Letter from . . . Chicago

Inauspicious omens

GEORGE DUNEA

British Medical Journal, 1979, **1**, 1337-1338

Scientists trying to understand the world and its problems in terms of milirems and meltdowns have recently been too busy gazing at giant radioactive bubbles to notice that something more fundamental is amiss; and in their preoccupation with the clinical symptomatology of the China syndrome would have paid scant attention to reports of pigs being born with two heads, of hens turning into cocks, of goats growing wool, of birds swimming and fish flying and horses suddenly dropping dead in the fields. But those schooled in the severe disciplines of magic and divination, who know the meaning of blood-stained wheat dropping into reapers' baskets, remember only too well that lights had blazed in the sky before the Volsci marched against Rome, and that statues had wept blood and warm water had flown from the springs before the catastrophic battle of Cannae. And had not the Chaldean soothsayers warned Alexander against entering the city of Babylon? Had not dreams forewarned Croesus against Cyrus, and Cyrus against the Queen of the Massagetae? Had not a mule foaled before Darius conquered Babylon? Had not the soldiers' shields sweated blood and the images of the wolves broken into sweat before the disaster of Lake Trasimene, when the sky looked as though it was on fire and the moon seemed to be falling into a shower of rain. And did not the people flee from the towns of Goldboro and Yocumtown, the women covering their babies' heads lest anything fell on them, the scientists babbling about "uncontrolled" releases of radioactivity, and generally attributing to pollution and contamination a whole series of inauspicious omens that even the most junior apprentice in astrology school would recognise for what they are worth.

Chemical waste dumps

Only last year, in the small Michigan town of Hemlock, geese were born with their wings on backwards and chickens with their digestive tracts outside their bodies. For many months a green iridescent film portentously covered the local pond, dancing away when you tried to scoop it up. Incredulous hunters reported that the rabbits had green flesh; a baby was born with coal-black decaying teeth; and on the farm dogs and horses and cattle died suddenly for no apparent reason, their bodies failing to decompose in the middle of summer. Later, several farmers developed headaches, numbness, fever, convulsions; others had painful joints, swollen glands, and enlarged spleens. Then a lady hired her own toxicologist, who found that the water from her well contained four highly poisonous substances, perhaps as a result of the nearby Dow Chemical Company pumping contaminated water into the ground. And, although the farmers recovered when they stopped drinking iridescent water, there were similar portents at Niagara Falls, where dogs developed ulcers that would not heal, rubber tyres disintegrated inexplicably, babies were born with gross congenital defects, and over 100 families had to abandon their homes because dangerous poisons—including dioxin, one of the most lethal toxins known to man—had been oozing out of the ground as a result of a chemical factory burying its toxic wastes in an abandoned canal some 30 years earlier.

Elsewhere too there have been concerns about industry dumping chemical wastes into rivers and lakes, or burying them in the ground, giving rise to fears that some day poisons will seep into the water and re-emerge to the surface through wells. There has been much concern about the presence of chemical or radioactive waste disposal sites near towns, especially since scientists have estimated that much of America's 350 million tons of industrial wastes is being disposed of in unsafe ways. Recently in Illinois the anxious inhabitants of a small town were successful in obtaining a court injunction directing a chemical company not only to stop burying further material but also to remove the wastes already buried there. In Denver officials have now discovered a total of 36 potentially dangerous radium disposal sites. Some 1200 to 2000 long-forgotten waste disposal sites are expected to come to the public's attention within the next two to three years, and the cost of containing and cleaning them up may be as high as $50 billion. Meanwhile 10% of Iowa's water is contaminated with potential carcinogens, systematically dumped into the Cedar River for the past 30 years; while sulphur dioxide, produced by burning coal, has been shown to damage crops at levels far lower than previously thought, as well as combining with water to form "acid rain" (sulphuric acid) and causing the destruction of whole populations of fish in some lakes.

Already the fish in Lake Michigan contain such high levels of PCB (polychlorinated biphenyls) that the apostolic Food and Drug Administration has ruled that no more than eight ounces of salmon may be consumed in one week. Also in Lake Michigan, at the bottom of Waukegan harbour, lie tons of PCB, dumped there by the outboard Marine Corporation since 1948, and the authorities remain entangled in an interminable dispute with the manufacturers about who is to pay for removing all that contaminated mud—all this apart from the fact that nobody even knows whether the material can be removed safely without severely contaminating the rest of the lake. And an even worse episode of contamination occurred in April 1977 in Puerto Rico when a fire broke out in a warehouse and some of the fishfeed accidentally contaminated by the fire-hoses was dried out, reprocessed, and sold as animal food. Not until the farmers reported problems with the poultry was the contamination discovered, and although hundreds of thousands of chickens and millions of eggs were destroyed, the PCB has been so widely disseminated that most of it will never be recovered.

Another incident, concerning a related chemical substance, occurred in 1973 in Michigan when a chemical company accidentally shipped 600 pounds of PBB (polybromated

Cook County Hospital, Chicago, Illinois 60612, USA
GEORGE DUNEA, FRCP, FRCPED, attending physician

biphenyls) containing fire retardant instead of a feed additive for cattle. For months the mishap remained undetected, despite farmers complaining that milk production was falling off and some of their cows were sickening and dying. Some of the farmers themselves noticed increased susceptibility to infection, weight loss, and fatigue. Yet all laboratory tests remained negative, until one farmer hired his own toxicologist. By then 35 000 cattle, a million pigs and chickens, and tons of milk and butter had had to be destroyed, and the companies have paid out millions of dollars in damages to farmers. Last October, however, a local judge dismissed a suit for $250 000 in damages by ruling that the plaintiffs had failed to prove that their animals had been injured or indeed that PBB was harmful in small quantities.

Job-related cancers

At the centre of this furore about the environment, of course, is the concern about carcinogenesis. It has been estimated that at least 10% of all cancers in the US are job related. Some 10 million workers have been exposed to asbestos since the second world war and some 67 000 have developed cancer. Each year two million workers are exposed to ethylene dichloride, used in manufacturing the vinyl chloride monomer from which the widely used plastic polyvinyl chloride is made. Other factory workers are exposed to arsenic, benzene, coal tar, chromium, iron oxide, nickel, and petroleum distillates; but many must face the risk of carcinogenesis or have no job at all, at least according to Dr Sydney Wolfe, head of the Public Citizens Health Research Group.

Yet hidden dangers lurk everywhere. A photographer using a lady's hairdryer to dry blow his negatives was recently surprised to find unusual looking filaments on his photographs, leading to the discovery that thousands of electric hand-held driers were blowing out dangerous amounts of asbestos. Ethylene dibromide, the most powerful carcinogen known to man, has now been found to be widely present in pesticides and leaded gasoline—and more than 350 million pounds are produced each year. Beautiful ladies, already imperilled by oral contraceptives and fluorocarbon hairsprays, may now develop breast cancer from amines in permanent hair dyes; their homelier sisters have been warned against using tretinoin for acne; and the sun's rays are being relabelled for causing premature aging of the skin and skin cancer. There is danger in cigarettes and artificial sweeteners; peanut butter harbours dangerous aflatoxins; griddle-cooked hamburgers may contain carcinogens if prepared at temperatures above 390°F; and even the popular BLT sandwich (bacon, lettuce, and tomato) has fallen under suspicion—the lettuce for containing too much cadmium, the bacon for being preserved in nitrites capable of being converted into deadly nitrosamines.

All these horrors and frightening reports merely confuse and alarm a public that loves to be protected but hates to be regulated; and they terrify the ponderous Food and Drug Administration, with its huge staff of 8000 and its annual budget of $280 million, entangled in its own red tape and hamstrung by awkward legislation, unable to decide whether to keep nitrites in bacon and prevent botulism or ban it and provoke an epidemic of brown-black bacon and tasteless Bologna sausages. Yet, asks one of our newspaper columnists, how can one expect a bureaucrat (especially one untrained at interpreting omens) to guess correctly the maximal safe amount of thrips, mites, aphids, insect head equivalents, drosophila eggs, or rodent hair fragments in fig paste, frozen broccoli, apple butter, or bleached raisins.[1] The people, moreover, don't give a fig about drosophila equivalents but merely go on in their sinful ways, obstinately ignoring the most portentous omens. The newspaper reporters petulantly complain because their favourite breakfast loaf has been labelled with threatening warnings about the permissible amounts of thiamine mononitrate, mono- and di-glycerides, calcium sulphate, ferrous sulphate, ammonium chloride, potassium bromate, and monocalcium phosphate.[2] In short everybody is sick and tired of hearing that all the enjoyable things in life are either fattening or immoral or cause cancer.

It should come as no surprise then, that the backlash has now also affected the cancer crusade, which seven years and five billion dollars ago was launched by President Nixon in the hope of quickly solving the riddle of cancer, but which was recently characterised as a "medical Vietnam." For the researchers at the various cancer institutes the honeymoon is over, at least in part, it is suggested, because the expectations were raised too high. So the Government is cutting back on research and anti-pollution programmes, the search for dangerous dumping grounds has been put off—and meanwhile trees keel over in the meadows; bureaucrats are born with two heads and their edicts rain fire mixed with brimstone; birds swim and fish fly; and an iridescent sheen mysteriously covers the waters. The soothsayers predict a chemical doomsday but nobody will listen. Only in the small town of Stelle, Illinois, the people know that the end is near, and that on 5 May 2000 the orbits of six planets will line up to wipe out 90% of the world's population. With supreme confidence, they expect to survive the cataclysm and be the builders of a new civilisation, claiming that any reputable astronomer would confirm their prediction. Which points to the danger of listening to astronomers rather than relying on the well-tested science of astrology.

References

[1] Royko, M, *Chicago Sun Times*, 7 July 1978.
[2] Kilpatrick, J J, *Chicago Sun Times*, 7 October 1978.

WORDS FAEX. Elsewhere in this series I refer to the lack of single words that may be used in polite society, or in a medical or physiological context, to describe certain bodily functions. All are agreed that an accurate description of faeces may be of clinical importance. While there is no difficulty in describing consistency, colour, or abnormal constituents, when it comes to mentioning a single more or less cylindrical portion, we are stuck for a word. We are apt to flounder with vague or circumlocutory expressions that are capable of being misunderstood by patients. "A formed stool" refers to an entire evacuation, not necessarily to a portion thereof. In the *Canterbury Tales*, Chaucer's own contribution (Sir Topaz) is interrupted in mid-sentence by the Host because he is bored by all that rhymed verse. To quote Neville Coghill's modern version,[1]

"My ears are aching from your frowsty story!
The devil take such rhymes! They're purgatory!
That must be what's called doggerel-rhyme," said he.
"Why so?", said I. "Why should you hinder me?
In telling my tale more than any other man,
Since I am giving you the best I can?".
"By God," said he, "put plainly in a word,
Your dreary rhyming isn't worth a turd!"

No possibility of misunderstanding here. Well, to put it bluntly and stop beating about the bedpan, we need an acceptable word for turd.

Vincent J Derbes[2] drew attention to this need and suggested a remedy. As he put it clearly and elegantly, "There are, in the vernacular, two words which approximate in meaning to the commonly used *faeces*. One is used exclusively as a substantive to denote a discrete mass of faecal matter, the other as a verb or noun. Their persistence through the centuries attests as well to their utilitarian as to their scatological value. Physicians need an acceptable word which will permit the greater flexibility inherent in our Anglo-Saxon heritage. Faeces, a collective noun in plural form, lacks precise meaning. It is the singular which we require; this will permit us to say, in one word, that unit of a formed stool delimited by two successive anal sphincteric contractions. Harper's *Latin Dictionary* (1907, p 720) gives *faex, faecis* as this singular. Some clumsy circumlocutions might be avoided by incorporating *faex* into our medical vocabulary."

[1] Chaucer, G, *Canterbury Tales*, translated by Nevill Coghill, 2nd revised edn, p 201. London, Penguin Classics, 1960. © Nevill Coghill, 1951, 1958, 1960. Reprinted by permission of Penguin Books Ltd.
[2] Derbes, V J, *Lancet*, 1957, **1**, 994.