

A litany of folly

Walter Gratzer

Diamond Dealers and Feather Merchants: Tales from the Sciences.

By Irving M. Klotz. *Birkhäuser*: 1986. Pp. 120. \$24.95.

"As to the opinion which explains the putrefaction of animal substances by the presence of microscopic animalcula, it may be compared to that of a child who would explain the rapidity of the Rhine's current by attributing it to the violent movement of the numerous mill wheels at Mainz." The view is that of Justus von Liebig (echoed some time later by, I think, James Thurber, who held that wind is caused by trees waving their branches), and the child in question is Pasteur. Or try this: "Recently I pointed out that deficiencies in fundamental chemical knowledge and the lack of a good liberal education characteristic of many professors is responsible for the current decline in chemical research . . . If anyone thinks my concerns are exaggerated, he should read, if he can stomach it, a recent monograph of a Mr van't Hoff, entitled *The Arrangement of Atoms in Space*, a book swollen with infantile foolishness." That egg was laid by the great Hermann Kolbe, the first man to synthesize an organic compound, acetic acid, from its elements. In *Diamond Dealers and Feather Merchants*, Professor Klotz has assembled a wonderful collection of such philippics in his exploration of how these thunderous gaffes come to be perpetrated — hostages heedlessly offered to fortune by those best placed to know better.

Perhaps success, like power, tends to corrupt; Ambrose Bierce in *The Devil's Dictionary*, ever a sound guide to human nature, encapsulates the matter thus: "Intolerance is natural and logical, for in

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every dissenting opinion lies an assumption of superior wisdom." The uninhibited ferocity and vindictiveness with which academic vendettas were publicly conducted belong of course to a bygone age of polemic. The heavy, snarling sarcasm, the pseudonymous lampoon on the rival's work, have given way to a little discreet disparagement in the intimacy of the grant committee; but the results are similar and it is probably an inalienable part of the scientific process. Max Planck said that radical scientific innovations do not prevail by overcoming prejudice, but rather through the eventual demise of their

opponents, to make way for a new generation of scientists whose prejudices have not yet hardened.

Klotz suggests that the strange passions that cloud the judgement and take the reason prisoner can express themselves as much in credulity as in obduracy. Chauvinism and political engagement play a part in two spectacular scientific debacles that he chronicles with relish, but not without compassion: N-rays were named after the city of Nancy by the respected French physicist, Blondlot. Klotz surmises that Blondlot's formative years would have been darkened by the defeat and disintegration of the Second Empire and the loss of much of Lorraine, which brought the German border almost to Nancy. This must have inflamed the rivalry, already intense, between French and German science. In addition, Blondlot was probably still grieving at the turn of the century that the discovery of X-rays had eluded him.

N-rays were an electromagnetic radiation emitted from electric discharges and many other sources, such as hot metals. They were taken up with fervour by French physicists, chemists and indeed biologists, for it soon emerged that nerves, muscles and even enzymes were abundant emitters. By 1904 the ratio of papers in the *Comptes Rendus* on N-rays to those on X-rays was 53:3. The outside world was more cautious and the end came when the great American spectroscopist, *farceur* and eccentric, R.W. Wood (the man who trained his cat to clear the cobwebs from the 40-foot optical path of his spectrograph), visited Blondlot's laboratory to observe the measurement of wavelengths in the N-ray spectrum, dispersed by an aluminium prism. The room being dark, Wood adroitly trousered the prism, with no detriment to the process of data collection. Wood spared no feelings when he subsequently described the events in *Nature*. J.A. Le Bel expressed what many French scientists must have felt: "What a spectacle for French science that one of its distinguished *savants* determines the position of lines in the spectrum while the prism sits in the pocket of his American colleague."

Klotz seeks a parallel between the N-ray affair and the curious mirage, half a century later, of polywater — an associated form of water reported by the Russian surface physicist, Boris Derjaguin, to form in fine silica capillaries — for here too political prejudice may have exerted a baleful influence. J.D. Bernal, who was preoccupied at this time with the structure of water, must, so Klotz believes, have badly wanted Soviet science to come up trumps. (He continued, for instance, to support Lysenko long after the truth had come out in all its squalor.) Bernal did in the event jump off the polywater bandwagon before that vehicle careered over the precipice, taking many reputations with it. Joel Hildebrand, the Methuselah of physical chemistry who published his last paper at the age of a hundred, seemed in no doubt from the outset. "Water and silica," he wrote, "have been in intimate contact in vast amounts for millions of years; it is hard to understand why any ordinary water should be left." Another physical chemist, R.E. Davis, put it succinctly: "We must conclude that all polywater is polycrap and that the American scientists have been wasting their time studying the subject". In retrospect it seems that most of these scientists could have believed in polywater only because they wanted

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polywater to exist. Derjaguin accepted earlier than many that he had been wrong, and emerged with dignity from the reeking shambles.

Klotz concludes with some examples of credulity and ignorance to make your toes curl. Thus: "From experience with non-science college students, I know that the majority predict that if a silver dollar and a silver dime are simultaneously dropped from the top of the Sears Tower the former will hit the ground first. An even larger fraction when asked whether a two-inch line or a one-inch line has more points will vote in favour of the former: the remainder exercise their democratic privilege of not voting. The general public would overwhelmingly endorse [this] view." I understand the flat-Earthers are still among us, satellite pictures notwithstanding: common sense lives.

Professor Klotz's name is familiar to all protein chemists, and generations of science students were brought up on his celebrated textbook of chemical thermodynamics. He now reveals himself as a writer of wit, wisdom and originality in a different genre. This admirable little book will give much pleasure. □

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