Miscellaneous commentary

Credit where credit is due? (*February 2002*)

A recent book (Crewdson, J. 2002. *Science Fictions: A Scientific Mystery, a Massive Cover-up and the Dark Legacy of Robert Gallo*. Little, Brown; Boston) describes the role of pulling (and enhancing) rank in the history of HIV's discovery. In fact there were two histories: the real one in which two post-docs in Gallo's lab, Bernie Poiesz and Frank Ruscetti, succeeded in isolating human T-cell leukaemia virus - the seminal step on the road to HIV; and the "engineered" history, in which credit for the discovery seemed to pass entirely to Robert Gallo. However that particular revision of reality emerged, building rank through annexation of credit is not uncommon in academic circles. Peter Lawrence of the Medical Research Council Laboratory of Molecular Biology, Cambridge University has expanded on Crewdson's careful investigation to produce a useful warning, particularly for beginning and junior researchers in all disciplines (Lawrence, P.A. 2002. Rank injustice. *Nature*, v. **415**, p. 835-836; doi: 10.1038/415835a).

Lawrence's thesis is that the scientific community allows experienced researchers to take advantage of their inexperienced colleagues and students, so that credit generally flows up the ladder of rank. Part of the problem is that graduate students, and even post-docs, nowadays rarely generate projects themselves and increasingly work under the control rather than the guidance of a supervisor, team leader or major grant holder. It is not always a case of high-ranking scientists mendaciously grasping credit for discoveries made by underlings, for various practices make misplaced credit inevitable. Lawrence lists a whole number of these. For me, one is particularly interesting. It centres on how to stick in one's peers' memory. If the same name appears again and again in publications - it makes little difference where it figures in the list of authors - it is that name that is remembered as an "authority". During the 1980s, Gallo managed to figure as an author in up to 90 papers a year, despite mainly travelling back and forth to conferences.

Most people's view is that whoever does most of the work, discusses its ramifications and draws conclusions should be the first author in a list. But are they the "senior" author? In terms of rank that is often not the case, and one need only scan the publications of a large research team to see the same name appearing again and again, often in last position; that of the "owner" of the lab or the funds. What they have done to appear on the list is rarely clear, but by sheer number of appearances it is their name that is remembered, and more importantly these days, figures in measures of productivity. As they say, it is a "win-win" scenario. Any paper, in whose list of authors the "name" appears, that meets peer acclaim and serves to boost that "name's" citation rating too. If such a paper turns out to be sloppy or even fraudulent, then someone safe among the "also-rans" can shrug off responsibility.

The same issue's Editorial (Thoughts on (dis)credits. *Nature*, v. **415**, p. 819; DOI: 10.1038/415819a) quotes from a letter submitted by Max Perutz (Peter Lawrence's former "boss"), shortly before his death on 6 February 2002. Perutz spent the first 25 years of his career in the Cavendish Laboratory at Cambridge, headed by Ernest Rutherford and then W.L. Bragg, neither of whom put their names on papers to which they had not contributed, despite the fact that a whole number represented epochal breakthroughs inspired by them. And nor did Perutz. That generosity damaged none of their careers or reputations, but

made them properly respected, admired and fondly remembered. Will careers based on annexation of credit (an excellent euphemism!) find the same fate?

The etymology of the Gaia hypothesis (*April 2002*)

Amid the desperate search for classical names to lend weight to the study of asteroids palaeotectonic features, and even theories of the Earth system, there has been one particularly unfortunate choice.

Gaia (Earth) emerged from Chaos, the great void of emptiness within the universe. She gave birth to Uranus (Sky), apparently by some form of parthenogenesis. Their incestuous coupling produced the 3 Cyclopes, 3 Hecatoncheires and the 12 Titans. Uranus was a bad father and husband. He particularly hated the Hecatoncheires (they had 100 arms and 50 heads each), and stuck them deep within Gaia's womb causing her to plot against him. To rid herself of Uranus she begged her children to kill him. All refused apart from the youngest child, Chronos (Time and the father of Zeus). Gaia made Chronos a flint sickle, which he used to castrate his father and threw his testicles into the sea. From the spilt blood came the Giants, the Ash Tree Nymphs and the Erinnyes. When Uranus' severed genitalia landed in the sea, foam bubbled around them. From this foam sprang Aphrodite (meaning foam-born), Goddess of Love.

This doesn't quite tally with the eponymous hypothesis and the ethos surrounding it, but seems to have a more realistic ring for what we know about Earth history.

Source: http://www.csc.liv.ac.uk/~u9dam/myth/immortals/

Review of 2002 (*December 2002*)

As in previous years, the landmark developments in 2002 chosen by editorial staff of major journals sideline the Earth sciences. Both *Nature* and *Science* consider the discovery of *Sahelanthropus tchadensis* the only geoscientific advance worthy of a headline (See *Bonanza time for Bonzo* in **Human evolution and migrations (2002)**. Scientific misconduct tops *Nature's* list, the exposure of monumental fudging by physicists Jan Hendrick Schön and Victor Ninov being something which should concern every scientist. Molecular biology was, unsurprisingly, the front runner for both august periodicals, with issues related to terrorism, climate change and the soon-forgotten World Summit on Sustainable Development in Johannesburg appearing in both. Jo'burg received typically trenchant comment from water specialist Fred Pearce in *New Scientist*, particularly about the weasel phrase "sustainable development" - read "make money", according to Pearce. *New Scientist's* main look forward to 2003 is Oliver Morton's perspective on ESA's Mars Express, which carries the British Beagle 2 miniature life-sniffing lab, and the two NASA Mars rovers scheduled for launch this year. This is big-budget science, yet carries big risks, judging from the frequency with which giga-dollar missions recently ended up in flames or the sea. Morton pours scorn on the hype that Mars missions will solve "great mysteries" on which their funding depends - and that of the agencies who launch them.

Anyone who has the brass neck to comment month by month on geoscientific news cannot resist picking developments that most marked the year, so here is my own personal choice.

The most exciting advances were in palaeoanthropology: March (*Taking stock of hominid evolution*), April (Homo erectus *unification?*), April (*Phyllogeography and "Out of Africa"*), August (*Bonanza time for Bonzo*), November (*A considered view*) , December (*Central Asian Y chromosomes and the source of migrating humans*) in **Human evolution and migrations (2002).**

Most hammered hypothesis: "Snowball Earth" came in for some stick in February (*Meltdown for Snowball Earth?*) and December (*Snowball Earth hypothesis challenged, again*) in **Palaeoclimatology (2002**). Running that a close second was the BLAG hypothesis that subduction metamorphism is a source for CO_2 recycling: December (*Deep carbon cycling, and gold mineralization*) in **Sedimentology and stratigraphy (2002)**.

Biggest technological advances: April (*Satellite-based gravitational surveys*) in **Remote Sensing (2002)**, October (*Microgravity and diamonds*) in **Physical resources (2002**); August (*Tungsten and Archaean heavy bombardment*)**,** September (*Very early differentiation of planetary bodies*) in **Planetary science (2002)**. The most important technical consolidation was in seismic tomography: May (*Mantle motions from seismic tomography*), August (*Seismic tomography and the African superplume*), (*Beowulf and mapping the mantle*).

Most connective research: November (*The lost world of the Galápagos hotspot track*) in **Tectonics (2002)**, linking plume activity, Pacific and Caribbean tectonics, closure of the Central American climatic "door", and intercontinental migration of flora and fauna.

The biggest slanging match: April (*Doubt cast on earliest bacterial fossils*) in **Palaeobiology (2002)**.

The greatest scandal emerged in autumn 2002: October (*British Geological Survey sued over arsenic*), December (*More confusion over Bangladesh arsenic crisis*) in **Geohazards (2002).**

March saw hopefully the last word on the influence of extraterrestrial impact on the K-T mass extinction (*Extinctions by impacts: smoking artillery*) in **Palaeobiology (2002)** when the fullerenes in the K-T boundary layer were matched with those in carbonaceous chondrites.

Lesser categories: Biggest scam: August (*Exploration licence lepton by physicists*) in **Physical resources (2002)**. Most amusing discovery: November (*Dinosaurs did urinate* in **Palaeobiology (2002)**. Latest frightener: May (*Magnetic reversal on the way?*) in **Planetary science (2002)**. Most promising palaeontological theory: September (*The Malnourished Earth hypothesis – evolutionary stasis in the mid-Proterozoic*) in **Palaeobiology (2002).**