
Humour

The Interdisciplinary Denominator in Science

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Humour in science assumes many forms and shapes. It appears as hoaxes and spoofs; individuals and groups of scientists edit special satirical and humorous journals; anthologies and books on humour in science are published. All these find their representation in this review, which contains also many examples of gamesmanship in science, obscurantism and puns that contribute to the lighter side of science.



"Dr Chambers is unscrambling messages from outer space, Dr Waddell is working on computer language, and Dr Saville has been conversing with dolphins, but perhaps you could all find some common form of human communication."

From: S. Harris, *What's so Funny About Science?*, W. Kaufman, Los Altos, California (1980).

The attitude of the layman to science is ambiguous. Some fear it, some are awed by it. Some consider science a mystery, others think its practitioners are monsters. One of the bridges that brings the layman and the scientist to a common understanding is humour. Humour has the task of restoring perspective on any human activity, including science. In this sense humour may be said to be truly interdisciplinary.

When 200 years ago Schiller said: '... man is not completely a man except when he plays...' it was then a daring idea, and for some it is even so today. In particular, for many scientists the idea that their scientific endeavour can be equated with play, does not easily fit their conscious evaluation of their own activity. Actually, the dictionary definition of play as 'an output of physical and mental activity without a

definitively and immediately useful purpose, its justification for those who engage in it being the actual pleasure they derive from it' - fits the scientific pursuit quite well.

DEFINING HUMOUR

A scholar has much in common with a child in his ability to play. The element of play involves humour and laughter. How can one define humour? I remember from my school days the dissection of a frog, with its open belly and the various anatomical details of its insides. I also knew well frogs in nature, their agility, their fantastic jumps, their evening chorus. How utterly different were these two aspects. I am afraid therefore that the analysis and the dissection of humour at large, and humour in science in particular, will turn the agile, living being into a dead corpse.

Dismembered humour will hardly retain any of the esprit, the wit and the delight that humour has in action. No more will defining laughter anatomically as the contraction of 15 facial muscles accompanied by interrupted exhalation of air from the lungs, accord with the listeners' sensation when exposed to a good joke. The finding that there is a laughter centre in mid-brain¹ does not contribute to the understanding of humour. We would be naïve if we assumed that a study of humour must somehow be humorous. It is not. Nevertheless since humour apparently is the great leveller, the common denominator between scientific disciplines, we must pause to consider what it is and what the world's top thinkers made of it.

Aristotle defined humour as an instant feeling of triumph which comes with the sudden perception of superiority in ourselves in comparison with inferiority in others. This concept was later taken up by Hobbes. Kant viewed laughter as sudden release of tension,

of expectation or of anxiety. Schopenhauer considered that it was 'sudden perception of a discord between reality and our idea of representation of reality'; Bergson said that humour consisted in the fact that in place of an intelligent and well-adapted reaction, the individual makes an unintelligent and poorly adapted reaction to a situation.²

The first literary theory of humour was formulated around 1660 by Ben Jonson, a pioneer of what was to become modern humour. He associated humour with the body humours. Humour as a fluid served to dilute the hard facts of life, making it possible to swallow and digest them, and so rendering them suitable for human consumption. Humour is, of course, palatable even without moisture; in such cases we are dealing with dry humour. The basis of acid humour is ulcers.³ The temperament—or the mixture of humours—defines a person's psychological make-up; any imbalance in the mixture produces distortion in the personality, that is termed eccentricity.

ECCENTRICITY

Eccentricity is somehow related to comedy, and so Jonson defined the humorous type⁴ as one who, because of predominance of one of the humours in his temperament, has a single distortion in which he differs from all mental and affective properties of his fellows. To a normal man an eccentric is by definition a very odd person. The eccentric himself, however, is perfectly sure of his sanity, and has even the feeling of superiority. The behaviour of an eccentric evokes laughter. Indeed, in literature all manifestations of eccentricity evoke laughter and are classed as humour. Humour in literature is generally equated with comic. Jonson's freakish characters that amused the audience, that were comic, and therefore apparently inferior to the onlookers, gradually grew into manipulators of the laughter of their audience. Morris⁵ made a distinction between 'a man of humour' exhibiting ridiculous character traits, and a 'humorist' who knowingly and consciously used humour to amuse people, a person with an eye for potential fun in life. In 1856 Reed spoke of 'the happy compound of pathos and playfulness

which we style by that untranslatable term humour'.⁴

Everybody instinctively seems to understand what humour is, but very few can define it. To many, humour is simply what causes laughter. One can distinguish between wit, which is humour achieved by verbal means, and comedy which is based on accidental incongruities in a situation. 'At its best, that particular twist of thought and expression, remains a way of thinking and feeling, at its worst the poor antics of a tired jester'⁴ and 'The detachment caused by humour can be a source of insight and understanding as well as a good laugh'.⁴

Following Priestley's treatise on English humour⁶ and of Eastman's on the sense of humour⁷ in the 1920s, there appeared after the war a number of books on this subject,⁷⁻¹⁶ among them Read's book that specifically deals with humour in chemistry.⁸

GOOD SATIRE IS RARE

In science good satire is an exceedingly rare commodity. The creation of the ridiculous is almost impossible because of the competition it receives from reality. In science, as perhaps in other fields of human activity, one should distinguish on the one hand between the creation of humour—an activity which, whether intentional or unintentional, involves the expression of wit and fun relating to the professional life of scientists—and on the other, the appreciation of humour, the ability to understand and enjoy a spoof, a hoax, an absurdity and to laugh at it. What is this second ability to appreciate the absurdities of a situation or of a chain of reasoning? It is the agility of mind that allows one to think on two different planes. 'Humour, particularly that directed against ourselves, keeps us humble in the face of our own too well-perceived incompetence'.⁷¹ Humour in a scientist, a sort of controlled lunacy, serves as a safety valve that ensures that he remains intellectually open. To see something as being funny, one sometimes has to have a certain knowledge about whatever is the subject of the joke. When the wit is specialized the reader needs more information in order to be able to appreciate it.



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CARTOONS

A cartoon showing two guinea pigs talking to each other and one saying: 'I decided to leave my body to science' is perceived as funny even by a layman. A layman will probably also find hilarious a title like 'Motion of a bore on a sloping beach',¹⁷ though a rheologist will see nothing funny in it. Other examples of this type are: 'Heat and mass transfer in a turbulent bed contactor'¹⁸ which may not sound as funny to chemical engineers as it does to the rest of us. A title, however, 'Demonstrated ability of penile erection in castrate man with markedly low titers of urinary androgens'¹⁹ will be better appreciated in circles of professional endocrinologists. Only mathematicians will see a joke in the formula:²⁰

$$\ln \left[\lim_{z \rightarrow \infty} \left(1 + \frac{1}{z} \right)^z \right] + (\sin^2 x + \cos^2 x) \\ = \sum_{n=0}^{\infty} \frac{\cosh y \sqrt{1 - \tanh^2 y}}{2^n}$$

which actually means $1 + 1 = 2$.

In order to enjoy the riddle: 'How do you tell the sex of a chromosome?' Answer: 'You take down its genes and you look', one has to know the elements of genetics. Knowledge of physics is required to understand the conversation between two photons in space—One asks: 'Can't you move straight? You must be drunk again.' The other protests: 'What do you expect? I am getting soaked in a gravitational field.' On the other hand the riddle: 'What is psycho-ceramics?' Answer: 'A science that deals with crack-pots' is humorous to any educated person. So is the statement: 'A metallurgist is an expert who can look at a platinum blonde and tell whether she is a virgin metal or a common ore'.

Humorous science cartoons appear from time to time in many scientific publications. A collection of cartoons from the *American Scientist* appeared in a book in 1980,²¹ and an example from this book has been used at the beginning of the present review. A collection of cartoons by Holland, Box and Beard from the *New Scientist*, entitled 'Spin-off'²² (Fig. 1) contains in the preface Nigel Calder's statement: 'Much that is funny (like much of current science) grows out of the barely possible'.

SPOOFS AND HOAXES

The urge of scientists to laugh at themselves led first to an infiltration of hoax and spoof articles into the regular conservative periodicals. One such article which appeared in the first half of this century, is the paper by B. Old 'On the mathematics of committees, boards and panels'²³ in which the author showed serious discrepancies between the theoretically calculated work output of committees and the

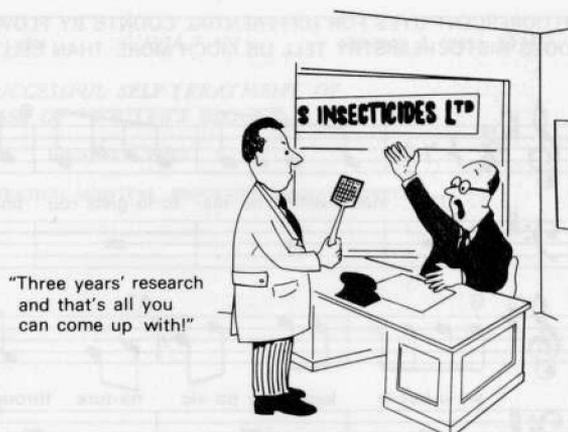


Figure 1. From: *Spin-Off – A selection of cartoons from New Scientist*, C. G. Harrap and Co., London (1965) (cartoon by Holland).

actual output of their wise decisions, good reports and constructive accomplishments. Having analysed the correlations between the efficiency of a committee and the number, the intelligence of the participants, the type of chairman and so on, Old concludes that the most efficient committee should be made up of only 0.7 of a person.

Another, by now classical spoof, is the 'Contribution to the mathematical theory of big game hunting'.²⁴ Petard enumerates in this treatise the mathematical and physical methods for the capture of a lion in the Sahara desert. An example of such a method is that of projective geometry: if one considers the Sahara desert as a plane, one may project it into a line, and project this line into the interior of a cage which was prepared beforehand. The lion, however randomly placed in the desert, will thus be projected into the cage. The Schroedinger method of theoretical physics is based on the assumption that at any given time there is a positive probability that there is already a lion in the cage. One has simply to sit and wait until that probability is realized. The thermodynamic method calls for a construction of a membrane, semi-permeable to everything except lions. The lion is captured when the membrane is swept across the desert. The relativity theory calls for taking a cage with bars such that a lion cannot get through them. The cage is moved at high velocity relative to the lion so that the latter is contracted according to Lorentz's contraction law. The lion can now pass into the cage. When he is already there, the movement of the cage is stopped, Lorentz's contraction is abolished and the lion is caught.

Albrecht in 1952²⁵ published a spoof article in *Scientific Monthly* that depicted photographically the fantastically rapid growth of a yucca plant, Schuss-Yucca; it was shown to reach the height of some 5 m in a few hours. As convincing evidence he presented the photographs of the growing plant next to an attractive cowgirl, to show the size, and a clock that indicated the time elapsed.

Other tongue-in-cheek papers^{26,27} describe the body and dental diseases of *Brunus edwardii* (teddy



(Music © Howard M. Shapiro — used by permission)

Figure 2. Beginning of a paper sung at a convention, H. J. Shapiro, *J. Histochem. Cytochem.* **25**, 976 (1977).

bear) inhabiting 63.8% of North-European households. These animals can accept cutaneous and limb grafts from other bears without showing any signs of tissue rejection. In most animals the predominant cause of pathological change was an external mechanical trauma, clumping of the stuffing, alopecia, luxation of the eyeball, torticollis, and so forth.

H.M. Shapiro from West Newton, MA, chose an outstanding interdisciplinary format for his serious studies on fluorescent dyes for differential counts by flow cytometry in the *Journal of Histochemistry and Cytochemistry*,²⁸ the first page of which is reproduced in Fig. 2. He actually sang the paper at the 28th Annual Meeting of the Histochemical Society while accompanying himself on the guitar. Thus Dr Shapiro has come closest to the mediaeval troubadours who entertained the courts of the European nobility with their ballads and songs, as many scientists now do at symposia, workshops and conferences.

No less entertaining is the paper of Denis Upper, reproduced *in toto* in Fig. 3.²⁹

INTENTIONAL AND UNINTENTIONAL HUMOUR

Many text books of physics state or imply that the index of refraction is correlated to the density of the medium through which the light passes. Scott Barr took up this matter in his paper 'concerning index

of refraction and density',³⁰ and came to a conclusion which is depicted in Fig. 4.

A rather bizarre report appeared in the *British Journal of Venereal Disease*.³¹ A young woman felt some swelling in her vagina. Suspecting a tumour she consulted the author of the paper. He discovered that the putative tumour was actually an onion inserted there as a friendly parting gesture by her drunken companion when she was asleep. Upon hearing the truth about the 'tumour' the woman became angry because of 'the presence of this unexpected vegetable in such an unusual garden'. Tumour? Humour?

An unwitting case of humour may be found in a paper on 'initial coital experiences'.³² The author conducted confidential interviews with 122 Air Force recruits about their initial heterosexual experience. His Table 2 shows that 1% of 63 recruits (i.e. 0.63 recruit) had their first experience with their half-sisters. It baffles my imagination how two thirds of a youth can have coital experience with only half a sister?

In 'An unusually obstetrical case history'³³ Dr Bryant presents the case in words taken entirely from Shakespeare's plays. Only nine words in Bryant's paper do not appear anywhere in Shakespeare.

DICKENS' COMMENTS ON THE B.A.

A remarkably early example of modern science humour is already found in 1836 in Dickens' *Mudfog*

THE UNSUCCESSFUL SELF-TREATMENT OF
A CASE OF "WRITER'S BLOCK"¹

DENNIS UPPER

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REFERENCES

¹Portions of this paper were not presented at the 81st Annual American Psychological Association Convention, Montreal, Canada, August 30, 1973. Reprints may be obtained from Dennis Upper, Behavior Therapy Unit, Veterans Administration Hospital, Brockton, Massachusetts 02401.

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(Published without revision.)

COMMENTS BY REVIEWER A

I have studied this manuscript very carefully with lemon juice and X-rays and have not detected a single flaw in either design or writing style. I suggest it be published without revision. Clearly it is the most concise manuscript I have ever seen—yet it contains

sufficient detail to allow other investigators to replicate Dr. Upper's failure. In comparison with the other manuscripts I get from you containing all that complicated detail, this one was a pleasure to examine. Surely we can find a place for this paper in the Journal—perhaps on the edge of a blank page.

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Figure 3. 'Writer's Block' by D. Upper, *J. Appl. Behav. Anal.* 7, 497 (1974).

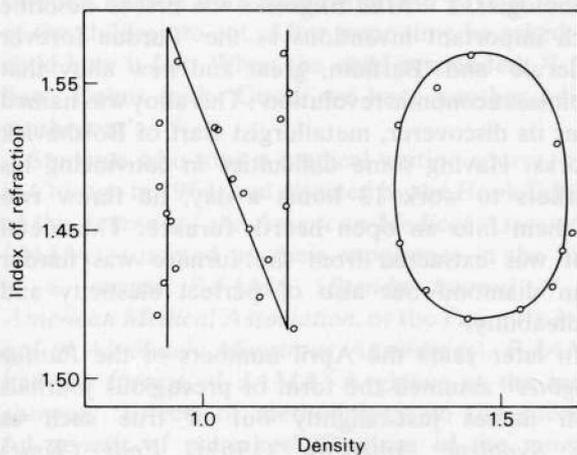


Figure 4. Does index of refraction vary directly with density? E. Scott Barr, *Am. J. Phys.* 23, 623 (1955).

papers.³⁴ The Mudfog Association for the Advancement of Everything had sections on Zoology, Botany, Statistics, Anatomy and Medicine, just like its modern counterparts. Dickens has this to say there:

'I cannot'—says the talented correspondent 'close my account of these gigantic researches and sublime and noble triumphs without repeating a *bon mot* of Professor Woodensconce's . . . I was standing by when that learned gentleman accompanied by the whole body of wonderful men, entered the hall yesterday, where a sumptuous dinner was prepared, and where the richest wines sparkled on the board and fat bucks, propitiatory sacrifices to learning, sent forth their savoury odors. "Ah" said Professor Woodensconce, rubbing his hands, "this is what we meet for; this is what inspires us,

this is what keeps us together and beckons us onward; this is the *spread* of science, and a glorious spread it is!''.

Some pathologists had fun by publishing a semi-detective story 'The case of the floating matzo balls'.³⁵ The author's grandmother, Bobeh Leah, was invited by her grandson to a dinner in honour of a rich uncle, Mr McTavish. The first course was a soup with matzo balls. After eating the soup Mr McTavish suddenly died. His death was first diagnosed as due to a heart attack. Bobeh Leah, however, observed that the matzo balls floated in the soup, though according to her experience they shouldn't have, and so she raised the suspicion that the soup was periodicals or house-organs that are completely devoted to satire and humour in science.

HUMOUR AND SATIRE IN SCIENTIFIC JOURNALS

In addition to occasional books and papers published in serious journals there have been appearing periodicals or house-organs that are completely devoted to satire and humour in science.

In the 1930s there was a burst of humorous activity among scientists in Cambridge. *Brighter Biochemistry* appeared in 1930, *The Tea Phytologist* (edited from the School of Botany) began in 1939, and in the same year the publication of *Eureka* (by the Archimedean of the Mathematical Society) started. *Brighter Biochemistry* defended the moustache as an excellent strainer of liquid food. *The Tea Phytologist* provided its readers with a variety of topics ranging from 'Elementary botany: instruction in the use of a compound microscope' (woe to the microscope that has been so used!), through 'Unconsciousness of *Chlorella vulgaris*', to 'On some conclusions reached as the result of some few observations on certain aspects of problems connected with the apparent increase in the population of the common domestic house fly'.

An interesting Pavlovian experiment on an insectivorous plant was described, p. 17 of Vol. X+1 (1939), '50 plants of *Drosera rotundifolia* are fed at intervals of one hour with small beefsteaks, the feeding being accompanied by a dinner bell. After five days of this treatment the dinner bell was rung without application of beefsteak. 15 out of 50 plants elevated their leaves and produced copious peptic secretion'.

Eureka appeared only once a year and it contained mostly serious mathematical articles and puzzles, but each issue had at least one humorous discourse. 'Old fairy theorem'³⁶ tells of Wilhelm Tell playing a semi-infinite alpenhorn, that can be obtained by rotating a curve $y = 1/x$ about the axis. Because of a love affair, Tell needed to paint the insides of his alpenhorn and he calculated that he would

need $\int_0^{\infty} \pi(1/x^2) dx = \pi$ gallons of paint, thus inventing calculus. There are many other gems in *Eureka*.³⁷⁻³⁹

An irregular periodical *Dopeia* has been published since 1940 by the Society of American Herpetologists. One of its issues contained 'A key to dangerous marine vertebrates of Miami Beach' using the common classification procedure employed by botanists: an investigator who finds an unclassified specimen on the beach is led through the key from jelly fish, snails, morays, scorpions to 6a: 'When backside of specimen is gently stroked your nose lights up—*electric ray*' or 6b: 'When backside of specimen is gently stroked, you light up all over, and specimen invites you to her room for gin and tonic'.

Of passing interest was the delightfully humorous *The Malpighii*, a newsletter from the Department of Zoology at McGill University in Canada. Starting in 1959, it was published once a fortnight, but ceased its publication after a few years.

'If your IQ is small and your eyes are oblique and your fingers are webbed and your bone structure weak

If you're liberal and modern and won't be annoyed by Clark Fraser's suggestion that you're aneuploid.'⁴⁰

SPOOF JOURNALS

Mad Engineer—a humorous offshoot of the serious *Purdue Engineer* has been published once a year on 1st of April. The editors define the engineers as people educated in the art of developing new and different ways of making the same mistakes. In 'Stress and strain in maidenform strapless brassiere'⁴¹ Charles Siem applies engineering and technological methods to define and measure what and how is holding up what it is supposed to hold up. This idea, *nota bene*, was later developed in the *Journal of Irreproducible Results (JIR)* and reprinted in several anthologies.^{42,43} *Mad Engineer* was first to describe such important inventions as the 'Purdue forever sliderule' and 'Barfium, great and new alloy that promises economic revolution'. This alloy was named after its discoverer, metallurgist Barf of Bolshevick Works. Having some difficulties in convincing his workers to work 13 hours a day, he threw two of them into an open hearth furnace. The metal that was extracted from the furnace was harder than diamond but also of perfect elasticity and malleability.

In later years the April numbers of the *Purdue Engineer* assumed the form of prestigious journals with names just slightly out of true such as the *Synthetic American* (1962), *Emit (Time)* (1979), *Car and Drivel* (1980) and perfectly imitated the form, the style and the print of these periodicals.

The Journal of Insignificant Research has been published once a year (Leigh van Valen, University of Chicago) since 1959. It has contained some spoofs, but has mainly specialized in brief quotations from the literature satirizing the arcane jargon and taking a long cool look at current expressions. Its sharp eyes picked out: 'How free radicals work for industry',⁴⁴ 'A new laboratory for research on creep',⁴⁵ 'Eruption of bearded tits during 1959-1965'.⁴⁶ Van Valen bridges the gap between science and humanities with verses such as:

I'm a poor little gene—that has lost my DNA
sad to say
How do I not exist—or am I protein
or DNA?

In 1959 we witness the appearance of *A Graduate Student Manual for Millimicrosubmolecular Biology* edited by D. J. Niederpruem of Indiana University and, from 1963, together with Thomas Ragland of Davis, California. Here are samples from their pages: they define a graduate student as a person carrying his umbilical cord in his hand, looking for someone to plug in to. Electron microscopy for them is 'only a moment frozen in time'. In poetry corner Al Laskin contributed:

The embryo said: 'What a bore
I have made my anterior pore
Now I'm really perplexed
as to what to do next
since I never have have done it before'.

In 1977 Niederpruem and Tansey produced *Mycological Teaching Humor* which contained a lot of sophomoric puns like: 'Lichens growing on tombstones are of grave concern', or definitions like: 'Recombination means second try to open a gym locker'. One finds here also a delightful story concerning W. C. Coker of the University of North Carolina. He is alleged to have been walking with his numerous nieces and nephews one fall afternoon, when he stopped, picked up a mushroom and gave it to one of the children to eat. After some time he asked the child how it felt. When the child responded: 'I feel fine', Coker said: 'Good, we have another edible mushroom'.

Students who took a medical writing course, held in Chicago in 1964, and directed by the Book Editors of the *Journal of the American Medical Association (JAMA)*, summed up their experience in the form of a journal *P-JAMA (Pseudo Journal of the American Medical Association, or the Punner's Journal of Absolutely Monstrous Absurdities)*. *P-JAMA* had the format of *JAMA*. A glance at the index showed: 'Effects of methodology on the successful genesis of pancakes' 'Rupture of the month', 'Review on chronic tardiness', 'Sensitization to words', 'Histochemical analysis of pathological punning'.

SPOOF BOOKLETS

Spoof articles were also published in separate booklets, such as Lindestrøm-Lang's story about the thermodynamics of male houseflies,⁴⁷ which was sent out by Academic Press as a Christmas gift. In 'Life on Earth',⁴⁸ the famous cell biologist, Paul Weiss speculated that Martians would interpret motor cars as the main living creatures on Earth, and that humans would be considered by them as intestinal parasites of the cars.

In 1967 Professor Cipolla published in Bologna a booklet on basic laws of human stupidity.⁴⁹ The first law states that: 'everyone always underestimates the number of stupid individuals in circulation', and the second: 'The probability that a certain person be stupid is independent of any other characteristic of that person'. A definition of a stupid person is given in the third law: 'a stupid person is a person who causes damage to another person while himself deriving no gain and even possibly incurring losses'.

PERMANENT JOURNALS

In the late 1950s there also appeared more permanent periodicals such as *The Worm Runner's Digest* (1959), *The Journal of Irreproducible Results* (1956) and later the *Subterranean Sociology Newsletter* (1969).

A special tribute should be paid to the *Worm Runner's Digest* which was published for 20 years. Its originator and editor, James V. McConnell, Professor of Psychology at the University of Michigan, Ann Arbor, used the motto '*Ignotum per Ignotius*' and published in his journal a mixture of serious studies on planarians and all sorts of spoof articles. This was at the time a daring idea and scorned by many, but McConnell believed there was a place for a journal 'which does not mind poking occasional fun at the herd of sacred cows'. In 1964 it changed its form, the humorous journal being read from one cover, and the serious *Journal of Biological Psychology* from the opposite cover. The journal was richly illustrated with brilliantly funny drawings (Fig. 5).

In 1973 *Worm Runner's Digest* co-opted a symbiotic *Journal of Mathematical Statisticulation* (edited by Kalinowski Jr II) that 'promoted the art of lying with statistics while maintaining the appearance of objectivity and rationality'. 'The sex life of a neuron', 'Learned laziness in dead pigeons', 'Sharks as manicurists', 'Gin and tonic immobility', are only a few of the hundreds of excellent witty contributions published in the *Worm Runner's Digest*.

The most persistent satirical and humorous periodical is the *Journal of Irreproducible Results (JIR)*, the official organ of the fictitious Society for Basic Irreproducible Results, presently published by Dr G.

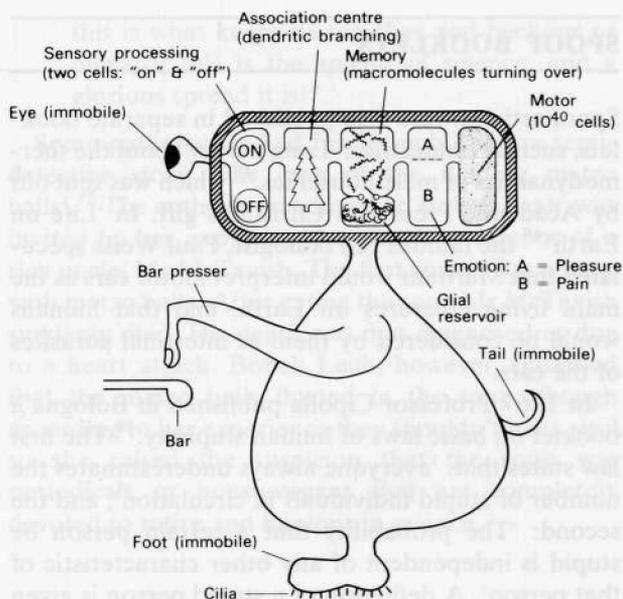


Figure 5. The perfect laboratory animal. W. Corning, *Worm Runner's Digest* cover X(2) (1968).

H. Scherr, PO Box 234, Chicago Heights, Illinois 60411, USA. It started in 1956 with a paper by its originator and editor (the author of this review) 'Kinetics of inactivation of laboratory glassware'. Today the journal, now in its 27th volume, reaches some 15 000 subscribers in 52 countries.

In distinction from other humorous journals described here, *JIR* is truly interdisciplinary, like *Science* or *Nature*, and has a board of some 40 editors, each a specialist in his discipline.

NO-ACETOL STORY

In 1965 X.Perry Mental reported in *JIR* the discovery of a new contraceptive compound named NO-Acetol (Fig. 6).⁵⁰ It is a ring compound which has NO in every position. Its alternative name was Frigidium Niteride. Haber suggested⁵¹ that its contraceptive properties were better than those of aspirin - known to be very effective when held firmly between the knees of the female during the dangerous period. Later Price⁵² reported that the contraceptive properties of NO-Acetol were partially lost when it was mixed with alcohol. The reaction that took place is shown in Fig. 6.

It was clear from the beginning that NO-Acetol was inherently unstable because of the positively

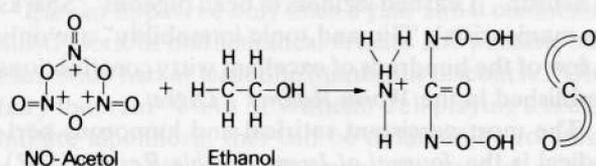


Figure 6. Effects of ethanol on NO-Acetol., C. Price, *J. Irrepr. Res.* **18**, 62 (1970).

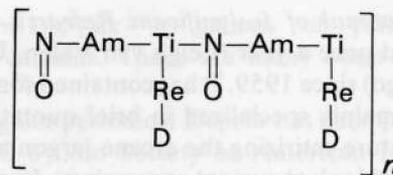
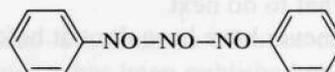


Figure 7. Transformation of NO-Acetol., A. Lepins, *J. Irrepr. Res.* **14**, 62 (1965).

charged atoms of nitrogen. Lepins⁵³ suggested opening the ring structure to a ketol form which had a tail at its end. Since the functional integrity demands that no tail is available, a stabilization of the compound was required, and this was achieved by the insertion of rare metals (Americium, Rhenium, Titanium and Deuterium) into the structure as shown in Fig. 7.

The new compound (No-Am-Tired-ol) could be polymerized at room temperature and its efficacy depended on the degree of polymerization. Following the publication of these formulae, many letters reached the journal. Among the topics discussed were various enzymes, such as frustrase, which broke down NO-Acetol to masturbium, or produced derivatives such as NO-Use-A-Tol or Damnitol.

In 1965 Dr Greenstein published a paper in the *Canadian Medical Association Journal*⁵⁴ in which he described the discovery of a new contraceptive agent - Armpitin - with the formula which has much in common with NO-Acetol:



Armpitin, when applied to the axillary regions of a female causes a temporary and reversible sterilization in the male partner approaching the female. Greenstein made his discovery when he used Armpitin as a deodorant in his mouse colony and found that the male mice became sterile. Tests on mice and 345 human volunteers showed that the duration of the effectiveness of Armpitin was proportional to the number of -NO- groups, each -NO- extending the activity for one day. In a letter to me, Greenstein commented on the coincidence in the publication of our paper on NO-Acetol and on Armpitin: 'this publication coincidence may well link the names of X.Perry Mental and Greenstein in a fashion similar to that of Wallace and Darwin'.

An unexpected medical correlation was reported in the *JIR* by Dr Iversen from Oslo.⁵⁵ He found a significant correlation between the average annual age-related incidence of malignant melanoma in the population of Western Norway (Fig. 8(a)) and the topography of Norwegian West Coast. Figure 8(b) shows a highly significant parallelism, except for a beautiful bulge, especially in the female curve, outside the district Sunnmore. (People of this district are well known for their prominent and outstanding qualities.) The finding that there were more cases of

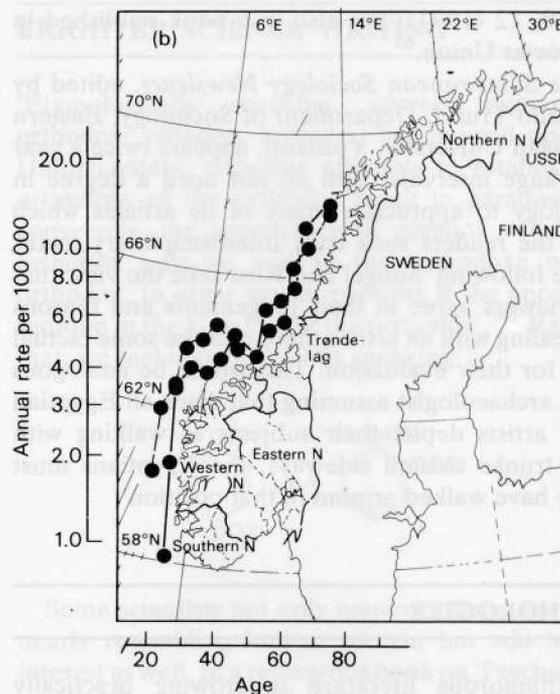
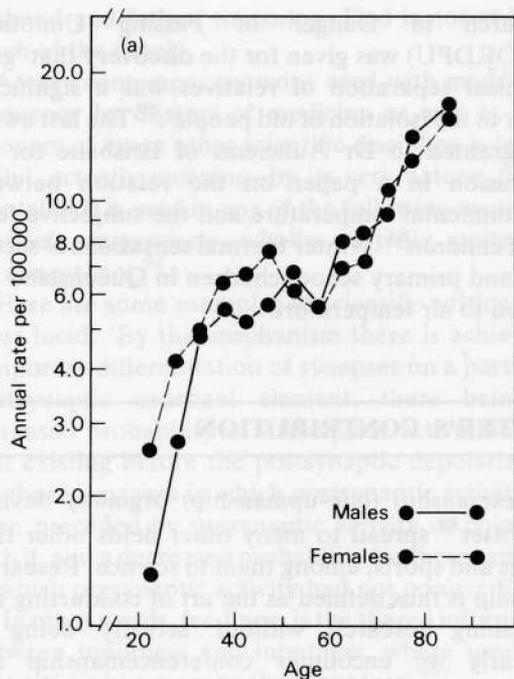


Figure 8. Correlation between annual incidence of malignant melanoma and the topography of Norwegian West Coast., O. H. Iversen, *J. Irrepr. Res.* **24**, 18 (1978). From: *J. Irrepr. Res.* Cover **14**(1) (1965).

melanoma on women's legs than on men's legs was attributed to the women's habit of wearing miniskirts that exposed their legs to good many potentially dangerous external influences.

THE SUCCESS OF *JIR*

A series of papers was initiated by G. Kaub in 1974⁵⁶ with an attack on the *National Geographic Magazine* as a potential element responsible for the earthquakes at the San Andreas Fault. Kaub showed the earthquakes might be due to the localized accumulation of several millions of issues of this magazine in California, and he predicted that the continuous storage of the magazine would result in massive subsidence of buildings and cities and the inundation of the USA by the sea. Kaub's attack was rebutted by Jones⁵⁷ who calculated that it would take 24.92×10^9 years for sufficient numbers of the magazine to accumulate in order to depress the USA by 30 m; thus he allayed the fear of inundation of the coasts of the USA in the predictable future. The controversy has continued and the matter is not yet resolved.

The innovative concepts published in the *JIR* enjoy on occasion international fame, for instance the case of a new unit of work for population genetics: the cock-foot,⁵⁸ which was taken up by *Playboy* in the section The Playboy Forum 'FUC Finale (fornication utilization constant)'. The cock-foot measures work done, and is equivalent, with proper conversion factors, to the more familiar 'foot-pound'; however,

it is expressed in more easily understood in close-to-hand biological dimensions: a cock-mile would be an expression of cumulative work of a sizeable population.

The journal has contributed not a little in the predictive field. It has described explosives based on catenanes of acetylene that can float in the air;⁵⁹ it was first to describe the 'umbilical complex' of ballistic missiles which led to launching failures;⁶⁰ it was the first to propose an enzymatic method to obtain compounds of noble gases,⁶¹ at almost the same time they were actually synthesized by a group of 18 scientists;⁶² the *JIR* advocated the towing of icebergs to arid areas in Israel long before the problem was in fact technologically considered for the deserts of South America and Saudi Arabia.

An entirely new type of energy exploitation predicted by the *JIR* is based on the darkbulb⁶³ which is an electronic device that produces darkness at the flick of a switch. In distinction from a lightbulb which is an energy source, darkbulb is an energy sink. Its heart is a krystalkanoogin valve that produces the Hay reverse electromagnetic field.⁶⁴ In analogy to a vacuum cleaner, a Hay-field sucks electromagnetic energy from the air and the darkbulb produces darkness in as large an area as a lightbulb of the same wattage would produce light. The darkbulb is very useful for converting ordinary rooms to darkrooms, and has some advantage at parties.

Articles from the *JIR* have been reproduced not only in such journals as the *Journal of Naval Engineering* (**18**, 274 (1969)), *Ca-A Cancer Journal for Clinicians* (**20**, 360 (1970)), *Invention Intelligence (New Delhi)* (**14**, 358 (1979)), *Forskning och Fram-*

steg (8, 12 (1971)) but also in a book published in the Soviet Union.⁶⁵

The Subterranean Sociology Newsletter, edited by Marcello Truzzi, Department of Sociology, Eastern Michigan University, Ypsilanti, appears twice a year at strange intervals. You do not need a degree in sociology to appreciate many of its articles which offer the readers such truly interdisciplinary truths as the following 'Smigel and Ross take the view that if reviewers agree in their judgements and reasons for dealing with an article there must be some factual basis for their evaluation. This would be analogous to an archaeologist assuming that since all Egyptian tomb artists depict their subjects as walking with their trunks twisted sideways, the Egyptians must really have walked around in that position'.

ANTHOLOGIES

The humorous literature is growing practically exponentially and has even been reviewed in *Current Contents*.⁶⁶ In addition to the funny journals and articles on humour in serious journals,⁶⁷ many books are being published that either dissect humour in science, or are themselves humorous.

An anthology of selected articles from the *JIR* has been published on two occasions in 1963 and 1978.^{68,69} McConnell, the editor of the *Worm Runner's Digest*, brought out two delightful anthologies of scientific humour: 'The worm returns'⁷⁰ and 'Science, sex and sacred cows'.⁷¹ Other selected books on humour are listed in the bibliography.⁷²⁻⁷⁷

Sommer's 'Expertland'⁷⁸ turns a satirical eye on the growing specialization of various branches of science and explains the customs, the ideals and the ways of life of scientists. 'When a scientist reaches senility' he tells us—'he is one of two things, either a consultant or a failure'. Summer also states that one function of a consultant is to distract the working scientist from his labours.

Many conservationists are worried about the extinction of a number of species of animals and plants such as eagles, musk-oxen, three-toed sloth, ginkgo, *Homo sapiens* and others. Answering their arguments, Richard Curtis under the guise of Professor Morton Stultifer published a book⁷⁹ 'The Case for Extinction'. There he presented some of his views on *Homo sapiens*: 'The human female is almost universally a passive creature who recognizes that status, territory and sexuality are all masculine instincts, and that the female preserve is strictly limited to child-bearing and the solicitous care of her male. Show me an exception to this rule and I will show you a civilization in the last stages of decline'.

Unusual awards have been presented by Dr Bernard Dixon, former European editor of *OMNI*, writing in his 'Talking science' series in *World Medicine*. The first Dixon Award for Original

Research in Danger of Passing Unnoticed (DAORDPU) was given for the discovery that 'geographical separation of relatives was a significant factor in the isolation of old people'.⁸⁰ The last award was granted to Dr Auliciems of Brisbane for his conclusion in a paper on the relation between environmental temperature and the subjective feeling of children⁸¹ 'Winter thermal sensations of secondary and primary school children in Queensland are related to air temperature'.

POTTER'S CONTRIBUTION

Gamesmanship (one-upmanship) originally devised by Potter⁸² spread to many other fields other than games and sports, among them to science. Researchmanship is thus defined as the art of conducting and publishing research without actually doing it. Similarly we encounter conferencemanship and chairmanship. The practice of all these types of gamesmanship in science have been described in various journals,^{77,83,84} and particularly so in the *JIR*. Among the books dealing with that 'field' of science are now the famous 'Peter's Principle',^{85,86} Ford's 'Nonscience',⁸⁷ Dickson's 'The Official Rules',⁸⁸ as well as Parkinson's Law⁸⁹ and 'Mrs Parkinson's Law'.⁹⁰

One of the blights liable to assail all disciplines in science is the gobbledygook in which it is written. Aristotle already said that language which does not convey a clear meaning fails to perform the very function of language, and according to Confucius; 'If language is not correct then what is said is not what is meant; if what is said is not what is meant then what ought to be done remains undone'. In spite of these warnings the scientific literature is cluttered with polysyllabic or pompous jargon. Some scientists are convinced that complex sentence structure peppered with latinized vocabulary is *comme il faut*. Actually this scientific gobbledygook⁹¹ approaches the Orwellian *newspeak* and *double-speak*.

SCIENTIFIC NEWSPEAK

A few examples will illustrate the point. In the revised edition of Sir Ernest Gower's 'The complete plain words',⁹² two American examples of gobbledygook which I quoted in an article in *New Scientist*⁹³ are cited with their English meaning: '... the allocation of a very limited portion of a person's resources, abilities and energies to the ownership, maintenance and adornment of residential structure' (meaning—they live in slums), or '... a set of arrangements for producing and rearing children the viability of which is not predicated on the consistent presence in the household of an adult male acting in the role of

husband and father' (meaning—Dad is not at home much of the time).

A very contemporary word used with maddening frequency by doctors of medicine as well as practitioners of every other scientific discipline is 'essentially', actually meaning—by its very nature, fundamentally. It is used in any of the following meanings: precisely, imprecisely, wholly, partially, quite, sort of, almost, not.⁹⁴

Here are some examples of scientific writing at its most lucid: 'By this mechanism there is achieved a temporary differentiation of synapses on a particular postsynaptic neuronal element, there being an increased probability of subsequent activation over that existing before the postsynaptic depolarization for those synapses in which postsynaptic activity had been preceded by presynaptic activity or coincided with it, and a decreased probability for those synapses in which presynaptic activity had not occurred'.⁹⁵

'In other words, feediness is the shared information between toputness and inputness, where toputness is at a time just prior to the inputness'.⁹⁶

'The lateral surface, lateral to the anterior border, is anterior, lateral, and also posterior above, for it extends from the anterior to the posterior border of the radial tuberosity, but is largely lateral below, and the posterior surface, narrow and mostly medial above, expands and is truly posterior below'.⁹⁷

The Chairman of the Executive Council of the British Academy of Forensic Science once wrote in *Nature*:⁹⁸ 'Would the public interest be better served were a statutory obligation placed on both road authorities and manufacturers of motor vehicles so that a claim to damage might lie, where an accident could be shown to have occurred due to some feature of the road or the vehicle which while not such as might fairly be described as a defect in construction of the road or the vehicle, be nevertheless a contributing cause in the ultimate damage or injury which reasonable foresight applied against the background of the facts and technical knowledge might have avoided'.

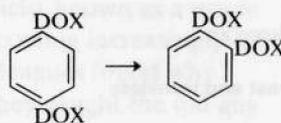
'I wish to note the following: a physically meaningful random distribution of dislocations can be defined only by assuming the positions of the dislocations are completely random'.⁹⁹

'The theorem itself suggests that there may be a nonprobabilistic proof to the effect that a totally positive semigroup of matrices may be used to define a completely additive measure in the space of continuous functions and the continuous state space analogue of the assertion'.¹⁰⁰

In distinction from such deplorable sodden prose, it is a great relief to turn to scientists who have injected a little leavening humour into their writing. So, for instance, it is refreshing to read Professor Maier-Leibnitz's advice to committee chairmen on how to achieve desirable decisions from a committee by preparing and serving a superb meal, prepared by the committee chairman himself, to the committee members.¹⁰¹

BRIGHTER SCIENCE WRITING

'Etymologically speaking, correct opinion is orthodox; paradox, however, lies beyond opinion. Unfortunately, orthodox attempts to establish the orthodoxy of the orthodox result in paradox, and conversely, the appearance of paradox within the orthodox puts an end to the orthodoxy of the orthodox. In other words, paradox is the apostle of sedition in the kingdom of the orthodox'.¹⁰² Reading that, we feel that chemically speaking:



Some scientists not only employ a language more nearly resembling human speech, but add human interest as well. In a review of a book on 'Psychopharmacological Agents',¹⁰³ Burger wrote: 'This review was written on the sand of Waikiki Beach on an April Sunday, while the reviewer tried to relax from a full week's laboratory work on the biochemistry of some of the very drugs described in this volume. It must be reported that reading about these drugs without sampling some of them, did not facilitate mental concentration in the presence of the many vital and absorbing distractions in the natural environment.'

'The breasts form an important part of woman's biological equipment for courtship and it is a question not so much of morals as of tactics to consider at what stage in the proceedings they are to be deployed to the best advantage'.¹⁰⁴

In a paper dealing with adult circumcision Dr Swersie writes:¹⁰⁵ '... the patient is admonished to confine the function of the operated appendage to micturition for two weeks after operation. After that period if he is so disposed he may, without pain, expand its field of usefulness'.

Other examples of the brighter side of scientific writing: 'The concept of the bladder as an inert container of urine no longer holds water'.¹⁰⁶ Dr Battle named a condition of sciatic nerve irritation due to carrying an overfull wallet in the hip pocket as 'Credit carditis'.¹⁰⁷

ADVICE TO SHAKESPEARE AND SHELLEY

The strict requirements of journal editors that the authors conform to conventional criteria and format has recently spawned satirical articles in which classical works such as Shakespeare's 'Macbeth',¹⁰⁸ a chapter from the Bible,¹⁰⁹ or Shelley's 'Ozymandias',¹¹⁰ are treated as if they were submitted for publication in one of the modern scientific journals.

So for example Sable, speaking for the editor, Francis Bacon,¹⁰⁸ advises Shakespeare to change the wording of his acknowledgement in 'Macbeth' from: 'The author begs to express his most humble gratitude for the patronage of her Virginal and Most Gracious Majesty, Elizabeth, Jewel of England's crown' to: 'Supported in part by a grant from the Elizabeth Tudor Endowment Fund'.

Here are some of the changes the reviewer proposes in 'Ozymandias':¹¹⁰

Manuscript as submitted

Ozymandias¹ by P. B. Shelley²

I met a traveller from an
antique land
Who said: Two vast and trunkless
legs of stone
stand in the desert . . .

Suggested rewritten manuscript

Twin limb-like basalt columns ('trunkless legs') near Wadi
Fazar and their relation to plate tectonic.
Ibn Baluta and P. B. Shelley

In a recent field trip to north Hadramaut, the first author observed two stone leg-like columns 14.7 m high and 1.8 m diameter (medium vast, ASTM grade scale for trunkless legs) rising from sandy desert 12.5 km south west of Wadi-Al Fazar (grid 474753). The rock is a tholeiitic basalt (Table 1) . . .

In a similar spirit are the speculations as to what would have happened to Koch¹¹¹ or to Newton if they had lived in our times and wanted to apply for a research grant.¹¹² Would Newton's letter to King Charles, composed of 22 words, and containing his gravitation hypothesis be sufficient for the King to grant him the necessary financial support? Or would the application be scrutinized by His Majesty's Planning Board for Research and Development, Committee for the Investigation of New Ideas, Subcommittee for Suppression of Non-British Ideas or HMPBRD/CINI/SSNBI for short?

HAPPY INSTANCES

The examples presented above were intentionally humorous. There are, however, numerous happy instances where the authors quite unintentionally produced a comic effect: 'Lake Como . . . is shaped like a man striding westward, his front foot in Como and the other in Lecco. Between the two legs is a promontory of great beauty'.¹¹³ 'During June a 24 hour service was initiated seven days a week, with two physicians and two nurses, one physician sleeping in the center'.¹¹⁴ 'In addition to living a relatively short time, rats tend to become ill and sometimes interrupt experiments by dying'.¹¹⁵ 'Thanks to the efforts of our county health departments, family planning clinic and private physicians, some 1527 women

were found to be infected by other than our VD clinics'.¹¹⁷

'The vertical and horizontal models of behaviour are simple to understand and much personal satisfaction can come to the librarian who learns to function in the horizontal mode. The achievement of horizontal communication by the librarian will lead not only to produce satisfying interaction with patrons, but also with family and society'.¹¹⁸ 'Perhaps it is just as well that the data are not taken too seriously for, otherwise, a true puzzle might confront us all'.¹¹⁹ 'Burned patients were found to be without statistically significant differences in outcome in terms of race, sex or ability to pay hospital bills'.¹²⁰

WITTY TITLES AND PUNS

Some titles of scientific papers also fall into the category of unintentional wit, for instance: 'Limited nutritional value of cannibalism';¹¹⁶ 'An intergenerational cake eating game';¹²¹ 'Female reproductive system in two parts';¹²² 'Dips at nonsense signature points';¹²³ 'An instance of pitfalls prevalent in graveyard research';¹²⁴ 'The effect of breathing 15–21% and 100% oxygen on the shivering response of nude human subjects at 10 °C';¹²⁵ 'Stimulus selection and tracking during urination: autoshaping directed behaviour with toilet targets'.¹²⁶

There are also books on: 'How women can make up to \$1000 a week';¹²⁷ 'Elementary mechanics of deformable bodies';¹²⁸ 'Non-existent compounds';¹²⁹ and on 'Tit watching in the British Isles'.¹³⁰

Although puns are not usually valued as a distinguished type of humour, they contribute to the amusement of the reader. According to Maxwell¹³¹ a pun includes two truths under one expression, whereas analogy is two expressions of the same truth. I find it mildly humorous that some authors have names related to the subject of their studies, e.g. Tickle and Trinkaus write about nudging cells in culture;¹³² Lord Brain and Head explain the man and his ideas;¹³³ Dull and Dull wrote 'Mathematics for Engineers';¹³⁴ Fox studied sociosexual abnormality in a dog resembling Oedipus complex in man;¹³⁵ Read contributed a chapter on learning from preschool orthographers;¹³⁶ Tiger and Fox dealt with zoological perspectives in social science;¹³⁷ and Mountjoy attempted to modify penile erections in horse and man,¹³⁸ and finally we have the statement that 'A purified, apparently H-negative, but strongly A-active preparation of pig submaxillary mucin was kindly provided by Dr Ward Pigman . . .'.¹³⁹

SCIENTIFIC AXIOMS AND QUIPS

Apart from Murphy who succinctly summed up the scientific experience in his famous law: 'In an experi-

ment, if anything can go wrong, it will' many other outstanding scientists have distilled their life's experience in axioms.

'Scientists can be divided into three unequal categories: the makers, the takers and the fakers'(?); 'Scientific ability is no guarantee of good judgement in gardening, politics or theology' (John Lennihan); 'Cambridge is full of mathematicians who have been so corrupted by quantum mechanics that they use series which are clearly divergent and not even proved to be summable' (J. B. S. Haldane); 'There is something fascinating about science: one gets such a wholesale return of conjecture out of such trifling investment of fact' (Mark Twain).

'Scientific happiness is to have an experiment that works and keeps doing it all the time' (Alfred Hershey); 'Logic is an organized way of going wrong with confidence' (Kettering); 'If caution is needed in the interpretation of what is seen, more caution is necessary when one sees nothing' (Lwoff¹⁴⁰); 'If your parents did not have any children, the odds are that you won't have any' (I. Chayut); 'A theory has only the alternative of being right or wrong. A model has a third possibility: it might be right but irrelevant' (Manfred Eigen); 'There are three roads to ruin: women, gambling and technicians. The most pleasant is with woman, the quickest is with gambling but the surest is with technicians' (Georges Pompidou).

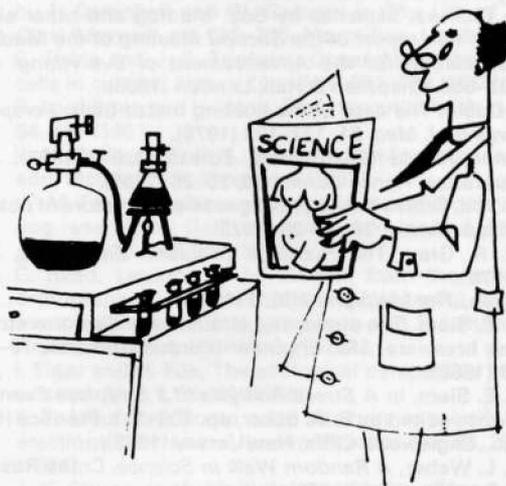
Scientific careers can be divided into three periods: 'In the first the scientist works, in the second he talks about the work, in the third he says: "Let me show you my Institute"' (Kabat A.). When Ghandi was visiting Europe he was asked what he thought of western civilization. He replied: 'I think it would be a very good idea!'

THE MORAL

The moral of this review can be summed up in two sayings: Horace in *Ars Poetica* wrote: 'Omne tulit punctum qui miscuit utile dulci' (he gains everyone's approval who mixes the pleasant with the useful). Secondly, Dr Kline of Columbia University said: 'Research is like sex: it is more talked about than performed, since to be really satisfactory its practice requires not only interest and pleasure but hard work'. And I would add 'Humour, as well'.

A physicist known as a prude
was becoming increasingly lewd.
His colleagues found why
when they caught the old guy
Reading *Science*, at night, in the nude.

(J. Reiffel)



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