

CORRESPONDENCE

Indian Brain Drain

SIR,—Much has been written about the brain drain from the developing (and, lately, from the developed countries). As an Indian with a PhD in chemistry who has immigrated to the USA, I have a vested interest in this problem. I am sure that my feelings are shared by many like me.

As a product of the liberal arts/natural science type of education, I have been the subject of a conditioning process which attempts to instil a belief in the innate desirability of the acquisition of academic goals and ideals of elders and teachers. If this conditioning is unsuccessful, one is left with a choice between frustration and dropping out—that is, immigration—though the two courses are not equivalent. Under such circumstances, I do not think that any approbation or censure should be attached to an individual's choice of action, as Dr Parthasarathi suggests (*Nature*, 230, 87; 1971).

The planning and execution of official policies in the developing countries are necessarily of profound importance. In India, for example, the vast resources invested in education have created mainly a local elite class, the *babus*, who fill the ranks of the executive and a large fraction of the policy-making bodies. These resources could (and should) be used to develop more meaningful and relevant educational programmes where emphasis on academic rewards is minimized, and also to train technicians and innovators.

As long as present Indian educational policies are retained, Dr Parthasarathi's hope that developed countries should produce professionals whose training is relevant to the Indian scene sounds naive. But the present situation could be exploited to retain or bring back the best professionals, not the most "academically qualified", but those with innovative capabilities. This may require much more flexible methods of recruitment. The shortage of qualified professionals does not extend to all fields and to a large extent it is due to highly specialized and often superfluous training. With a proper educational background, many professionals could be utilized in related jobs after a short period of reorientation. Alternatively, on-the-job training facilities could be exploited. As for giving professionals "greater control over their own activities", this would make little contribution to the overall direction of any project or programme. A developing country can ill afford a set of uncoordinated research projects which are not goal-directed in coordination with the overall direction of the programme.

A mixed group of "technocrats" with wider perspectives and relevant educational background can be generated to coordinate various phases of development—planning, training, execution and utilization. At the moment, this is done by politicians and bureaucrats trained in liberal arts and office chores. As the responsibility of the individual appears to be as great as that of the government, incentives and other positive "promotional methods" could supplement the means proposed to curb the negative forces arising out of the "poverty and rigidity" of the intellectual environment. I am certain that in most cases the lack of incentive is not due to insufficient economic benefits.

I agree with Dr Parthasarathi that professionals away from home should be told about career opportunities in India, but even a thorough study of bulletins of leading research organizations is not going to help in this matter. An average graduate (even of a foreign university) is not equipped to interpret the jargon of statistics and publicity phrases. If a more realistic picture were presented in the bulletins, their propaganda purpose would not be served, but I see no need to create images; a realistic picture can be challenging enough.

From personal experience, the most frustrating aspect of this business of "contact" is the lack of response to enquiries. To twenty-two letters enquiring about the possibility of a job, I received only four answers (in ten months) informing me that there was none. There is no significant lack of qualified applicants in most fields, and lack of personnel in some highly specialized technical fields can be differentiated from the myth of a general lack of college trained personnel. Thus a flat appeal to foreign governments to bar educated persons from immigration is irresponsible. A clear distinction between degree holders and qualified professionals with actual (not potential) job openings should be drawn, especially for framing policies which would decrease the mobility of an individual.

The measures Dr Parthasarathi suggests seem to have little relevance in terms of developing indigenous solutions. Foreign trained *sahibs* (even those with high academic laurels) may be the jewels of the establishment, but little can be expected from them by an average Indian. At best, they can be Peace Corps volunteers whose efficiency is open to question. Modern technology is an alien force in most human societies (even though it is here to stay) and its compatibility with human nature has not been proved even for technologically developed societies.

However, its integration with other cross-cultural forces can be aided by relevant education and planning which encompass cultural, economic, and political aspects of a society.

Yours faithfully,

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Pollution is a Dirty Word

SIR,—In the past couple of years I have read or heard about pollution of the atmosphere (by radioisotopes from fallout, by tobacco smoke, car exhausts, open-hearth fires, factory chimneys and coal-burning trains); of fresh waters (by toxic or inhibitory agents, such as detergents and DDT, and by nutrients or growth stimulants, such as nitrates and phosphates); of the sea (by chemical effluents, which may be toxic to plankton, by sewage, which promotes its growth, and by effluents from nuclear power plants, which tend to warm it); of the scenery (by beer tins and roadside hoardings); of the ether (by advertisements or rock music, according to taste); of the night sky (by the shine of street-lights); by the wrong kinds of microbes and viruses (causing disease or bad beer); by the wrong kinds of fish (a consequence of introduction or inferior husbandry); by the wrong kinds of genes (a consequence of miscegenation or inadequate eugenic measures); and of the world's population in general (by our own unlimited propagation). There are endless protests against chemical pollution, thermal pollution, sound pollution and light pollution. Any day now, I expect to read about calorie pollution (too much sugar in one's diet), verbal pollution (one of the specialties of contemporary USA), personnel pollution (too many half-occupied typists), negative thermal pollution (in draughty corridors) . . . *ad nauseam*.

As children, we used certain words to impress our parents. As adults, applicants for public funds to support our research or other favoured activities, we tend to continue this practice. But as scientists and craftsmen, we should not overuse or misuse our tools or our words until they become so bent or so blunt that they lose their efficacy. Let us not muck up our language, lest we also muddle our minds.

Yours faithfully,

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