The new Victorians

Anne Cutler discovers the joys of scientific correspondence

My dear Hooker,” wrote Charles Darwin to Joseph Hooker on 6 March 1844, “I will not lose a post in guarding you against what I am afraid is . . . labour in vain.” This urgent warning went by post, because Darwin had no option: he had no telephone.

What the Victorians did have, however, was a pretty efficient postal service, and they made good use of it. Look at the fat volumes of Darwin’s correspondence. Hooker was only one of many fellow scientists with whom Darwin exchanged letters at a rate that seems to us prodigious. Victorian scientists bombarded one another with ideas, results and opinions, and all by mail.

By comparison, we write few such letters. But now, quietly, a new age of scientific correspondence is opening, and what has brought it about is a new kind of mail: electronic mail.

As we know, the telephone put paid to letter writing as the Victorians knew it. It was a point in writing it all down, finding an envelope and a stamp, entrusting the result to the uncertain mercy of who knows how many intermediaries and waiting—even if only a day—for an answer by the same route, when one can lift the telephone and get the answer now. The telephone surely revolutionised scientists’ lives. In particular, it facilitated long-distance collaborations. You don’t have to stop doing joint research with your colleague just because one of you moved from Aberdeen to Exeter. Or to Stanford or Sydney, for that matter.

With the spread of the telephone came a decline in the standards of the postal service; but that hardly seemed to matter when the telephone was so much more convenient.

Convenient though it certainly is, however, the telephone has its negative aspects. For example, it has a tendency to ring just when you’re on the verge of finally cracking a problem, the distraction driving what would surely have been the solution right out of your mind. Or it allows a distant colleague to ring you up to discuss one project when you’re in the middle of quite unrelated experiments in your lab. Under such circumstances, it is possible to envy the Victorians their lack of phones.

Moreover, the telephone is hardly an everyday option for international collaborations. On the one hand, laboratory budgets in Britain don’t stretch to in-depth international exchanges, a series of experiments at international long-distance rates. On the other hand, when is the right time to call?

The Californian’s day is eight hours adrift of mine, while the Australians are almost maximally out of phase with a difference of up to 11 hours. Admittedly, it’s probably possible to call Stanford at tea time and find your colleague in the lab at 8 am local time.

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As a rule, the other day, an agonised search for a reference elicited a reply from the Netherlands in half an hour. My colleague in Scotland, who is terse and dismissive when telephoned unexpectedly, produces witty and helpful responses to electronic requests because he can deal with them at his leisure. All this is so much more congenial than the telephone, and so much quicker than what we electronic-sophisticates now call “snail mail”, that one can properly talk of a new age.

In this new age of communication, scientists swap ideas as Darwin and Hooker did: reasonably quickly but not intrusively. Urgent matters can be dealt with at once; responses arrive before questions have faded from memory; correspondence can take on some of the aspects of conversation. No jangling bells pre-empt our attention; we read and respond to e-mail as if it were not an appendage but an equally valid form of communication. E-mail has made of us new Victorians.

Of course, it also means that we can now ignore deadlines even longer than we used to: not just till the collection of the last appropriate post, but literally right up to the last minute. But that’s another story.

Oh for the ills of the rich

Sue Birchmore reckons it’s worth joining the professionals

A colleague of mine discovered recently that I am, like him, married to a nurse. “Ah,” he remarked gloomily, “Another engineer married to a nurse. Passport to a life of poverty, that is.” “Poverty” is perhaps putting it rather strongly—engineers’ pay isn’t quite as low as nurses’—but there’s no doubt that we who deal in pounds force and pounds mass will never be as rich as those who deal in pounds money, and it sometimes rankles.

This is why I have to admit to a certain malicious satisfaction over some of the recent health scares. For example, in my innocence I had always vaguely imagined that those clinical-looking, plastic-wrapped convenience meals and pre-packed salads were, if anything, rather more hygienic than the scratch-built products of my tatty kitchen—but I had always eschewed them on grounds of cost. Now I discover that my economical (or mean) attitude may actually have saved me from a dose of the dreaded salmonella or listeria.

Then there’s this “sick building syndrome”. Workers develop mysterious maladies—headaches, tiredness, stuffy noses and so on—which attack them as they walk into reception, relenting only at 5 o’clock when they head off home. The syndrome principally affects workers in air-conditioned offices, and there seems to be a suggestion that plush furnishing and carpets make matters worse by shedding irritating fibres into the atmosphere. Very few engineers are in any danger from that. No, the health hazards in our working environments tend to be rather different, as I realised when I walked into my office at a previous employer and was confronted by a mouse. Well, “confronted” is hardly the right word; it was dead on its back with its paws in the air. What really worried me at the time was the question of what it died from—and would I be next?

Another of the great health worries of our time: heart disease. While marketing executives cruise around in Sierras, engineers pedal pushbikes, thus reducing their risk of heart failure (but vastly increasing their chances of coming to a squelchy end under the wheels of a juggernaut). And while the advertising professionals enjoy the culinary delights of cholesterol-laden business lunches (the sacrifices demanded by high office!), we engineers are in any danger from that.

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Scientists generally subsist on sandwiches. No wonder companies offer their highest-paid employees free medical insurance! They obviously need it. Which of us care-engineers generally subsist on sandwiches. Free engineers and scientists, unencumbered by the weight of riches, would swap our drawing boards and lab benches for unhealthful offices, clogged arteries and executive stress?

Well, this engineer for one, given the chance. The nasty truth remains that the upmarket ills may make the news, but the diseases of poverty kill many more people. In 1978, if my book of statistics is to be believed, the death rate among British professional men was 77 per cent of the national average for those aged between 15 and 64, while that among unskilled manual workers was 137 per cent. Their children fare better, too. In 1980, infant mortality for the professionals was 8.9 per thousand live births; for the manual workers, it was 16 per thousand. Being poor can seriously damage your health.  

All the fun of the fair

John and Ben Gribbin assess the first Edinburgh Science Festival

Science may at last be penetrating into the consciousness of the great British public—and not just because of scare stories about London being 8 metres under water in a few years from now. In 1988, a modest, but significant, scientific book prize was established, alongside all the Booker-type awards that fiction writers have to share; this year, the great city of Edinburgh saw the light, and last month introduced a science festival as a counter-part to its famous festival of the arts. If you missed it, too bad: the festival attracted less publicity than it deserved south of the border. But the good news is that it is coming back for at least two more years, and almost certainly will become a permanent feature of the Scottish cultural heritage.

The wonder is that nobody thought to do it before. However, it is appropriate that the idea should surface in Scotland, home of Robert Hooke, and a country where education is still taken seriously. Education is, in fact, only part of the story. The thinking behind the festival is that science is a part of daily life, and ought to be celebrated in the same way that we celebrate good books or theatre.

We wouldn't want you to run away with the impression that it was all fun and games. There were plenty of serious talks, discussions and presentations on topics such as (you've guessed) the greenhouse effect and the ozone hole. That wasn't the only surprise. We made what we thought would be a duty call on a primary science fair, prepared to look condescendingly at the work of our juniors. We found that 40 schools had constructed exhibits. Not only were the exhibits themselves impressive and interesting, for example, a working model of a swing-bridge; but Linlithgow Primary School, several steps ahead of the national media, had produced a special edition of a newspaper, Primary Press, reporting the event. And, sitting in on a science quiz involving secondary schools, we were delighted to be plunged into the midst of a scientific controversy.

What, the teams were asked, is the origin of the word “nylon”? Two of the four competing schools in the final round of the competition (nail-biting stuff, with the scores nearly level) gave the right answer; or, at least, the one which satisfied the quizmaster. It is, they claimed, an anagram formed from the initial letters of New York and the first part of London, commemorating the joint development of nylon by researchers in the US and Britain.

Up popped a senior member of the audience to dispute this. According to his version, the original plan of the inventor was to christen the new fibre “nulon”. When it was discovered that the name had already been registered, it was changed as little as possible, replacing the “u” with a “y”.

After much debate, the “NY-LON” version was agreed to be correct for the purposes of the quiz, with a plea for further information from anyone who has it. We’d be as interested as the organisers to know the full story!

The perspicacity of the organisers was clearly demonstrated at our last “official” port of call, the Science Book Fair, held in the Albert Thompson Hall of Heriot-Watt University. Instead of simply filling the place with boring but worthy scientific tomes, the festival had found room for an exhibition on space and a section devoted to science fiction; “Space and science fiction” was, indeed, a theme for a series of talks and workshops linked to the book fair. And the appropriateness of Edinburgh as a venue for such a festival was confirmed by another surprise. Our highest highlight was a visit to

Science under canvas: children delight in the temporary Discovery Dome at Edinburgh

John Gribbin is one of New Scientist's consultants. Ben is his 12-year-old son.


**ENIGMA**

No 511

Double, double. . .

*by Susan Denham*

I WROTE an odd number on the board and asked the class how many numbers (including the original number itself) could be made without writing exactly the same digits but in different orders. (For example, if the number had been 5051, the answer would have been nine, namely 5051, 5105, 5150, 5501, 5510, 1055, 1505 and 1550.)

Clever Dick got the answer immediately, so to keep him busy I told him to repeat the exercise with exactly double my original number.

"That doubles the number of ways, Miss," he reported.

I told him to double again and repeat the exercise, and again he reported "That doubles the number of ways yet again, Miss." So I told him to double the number yet again and to repeat the exercise with the four-figure answer.

"That doubles the number of ways again, Miss," he replied and, as always, he was quite right.

What number did I write on the board?

A £10 book token will be awarded to the sender of the first correct solution opened on Thursday 18 May. Please send entries to Enigma 511, New Scientist, King's Reach Tower, Stamford Street, London SE1 9LS. The Editor's decision is final. The winner of Enigma 508, 'A colourful deception,' was J. H. Roughley of Windlesham in Surrey.

**Answer to Enigma 508**

A colourful deception

Miss Wheel took the route C, D, F, G, B, A, E. The tourists thought they were taking route E, A, B, G, F, D, C.

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**UNESCO, energy and a plague of dormice**

Another round-up from Westminster

M ANY MPs, and from all parties, never approved of Margaret Thatcher's decision to pull out of UNESCO. Now that the director-general of that organisation is the distinguished former vice-chancellor of the University of Granada, the Spanish minister Dr Federico Mayor, there is no excuse for not getting back in double-quick time.

Mayor recently addressed the Parliamentary and Scientific Committee with great success. His audience included Sir Walter Bodmer, Sir John Kingman, Sir David Phillips, and the director of the Royal Institution, John Thomas.

UNESCO is currently carrying out four inter-governmental scientific programmes on the environment and natural resources. First, there is the International Geological Correlation Programme, which seeks to investigate those aspects of the Earth's crust that have a direct bearing on the distribution of mineral and fuel resources. Secondly, there is an interdisciplinary ecological programme geared towards the rational management of terrestrial and aquatic ecosystems. Thirdly, the International Hydrological Programme seeks to identify the basis for the rational, long-term management of water resources. Finally, there is a range of activities under the Intergovernmental Oceanographic Commission, aimed at defining the mechanisms governing the oceans and their resources, their effect on the climate, assessment of marine pollution and so on.

Although Britain has continued to help in the oceanic programme, we should get back into the full flow of UNESCO activities. I believe that the MPs present at Mayor's speech will be urging the Cabinet to do so.

* * *

DAVID SHAW, the Conservative MP for Dover, has asked an interesting question of Michael Spier, the energy minister: what would be the estimated size of a wind park
FEEDBACK

S P A R E a thought for Christopher Harding, chairman of British Nuclear Fuels. Harding, who has a certain amount of pleasure in recounting the fact that, were his company to replace Calder Hall, its ageing nuclear power station at Sellafield, with a coal-fired plant, it would run the risk of breaching the site's health and safety regulations in respect of airborne radioactivity.

Puzzled? Read on. Coal is hewn from the ground. It contains impurities. These include naturally occurring radioactive compounds. Combustion releases ash into the air which contains radioactivity. This is deposited on the ground and can get into the human food-chain via plants.

Times are a-changing. The National Radiological Protection Board recently published its latest review of the radiation exposure faced by Brits. It noted that earlier assessments of the radiation dose from "fly-ash" discharges had been "appreciably overestimated". The average dose from this source is now put at a tiny 0-1 microsievretes. To put that in perspective, the average radiation dose from all radioactive sources is 2-5 millisievretes.

As a result of the NRPP's reassessment, building a coal station to replace Calder Hall is no longer officially a health hazard—all of which seems rather hard on Harding.

I N C I D E N T A L L Y, given that Harding has done much to encourage greater openness at British Nuclear Fuels, we were a little alarmed to see a recent full-page advertisement placed by BNFL to promote its Sellafield Exhibition Centre.

The advertisement states: "There's plenty to see and do for all the family and it's all completely undercover. What can this mean?"

A R E W E about to suffer a plague of edible dormice? I doubt it. However, you ought to know that, in the Commons last month, Ron Davies, the Labour MP for Caerphilly, asked Richard Ryder, the agriculture minister, how often during the past three years he has issued licences to trap them.

Ryder told Davies that licences to trap edible dormice were issued on four occasions between 1986 and 1988, under section 16(3) of the 1981 Wildlife and Countryside Act. The licences were issued to occupiers of commercial woodland where this non-indigenous animal—a foreigner, perish the thought—was causing "serious damage". It was a condition of each licence that the number of animals taken should be reported to the ministry.

Solemnly, Ryder gave details. In 1986, one licence was issued, and four of the brutes were taken. Nineteen-eighty-seven was annus mirabilis, when the first licence yielded 43 dormice—a real plague—and the second 14. In 1988, the danger seemed to have been averted, as one licence was issued and only six of the creatures were taken.

Forgive me asking, but do edible dormice really do "serious damage" to the realm?

M E A N W H I L E, at another part of the LEP ring, this time 150 metres below ground, researchers building an experiment known as ALESPh were rath enough to stop their work. AlesPh was scheduled to operate during the last Friday and Saturday of May. By mid-afternoon, people were queuing for 30 minutes or more to go down the "pit" to see some of the sophisticated equipment that physicists delight in.

So were they suitably awwestruck by the hardware, costing several millions of Swiss francs, and surrounding some of the most sensitive detectors around? Apparently not. It seems that, for most people, the simple experiments in physics are still the best. The main attraction proved to be the impressive echo, with everyone clapping or shouting at the bottom of the shaft and waiting for the sound to bounce back from the cover at the top.