwood, November 4

Excellent party, shame about the journey. I think in future years (considering it took 1½ hours to get out of central London) it would be a good idea to get everyone down to Hatton Cross on the tube first and then get a coach from there.

Rent Strike

More and more people seem to support the rent motion each day, particularly people within College administration whom one might assume would oppose it. It is very difficult to convince people that I proposed the motion not because I am an extreme radical whose aim is to bring down the country, but because a number of people came into my office and expressed their grave concern about the rent levels and I felt that too little pressure was being applied to College to stabilise these increases.

I hope that the Governing Body views the motion as seriously as it deserves rather than dismissing it as the whim of a few reactionary students.

Rag Week

You've probably already been to a couple of the events, but you've still got a long way to go. Fiona and the Rag team deserve an amount of thanks directly proportional to their ever-increasing tired expressions.

Discos

With Christmas nearly upon us, the partying and schooning will begin and the more you schooner, the more your legs move uncontrollably towards the dance floor. So, here's the plug: For parties in the Lounge, the Ents Disco is available from only £50. Contact BJ the DJ in the Ents pigeonhole.

Chas returns

Overseas Students

It is with regret that I have to report the resignation of one of our Officers, Amin El-Kholy, the Overseas Students Committee Chairman, owing to work pressures. Elections will have been held for the posts of Chairman, Publicity Officer and Liaison Officer on Wednesday 9th November.

Sports Shop Sale

We sold over £11,000 worth of stock in the sale, leaving the Sportshop account looking a bit healthier! There is still a lot of stock left over, so we will probably hold another sale towards the end of term. My thanks to everyone who helped make the sale such a success - both staff and customers.

Snack Bar

There has been a fairly positive response to the food being served in the Snack Bar, but nevertheless it appears that many students aren't satisfied. I would like to point out that merely criticizing the food or the surroundings is pointless unless you can come up with some alternatives. So if you have a complaint or suggestion, send it in writing to either myself or David Peacock, Union Manager. Please include your name and department so that we can keep you informed. It is, after all, YOUR Snack Bar.

IC Women

I am writing (somewhat belatedly) to introduce myself as IC Women's Officer. My job is to represent all women students and ensure that they are not discriminated against. If there is anything you wish to discuss with me I can be reached, via the Union or the Mech Eng pigeonholes.

For a start, I'd like to draw your attention to the following.

Rape Alarms. These are available to all women students free of charge. See Kathy in the Union Office.

Self Defence. If anyone is interested in a short self-defence course (run by the police) please give your names to Kathy. Also, on Tues November 15 and Thursday November 17, there are two videos on personal safety for women being shown in the Pippard Lecture Theatre, Sherfield (1pm on Tuesday and 12.30pm on Thursday). See posters around College.

College Women's Tutor. This is Sandra Dawson of the Management School (53 Princes Gate—opposite Mech Eng). She is extremely approachable, so if you are having problems of any sort, don't hesitate to contact her (via me if you prefer).

ULU Health Week. There are a number of lectures specifically for women, for example breast examination and post-abortion counselling on Wednesday 16 and Thursday 17 November at ULU. See posters for more details.

HUBby's Corner

A number of postgraduate women in the College last year indicated to HUB and the Women's Club that a luncheon, hosting a number of guest speakers who are successful in their scientific and engineering careers, would be most inspiring to them.

With this in mind we set about searching for women engineers and were extremely lucky to find Pauline Cooper and Nahid Lyons both of whom are to give a short talk at a luncheon at 12.15pm, 170 Queen's Gate on November 22.

Nahid, at present a wife, a mother of three children and Principal Engineer at Wimpey Offshore, obtained her first degree at Tehran University and completed an MSc at IC in 1973. She then continued at IC to complete a PhD related to designing offshore platforms.

Pauline obtained a BSc in Electrical Engineering from Swansea in 1984 and started in electronics for INMOS as a graduate Product Engineer. She then moved on to 3M in South Wales as a Process Engineer on magnetic media products. At present she is working for A C and S in a sales role, broadening her outlook on business. Pauline is an associate member of IEE and a committee member of the West Wales younger member section. EITB have in the past made use of Pauline in their programme to recruit female engineers.

If you would like to attend this luncheon please come along to HUB Office, Third Level, Sherfield Building Room 355 to book your ticket (nominal fee of £2).

All enquiries telephone 3021.



The Independent

SKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKIERSKI



A skier going down hill

To many people, skiing may seem to be a completely pointless sport. Why should anyone want to spend several hundred pounds to exchange the cosiness of home at Christmas for a 'holiday' doing vigorous exercise in freezing temperatures at the top of a mountain with the apparent inevitability of a broken leg?

However, if this is your opinion of skiing holidays then your ideas are sadly outdated; thousands of first-time skiers each year can't be wrong. Modern advances in textiles now enable skiers to keep warm in even the most extreme conditions, and any decent ski resort will by far surpass the cosiest of homes with the infamous apres-ski. Advances in ski equipment have dramatically reduced injuries to the point where a broken leg is now extremely rare. In fact, the most common skiing injury is a broken thumb, and how many skiers have you heard about with that problem? And as far as exercise? Why not! The air is about as unpolluted as you can get and skiing is an excellent way of working off the Christmas and other festive indulgence.

By far the most popular resorts for the British are in the French, Italian, Swiss and Austrian Alps. Of these areas, France generally is the cheapest with more modern purpose-built resorts such as Meribel, Val d'Isere and Les Arcs. Italy is slightly more expensive and Switzerland and Austria are the most expensive, especially in the so-

called exclusive resorts such as Verbier, Klosters and Gstaad where good apres-ski compensates for the limited skiing. There is also some cheap skiing in Scotland but the weather and snow are unreliable, and the falling dollar has made skiing in America slightly more affordable, although still out of the range of most students.

So what should you expect on a ski holiday? Unfortunately transporting thousands of people rapidly to such an isolated place is not easy, so, at best, you should expect a two hour coach journey after a flight, or else a twenty hour coach journey to the resort. However, the coach journey is not as horrific as it sounds as the coaches all have air-conditioning, videos, refreshments, toilets and either reclining seats or seats which convert into bunks. On arrival you will be issued with boots and skis if you have not brought your own. It is very important to ensure that your boots fit correctly as the wrong boots can be murder on your feet and will not help your skiing either. Finally you have everything organised and it is time to hit the slopes!

Your instructor may be either from the holiday company or from the local ski school (in which case he will speak good English) but whoever they work for, their job depends on getting a good report from you so they will be very patient with you, no matter how often you fall or need a rest.

For the beginner, the first few days on the slopes may be dominated by the frustrating paradox of how easy it is to fall over compared with getting back up again. However, a few sessions on a dry slope before the holiday will hopefully by-pass this stage and you will proceed straight to the exhilaration of speeding along, quietly humming the theme to 'Ski Sunday' to yourself, before the inevitable happens and you bury yourself in a snow drift. The progress of beginners varies according to their self-confidence to some extent, but even the slowest of learners is able to ski down the nursery slope with ease within a week. The faster learners may even have the confidence to tackle the hardest grade of slope, the black runs.

The process of skiing is surprisingly tiring, partially due to the altitude, but the slopes are well scattered with mountain bars and restaurants so a liquid 'confidence booster' is never far away.

After a hard day's skiing, there is nothing better than to get back to the apartment, remove the weights clamped to your feet, and flake out in a hot bath with a generous measure of your duty-free. Sadly though this euphoria cannot last since there is still the apres ski to come. Depending on the group you are with you could go to the local restaurant, pub, bowling alley, bingo hall, night club, skating rink or just descend on someone else's apartment and drink their duty free. Sleep tends to be instantaneous as your head touches the pillow and you wake up raring to go for another day.

For the more advanced skiers, skiing is not limited to bombing down the pistes or trying to cut up the beginners groups. For a small hire charge you can hire a monoski or a surf-ski for the day, both of which are surprisingly easy to learn to drive but difficult to master. Ski ballet, or freestyle, is rapidly becoming a popular sport although, like ski jumping, there are few places where it can be learned. The more adventurous skiers can ski where no man has skied before by touring from resort to resort, or by heli-skiing (using a helicopter to reach the most isolated slopes).

However, I will admit that there is one problem with skiing: the cost.

For example, for a week's holiday in France, in the top resort of Val Thorens, the prices range from £140 to £300 for travel and self-catering accommodation only. To add to this, the lift pass and insurance is another £100 to make the basic price for an experienced skier with his or her own equipment at least £240. However, for the beginner the price rises if you include lessons and equipment hire (at least £100) and the necessary clothing (another £100, although jackets and gloves are useful in the British winter and clothes can sometimes be borrowed).

But before you give up hope of ever going skiing, there is some good news. The IC Ski Club is going to Val Thorens this Christmas for only £177! This price includes the lift pass and insurance as well as travel and accommodation, and if you require ski and boot hire and lessons they are only £34 and £43 respectively. This price is so low because we have negotiated a special group rate with a reputable and efficient company (it is the company which owns Les Arcs), and not because the company has cut corners with the holiday. If you would like to try skiing for the first time, or if you have already experienced the excitement of skiing and would like a cheap holiday, please come and talk to the Ski Club. We meet on Tuesdays and Thursdays at 12.45pm in Southside Lounge, but please hurry if you would like to come on the holiday



Another skier

since all money must be paid by Thursday November 17 (this deadline has been extended due to the late publication of this article).

But whether you go this year, or next year, give skiing a try. It really is a fantastic sport—thousands of first time skiers each year can't be wrong!

Jeremy Biddle

Thinking about research?

Research is just one of the options available to a graduate, but it can be one of the most rewarding. Research need not just be carried out in the ivory towers of a university, it can just as well be performed in the normal working environment. Indeed, one of the most exciting areas yet to be discovered involves incredibly mundane equipment but is providing insights into all areas of science, including biology and computing.

In computing, for example, the rise of object orientated programming has given rise to the idea of using actual objects and moving them to see the results.

This movement of objects forms a new abstraction in the field of research with furniture representing the ideas. At Pickfords R&D centre in Wokingham, researchers are looking into how many fields of science can be regarded in terms of furniture movement.

However, the project has already

hit troubled waters: there are simply not enough staff to do the moving. According to Professor van Nostrand, "The brains are willing, but the limbs are weak. It is not enough to be bright, the likely candidate must be able to lift a filing cabinet."

Although short-staffed, the first of the teams has started field trials in the town. An assignment at 20 Lavender Avenue has developed into a full-scale study of neural networks in the brain, and the learning patterns involved when the network is moved to 14 Acacia Close.

"It's all to do with the filling of the tea chests," explains Tom Hutter, a team member. "Simply stuffing one full of Duane Eddy records is not enough: too many and the equation becomes too lopsided, not to mention impossible to carry."

"Also," adds Diane Warbrick, the team's leader. "The system is not just about where the objects are moved to. The intervening process

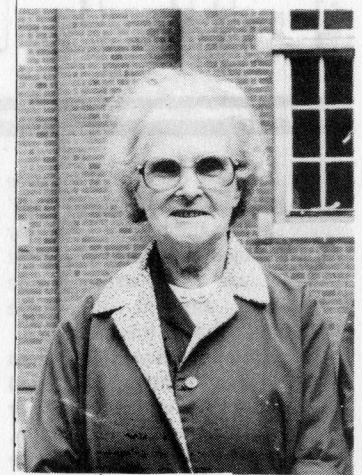
counts as well."

She cites the necessary task of tea making in the process of removing furniture: it calibrates the system for later analysis. The tea should be made in a large teapot and served into whatever mugs are available after all of the china has been packed. The mugs are then lost, as they must not affect the eventual move.

Likewise, at least one vase and a leg from a great aunt's table should be broken on crossing into the new house. This process serves to normalise any results obtained from the analysis.

Not enough can be made of packing the lorry for transport, wherein almost all of the team members stand in the road and direct whoever is the youngest to "put the wardrobe at the back with the potted plants and mind the crockery."

Even though the project is still young, it has already yielded promising results, not least in



Diane Warbrick

observing the physiological effects of excessive tea consumption. "It's bloody backbreaking," says Warbrick, "But it's worth the aggro: I expect to have my first paper out by Friday."



IN THE PIPELINE

With America back in the space race, Russia about to launch 'her' space shuttle, and pollution a highly topical subject at the moment, most people are unaware of the enormous amount of 'space pollution' orbiting the Earth.

The North American Air System (NORAD) currently have 6194 trackable objects, tennis-ball size or above, on their computer system, and of these only about 300 are operating satellites! In addition to this, they estimate that there are another 40,000 golf-ball sized objects that are not trackable. The debris ranges from paint flecks, nuts and bolts and fragments of exploded satellites to hand tools that have slipped from the gloves of astronauts!

The majority of space debris comes from the explosion of space rocket stages and satellites. Approximately 80 explosions have been caused by the combustion of spent rocket casings and the deliberate explosions for space weapons testing.

Unplanned explosions of rocket stages have occurred years after the launch; some fifteen Soviet Proton and US Delta and Titan rocket shrouds are known to have burst spontaneously in orbit. The thin casing that separates fuels corrodes in the harsh environment, the fuels mix and explode. Delta shrouds lay dormant for about three years, and in keeping with its performance on the ground, even Ariane has exploded after spending a year in orbit!

Deliberate explosions in space have been occurring since the 1950s when the US exploded warheads in low orbits. Ballistic missile and antisatellite tests are thought to have injected 10 million pieces of debris into low and high orbits.

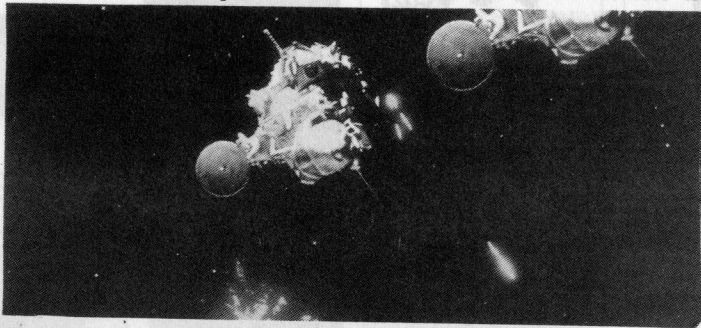
On September 13, 1985, a functioning solar research satellite, Solwind, was destroyed by an experimental antisatellite missile. NORAD showed that the debris formed a 300-mile dust cloud containing 300 trackable pieces. After this test, Congress prohibited antisatellite tests against objects in space? however, in September 1986, two satellites were blown up as part

of a SDI test.

Even if no further refuse were generated intentionally or by accident, the flurry of fragments already in orbit might spawn more debris. NASA scientists believe that the large velocities at which space particles collide (about 8 to 10km/s) could be destructive enough to generate hundreds or even thousands of additional particles. The proliferation of these particles could snowball into a chain reaction with other satellites or particles, with the result being a debris belt around the Earth. Should this debris tear into a discarded satellite still more debris would be generated, increasing the potential for destruction.

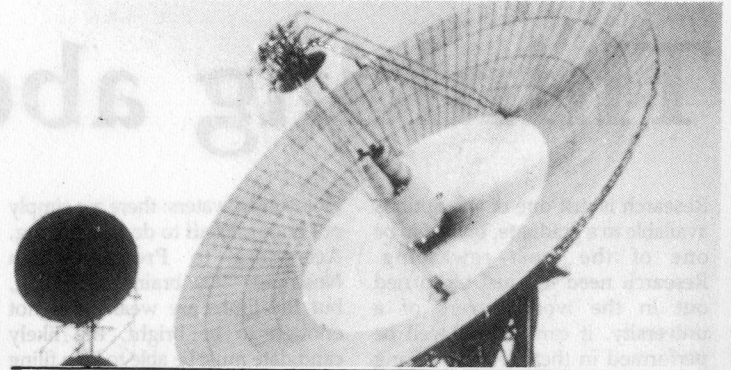
The Soviets have dumped 3000 pounds of old nuclear-powered satellites in a 600 mile orbit, 'A hyper velocity collision with a spent Soviet nuclear reactor may generate as many as one million particles of a diameter of one millimetre or more', says Nicholas Johnson of Teledyne-Brown Engineering.

NASA has been particularly worried about the space debris



threat since June 1983, when a stamp-sized paint fleck cracked the wind shield of the space shuttle, Challenger; an impact equivalent to a ten pin bowling ball travelling at 60 miles per hour! Other satellites believed to have been battered by debris include the Soviet Kosmos 1275, the European GEOS-2 and a US balloon satellite.

Contrary to popular belief, space is not self-cleaning, although atmospheric drag does eventually cause objects to re-enter the atmosphere. At an altitude of 180 miles, debris can take from several days to 9 months to re-enter; at 300-



1984 when Challenger astronauts retrieved the ailing Solar-Maximum Satellite. Detailed micro-photographs revealed that the aluminium casing was created by thousands of impacts, the largest by miles a marble-sized object would take a year, at 500 miles, 30 years, and at 800 miles, a mission-threatening 300 years!

'At 300 miles, the typical altitude for space stations, orbiting telescopes, and other satellites, you are definitely in a spece-debris environment', says Donald Kressler, NASA Orbital Debris specialist at Houston.

Graphic evidence of the damage that can be done was discovered in a particle of at least 1mm diameter. From the density of cratering, scientists have estimated that the flux density of space debris is comparable to that of natural micrometeorites.

The Hubble Space telescope, scheduled for launch next year, has a projected 17-year operational lifetime, but may not survive to carry out its full mission. Michael Sharva of the HST Institute in

debris threat. The atmosphere is a very poor optical medium; large objects such as MIR and the Space Shuttle are visible with the naked eye. Others are fainter, but easily detected by sensitive photographic emulsions used in astrophotography. Most space debris in low earth orbit is only visible for a few hours after dusk or before dawn, but pieces of spent rockets and broken satellites in geostationary orbit (22,300 miles above the Earth), pose a more difficult problem, because the clutter is visible for most of the time, and has an infinitely long decay period. Although Kressler estimates that the problem will not become serious for another 25 years, optical astronomers differ in their views of how the debris affects their work.

Radio astronomy, unaffected by the time of day, does not escape. Reflections from debris can wipe complete bands from the spectrum at a time. Astronomers were given a glimpse of this, when, in 1961, the USAF launched the 'Needles' project—releasing billions of copper needles into orbit to create a dipole belt around the Earth, to act as a mirror. These needles were supposed to re-enter in early 1966, although a few clumps are still thought to be in orbit.

What then of the future? When will the first mission fail as a result of a collision with space debris—or will a clean-up operation be initiated before such a disaster occurs? Several 'space dustbins' have been proposed—the trash removal and satellite hauler 1 (TRASH 1) proposed by SpaceTech Inc, or a debris catcher with a huge scoop, miles in diameter are just two suggestions.

But as with most problems, prevention is better than cure, and several ideas are being investigated. The airforce want to use more 'disposable orbits' in low Earth orbits, which speed up re-entry times. Satellites are more modular, thus reducing the number of exterior nuts and bolts and a new NASA operational procedure ensures that all rocket fuel is burnt up eliminating the problem of exploding rocket casings.

Maryland estimates a 1 per cent chance of being destroyed by debris during its lifetime. For a billion-dollar investment, such odds are not attractive. The Hubble Space Telescope will be put into a low Earth orbit, and its cross-section of 172 square feet and lack of thrusters make it a very likely target. Sharva has calculated that there is a 0.1% chance of collision with an object of above 1m; NASA will know days in advance if debris will impact, and being unable to manoeuvre, will be able to do nothing about it!

Even ground based astronomy has not escaped from the space

Your last year and you haven't a clue what to do next? Awful, isn't it? Perhaps if you forget about it, it won't happen? Perhaps if you just send off thousands of application forms, someone will give you some sort of a job which you might enjoy? No, better just ignore the problem. No, I know, go and see the Careers Advisers, they'll tell you what to do.

Unfortunately, we can't tell you what to do, we can help you towards the decision, point you in the right direction to get you started, test out whether you're being realistic but, ultimately the decision is yours. You're on your own on this one! So where do you start? Well you could stick a pin into every third page of the Graduate Recruitment Programme booklet or you could try to be a bit more systematic about it. First of all, you could think about it yourself, try to compile a list of your characteristic traits, your values, what you want out of life and your skills, what you're good at, not forgetting, of course, those things that interest you and that you enjoy. Then, when you look at job descriptions, you can compare them with your personal profile and see which ones match and, hey presto, you know what you want to do next.

The trouble is, it's not so easy to identify all these things about yourself and so here's some tips as to how you might go about it. Look at your life so far. Why did you come to Imperial College, why are you reading Mathematics or Biology or whatever? What have you enjoyed out of the experience and why? What have you hated? Was there anything in your holiday jobs that you found fun or that you discovered you were particularly good at? How about leisure interests, any clues there? If you can't do it this way round, try looking at the jobs first. Read as many job descriptions and adverts as you can and when you spot one that takes your fancy, try and analyse what it is that attracts you and then you can look for other occupations containing these factors. Perhaps you've seen or talked to people whose jobs seem interesting. Why, what was it about that job? Your Careers Adviser can help you with this task or analysing your skills and needs by asking questions and checking out whether you really mean it when you say, for example, that all you care about is becoming a millionaire by the time you're 30!

There are brief descriptions in the back of the Directory 'ROGET', but for more detailed descriptions, consult the series of booklets published by the Association of Graduate Careers Advisory Services, all available free of charge from the Careers Library.

If you find all this totally impossible and your Careers Adviser can't help you get started on the trail, then you may be

recommended to complete a Gradscope Questionnaire which is a fiendishly clever little toy. You answer fifty questions and the computer programme comes up with your top ten jobs....but alas you've still got to answer the questions: What are you good at? What do you enjoy? What do you want to do next?

Have you enjoyed yourself so much as a student that you're thinking of going on to take a further qualification? There are many reasons for continuing your studies but merely having enjoyed your undergraduate years may not be an adequate motive. Being a postgraduate may turn out to be very different from being an undergraduate. Are the elements of your undergraduate life that you have enjoyed still present at postgraduate level?

Another pretty pathetic reason for taking a further course is because you can't think of anything else to do or because this careers choice business is just too difficult. What's going to make it easier to think of something else, or to decide after another year or three at College? If you just continue to study and take no active steps toward the dreaded future, you'll find yourself in exactly the same dithering situation, only slightly older!

But beware, the worst reason of all is falling prey to flattery. You may feel that you're not susceptible but come June, when your degree results are out and notable professors ask if you'd like to do a PhD with them, it's so easy to be overwhelmed by the ideas, without thinking out the reality. Should this happen to you, beware false pride. Beware the professors have reasons of their own for wanting PhD students and before jumping onto a three year project, weigh up the pros and cons and analyse whether it's really the right move for you.

Before you get the impression that I'm totally against postgraduate studies, here are some more positive reasons for this course of action. You may simply not feel finished with studying and decide that you want to learn more. Perhaps there's a part of your undergraduate course that you have found particularly interesting and would like to study in depth. Many a masters course caters for this need, eg Astrophysics.

The most obvious reason is vocational. Your chosen career may require a PhD or a further qualification, eg research in the Pharmaceutical industry or

teaching. You may feel that it will be easier to get a job in your chosen field if you possess a further qualification, eg Geophysics or Petroleum Engineering. You may wish to change direction and another course can often help, eg Information Technology. Another word of caution is required here. It's easy to be misled into believing a course is more vocational than it really is. Admissions tutors are sure to tell you how useful their courses are and so make sure you ask what percentage of their previous scholars are in employment and what they are doing. You might also check the value of your chosen course with some of the employers at the Careers Fair or discuss it with a disinterested person like a Careers Adviser.

Having made the decision to prolong your student days, the obvious next step is to decide where you want to study. The Careers Office, Sherfield 309, keeps a reference copy of 'Graduate Studies' which lists all the PhD and Masters and many of the Diploma courses available in the UK. We can also point you in the right direction for information on studying abroad. The Lyon Playfair Library has many prospectuses and also keeps a copy of the 'Directory of Research in British Universities and Polytechnics' which contains detailed titles of PhD projects which have been carried out recently. Of course, you'll need to check whether you can get the money for your studies and whether you need any pre-course experience. To be safe, you should think about applying for PhDs and Masters around Christmas but for many vocational courses like teaching, you should be applying now. If you think that there's the slightest chance of wanting to continue your studies, then apply. If you get an offer of a place, you can always turn it down, otherwise you may find yourself having to wait a year because you decided too late.

What Next?



The employer Applications

'How do I choose which employer to apply to? They all seem much the same. I'll apply to the seven largest, most famous employers with the most vacancies and that will probably do.'

It might work but, if you have spent any time at all choosing what occupation you wish to follow, it seems a pity to mess up your future happiness by failing to carry out

of environment would you enjoy? What promotion prospects or training would suit you best? Do you want a very open, friendly style of management or would you prefer a more conservative formal firm? What other factors are likely to make the difference for you between one employer and another? Then when face to face with employers or recent graduates, you can question them



adequate research on your prospective employer. There are five Directories of employers of graduates, *Register of Graduate Employment and Training (RoGET)*; *Graduate Employment and Training (GET)*; *Graduate Opportunities (GO)*; *Directory of Opportunities for Graduates (DOG)* and *Directory of Opportunities in New Technology (DONT)*. These are a good source for your preliminary list of possible employers. Besides outlining the vacancies that they may have, they may tell you about the Company's size, its location, its pattern of employment and even a little of its philosophy. Many employers produce special Graduate brochures which provide profiles of recent graduate entrants of the 'Day in the Life of...' variety. There are many videos for those who prefer watching and listening to reading. These can be viewed in the Careers Video Room. Key from Sheffield Room 309. Although all these sources will tell you something of the companies, they are produced and written by the employers themselves and therefore are unlikely to paint the companies in anything other than glossy terms. The same can be said of the recent graduates brought along to company presentations. A company is unlikely to bring along people who think it's a foul company in which to work. So how can you find out which company is for you? Firstly, you must know what you want from an employer. What sort

closely. The Careers Fair is a good place to start. You might ask them why they think you should work for them rather than for X and Co although don't sound too arrogant when doing so! Another valuable way of finding out about different employers is at the old students' Association Careers evening.

Once you have narrowed the field of employers, you can save everyone an awful lot of time by checking whether the companies actually have vacancies in the areas of which you are applying. Every year, a well known computing company is inundated with applications for computer programming jobs. They do have between 400 and 500 vacancies but not for computer programmers.

If the company is visiting the campus during the Graduate Recruitment Programme then you can obtain the application forms from the Careers library otherwise you will have to apply directly to the company.

And finally, think about 'falling back positions'. Please consider the wisdom of only applying it to the big glamorous, well known companies. Every year on the Imperial Graduate Recruitment Programme, perfectly respectable companies have to cancel their visits through lack of applications. Just think what it would do to your chances of success if you applied to such a company.

Books have been written on this topic and so it is not particularly easy to condense into a couple of hundred words or so.

A good application is absolutely crucial in seeking any job—without it, you have no chance of an interview, let alone the job! The reasons why most applications fail are because they are badly presented (illegible writing, coffee stains, etc), badly thought out and poorly expressed. One employer reported he had rejected 90% on those grounds. Perhaps more typically an employer with about 15 jobs might receive 700 applications and these would be reduced to about 150 for the first interview. Thus it really is significant to get the interview.

What then is the 'secret'? Actually there is no secret at all; just plain common sense. So here then are a few tips.

1. Think carefully about what kind of job you want, identify possible employers then read up about them and their vacancies.
2. Follow the instructions on the form carefully. If they say 'attach a photograph and write in black ink' then you cannot expect too much if

you do not send a photo and write in blue ink (as a depressing number of applicants did for one employer last year).

3. Work out in advance your answers to the questions on the form.
4. Draft and edit your answers to fit the space provided.
5. Answer all the questions. If one is not really applicable to you, explain why that is so and do not leave the space blank.
6. Keep it all simple; keep a copy.
7. Try and view your application from the employers position. Would you be impressed by the answers? It is not likely that you would be if there were broad unsupported generalisations, for example; 'I can communicate well and get on with people'—is the evidence elsewhere on the form?
8. If you want more help or advice see one of the Careers Advisers. If also after a few applications you haven't been invited to an interview, come and see us again.

Interviews

'The unspoken message'—When called to an interview, the unspoken message from the employer is that they like the look of you on paper and so wish to meet you to confirm that view. The invitation to the second interview is, that having checked you out, 'we'd now like to give you the proper interview from which we may make you an offer'.

Thus, the first interview, often held in College and certainly for those employers listed in the GRP Programme, is relatively short. Much will consist of points in your application—'tell me more about that', 'why did you do that?', 'describe your project'. In some cases there may be a little technical content. The interview is also a chance for you to ask questions—so have some prepared! In fact be prepared all round—dress suitably, arrive in good time, be friendly and positive, look at your interviewer, be prepared to smile, be honest—if you don't know the answer to a question, say so and don't waffle!

The second interview is normally

on the employers premises. This gives a special chance for you to evaluate the employer (after all it is a two way process)—does the place seem a good one in which to work? Are the employers friendly? How are recent graduates getting on? The employers may have a variety of tests for you to do—some use psychometric tests, some use group discussions—here the important thing is not so much whether you get the right answers to the problem but how you deal with other people, how do you react under stress. Finally, there will be the interview itself, very often before a board. Of course you will be nervous but the confidence that comes from a good preparation can help a lot.

Once again the Careers Service can be part of that preparation. We are easy to find, easy to consult and we are running a comprehensive programme of talks and seminars, we also have a lot of literature. So if you want any help, do come and see us.

In Summary...

General Employment Prospects

Since the low in 1981/82, employment prospects have been rising steadily. Although full unemployment rates are one obvious indicator of this (and Imperial is always at or near the bottom of the league table), every other measure tells the same story. Thus there are more jobs on offer, more employers asking to visit, more employers having jobs available at Summer Fairs and many others. While all these signs are particularly evident here, the same optimistic reports are being made all around the country. As might be expected, demand is strongest in such areas as electronics and computer science. One employer, commenting on the trend, reckoned they would have to run hard to stand still! In other words they were going to find it much harder to recruit as many graduates in 1986 as they did in 1985. There has also been a good recovery in recruitment levels in manufacturing and, to a

slightly lesser extent, the oil industry. Finance (Banking, Accountancy, Insurance, Commodities) and Retailing are two other areas that need a special mention. Most of the employers here are making special efforts to attract science and engineering graduates.

All this does not mean that the 1988 graduates can sit back and wait for attractive job offers. The market does not operate that way. As an example; about 300 electronics graduates were unemployed at the start of the year. It is still vital to remember you must be realistic—if you have taken five years for a pass degree do not insist on looking for a R&D job as one graduate (from elsewhere in London) did a few years ago. Also good applications are crucial but they are dealt with elsewhere in this issue.

Taking a Year Off

...or six months (some employers recruit in March).

A year off taken before University is welcomed almost universally. Quite a number think seriously instead about having some time off after graduation and before starting (serious!) work. This too can be very rewarding and productive. As usual, however, there are some qualifications to be made. If, for example, you are aged about 21 or 22 then there is no problem, from an age consideration, regarding your eventual career prospects. If, however, you are 24 or 25 it may be less straightforward and it could be worthwhile to seek careers advice first. It is also good that at any age you would have some sort of plan for the year and one which you can articulate—perhaps to a future employer. You should be able to talk about what your aims were, what you gained from the experience etc. You should also think ahead. For example it might be fun going jackarooing in Australia for about 12 months but you will hardly be well placed to apply for jobs back in the

UK. For just such simple reasons as this, 12 months off often becomes 15 or more. Remember the vacancy lists in September are probably shorter than at any other time of the year. Nevertheless, given some thought and planning, some time off after graduation can be fun, productive and, for many, a time of great personal development.

Summer Fairs

It has always been wrong to think of recruitment as being only a January to March phenomenon associated with the Graduate Recruitment Programme (GRP), otherwise known as the Milk Round. In fact, recruitment is increasingly becoming an all-the-year-round event. Nevertheless, outside the GRP, the next busy peak is during the Summer Fairs. This is the time in June and July, starting immediately after finals, when there are about ten fairs throughout the country. Of these, London's is by far the biggest. This year almost 200 employers attended during its three days, with a wide variety of jobs on offer. Thus these events are particularly useful for those who have not wanted to think about jobs prior to graduation.

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Thoughts on finding a career

What do you think is important? Have you decided yet? Do you care? If you think the third statement applies to you, then I'm not sure what you are doing at Imperial College in the first place!

My qualifications for writing this do not include becoming the chairman of the company I work for—yet!...However, three years after leaving University I'm happy that I've made the right decisions so far. My work has been interesting and enjoyable and my salary quite acceptable!

Throughout my time at University my ideas on careers were constantly evolving and I hope they will continue to evolve for a few years yet! So far they seem to have worked out well for me and therefore I'll try and explain a few factors that I believe are important.

First of all, it helps to have the confidence that you'll be able to do and obtain the job that you want; in

It is difficult to persuade someone else you can do a job when you're not sure yourself.

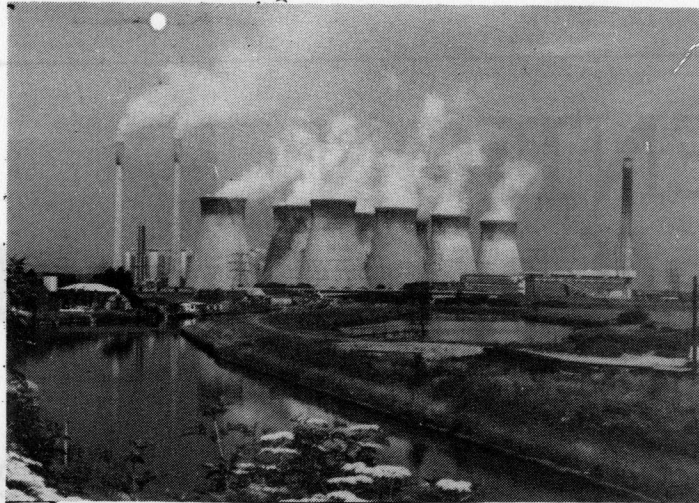
that order—there's no point in seriously applying for a job unless you reckon you've got a chance at persuading the employer that you are capable of that job and it's difficult to persuade someone else that you can do a job when you're not sure yourself. I'm not talking about 'bullshitting' (it tends to get spotted!), but straight confidence in your own abilities. On the other hand, there isn't any harm in applying for a couple of jobs for practice; but don't be surprised if you don't get offered them—it often shows when you are not interested.

It helps if you can find something that you enjoy.

Another important aspect is, of course, deciding what you want to do. Since most of your waking life is spent at work, (unless you are an insomniac or thinking of a part-time career), it helps if you can find something that you enjoy. Some people may believe in saving up all their happy moments for the annual holiday, but not me—I want to enjoy life all year round, not just for two or three weeks in the summer. I find that I can be paid very adequately for work which I find rewarding, and can then afford to spend my holidays in the many different ways

that I enjoy. By the way, it might be worth checking how much holiday your prospective employer does allow.

I found that it was very difficult, from an interview, to discover what was on offer—most of the time was spent discussing my capabilities. Therefore, it was essential to visit the company and have a chance to chat to the people working there. This is the only way you can get a feel for the environment where you might spend your next couple of years. Peoples' attitudes to their work were important; but even more important, was whether I felt I could work with them. You always tend to work as part of a team and so it helps if you can respect the



people you work with. A company's policy to its employees can be read in its annual report but how that policy works in practice can only be ascertained by talking to the people who work for that company. On the subject of annual reports—it is often worth checking that the company will be able to afford to pay your salary for the first couple of years (and even some profit sharing too!).

Work can be very challenging wherever you are for the first couple of months—getting to know people's names, getting into work every morning on time, finding somewhere to live...however, once you've got the rest of your life sorted out then you'll probably be

wanting work to provide a large proportion of your ongoing challenges. I looked for a company that would continue to present me with challenges and new opportunities throughout my career. So, for me, it was important that the company I joined believed in career development and hence in developing my career with me. That way I have the widest opportunities: I still have the option to leave if I don't like the way things are going, but I have the advantage that the company itself has an interest in helping me to progress towards more senior jobs.

Continued training and personal development throughout your career are very important—job experience, though vitally important, needs back-up away from the job—to clarify your ideas and teach you new ways of tackling problems. Technical training leading to membership of a Professional Institution is very useful, especially if you wish to work abroad at some

involve increased monetary reward but there tends to be reasons why the companies have to pay these sums. The expatriate lifestyle may also be attractive—though it is fast disappearing in most countries. I was brought up with this style of living and so fortunately had a chance to see all its facets; so though I enjoyed myself greatly living abroad I had no great urge to spend all my life there!

Within this country there is great variety. Remember the North? Well I have moved up here and have found many advantages. At University I chose the job and company, rather than the location which I wanted to work in. However, when I compare myself to many friends who stayed on in London, I find I am able to afford a wider choice of how and where I wish to live. A recent report suggested that you have to earn £37,000 in London to achieve a similar standard of living to someone on £20,000 in the North; and don't worry there are plenty of ways of spending it up here.

Enjoy the hunt!

Another choice you might have to consider is between industry and commerce. Many people think that the bright lights of London are more attractive, however, I chose engineering in Industry and, as I have already said, I am happy with that decision.

Finally, I don't suppose I should finish without mentioning starting salaries. They are generally indicative of the quality of person that the company is seeking to employ; but only between similar types of companies. Of equal importance though is progression of your salary once starting work. Watch out for highish salaries that don't lead anywhere—there is often limited scope and some companies operate a 'burn them out' and 'chuck them out' policy. If you are only after the money then I'm sure you can find it for a couple of years—the problem is how to sustain that income and then increase it.

I've mentioned a few of the areas that I thought through before choosing a job—there are many more; but I hope I've stirred up some of the issues that you will have to consider in the next couple of months. Enjoy the hunt...!

Caroline Scott, Electrical Engineer.

Engineering in perspective

Gone are the days of being able to get up when you like and go to lectures if you want to. From now on it's five or maybe six days a week, every week for the next forty odd years! This rather bleak view of full-time employment is not intended to scare you, but it is often the image held by students, as I did, about working life. I now hope to dispel some of these fears and enlighten you to some of the better points of life as an engineer and more generally as a professional person.

I graduated from Brunel University as a Mechanical Engineer in July 1988 and since then I have been employed by ICI Chemicals & Polymers Group in Teeside. In fact, I have been employed by ICI since the age of 17 when I was successful in obtaining sponsorship for my thin sandwich course at Brunel. Having only ever worked for one company might have given me a blinkered view of engineering, but because of the size and diversity of this particular company, I would like to think this is not the case.

Whilst at Brunel I spent a total of eighteen months on industrial placements; two of the six month periods were spent on Teeside, the other with ICU Brantham in Essex.

Since joining full-time in July 1988 I have spent three months with ICI Americas in Wilmington, Delaware, USA and I am now four weeks into my job as Mechanical Technical Support Engineer for one of the Terephthalic Acid plants on the Wilton site, Teeside. Having done a thin sandwich course, I was perhaps in a better position as a graduate recruit than some of those who had come straight from full-time courses. The transition from student life to full-time employment

I found it very difficult, from an interview, to discover what was on offer.

is probably one of the most radical changes in environment and attitude that anyone is likely to make. As a result of spending time in industry between periods of academic work, the two very different approaches to engineering were blended together well.

A sound and comprehensive academic training is essential in all professional jobs but the ways that you apply this knowledge can vary considerably. It is this practical approach to engineering that is sadly lacking from all University and College courses and it is the first

lesson you will have to learn as a graduate recruit.

The message which overrides all others throughout the majority of companies in the UK, is 'Safety Comes First'. At University only a passing word is mentioned with regard to safety but now everything I do revolves, and rightly so, around that one word. The other big

Life as an engineer is not all roses.

difference between University and Industry is responsibility, at University it did not really matter if you got one of your calculations wrong or your balsawood bridge failed because of poor design or you used the wrong glue. In industry, however, poor or careless design can result in major incidents such as the Flixborough disaster. Right from day one you are told: 'You will be held responsible for your actions'. This all sounds very dramatic, but it really is not as bad as it sounds. You are not just thrown in at the deep end and left to get on with it. There are strict instructions and procedures to follow and a veritable plethora of 'experts' to help you make the necessary decisions. I am still in the process of an extensive induction course which has been designed to introduce me to everybody I need to know in order to do my job effectively. When this induction is over though my training is far from complete. My career path is carefully monitored by a career working party to ensure I get the most from the company and that the company gets the most out of me. I will receive continuous on the job training as well as attending specific courses to prepare me for the next, more challenging placement.

As Technical Engineer for a continuous plant, which runs 24 hours a day, 7 days a week making Terephthalic Acid, I respond directly to the Maintenance Manager, whose job it is to keep the plant running. I suppose the

broadest remit for my job is to improve the long-term reliability and performance of the plant from an engineering stand point. The work, despite the man-traps of safety and procedure, is extremely varied, always interesting and often challenging. As well as providing the technical input to a problem there is also an element of man-management involved in the implementation of the work. Man-management is another personal skill, which is not taught (if it can be taught) at University or College, which is vital in industry if work is to be done properly, efficiently and safely.

There is nothing wrong with the large cities such as Leeds and Newcastle. I was brought up on the South Coast and have spent the last four years in London. Moving to Teeside in the North East of England has come as something of a culture shock but you soon adapt to it. Again though, my sponsored industrial placements in Teeside have prepared me for this permanent move. Permanent is perhaps the wrong word because, as with many international companies, ICI may move me to one

of the hundred odd sites in the UK or perhaps (hopefully!) to sites farther afield.

There is one element of full-time employment which I have not yet mentioned which, to some, is probably the most important of all; the money! Suddenly I have gone from being a poor student with four-figure overdraft to an engineer earning over £1000 a month. The overdraft has not diminished any but my standard of living has improved considerably and my social life has become hectic to the point of exhaustion.

Life as an engineer is not all roses though. A large chemical site on the edge of the North Sea can be a grim place to work when it is minus ten degrees with force five winds and dark by four o'clock. The majority of engineers I know put a lot more than 37½ hours a week and are often here in the middle of the night or over the weekend.

In conclusion, I would say that if you have been put off engineering by the work you are doing at University, try the real thing before you become a Merchant Banker in the City.



This man eat too much muesli.

Teaching—the politics and pitfalls of the classroom

There was a time when teaching was regarded by some as a soft option - a last resort for the graduate if all else failed. This is no longer the case; the profession faces greater challenges today than at any time in its history and graduates would be well advised to consider carefully the evolutionary processes which are combining to make teaching one of the most stressful occupations today.

Before considering the financial rewards, short days and long holidays it may be advisable to think of the high proportion of teachers who retire early on the grounds of ill health or mental breakdown.

What is happening in the world of education to produce such serious problems? One of the most contentious issues is discipline in the classroom. It is not simply a question of the much publicised violence or the abolition of corporal punishment; laudable though it was, it was simply the first step in a series of legal moves which have reduced the sanctions available to teachers to an alarming extent.

Discipline in today's classrooms can only be maintained by a process of negotiation between the teacher and pupil, but not all parents or pupils are prepared to enter into that process.

The status of teachers in today's society is constantly called into question. Words such as accountability and assessment are bandied around with little or no understanding of the problems they create. Mr Baker, has stated that teachers should be assessed annually - a simple enough idea, but by whom and on what grounds? The learning and teaching processes are subjective; they cannot be quantified or measured empirically. There is also the problem of the objectivity of the proposed assessment.

The encroachment of information technology into the classroom is another factor which is claiming a lot of firsts for some teachers. The range of skills and knowledge required to handle the new technology expands daily and teachers are expected to keep abreast of these developments.



'It is without doubt a very rewarding career, if one is successful, but it is also extremely demanding.'

Through the advisory services local education authorities do provide courses to enable teachers to gain new skills or expertise, but the knowledge base is constantly shifting and expanding.

The stresses involved in these developments coupled with additional work of the changing syllabuses and examination requirements have increased the work load of the teacher to an extent which could not be foreseen 20 years ago. As a direct consequence the teacher finds himself operating in a strained environment which is foreign to the one he envisaged when he elected to enter the profession.

The Government's latest package of proposals indicate the rate of change is not going to slacken. The advent of the City Technical Colleges (CTC) in their areas will create even greater pressures on the teacher. Already schools are beginning to compete with each other. There is a perceived need to be judged as being a 'good' or 'successful' school and the obvious criteria for comparison is examination results. If the 'better' educated parent of pupils who currently attend secondary schools

with good catchment areas send their children to the local CTC the school's success rate in examinations will fall off. Will the school then be judged as a failure?

There will certainly be an increase in the pressure brought to bear on teachers to maintain past levels of achievement. As we move into an era when schools will be responsible for their own financial administration, and the funding is dependent on the number of pupils attending each school parental choice will become a vital consideration in the success or otherwise of any school. The prospects for some schools look very bleak indeed.

In the light of these and other developments currently under consideration, it will beheld the graduate well to think very carefully before committing him or her self to a career in teaching. It is without doubt a very rewarding career, if one is successful, but it is also extremely demanding. In the old days it was said that 'those who can do - those who can't teach.' Perhaps it should be rephrased 'those who can teach and those who can't should keep well away'.

Actuary

Most people have absolutely no idea what an actuary is or does, unless they know one. This is not surprising, as there are only about 2000 qualified actuaries in Britain.

Actuaries are professional people who have taken exacting professional examinations. They work mostly in the field of insurance and life assurance, where they devise insurance policies and pension schemes, manage and invest the funds generated from such schemes, or work as consultants or brokers for companies wishing to invest in pension schemes.

To do their job, actuaries require a sound knowledge of statistical theory, demography (population statistics), economics and investment. Most actuaries have a mathematics or economics degree, although any degree with a strong mathematical element may be acceptable.

There are ten actuarial examinations, divided into two sections. The first six examinations deal with the necessary theory. The other four examinations deal with the application of this theory to everyday actuarial problems. Most actuaries study via correspondence courses (although there are some one year MSc courses, which allow exemption from part of the examinations). The majority of large insurance companies allow two half days paid leave each week for study purpose. It is usual for actuarial students to complete their examinations in four to six years, when they will become Associates of the Institute of Actuaries.

The Financial rewards for actuaries are generous—higher than those for accountants (though probably not as high as, for example, merchant banking). The average graduate salary is approximately £10,000 in London, rising to £17,000 for newly qualified actuaries.

Most trainee actuaries join large insurance or life assurance companies. They provide 'on the job' training, to complement the formal examinations, moving their trainees around their different departments. It is usual to spend six months to a year in each section, and this not only provides the opportunity to apply the theory acquired during study, but also to 'try out' different areas and choose the area one wishes to specialise in.

Georgina Warren and Elizabeth Warren.

Journalism: the inside story

It's been a long time since journalism could be considered glamorous, and technical journalism itself has always played Cinderella to its television and newspaper brethren. Once in a while the nationals find themselves in too deep and dig the staff of specialist publications out of their little cupboards and put them into a chair to talk about the latest disaster.

The Piper Alpha explosion was one such incident. Lost among the jargon and marketspeak of the oil industry, the nationals were forced to consult with the editors of the specialist books who gleaned their allotted 15 minutes of fame.

Cynical though that view is, journalism of any kind still beats working and in the technical market it can provide a narrow doorway into the newspapers, radio and television, if that is what you really want.

For the science graduate, technical writing provides the best entry into journalism as the one thing that every technical publication is short of is technical people. The upshot of this is that anyone leaving college with anything approaching a science or engineering degree should not experience any particular difficulty in finding a job.

The other traditional channel—the local newspaper—is practically closed as it involves competing with school leavers or English students who are by far the most favoured breed in mainstream writing. Although it has long been a cliché, English is still considered the subject for the budding journalist.

So, what does the editor of the average technical book want? Generally, the one thing that he or she needs is some sort of feeling for the magazine's subject matter rather than any direct knowledge and it is very rare that a particular degree will have any direct relevance to what is happening to its related industry.

On the one hand, it means that people move from one area to another fairly easily, but it also means that the science graduate is just as lost as the ex-English student when it comes to specific technologies. However, while employers still believe that the ex-engineer is indispensable then the field is largely clear for IC graduates.

The one other thing that the editor needs is a writer. Although writing experience will help, especially if gleaned on a magazine -- college or otherwise -- it is by no means necessary. Quite a few journalists in

the electronics field are those who drifted into the job because it was something different after working as an engineer for Plessey or Ferranti. Many did very little actual writing before joining and, after the odd training course and some on-the-job experience, usually end up writing at least passable English.

The other criteria that the editor decides by are usually the things that any employer will cite: personality, compatibility with other staff, and interest.

But when you have found yourself a job at any of the publishers, what will you be doing? One thing is for certain, most editors do not see it as their role to be digging up the dirt. Most material comes in the form of a press release or conference and occasionally from the disgruntled telephone call when someone reveals that the entire management team of a company has been made redundant.

How the press release is used depends largely on the magazine. In all areas, even those that are sold on news stands, the books shake down into three main types: the newspaper; the technical features book; and the product book. Many will combine some of these parts, but most are referred to as one category out of the three.

As long as it involves a new product or service, the product book will take the press release as it stands and print it along with a telephone number for the company or with a "bingo number" to go on a reply paid card. Many newspapers and technical books also incorporate one of these sections.

The technical features book will take the release and invite a member of the company to produce a feature or will do an in-depth look from the release. Usually the book will also print reviews of products carried out by themselves or people in the industry.

The newspaper represents the sharp end of the market since it involves a starting point for any number of different stories. The final article may be a re-run of the release or it may develop into something entirely different and possibly entirely wrong. How critical the final piece turns out to be depends on the editor and, frequently, on the in-house lawyer.

It is from the technical newspapers that the nationals, as well as radio and television, poach their science correspondents and editors. And so, if you want to end up on a daily that is the way to go.

With the exception of the training courses at Morgan-Grampian and Reed, the way to get in is to study the Guardian every Monday for particular jobs. Generally, you will be aiming at job titles like reporter, staff writer and assistant editor. Editorial assistant is probably one to avoid as it is often a synonym for dogsbody. If you can get hold of it,

try a copy of UK Press Gazette; buried among the ads for Trout & Salmon Monthly and Shoe & Leather News there may be something interesting. The Independent on Wednesdays is another to look out for, though far less comprehensive than the Guardian.

Where to work

So, who are you going to work for? Although there are a number of fields to get involved in, there are three fields in which the sheer number of magazines make it much easier to move around: electrical and electronic; computing and communications; and medical and pharmaceuticals. Following up on those are general engineering and industrial books.

There are two major players in the trade and technical market -- Reed Business Publishing and Morgan-Grampian -- with a number of medium-sized and smaller publishing houses bringing up the rear. However, if its current spate of acquisitions continue then the newly formed Maxwell Business Communications will represent a third, but its final shape is far from settled.

Reed represents the largest share of the market, with its portfolio covering just about everything from farming to computing. Its biggest money earner is probably Computer Weekly which has the third largest circulation of any business magazine, including news stand books like the Economist. Other titles include Electronics Weekly, European Chemical News, Computer Talk, Electronic and Wireless World, Practical Computing and Systems International.

Although based in a tower block out in Sutton, it is one of the better payers in the industry.

Morgan-Grampian offers what is regarded as the best training programme around. However, it has an odd portfolio that veers from a trio of electronics publications through a couple of transport magazines like Transport Week to the Engineer, Process Engineering and Design Engineering.

The house is known in the

industry for pioneering its series of What's New product magazines like What's New in Electronics and What's New in Computing.

VNU is the UK subsidiary of one of the Netherlands' largest publishers and specialises in producing computing magazines as well as Family Circle. Its most famous title must be Personal Computer World, and it also holds Computing, the magazine which once threatened Computer Weekly for leadership but is now losing out.

Part of the success of Computer Weekly, however, has been the demise of Computer News, one of CW Communications' titles. Part of a worldwide network of computing publishers, CW is now left with DEC Today and PC Business World among others.

EMAP is another house specialising in personal computing and CAD/CAM with titles like CAD/CAM International and 3D. Its major title is PC User, the magazine with which VNU's Personal Computer World is having something of a readership war which is a little odd since PC User is controlled circulation and PCW is a news stand book. EMAP also may be picking up the pieces of Computer News from CW.

Based in Dartford, Findlays is reckoned to be the best payer in the market and carries Educational Computing and Eureka, a sort of paper Tomorrows World for engineers.

Among the rest are assorted publishing houses including Techpress, Angel, Hanover and EDA. However, they all have one thing in common: any publisher of a decent size is based in London, so you could be paying extortionate rents or commuting for four hours every day for a very long time.

Ind Soc Guide to 1988 Careers Fair

JCR = Junior Common Room
GH = Great Hall

TUESDAY 15th

Touche Ross.....	JCR	GEC Eng. Research.....	GH
Unilever.....	GH	Hewlett Packard.....	GH
BBC Engineering Rec.....	GH	IMI Computing Ltd.....	JCR
Royal Signals.....	JCR	Jones Lang Wootten.....	JCR

WEDNESDAY 16th

Arthur Anderson Ch. Acc.....	JCR	Marconi Def. Systems.....	GH
British Gas Plc.....	JCR	Metropolitan Police.....	GH
British Petroleum.....	GH	Mobil Oil Co. Ltd.....	JCR
Building Research Est.....	GH	Price Waterhouse Accs.....	GH
Cadbury Schweppes Plc.....	GH	Reckitt Colman.....	JCR
Casis.....	GH	Scicon Ltd.....	JCR
CEGB.....	GH	Shell Int. Petroleum.....	JCR
Chevron Pet. UK Ltd.....	GH	Smith & Nephew Ltd.....	GH
Citicorp/Citibank.....	JCR	Sun Alliance Ins. Co.....	JCR
Data General.....	GH	Tarmac Const. Ltd.....	JCR
DTI.....	GH	REME.....	?
Lab of Govt. Chem.....	GH	Royal Ordnance Plc.....	GH
Nat. Physics Lab.....	GH	Software Sciences.....	GH
Dow Chemical Co. Ltd.....	JCR	TASC.....	JCR
Elect Council Research.....	JCR	UKAEA Winfrith.....	JCR
Esso Group.....	GH	Vickers Shipbuilding & Eng.....	JCR
Ford Motor Co. Ltd.....	GH	Wellcome Found Ltd.....	GH
FPS Management.....	GH	DII Radiocommunications Div.....	GH
Def. Science Grp. MOD.....	JCR	Civil Service Science Div.....	GH
Dow Chemical Co. Ltd.....	JCR	British Aerospace.....	JCR
Eurotherm Int. Plc.....	GH	WS Atkins.....	?
Govt. Communications HQ.....	GH	Ove Arup.....	JCR
Guardian Royal Exch. Ass.....	JCR	R Watson & Sons Con. Act.....	GH
ICI Plc.....	GH	Chevron Gulf Oil Ltd.....	GH
Lindsey Oil Ref. Ltd.....	JCR	Royal Signals.....	JCR
GEC-Marconi Research Cen.....	GH	Lutron.....	JCR

THURSDAY 17th

Air Products Plc.....	GH
British Coal.....	GH
British Telecom.....	JCR
Citymax Int. Inf. Systems.....	JCR
Conoco (UK) LIDCS.....	GH
Courtaulds.....	JCR

COMPETITION

Are you unsure of your career plans? Does the thought of a nine to five accountancy job terrify you? How does this sound for a career: Lots of foreign travel, short hours, international fame and enough dosh to give your bank manager early retirement. Interested? Well that's the sort of benefits available to a top Formula One driver and unfortunately it takes an awful lot of hard work and sacrifice to get to that level. However, they all started somewhere, most of them (including World Champion Ayrton Senna) in Formula Ford.

This week's competition gives you the chance to drive a Lola T644E Formula Ford 1600 racing car at the Goodwood motor racing circuit on Sunday November 20. On that day Guilds Motor Club have hired the circuit for people to drive their cars (or their parents or friends cars) around under the expert guidance of experienced members. Anyone interested should get in touch with them via the Guilds Office (Mech

Eng, level 3 or internal 3521).

The prize will be awarded to two people, one male, one female and entrants must possess a full driving licence.

THE QUESTIONS:

1. Who is the new World Champion driver?
2. How long is the Goodwood circuit?
3. When was Formula Ford introduced to Britain?
4. Who won this year's RAC FF1600 championship?
5. Which manufacturer won Le Mans this year?

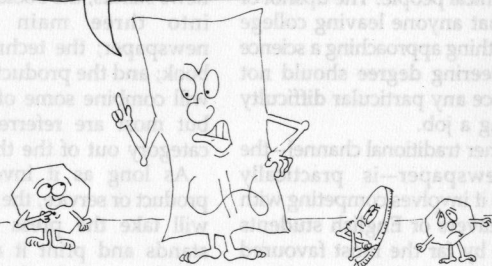
TIE BREAKER:

Complete the following in no more than 12 words:

'I want to drive a Formula Ford because...'

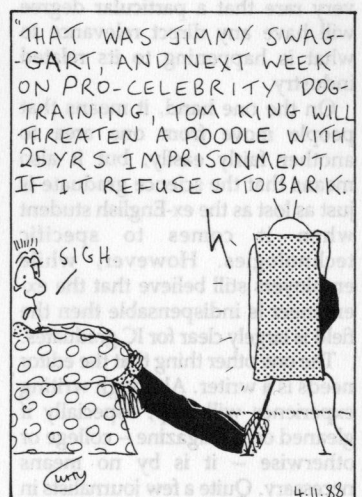
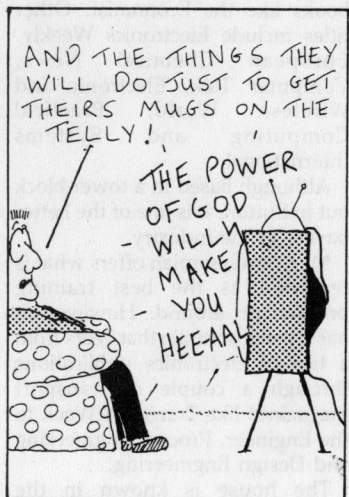
Send entries to FELIX competition, FELIX Office, to arrive by 12.30pm next Wednesday. Judges decision is final. No entries from FELIX staff or C&GCMC Committee members. No correspondence will be entered into.

... AND WHAT ABOUT THE TIME I LENT YOU MY BIKE. THAT'S 50p. THEN YOU READ SOME OF MY PAPER. ANOTHER 30p. THEN I LET YOU USE MY COMB. ONLY 10p FOR THAT ONE. AND NOT FORGETTING...



PETTY CASH

SouthKenders



The Arms Race

Now is the time when most final year students are beginning to think seriously about finding a job. The Careers Fair is one way in which companies try to attract the attention of future graduates, and it is only part of a process of presentations designed to smooth the transition from student to employee. But amidst all the brochures and the hype, there are one or two awkward questions that many companies would prefer not to be asked. For the science, technology and engineering graduates of IC, one of the most important questions is 'how is your company involved in the arms trade?'

The arms business has not led to a secure peace, as some hard facts can show. Since 1945, 21 million people have died in wars, mainly in the Third World. Three out of every five deaths were civilians, the majority of them women, children and the elderly. Two-fifths of the



Nicaraguan Soviet-built HIND helicopter

world scientific R&D is devoted to military purposes, and \$17 billion is spent on arms every two weeks (this amount is enough to feed, clothe and house everyone in the world for a year). The science graduate is an integral part of this process and three out of every five in this country go on to take a job in arms related industry. Britain is one of the world's leading arms exporters and sold £5,000 million of military equipment to overseas countries in 1986.

Three-quarters of these UK arms exports were to Third World countries. When people in this country think about the arms trade, it is more often in terms of balance of payments than about where the arms go or the uses to which they are put. Already nearly every Third World country spends more on its military than on health and education, and many of these countries have serious debts which are made worse by the spending on armaments. A recent report in a

British medical journal on the health of the Third World showed a direct correlation between high arms spending and high infant mortality. More directly, this global trade occurs in a world where two-thirds of the people are undernourished and millions are dying from hunger and preventable diseases. The arms trade diverts money away from these issues. So without ever being used, merely by existing, the ever expanding armouries of the underdeveloped nations are killing and maiming on a massive scale.

At an opening debate of the UN General Assembly in 1987, a number of Third World delegates warned that the debt problems of developing nations were as serious a threat to international stability as the arms race. "A world in which politics is replaced by arsenals and economy by finance is simply a world in danger," stated President Alfonsín of Argentina. However, a world in even greater danger is one in which the build up of arms is actually intermeshed with the debt crisis.

Third World governments have spent a large proportion of loans on purchasing expensive weapons systems, greatly encouraged by the world's arms companies who faced a slump in sales at the end of the Vietnam war. Between 1972 and 1982, precisely the period of increased Third World borrowing which has led to the current global financial crisis, the value of arms delivered to non-oil producing developing countries more than doubled in real terms. Since arms can only be used for destruction, they generate no further income and have done nothing to repay debts. Indeed, arms purchases have led to further borrowing.

Turning to the International Monetary Fund for short term loans, Third World governments find that loan conditions include a removal of government food subsidies, cuts in health and education, and reductions in wages - all measures that extract money from the poorest sectors of society. A reduction in military spending is never included in these conditions.

Such austerity measures, by diverting resources into the

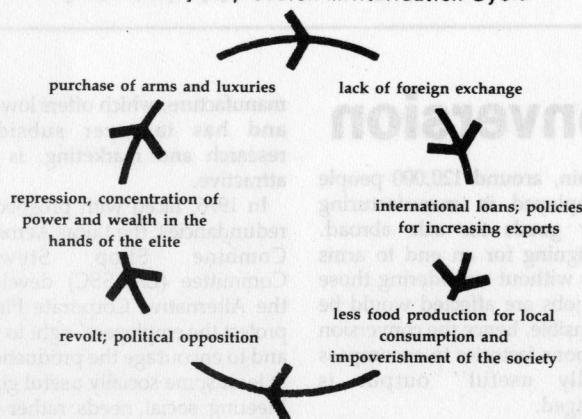
purchase of costly military equipment, deny people of the most fundamental human rights - the right to work, to be free from hunger and to enjoy good health and education. When the denial of these human rights provokes the people into protest, their governments often find it necessary to retaliate with violence, involving harsher repression, more military spending and greater poverty for the people. A vicious circle is set up which is extremely difficult to break.

Looking more closely at the consequences of the arms trade within such countries reveals a vicious dynamic called the poverty-repression-militarisation cycle. The debt, which is increased by the spending on arms and luxuries by Third World elites, leads them to generate more hard currency by cutting wages, food subsidies and welfare programmes and by increasing exports (eg. cash crops). The poor, as ever, bear the brunt of these measures but any expression of discontent or protest is repressed by the government, which then buys more arms to maintain its military stranglehold on power.

The arms trade is also an overtly Green issue. From the total destruction of full scale war through Vietnam style defoliation to the deliberate disruption of environmental programmes by the Contras in Nicaragua, the business of military sales helps to wreck our planet. The militarisation of the world is the very opposite of a sustainable lifestyle.

Today, Britain is one of the leading arms manufacturers and traders. What about all the jobs that must depend on the arms industry? Surely making arms for export makes economic sense? In fact,

The Poverty-Repression-Militarisation Cycle



spending \$1000 million on the arms industry generates 76,000 jobs. The same money used for construction gives 100,000 jobs and in health would give 139,000 jobs. The move to high technology means a loss of 20,000 jobs in military related work in Britain between 1981 and 1985, despite an increase in our share of the global arms market. Arms themselves don't even make economic sense, since once made they can generate no further wealth. But detailed plans for converting military industry to socially useful production have been dismissed out of hand by industry and by governments of both main parties.

Why this reluctance in the West to put an end to the arms trade? Are arms companies just satisfying a "market need"? For a start, the world economy is grossly distorted. Despite gaining official independence from colonial masters in the years after 1945, most developing nations find themselves locked into a system in which they are suppliers of raw materials and the consumers of western manufactures. The main global economic powers are the governments of the rich industrialised nations and transnational companies (TNCs). The TNCs like to invest in countries with low production costs and where they control the profits. Third World elites sympathetic to TNCs tend to be those most willing to align with the strategic interests of western governments. A good example is Malaysia, where approximately 50% of manufacturing output is controlled by TNCs.

But the profit driven business of arms export doesn't even stick to this strategic and economic logic. Britain was selling arms to Argentina up to eight days before the invasion of the Malvinas/Falkland Islands! The sad reality is that the arms trade is fuelled by the search for profits and power and works hand in hand with governments such as our own. Its existence is totally opposed to the well being of ordinary people. There have been some limited successes with campaigns against specific arms deals and for some further information as to how to get involved with fighting the arms trade contact the organisations listed below.

At the present time, a large proportion of science related jobs and funding remains with the MoD and companies like British Aerospace, GEC, Marconi etc. It is a matter of personal choice and circumstance as to how you decide to deal with this fact. Nevertheless, to accept the status quo is to side with the powerful.

Malaysia

On the 27th September Dr Mahathir Mohamad, the Malaysian Prime Minister, visited Mrs Thatcher at 10 Downing Street to sign a Memorandum of Understanding for the purchase of over £1 billion worth of military equipment during the next fifteen to twenty years. Contracts with individual manufacturers are being handled by the Ministry of Defence's Defence Export Services Organisation (DESO). The details have yet to be worked out, but the equipment sold is understood to include:

- a dozen Tornado fighter aircraft from BAe
- twelve Rapier air defence missile systems from BAe
- 105mm light guns from Royal Ordnance (a BAe subsidiary)
- about thirty FH70 towed howitzers from VSEL
- electronics for the Tornados and air defence radar from GEC Marconi
- sonar, radar and communications equipment from Plessey
- about 50 Javelin ground-to-air missile launchers from Shorts
- a refurbished Oberon class submarine
- a training programme
- contracts for naval construction and repair facilities in Malaysia.

It is not entirely clear why the Malaysian government should want to spend so much money on



Afgan Rebel with US SA missile

weaponry. In reply to an interviewer's question, Dr Mahathir told ITN that it was routine rearmament. Britain has been making strenuous efforts to sell more arms to south east Asia, and the DESO opened an office in Kuala Lumpur in 1986.

No details have been given on any credit terms, but Malaysia will be paying in oil, natural gas, and other commodities, in a series of barter deals. Overdraft facilities will probably be provided by Britain as a supplier of credit, and British companies will be encouraged to invest in Malaysia. There are also reports that Malaysia wants more aid money in return for the arms deal. Britain does not give aid for military purposes, but parallel talks

are said to be taking place about an increase in UK aid to Malaysia through the Overseas Development Administration.

During the past year in Malaysia, the leader of the opposition and other political figures have been detained without trial, dissidents within Dr Mahathir's party have been purged, newspapers have been closed, and six supreme court judges (including the most senior) have been suspended. Although Malaysia has been one of the few democratic countries in south east Asia, two former Malaysian Prime Ministers are said to feel that Dr Mahathir is abusing his power. Nothing suggests that Mrs Thatcher raised the question of human rights during the Downing Street meeting.

Conversion

In Britain, around 120,000 people are employed in manufacturing military goods for sale abroad. Campaigning for an end to arms exports without considering those whose jobs are affected would be irresponsible, hence the conversion of weapons factories to encompass "socially useful" output is encouraged.

There have been many attempts at conversion since the second world war, both in Britain and abroad. Although there have been few successes, most have proved to be technically feasible, the main obstacle being lack of political will. Many of the initiatives for conversion have come from trade unionists who have been sufficiently forward looking to see that secure and satisfying jobs require long term change.

Unfortunately, management prefers short term, guaranteed profits, so that weapons

manufacture, which offers low risks and has taxpayer subsidised research and marketing, is very attractive.

In 1976, faced with prospects of redundancies, the Lucas Aerospace Combine Shop Stewards Committee (LACSSC) developed the Alternative Corporate Plan to protect the employees' right to work and to encourage the production of at least some socially useful goods. Meeting social needs rather than creating profit was the main concern, as with subsequent schemes at Vickers, British Aerospace, Faslane and the GLC. In addition, the Plan specified that all members of the workforce should have real influence over the organisation of production by increasing industrial democracy. Ideas for new products were collected from the employees, leading to 150 proposals in a number of areas - transport, alternative energy sources, oceanics, telechirics (remote control) and

medical equipment.

The management refused to meet the Combine or consider the Plan. Neither the DTI, the Labour government nor the TUC gave any assistance. In the following years, Lucas closed factories and adopted divide-and-rule tactics against the unions. Despite this, the Plan has been successful in that it has been the inspiration for other schemes.

Contact addresses:

Campaign Against the Arms Trade (CAAT),
11 Goodwin Street,
Finsbury Park,
London N4 3HQ.
01-281 0297

Campaign Against Military Research On Campus (CAMROC),
190B Burdett Road,
Bow,
London E3.
01-980 2455

OUTSTANDING GRADUATES FOR STRATEGY CONSULTING

McKinsey is the world's pre-eminent management consulting firm, advising major companies on their strategies, mergers and acquisitions, operations and organization. The Firm has 39 offices worldwide and is owned entirely by its partners.

We are looking for a few exceptional graduates and postgraduates to join our London Office as analysts next September, working in teams to solve client problems. We expect them to be with us for two years before going on to study for an M.B.A. at a leading business school. We encourage our analysts to rejoin us as consultants and provide them with full financial support while at business school.

We seek people with excellent academic records, in any discipline. They must also be able to demonstrate leadership ability and wide ranging interests.

To find out more about the Firm and our work, pick up a brochure from your Careers Office, or come to our presentation at Imperial College on Thursday, November 17 in the Pippard Lecture Theatre at 5.30 p.m.

We shall be holding interviews during January. If you would like to be interviewed, please send a Standard Application Form, photograph and academic reference, by December 31, 1988 to:

Graduate Recruitment
McKinsey & Company, Inc.
74 St. James's Street
London SW1A 1PS

McKinsey & Company



Rattle and Hum

Cert 15, Empire Leicester Square. The U2 media train comes chugging into town again. After the release of *The Joshua Tree* album last year came a mammoth world tour, followed by the release of *Rattle and Hum* the album, *Rattle and Hum* the book, and now comes *Rattle and Hum* the movie.

Is U2 being rammed down our throats? Are we getting a little sick of U2? For me, this film just cements U2's standing as the world's foremost rock group.

What is this movie about? 'It's a musical journey', exclaims Larry Mullen Jr, somewhat unsure of himself. But that is all it really is, and it doesn't pretend to be anything else. It is a well made concert film with brief moments of life on the road with the band, with concert footage interspersed amongst the songs. With concert footage taken during the group's *Joshua Tree* tour of the US last year, the movie was created to give U2 fans the best seat in the house from which to experience a U2 concert. And it is quite a treat for any fan. With songs mostly from *The Joshua Tree* and *The Unforgettable Fire*, the music is loud, powerful and passionate—traditional ingredients to the group's appeal.

An annoying aspect of the film is that it is mostly shot in black and white, but this does give it an informal, documentary style presentation, making the band seem more accessible.

We aren't given the opportunity to explore the minds of the individuals making up the group, or delve into their personalities. But,



Colors

In L.A., it is now reaching the point where it will be required for tourists to know which colours to wear in which area, in order to avoid death. Dennis Hopper's film attempts to analyse a problem which is daily spiralling into more mindless



violence and more deaths, and also assesses the police's impossible task of trying to tackle it.

The film begins promisingly as Hopper draws us into a world of gangland violence and, through the lives of two new partners; one experienced and diplomatic (Robert Duvall), who believes in the softly, softly approach, and the other (Sean Penn) who is young, vigorous and firmly believes in the strong arm of the law.

However, the film soon degenerates into just another buddy movie as it concentrates too much on the partnership and discards the potential of the title subject.

Although Duvall is as reliable as ever and Penn reminds us that he used to be a very competent actor before becoming a full-time press basher, they can't really do much more with a script that fails to get to the heart of the subject. The direction too, lacks inspiration and is often unoriginal, which is surprising and disappointing coming from a director like Hopper.

However, having said this, the film does have its scenes, more notably towards the end and Hopper's nihilistic view that the police can't win no matter what they do, survives to make a strong point.

Noel Curry.

the few snippets we are treated to are significant ones, and there are some gems that stand out. We see the band in awe of a Harlem gospel choir giving a rowising rendition of *I Still Haven't Found What I'm Looking For*; we see the great old man of blues guitar—BB King—playing with U2 and professing 'I can't stand playing chords'. We see an emotional Larry Mullen at Gracelands and his obvious disgust at seeing his hero Elvis' grave 'in his back yard'. The band go to the historic Sun Studios at Memphis where they record five songs in five hours—the songs, they say, that kept them going, on the long tour.

However, there is nothing here indicating the band as anything out of the ordinary. Indeed, for the most part the band come across as the

average, pretty dim, lads next door that are suddenly propelled to superstardom; which is a little irritating to those of us who know them to be a cut above the rest of the pop crowd. However, the turning point comes late in the film in blazing colour, and the effect is stunning. It is when politics rears its head that the real U2 emerge, with attacks on South Africa, the wars in Central America, and in particular, a moving condemnation of the IRA. Taken just after the Inniskillen

bombing, Bono's anger at the 'glory of the revolution' followed by *Sunday, Bloody Sunday* is a pivotal moment of the film.

With *All I Want is You* rolling over the credits, ends a film that should be a satisfying experience for all U2 fans.

I, for one, am eagerly awaiting their next venture. Hopefully, though, we'll be spared *The Making of Rattle and Hum*.

Sumit Guha.



The Greatest Story Never Told

Tony Husband, Corgi, £2.99.

Walk into any bookshop and browse through the humour shelves and you'll discover a plethora of flimsy books crammed with cartoons of one deception or another. They are often themed, or try to be, and despite an incredible amount of work by the cartoonist, are almost always overpriced.

Here's another one. Readers of

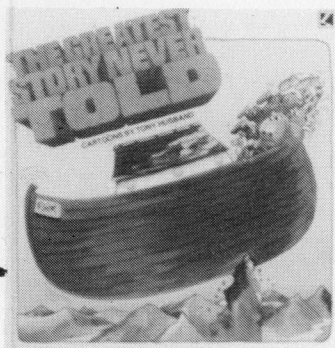
Punch or *Private Eye* would recognise Tony Husband's style if not his name. He has won awards as Cartoonist of The Year three times, and I must say that basically it's because he is funny. I found this latest collection hilarious in places.

I also found it confusing, since it's subject is the Bible, and I don't confess to knowing the Good Book too well. Some of the jokes were lost on me. But the many that weren't were pretty good, funny and slightly cruel.

Being a pretty devout atheist I was wary of recommending this though. So I asked a few people, Christian and otherwise to look it over and tell me if it's offensive. The consensus was that it is not if you don't take it seriously, and anyone who has a sense of humour isn't very likely to.

So, *The Greatest Story Never Told* is all set for anonymity in the endless ranks of overpriced Christmas stocking fillers. Just be careful who you give it to.

Andrew Clarke.



How long before the milkround turns sour?

There's one thing a spell at University always guarantees. Plenty of 'milkround' visits from company executives.

Each and every one of them has well-paid jobs to offer.

But before signing on the dotted line, think very carefully.

Will the promises turn out to be empty? Will the job suit your particular abilities and skills?

These are not the sort of questions you can answer in 3 minutes. So why not take 3 years to decide your future – as an Army Officer?

On completion of your training at Sandhurst you will be commissioned as a Lieutenant earning £11,074.

Naturally you will learn how to command and care for a group of bright young soldiers and to handle our sophisticated weapons and equipment.

And if you are posted abroad at short

notice to lead soldiers in unfamiliar surroundings you'd have to cope.

No wonder many leading industrialists regard an Army Commission as the best management training a young man or woman can have.

Whether you make the Army your long-term career or leave earlier is up to you.

Either way it promises not to sour your future. Quite the opposite in fact.

And you'll gain unrivalled executive training at our expense.

So if you need a little more time to decide, see your Careers Staff and pick up an Introduction Form.

Through this we will arrange for a Liaison Officer to see you at your University, Polytechnic, or College of Higher Education.



Army Officer

NETBALL

Good start

IC I—50
LSP—11

Last Saturday morning an exceptionally bleary eyed netball team assembled at South Kensington station for the first ULU match of the season. The team trundled over to Russell Square to play London School of Pharmacy (or SOPS as they call themselves) on their court situated in an 'innercity farm' complete with sheep!

We looked very scruffy next to smartly kitted LSP in our odd assortment of tracksuits, skirts and tops (lack of funds for kit from IC Union) but fortunately the netball was better than our strip. Lunchtime practices have certainly paid off. The team played well together and for once on LSP's court unhampered by sheep. By half-time IC had established a clear lead and went on to win without seriously maiming the LSP team.

FOOTBALL

Top of the Table

IC II—6
UC II—1

With IC top of the table, and UC second, this looked as if it would be IC's toughest game yet, and my word it was! UC kicked off, and for ten minutes pressurised the IC defence. But with the class and coolness of Russ Dark and Jezz Holland in the heart of the defence, goalkeeper Webster Nonde was never bothered. Then came the breakthrough. Good work on the right from Ash Jalan allowed the cross, and Rackesh Muthoo was there to poke the ball home. The second, ten minutes later was created in a similar fashion, with Guy Phiri scoring from an awkward header. IC went forward again, and just before half-time, and Ed Coates corner was cleverly dummied by Russ Dark to leave debutant Kev Graves the easiest of chances to make it 3-0. After the switch, UC pressurised again, but it was IC who scored through Adam Thomas, on the break. Adam then added a fifth as IC began to play some lovely football. UC then scored, but it was IC who had the last laugh. Freddie Dadze wriggled his way through the UC defence, and then calmly placed the ball under the keeper. After this demolition of one of the strongest teams in division 1, IC II look to be in for another successful season.

THE SPORTS PAGE

Doug King



Andy Watson finds trouble in their 30-6 win at LSE

ORIENTEERING

November Classic

The morning after Guy Fawkes Night was incredibly foggy, as if all the bonfire smoke had failed to disperse, and the sight made me wonder if it was worth getting out of bed. Alright so orienteers are only supposed to need a map and compass, but there are limits! I made the rendezvous with a nice comfy van which whisked us off to the New Forest.

By the time we arrived the day had metamorphosed into a bright, sunny and warmish sort of day and, pausing only to don our 'O' suits, we set off, one by one to run through the beautiful woodland.

For those who think they understand orienteering, but don't, it consists of getting from certain points in the countryside to certain other ones, preferably in a suggested order and fairly rapidly.

The most amusing feature of this trip was the unusual presence of camouflaged 'watchers', behind trees and in hides who became very secretive when asked what on Earth they were doing. One theory is that their mastermind (Dr Spellenberg of Southampton University) was researching the 'environmental impact of orienteering'.

Well, my old expedition injury (acquired in the Karakoram you know) played up, so my performance was a little below best (so I'm told) but what do you care anyway?

The sport is truly open to all and the club will cater for absolutely anyone (although two legs and the ability to run 100 yards at the finish are a basic requirement). If you are mildly interested, call internal 6776 for Andrew Fazakerley (club captain).

RUGBY

Unbeaten

After a particularly good intake during Freshers' Fair, Imperial College rugby is still unbeaten. The Club is putting out two teams every Wednesday and Saturday which are nearly the same standard.

IC 1st XV's most pleasing victory will most probably be against the formerly unbeaten club side, Orlcons FP. This performance showed a lot of determination, especially among the forwards, who finally secured us a place in the 3rd round of the Middlesex Cup.

After our first UAU game against Sussex, we were to play LSE last Wednesday. Due to lack of concentration IC were only 8-6 up at half time. During half time everyone got a kick up the bum from the captain, S Blanco, and IC jumped into a higher gear pinning LSE in their 22 for the rest of the match.

A powerful drive from the forwards was finished off by a try from H Fadge. Three tries followed from Hughes, Anderson and Watson which brought the final score to 30-6.

FOOTBALL

Division 6

IC VI—1
LSE V—3

Todd Hansen's first goal of the season, a 30 yard drive that left the keeper clutching thin air, was not enough as IC dropped some valuable points in their bid for promotion. Playing yet again with only 10 men, IC were unlucky not to get a draw with Albert Wong being denied by the crossbar and a fine save by the keeper.

MENS HOCKEY

Demolition

IC 2nds—8
LSE—0

Although some warned of compacency the 2nd XI went into their second UAU game with high hopes after a resounding 4-1 thrashing of Sussex. Our worst fears were realised when we learned our goalkeeper had opted for a lie-in. However, our forwards produced the goods against an opposition feared throughout the land.

The second half saw the demise of your faithful correspondent, as a fatal head injury forced him off the field with concussion leaving the remainder of the game shrouded in mystery. The result, however, was never in question.

BADMINTON

UAU Success

As usual before the badminton season has really got going we have been thrown in at the deep end with some tough UAU matches. Last week we travelled down to Sussex University where, despite having trouble with the drift on court and the confusing array of coloured lines on the floor our mens teams triumphed 8-1 (mens I) and 5-4 (mens II).

Unfortunately the ladies were defeated 9-0 by a Sussex team that didn't really contain any players of spectacular ability. The main problem was that we were playing with totally new partners and confusion in positioning caused many points to be lost. This is supported by the fact that the scores improved steadily as the afternoon went on.

From FELIX 1985

College Security Officer, Geoff Reeves, confirmed this week that he had been soaked by the Phantom Soaker. In his weekly bulletin on the soaking situation, Mr Reeves said that £50 of clothing had been damaged by the Soaker and that he would make the Soaker replace the clothing when he caught him. Mr Reeves has set up a soaker hotline on 3371.

Royal College of Science Association Careers Forum

November 29th
6.30pm

Senior Common Room, Sheffield

An opportunity to meet people from a broad spectrum of the industrial, commercial and managerial world, able to offer advice on careers and prospects.

Informal buffet.

Price: £2.50.

Cash bar

Contact the RCSA, Room 303, Sheffield, before November 21st to book

STOIC

Off air

As you may have noticed, STOIC have been off the air for the last week. We're sorry, but our technical team have been giving the studio a complete refit. Hopefully, they will have finished by today, and 'Into the Night' should be starting at 7pm as usual.

IC Radio

Gaga

The *Fast Trouser Show* has had exclusive details on how to deal with the trauma if you have suddenly found out that you are Welsh. So read on... And also for all those who have discovered that getting the clap is not something to boast to your mother about.

Every Thursday at 1pm, you can hear the *Fast Trouser Show* on IC Radio, so get to somewhere where you can hear the damn thing. If you are in Southside there is no excuse. If you are a vegetarian, OK no one's

perfect, but do five cucumbers get as much satisfaction as you do in being slowly inserted into the human torso?

IC Radio, Thursday, 1pm.

PS. For all you Welsh students, consult your local vet for a course in anal surgery!

IC Radio

News

Every Sunday between 10am to Noon on IC Radio is Gabby's Sunday Supplement. So all of you who aren't trying to get a quick one over, might as well tune in for a light-hearted look into the week's events.

Film Soc

Radio Days

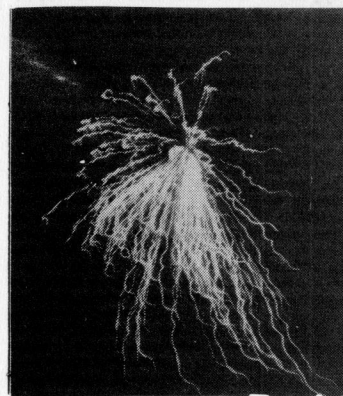
How does one write an article about a film one knows nothing about? Mind you, it's by Woody Allen so what more do I need to know, it's bound to be good isn't it? I think it's a series of stories about Woody's childhood listening to the radio but I could be wrong. Come along and

watch and find out anyway. The usual time and place, check 'What's On' for details.

Tennis

Snakes

The tennis ladder is now up on our noticeboard in the Sports Centre. Please check that your name, department and year are correct. If not, or if you wish to join the ladder, please contact Hideo Takano (Civ Eng 3). If you wish to join the Tennis Club, contact Roy Harrison (Elec Eng 4).



Agrochemicals

To those graduating in 1989 or 1990 in the Biological or related sciences

ICI Agrochemicals has a number of vacancies for those with the scientific skills and the potential to succeed in a world-class commercial environment.

* On our Techno-Commercial Programme, successful applicants will spend an initial period in research and development prior to transferring into a commercial department which will lead to an international business career.

* On our UK Sales Training Programme, successful applicants will start their business career in UK Agrochemical sales.

* On our Technical Programme, successful applicants will progress through one of our technical career paths including, in some cases, career development through commercial positions.

For further details please contact your University Careers Advisory Service.

There will be a presentation for 1989 and 1990 graduates, and any interested postgraduates, on Thursday 24th November, 1988 at the Forum Hotel, 97 Cromwell Road, London SW7 at 6.30pm. Refreshments will be available.

Applications should be received by Wednesday 11th January, 1989. Preliminary interviews will be held at the Gloucester Hotel, Harrington Gardens, London SW7 on Wednesday 25th January 1989.

Those seeking appointments in 1989 should apply (using the Standard Application Form) to: Mrs S. Hennelly, ICI Agrochemicals, Fernhurst, Haslemere, Surrey GU27 3JE.

Whats On

What's On

A guide to events in and around IC.

FRIDAY

- Con Soc Meeting**.....12.30pm
Mech Eng 569. All Welcome
- Ladies Basketball**.....1.00pm
Volleyball Court (behind Chemistry). Be there (unless you're male)
- Poetry Readings**.....6.30pm
University of London School of Oriental and African Studies Room G57.
- Fencing Club**.....12.30pm
Union Gym. Meeting also at 6 o'clock.
- Hypnosis Lecture**.....8.00pm
Great Hall. Proceeds to Rag.

SATURDAY

- Sci Fi Marathon**.....12.00am
SCR. Proceeds to Rag
- IC Kung Fu**.....4.30pm
Southside Gym. Beginners always welcome.
- SCAB Night**.....8.00pm
Concert Hall. Proceeds to Rag.

SUNDAY

- Sunday Service**.....10.00am
Ground Floor Sheffield Building.
- GLC Trip**.....???.??
Greyhound 'Church' Session. £2 plus tube. See Greater London Club.
- Wargames**.....1.00pm
Senior Common Room. All Welcome.
- Tug-o-War**.....3.00pm
Prince's Gardens. Proceeds to Rag.
- Kung Fu**.....4.30pm
Union Gym. Beginners welcome.
- RCSU Night in the Bar**.....7.00pm
Union Bar.

MONDAY

- WIST Committee Meeting**.....12.30pm
Green Committee Room. Free.
- Rock Soc Meeting**.....12.30pm
Southside Upper Lounge. Come along and have a good time.
- Beginners Ball Room**.....6.00pm
Main Dining Hall. 80p.
- Beginners Rock 'n' Roll**.....6.45pm
UDH. 80p
- Advanced Ballroom**.....7.00pm
Main Dining Hall. 80p.
- Latin American Dance Class**.....8.00pm
UDH. Cha Cha, Samba, Rumba, etc. 80p A.

TUESDAY

- Boardsailing Club**.....12.30pm
Southside Lounge.
- Audiosoc Meeting**.....12.30pm
Union SCR. Cheap records and tapes etc.
- Guilds Slave Auction**.....12.45pm
ME220.

- Ski Club Meeting**.....12.45pm
Southside Lounge. Interested in learning to ski? Already hooked? Want a cheap ski holiday? Come and find out more.
- Beatles Hour**.....1.00pm
For all the best Beatle and Beatle-related material on CD with Spenser Lane.
- Astro Soc Lecture**.....1.00pm
Lecture Theatre 2, Physics. 'The Finite Future of Astronomy' by Dr Bob Joseph.
- Amnesty Meeting**.....5.30pm
Brown Committee Room (top floor Union Building).
- Meditative Prayer**.....5.45pm
Chaplain's Office, 10 Princes Gardens. Come and join us for some peace and quiet
- Wine Tasting**.....6.00pm
Union SCR. Fine wines from Burgundy.
- Judo**.....6.30pm
Union Gym. No more beginners.
- Intermediate Ballroom**.....7.00pm
UDH. 80p
- Caving Club Meeting**.....7.00pm
Southside Upper Lounge. Everyone interested should come along.
- Bar Quiz**.....7.30pm
Snack Bar. Proceeds to Rag.
- Beginners Ballroom**.....8.00pm
UDH. 80p.
- Comedy Night**.....8.30pm
Concert Hall.
- Mountaineering Club Meeting**.....9.00pm
Southside Upper Lounge. Beginners always welcome.
- WEDNESDAY**
- Real Ale Soc Trip**.....8.00am
King and Barnes, Horsham, Sussex. Meet at Beit Arch.
- Building Blocks**.....12.30pm
Mech Eng 702. A course in Christian Education. Everybody welcome. Lunch provided for only 75p
- Caving Club Meeting**.....1.00pm
- Hamsoc Meeting**.....1.15pm
Third Floor of Union Building. Amateur Radio Society regular weekly meeting.
- Ski Lessons**.....2.00pm
Meet Southside Lounge. Come to Tuesday's meeting to book a place. Bring gloves and thick socks.
- Intermediate Rock 'n' Roll Class**.....2.15pm
UDH. 80p.
- Beetlesoc**.....2.30pm
Southside Lounge for 'Aquabeetle'.
- Jazz Dance Class**.....3.15pm
UDH. 80p.
- Kung Fu**.....7.30pm
Union Gym. Grandmaster Chang's class.
- Basic Christianity**.....6.30pm
Senior Common Room, 7th Floor. A meeting held by University Christian Outreach examining the life and claims of Jesus.

THURSDAY

- Fencing Club**.....12.30pm
Union Gym. Meeting also at 6 o'clock
- ICYHA Meeting**.....12.30pm
Southside Upper Lounge. Everyone welcome.
- Methsoc Meeting**.....12.30pm
Mech Eng 703. Tale on 'Adult Baptism'.
- Aerosoc Darts**.....12.30pm
Beit Quad.
- Audiosoc Meeting**.....12.30pm
Union SCR. Cheap records, tapes etc.
- Lunchtime Lecture**.....12.45pm
Elec Eng 403a. 'Wind Energy Research' by Dr Leon Freris.
- Ski Club**.....12.45pm
Southside Lounge.
- Con Soc Meeting**.....1.00pm
ME213. 'Causes of Crime' by John Patten MP.
- Debating Society**.....1.00pm
Room 341 Maths (Huxley).
- Prayer Meeting**.....5.30pm
All Christians in College are welcome to come and pray for the work of Christians in College.
- Judo**.....6.30pm
Union Gym. No more beginners.
- Film**.....7.00pm
Mech Eng 220. 'Radio Days' by Woody Allen. 50p, £1 to non-members.
- Real Ale Soc Meeting**.....7.00pm
Pig's Ear Beer Festival, The Old Town Hall, Stratford. Meet South Ken tube at 7pm.
- RCS Smoking Concert**.....7.30pm
Concert Hall. In aid of Rag.
- Soup Run**.....9.15pm
Meet Week's Hall Basement (back by 11pm).

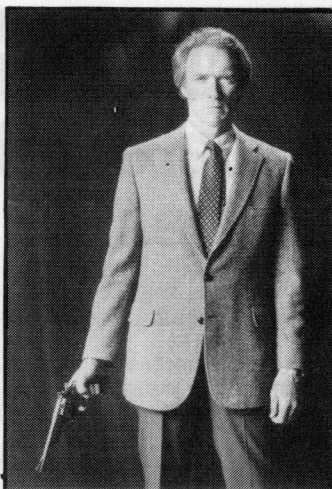
Smallads

ANNOUNCEMENTS

- **Any**, I mean any, goalkeepers at IC interested in playing for one of our 6 teams, please contact Paul Thompson through Mech Eng IV pigeonholes.
- **Careers** reception for graduating students in the Senior Common Room, Sheffield Building, Tuesday 22nd Nov, 6pm to 8.30pm. If you are able to attend, please collect an admission ticket from the Old Students' Association's Office in Room 303, Sheffield or from your departmental OC's GYR before 16 November. There is no charge to student OC's, but non-members will be charged a nominal price of £1.
- **Yacht Club**: Ever wanted to learn to sail in style? Or have you been and want to try it again? Anyone interested in re-forming the Yacht Society please contact C Browne, Physics 1. I need 20 names for IC Union.
- **Part-time** PhD students needed to form support group for other part-time PhD students. Phone 274 2739 (evenings).
- **Ladies** Basketball team needs more players. Come along on Friday lunchtime to volleyball court, behind Chemistry. Contact Karen Crawley, DoC 1.
- **Ten Tors**—The event takes place on Dartmoor and involves visiting Ten Tors (granite mounds) which act as checkpoints. Total distance is 55 miles and must be completed within 35 hours. The team should be entirely self-sufficient and personal stamina, team spirit and sense of direction are all important. If you fancy a go, please come to the meeting at 1pm on Friday Nov 11 in the Snack Bar. Otherwise contact me via the Physics pigeonholes, D Angelidis (Physics 3).

FOR SALE

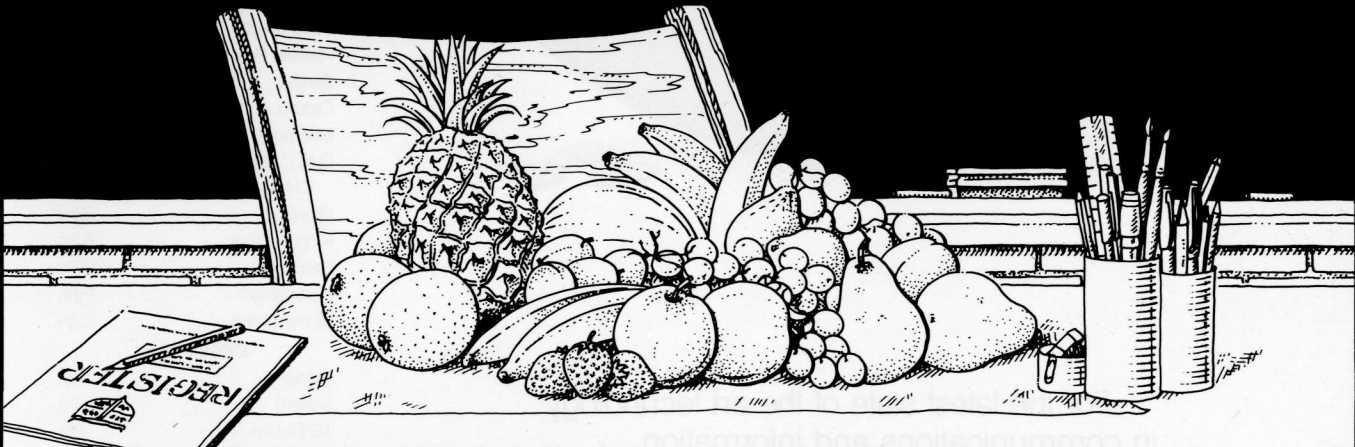
- **Bicycle**—10 speeds, One year used, £90 inc pump, tools, lockers, etc. Contact Dimitris (5886 or 01-692 2765).
- **Two** 'steamer' windsurfing wetsuits. Sizes medium and medium/large. £70 each. 01-244 6472. Also Shotokan heavyweight karate suit. Size medium tall. Mike Tarry, 01-244 6472. Also Bass guitar practice combo, £40. 01-244 6472.
- **Honda** C90, X registration, 23000 miles, MOT to March 1989, £180. Contact Dimitris on 589.48.34. or ext 5241.
- **Anyone** travelling to N London (Baker St area) needing a lift, please phone Simon on 4545. Share costs.



— all SCC clubs are hereby given warning of an
SCC Full Meeting
6pm in the Union Lounge
Wednesday 16th November

Come and see us at
Imperial College London
Fair on November 17th

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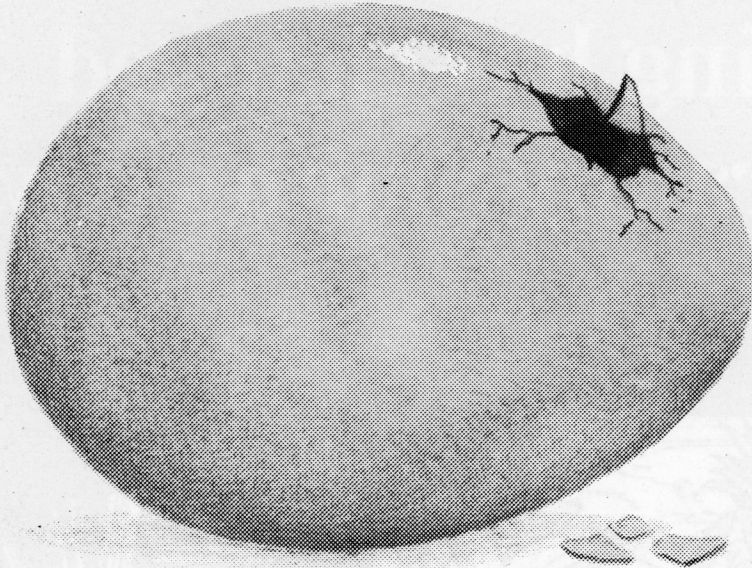
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STC or ICL will be at the following locations on:-

OCTOBER

Manchester/UMIST . . . 17th, 20th
 North Staffs Poly 20th
 Glasgow 24th
 Nottingham 25th
 Manchester Poly 25th
 Edinburgh 26th
 Bradford 26th
 Leeds 27th
 Bath 27th

NOVEMBER

Kent 3rd
 Birmingham 8th
 Aston 8th, 9th
 Bradford 9th
 Hull 10th
 Loughborough 15th, 29th
 Bristol 17th
 Lancaster Poly 17th
 Southampton 18th
 Bath 21st
 Imperial College 21st, 28th
 Edinburgh 21st, 30th
 Hatfield Poly 22nd
 Stirling 22nd
 Oxford 22nd
 Liverpool 23rd
 Q.M.C. (Queen Mary College) 23rd
 Glasgow 23rd
 Kingston Poly 24th
 Strathclyde 29th
 Nottingham 29th
 Birmingham 30th

DECEMBER

Warwick 1st
 Salford 1st
 TC Dublin 6th
 Queens (Belfast) 7th, 8th
 Dublin (all colleges) 7th, 8th

Special Insight Presentations

OCTOBER

Watfield 31st

NOVEMBER

Cranfield 1st
 Brunel 2nd
 Southampton 23rd
 Manchester/UMIST 24th
 Cambridge 30th

