Letters
continued

ENIGMA

Factory outing

Eric Emmet

I am the managing director of Our Factory and I write now from the wonderful Island of Imperfection.

I had better start by explaining about Our Factory. Over the years the personnel has doubled and although I do not like to boast I must say I am rather proud of that. At the start we had only four employees but now there are eight and I thought it would make a nice holiday if I took some of them to the Island of Imperfection.

At the time with which this story deals there were three tribes on the island—the Pukkas who always tell the truth, the Wotta-Woppas who never tell the truth and the Shilli-Shallas who make statements which are alternately true and false or false and true.

The three members of our factory with which this story deals were the Door-Opener, the Door-Shutter and the Door-Knob-Polisher. As is the custom of the island they were all made members of one of the three tribes, in fact each one to a different tribe.

They were pretty quick to understand how the tribes worked and I am glad to say they made no mistake in this puzzle.

Calling them *A*, *B* and *C* in no particular order they spoke as follows:

A 1.*B* is not a Shilli-Shalla. 2. *C* is the Door-Knob-Polisher.
B 1.*C* is a Pukka. 2. *A* is the Door-Opener.
C 1.*A* is a Wotta-Woppa. 2. I am a Shilli-Shalla.

Find the tribes and the jobs of *A*, *B* and *C*.

A £5 book token will be awarded to the sender of the first correct solution opened on Wednesday, 23 January. Please send entries to Enigma No 47, New Scientist, King's Reach Tower, Stamford Street, London SE1 9LS. The Editor's decision is final. No correct solutions were received for Enigma No 45, Six Squares—Harder, the solution to which we published last week. Shame on you!

Rising prices

Answer to Enigma 46

THURSDAY AND SATURDAY

For least cost the girls must be kept to short runs. He beat *B* on Sunday. So, you will find, he must have been first on Thursday and third on Saturday and Sunday. Two girls got 10p and the other (Alice) 16p.

Many departments including my own have as great an involvement in electronic instrumentation, physiological measurement, radiotherapy physics and radiation protection as they have in nuclear medicine and ultrasound. Diagnostic radiology has never specifically excluded physicists and the HPA has an active diagnostic radiology topic group. Various aspects of biological or clinical engineering are also pursued in many departments.

Finally, in no way would I wish to detract from the magnificent achievement of Godfrey Hounsfield and the team at EMI in the development of computerised tomographical X-ray imaging.

P. A. Griffiths *Lincoln*

Habitat protection

By chance your 6 December issue carried items on sand lizards, forestry, and the Nature Conservancy Council (NCC) in Comment (p 754), This Week (p 756), and Monitor (p 775). The British Herpetological Society believes that the very structure of the NCC forms the common link in a situation needing governmental review.

Helen Jackson's conclusions on the plight of our northern sand lizard form a sad confirmation of our six-years' pressure on the NCC for adequate habitat protection at Merseyside, as yet unheeded. Two eroding stretches of frontal dunes represent the main surviving habitat yet they are still subject to an abuse now almost unique in coastal north-west Europe—that of unlimited public car access to their foreshore.

Despite advice from its Great Britain HQ, NCC's north-west region (under direct control from England HQ) had first ignored then finally fled the problem. At the opportune moment of a new Coastal Strategy for Merseyside, it chose not to offend the local council responsible. It may be coincidence that Merseyside's Planning Officer has publicly supported this continued vehicular use, and also sits on NCC's Advisory Committee for England.

Keith Corbett *London*

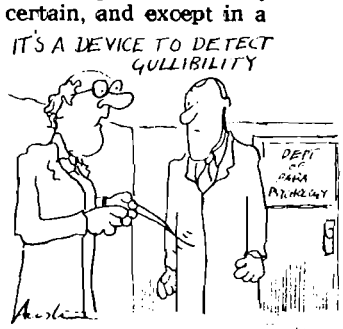
Dowsing

"Dowsing works, that much is now certain" says Anthony Hopwood ("Dowsing, ley lines and the electromagnetic link", 20/27 December, p 948). This is incorrect. It certainly does not have near 100 per cent success and the most that should be claimed is that it is thought by some people that there is a mechanism, corresponding to the name, which seems to have been successful on some occasions.

Matters of this sort are settled only when the mechanism can be demonstrated on request. So long as it depends on unpredictable personal qualities it is suspect. It is quite ridiculous to suggest that "the field" is where a test should be made. That comes later when it has been made clear that there is a procedure which works to order by a mechanism which is understood in the sense of being demonstrable in the laboratory with only the necessary conditions present the removal of any one of which would upset the act.

We've heard it all before; indeed you said only a very few months back that telepathy was now a proven fact. Really you should be more careful. Until a mechanism has been reduced to the level of laboratory demonstration, or is directly deducible from such knowledge it is certainly not certain, and except in a gambling mood any sensible man would act as if it were not.

R. S. Scorer *London*



My own experience in testing dowsers has shown that dowsing only "works" when the dowser "knows the answer."

The case against dowsing is well put in the book *Water Witching USA* by Evon Z. Voigt and Ray Hyman (University of Chicago Press, 1959). Voigt and Hymann, an anthropologist and a psychologist, set out, with no axes to grind, to make a study of dowsing as a *social* phenomenon. But in the course of it (p 82) they concluded that dowsing was a pseudo-science: "We don't have to resort to prejudice to dismiss water witching as invalid. The evidence for it, when assembled and examined, is not merely insufficient according to current scientific standards [the same ones we would apply to 'acceptable' and plausible hypotheses]. It is appallingly negative. We know few other hypotheses that have been put forth with such consistently negative experimental findings as the hypothesis that water witching 'works'."

The validity of Mr Hopwood's own experiments is suspect because they were not designed as "double blind".

Denys Parsons *London*

When lecturing on parapsychology, I emphasise the need to distinguish methodologically sound research from appealing, but groundless, ideas. I sometimes illustrate this point by demonstrating dowsing.

I put a pitcher of water on the stage floor and walk slowly toward it, holding the same kind of dowsing rods that Anthony Hopwood describes. As I have announced to the audience, the rods swing together as I reach the water. I then step back and remark that my memory was faulty, you know how it is with absent-minded professors, and the "radiation" from water actually causes the rods to swing apart. I deliberately decide to believe this statement as I make it, and as I walk back toward the water, lo and behold, the rods swing apart! In both cases I do not deliberately move the rods, they just swing "by

themselves". Beliefs are quite fascinating tools when you experiment with them.

Much research indicates that dowsing rods and similar devices can be useful indicators or readout mechanisms for unconscious or intuitive knowledge, but any attempt to correlate the rod's action with characteristics of the external world *when the dowser is in sensory contact with those characteristics* is naive. You can confirm any theory you happen to believe in. Blindness as to conditions by both the dowser and any observers in sensory range of the dowser is a must for valid experimentation.

Charles T. Tart
Davis, California

Maxwell's colours

In his paper on the theory of compound colours in 1860, James Clerk Maxwell refers to Thomas Young's trichromatic theory (as modified by Helmholtz) in these words: "The human eye is capable of three distinct primitive sensations of actual colour in all their varieties. Whether any kinds of light have the power of exciting these primitive sensations separately, has not yet been determined." He wrote down a general colour matching equation $u=x+y+z$ which would be valid if such "kinds of light", ie stimuli, did exist and then wrote down two equations which could be used if such stimuli did not exist. If some colours had to be changed by the addition of one stimuli, the colour matching equation $u=x+y-z$ would be valid; if other colours needed the addition of two stimuli, then the equation would be $u=x-y-z$.

Falconer (Letters, 6 December, p 816) is wrong in stating that Maxwell demonstrated that it was possible to choose three stimuli which would, in additive mixture, match all colours including the colours of monochromatic lights and the impossibility of doing this was known to Newton who had observed that no two colours of the spectrum produced, when mixed, a colour equal in saturation to the intermediate spectral colour. Falconer himself confirms that Maxwell did not succeed by quoting his statement "that the true primary red is not exactly represented in colour by any part of the spectrum": in the same paper Maxwell also pointed out that monochromatic green light at 510 nm "is either the true primary green, or at least the nearest approach of it which we can ever see". Because there are no stimuli which will evoke the theoretical fundamental sensations of red, green and blue respectively, the concept of using negative amounts of real stimuli was vital to the development of colour science.

K. McLaren *Newbury*

Hum . . . hum . . . hum

We have a small holiday home in west Wales, a very rural cottage, and three or four years ago we began occasionally to hear a hum in the middle of the night. ("Mystery of people who hear the hum", 13 December, p 868).

I once heard it about three nights in succession, and then it stopped. The sound was as if machinery was rumbling away under ground, very low-pitched. We checked the house, but there was no internal source. The source was not endogenous to me, as my wife heard it too. We were so concerned that we got up in the small hours and went out in our night-wear into the garden to see if we could pinpoint the sound and its source. We could not. It was audible out of doors, though rather weakly.

I imagined that it might be farm machinery, eg a pump at the bottom of a well some distance away (though it sounded rather like the distant rumble of Tube trains which one hears in some London theatres); but there is no farm near enough, and anyhow the sounds mysteriously ceased.

I don't think it is anything to do with our ears, or with the house, or with the known environment. When one has excluded the known, there remains only the unknown. I wondered whether there might be some extra-terrestrial source.

The weather was fine, and so warm that we could wander outside at night: is there some special atmospheric explanation? The only other explanation (a usual one) was that it was to do with some defence equipment.

A. N. Allott *London*

Whiffs of doubt

Dr Dodd's article on human pheromones ("The story of a stolen smell", 20/27 December, p 950) prompts many questions. He says that the discoverer, John Dillingworth, had all his records and materials seized by a secret army laboratory and was himself sworn to secrecy (after being "suitably rewarded"). But how then did Dr Dodd come by his detailed information? And was Dillingworth's company "suitably rewarded" for its loss of an important money-spinner? Most important of all, what government department has the right to seize the records and materials of a private company, and by what authority?

I have heard of similar cases of suppression of apparently innocuous scientific information. Some time ago you reported that accounts of the phenomenon of "ball-lighting" had been treated in the same high-handed way. It seems there is a case for an open discussion on this subject, particularly on the matter of arbitrary seizure of records. Who is the "arbitrator?" And if the grounds for suppression are "national security" what happens if Big Brother turns out to be wrong or corrupt? Does he get "suitably chastised"?

D. H. Mash *Harlow*

I don't know about musk, but there seems to me to be something of a "fishy" odour about Dr George Dodd's article in your Christmas issue, particularly as the photograph stated to be of a male musk deer is in fact of a kangaroo. . . .

P. F. Crawley *Coulsdon*

We welcome comments from our readers, who should write to the Letters Editor, *New Scientist*, King's Reach Tower, Stamford Street, London SE1 9LS. Short communications stand the best chance of publication and the Editor reserves the right to take extracts from the longer ones.