CORRESPONDENCE

More Means Worse

SIR,—In your issue of January 15¹, your staff open their report of the Cambridge education conference by saying that everybody at it rejects the Amis view that “more means worse”. That is a vulgar misquotation which perhaps recommends itself to educational expansionists by being easy to dismiss as “narrow”, “facile”, and so on.

What I wrote (in 1960), displaying no more than ordinary powers of prophecy, was “more will mean worse”; this in the context of arguing that, if you stop caring about university admission standards and allow simple desire for higher education to be the chief passport to it, you will produce less well educated graduates. Those who, like your staff and/or the participants at the conference, plus lower forms of life like the education correspondent of *The Times*, don't know what I said about more and worse, clearly can't know my arguments for saying it, and are in no position to “reject” a “view” I have never stated or held.

I would not, of course, use the same phrase today. Overcoming my dislike of stating what is perfectly obvious and more and more widely accepted (outside places like your columns and education conferences), I should have to write, “More has meant worse”.

Yours faithfully,

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¹ *Nature*, 229, 159 (1971).

Careers in Government R & D

SIR,—I am afraid that your editorial (*Nature*, 230, 334; 1971) misunderstood the basis of the CBI's proposals for broadening career prospects for people entering government research and development. The purpose of the short-term appointment was to offer the opportunity for a few years government service as an alternative to entering government science as a life's career. Incidentally, initial reactions from government suggest that their thinking is on broadly similar lines, so I hope that CBI will still have some friends in government laboratories!

As for the rest of your comments, the CBI's proposals called for just the same opportunities for lateral movements with-

in government service as your own commentary suggested and we explained how this might be achieved.

You will be interested to hear that we have other papers on various aspects of government and its research and development in preparation. We felt the paper on careers to be the most important since a flexible career-structure will make it easier for government to introduce any future changes in emphasis of government research and development.

Yours faithfully,

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Uses of Education

SIR,—I should like to comment on Sir Eric Ashby's analysis of what is wrong with university education today (*Nature*, 230, 283; 1971), because I believe that in supporting the remedies proposed by Pippard *et al.* he fails to grasp the nettle.

Universities may well stand for excellence, objectivity, the cultivation of reason and the inherent value of knowledge, but unfortunately so many people, parents, employers and government departments believe that they stand principally as professional qualifying bodies. The former of these roles is much the more important, yet it is hardly for such purposes that universities have multiplied and grown in size over the past decade. Let us be clear that the reason most students compete for university entrance is not the altruistic one of promoting excellence and so on but to acquire a qualification which has high market value. Would it not be better to recognize frankly that the ethos of the university is quite different from the requirements of students and employers? Surely it would be better to concentrate on the development of excellence in research and the pursuit of knowledge for its own sake in a relatively few centres, the well established universities with traditions of high scholarship and research, institutions which are not mission-orientated. They would be helped in this role if they did not hold examinations or award degrees. It is enough to have worked in a university with its high standards of scholarship and discipline, and consequently students would be attracted only if they were truly interested in study and research.

A wide field would then be left open

for the development of qualifying schools for the professions having an ethos coincident with the requirements of employers and of students seeking reliable qualifications relevant to the jobs they expect to take up. Such institutions might be developed from existing universities and from polytechnics and colleges of advanced technology by changing their present functions. These could properly be called polytechnics, a term which would acquire high status as soon as they were recognized as the only professional training and qualifying centres. In some cases they could develop side by side with universities on the same campus. Unlike universities, the new polytechnics would be mission-orientated and their role would be to train and examine students in: (a) knowledge relevant to a profession; (b) the critical evaluation of information; (c) the execution of individual and collaborative projects; (d) decision making in relation to practical problems and social needs.

The teaching staffs would be selected and promoted on their ability and success in teaching. Instead of undertaking academic research, they would be expected to tune themselves to the requirements of government and the professions by practising in national institutions and in industry on an exchange basis for, say, one year in four.

As a scientist employed in industry, I believe that such a scheme would be workable and would be welcomed by professional staffs who would have a regular opportunity of studying in some depth recent advances in their specialities, while teaching students about practical applications of their studies in real life.

Yours faithfully,

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Women's Liberation and Parenthood

SIR,—With regard to your editorial on “Taxation and Women's Liberation” (*Nature*, 230, 345; 1971) I must strongly protest.

It is by no means “well demonstrated” that a parent pursuing a “profession” is unable to provide the kind of attention that young children require. Your statement could imply children raised by working class women who are compelled

to work because of economic hardship, and children born during the last war when a majority of mothers went out to work, have suffered some form of parental deprivation—a much abused term in contemporary sociology. Surely it is as correct to suggest that it is the quality of affection and love that the child receives which is important and not the number of hours in the day the child has the parent present with it.

Implicit in your editorial is the assumption that children are happier if raised by one parent (that is, the mother in our society) and not by both parents equally, sharing in all aspects of the children's development, not just in reading a bedtime story but in feeding, washing, and all the other routine work required in rearing a child. So deep does the prejudice in our society run that the patriarchal state of affairs is the norm, it is always considered "natural" (a final resort in the logic of sane humans) that the women stay home and the men go out to work. Not only does the housewife need to be liberated from a portion of the responsibilities of raising a family, but men should seek liberation from the economic shackles put on them by having to support two adults and a number of children. Children are the responsibility of the mother and father and the "handicap" incurred as a result of producing them should in all fairness be shared equally by both partners.

The bland conclusion to your article that women are to relinquish their careers for five years is patently impossible in academic and a number of other professions. It would be interesting to know how many male professionals would accept the same sexual blackmail because they wish to have children.

Yours faithfully,

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Indian Brain Drain

SIR,—Dr Parthasarathi's article "Brain Drain from Developing Countries" (*Nature*, 230, 87; 1971) requires careful reading from all Indian scientists abroad.

He has made an excellent attempt to assess the situation and has offered a number of interesting solutions. There are, however, a few points that I would like to comment on. I think that one must really distinguish between three categories of trained Indians—engineers, medical doctors working in hospitals and scientists in a number of disciplines. As far as engineers are concerned, one cannot really accuse them of lacking national spirit merely because there is a paucity of jobs for their ilk. Even the Indian newspapers say so (and contrary to what the author says, we do read them). In the

event of positions falling vacant, these people do return. His suggestion that newer institutional structures be designed is commendable. The medical doctors working as interns or residents in British, American or Canadian hospitals are merely service personnel. They are not actively contributing to the progress of science. On the other hand, they actively accumulate foreign exchange to help them set up their practices when they return. And can one blame them?—after all, the practising doctor is a glorified tradesman. Struggling as house-surgeons or registrars in Indian hospitals will take them decades to accumulate sufficient capital. The third category, which includes a mixed bag of physicists, chemists, medical researchers and so on, requires a different emphasis. Although the author does not state so explicitly, words like "developmental programmes", "national needs", imply that he is distinguishing between basic and applied research. This distinction obscures a more crucial difference—between good and bad research. A piece of scientific research must be judged purely on the basis of its scientific merit—moral or value judgments have no place. That dogmatic assertion does not mean that good research cannot be carried out on kwashiorkor or that studies on Cepheid variables being more esoteric are better. Tender consciences and scientific merit are not necessarily synonymous. At a time when scientists wear their hearts on their sleeve, such a viewpoint may seem heretical, but a scientist has a dual obligation—to science and to society, in that order. This may partly explain the paradoxical position of the scientist in modern society. Fowles has pointed out some interesting sources for this paradox¹.

Scientific research can be better classified into open-ended or cul-de-sac varieties. Cul-de-sac research ceases when the problem is settled—many forms of applied research fall into this category. The more exciting variety is open-ended research which leads to numerous ramifications. Thus a study which may begin as a search for an anti-hypertensive drug may lead the investigator to study the function of the adrenals, the kidney, etc., and end up as a contribution to the nature of active transport in vascular smooth muscle. Although Kuhn believes that scientists are basically problem solvers², they do like to look for what Virginia Woolf may term a "luminous halo" around the core problem. Often the existence of this halo is what maintains enthusiasm.

Scientists in India have tended to indulge in both types of research. Some like Raman, Saha, Bose and others have attained international reputations performing excellent research on topics that have very little applicability to India's problems. The more recent contributions of Dr Paintal are a case in point. His

elegant work on atrial, gastric and pulmonary receptors has not solved our pressing problems, but it has served to focus attention on Indian research. As such, he has served to attract several very gifted men and has done more for India than others who dabble in supposedly relevant problems (for example, in indigenous drugs).

The crucial issue is whether India should invest in open-ended research at all. I am afraid that Dr Parthasarathi's measures will not serve much unless this issue is tackled. To serve in India for two years before leaving may merely open our eyes (it did mine) to the political machinations that are rampant. To have administrators visit foreign universities may give those gentlemen a trip abroad but only serve to irritate us—for bureaucracy is perhaps the only abundant element we can do without. It would be grossly unfair to expose a scientist to the possibilities of open-ended research and then tie him down with talk of national needs. A more radical solution is needed—the closure of all research establishments that perform this sort of research and a greater development of regional research centres. This may stifle enthusiasm (there was precious little) and convert scientists into scientific workers (but Haldane often said that many Indian scientists were just that). There is a good deal of money invested in projects that appear relevant, but appearances are deceptive. India must then be content for the present to leave open-ended research to wealthier countries and borrow technical know-how (an odious word) for solving immediate problems. In the meanwhile, those scientists who do not wish to indulge in short-term research may either live abroad and hope to return home some day or return to India, abandon research and take up teaching and perform other functions. I may be naive enough to believe that science is still a calling when all the evidence points to the contrary.

I do not think, however, that such radical measures are necessary. Leloir's work has shown that adverse conditions and lack of funds are no deterrent to the scientific spirit. If Indian bureaucrats and administrators release their stranglehold on Indian science, perhaps we may still achieve greatness in spite of meagre resources. After all, Indian scientists do fairly well abroad (witness Khorana, Chandrasekhar, Subba Row and others). Obviously it is the environment that is stifling and lack of resources is not the major issue.

Finally, Dr Parthasarathi would really wish the foreign universities to tailor their courses to suit our needs. To what end? Does he really believe that there are so many positions vacant—in scientific research (I am not interested in rural health care)? How many jobs that are advertised remain vacant? How many