

ENGINEERS, GET OUT OF BRITAIN

I am amazed to see "Mixer" treating the news that "A" level students shun careers in industry with such levity (October issue). Lack of really first-rate people in engineering is probably one of the greatest problems facing British industry today. Nevertheless, one cannot blame either the students or their teachers for this attitude. The fact is that engineering is not regarded as a respectable profession in Britain, an attitude which is repeatedly emphasised by the salaries offered for senior, responsible engineering jobs.

I am a graduate in electrical engineering with twelve years' post-graduate experience, spent partly in R&D and partly in production engineering. In 1972 I chose to leave Britain because I saw no prospect of ever having a reasonable standard of living there. Here in Belgium, I have a basic salary of about £19,500. Even allowing for differences in cost of living, taxation etc., I would need a basic salary of about £15,000 to maintain the same standard of living in the UK. Judging from job adverts currently appearing in the national and technical presses, I would be extremely fortunate to get an offer of £8,000. I for one am quite happy to stay here where professional, graduate engineers are regarded as social and professional equals to doctors, lawyers, etc., and I would recommend any Britons unfortunate enough to have chosen engineering as a career to seriously consider leaving the country.

I know of no other country in the world where engineering is so poorly regarded and remunerated as in the U.K. The blame must largely rest with the engineers themselves, of course, for accepting the disdain with which their profession is seen by management and public alike. I am, however, sure of two things: British industry will be unable to attract top students until and unless the engineering profession be given corresponding status to that of the "respectable" professions; and British industry will not make the long talked about recovery until and unless top students can be persuaded to choose careers in industry.

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3D TELEVISION

Professor D. A. Bell, writing about three-dimensional television in the November issue, dismisses the two colour (anaglyph) process for "entertainment television." But what about the odd 20% of television time which is intended to be educational rather than entertainment? I have always maintained that a 3D picture in mono is much more informative than a 2D colour picture and there are many programmes which would be more immediately comprehensible by the use of the anaglyph system. Perhaps we could persuade the BBC to include pieces of red and green transparent toffee paper in an issue of the *Radio Times* and give us a "Tomorrow's World" in 3D? Just once!

Meanwhile perhaps readers would be interested to hear of my own private method of obtaining true stereoscopic pictures from an ordinary 2D television set. I have some scores of pairs of photographs of most celebrated people and places, taken over the last two or three years. The secret is to watch for



an angular change between subject and camera and then to take two photographs in quick succession — perhaps a half to one second in time apart. Briefly the conditions arise when (1) the camera is seen to 'crab' round the subject, which it frequently does on set, in architectural scenes, and from helicopters; (2) when advantage is taken of small changes of angle of close-up heads — these might require several shots to find a suitable pair; and (3) when the object is turning on a turntable. It is almost essential that the camera is motorized, and it is better if it has an interlens shutter. The exposure with a 125 ASA film — which may be colour — is of the order of 1/30th second at f3.5 at normal brightness of picture. The television camera must not be zooming at the time, of course. The process requires alertness and deftness, and a sympathetic family.

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RELATIVITY AND TIME SIGNALS

Dr Essen (December letters) deserves an answer. Dr Griffiths doesn't supply it. However, I was fortunate enough to tune in to the following radio conversation between a Martian (M) and an Earthling (E). It might help if I quote it.

M: I don't understand this relativity theory that you chaps have dreamed up. Can you suggest an experiment?

E: Yes. When you are ready send me twenty pulses at one second intervals by your clock and I will do the same to you by my clock.

M: I received twenty pulses but they were not at one second intervals.

E: Of course not. I received twenty also but after making the necessary Doppler correction I find that the interpulse interval was $(1 - v^2/c^2)^{-1/2}$ where v is your velocity.

M: How did you know my velocity?

E: Easy enough. You are on your usual carrier frequency so I could find your velocity by doing a Doppler correction to it (relativistic of course).

M: I'm sorry but it seems to me like a circular argument.

E: Of course it is! If it wasn't there would be some loose ends somewhere. The only way to keep an argument free from paradox is to make it circular!

M: It seems to me there is only one thing we do agree about. There were no missing ticks!

E: Yes. Are you sure you sent twenty?

M: Of course I am. I can count. Once round my fingers and toes!

E: Er but you're a Martian.

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RAILWAY PUBLIC ADDRESS

I was not at all distressed to read of Mixer's travails with the public address system at London Bridge Station; in fact, I was rather gleeful. For we have the cure to the problem, in fact have had it for years. It's our Speech Enhancer, which was originally developed to counter Soviet jamming of Israeli radio broadcasts, and which worked very well at it during the Yom Kippur War of 1973.

What the Speech Enhancer does is to reduce the level of vowels relative to consonants. In English, as in most languages, the vowels contain the energy and the consonants contain the information. The difference in energy ranges from 20dB to 60dB, or occasionally more. How much energy is there in a stop?

Fairly consistently, at the 90% intelligibility level, we get improvements of 12-13 dB in intelligibility in white noise, for the same peak signal level. Translated, this means that for the same amplifier power, you get the same intelligibility at the 90% level if you increase the white noise by 12-13 dB, or alternatively, for the same environment, you can cut the amplifier peak power by a factor of 20 or so.

With normal speech the intelligibility falls off slowly so that if the noise goes up 6dB, you might catch one word out of two. With the Speech Enhancer, it falls off abruptly, so that if the noise goes up 3dB, you won't understand anything. The speech has a different quality than normal speech; it tends to cut through and demand attention.

Now the pitch. We should be delighted to sell Speech Enhancers to the British Railways, or to anyone else in Britain. (By the way, they are low power devices which consume about one watt and go between the microphone and the amplifier. There is only one control — a pot used to adjust input level — and one indicator, a l.e.d. which flashes when the optimum peak input level is passed on speech bursts.)

Yale Jay Lubkin

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On page 98 of the October issue "Mixer" says: ". . . it must surely be possible to design something that is at least intelligible." Of course it is!

Soon after the war British Railways installed at Liverpool Street, Charing Cross, London Bridge, and probably other stations, public address schemes that worked really well. The design and installation work was, if I remember correctly, by Rediffusion Limited. The essence of the scheme was that it employed many low output loudspeakers close overhead, instead of the few high power horns that had been used before. Another feature of the Rediffusion design was that it included a form of a.g.c. which boosted the