

groups is publication in every sense that matters. The fact that IEG communications are circulated only within a chosen circle is no defence against the charge of publication but merely evidence that the method of publication is defective. Certainly the methods of the IEG are enough like publication to make a mockery of the phrase "personal communication" used as a euphemism in referring to information gleaned from circulating preprints. The biological editors would have been within their rights if they had insisted on some demeaning alternative to distinguish the communications of the IEG from the personal letters which are a traditional part of scholarship of all kinds—"impersonal communication", perhaps, or "postal circular". Certainly they are on safe ground, and they will carry most working scientists with them, in saying that they have no wish to connive at multiple publication. That is the essence of their case against the IEG.

The question will arise of where *Nature* stands, and it should be plain already that this journal has the fullest sympathy with the statement which the biological editors have put out. But the rules which the biological editors have drafted are not easily applicable to journals like this. For one thing, there is no regular means by which a general journal can know what is circulating on the IEG network. Indeed, even the journals which have decided to adhere to the statement by the biological editors can only hope consistently to enforce their own rules through the supposedly secret knowledge of people who are also on the books of the IEG. It is also important that *Nature* has a special interest in publishing material which commands attention outside the branch of science with which it is chiefly concerned, so that the region of potential conflict with the IEG (which must be narrowly defined if they are to function at all) should be less serious than for most journals. At the same time, a journal like this, whose function is in part to provide working scientists with a sense that they know what is going on, cannot wholeheartedly endorse the view that the IEG would be unobjectionable if they circulated "very brief notices of current research". The truth is that preliminary accounts of research in progress are as much in need of publication for the world to see as are the more formal contributions to the literature. But all this raises a host of almost legalistic questions. In the long run, the only defence is to beat the IEG at their own game. Fortunately, there is every reason to expect that about the middle of this year, *Nature* will be operating consistently with a time lag of a few weeks, and without skimping on the care spent in sending communications to referees. It will be harder for monthly journals to follow suit, but obviously they should try.

Improving the service which the journals provide is obviously important, and the statement by the biological editors draws attention to some of the more obvious steps which could be taken, although there is a good chance that many of the common complaints against the journals would melt away if more of them had full-time technical assistance. But mere mechani-

cal improvements are not enough. One of the most serious defects of the published literature is that it has become obsessively concerned with the compilation of a historical record, and too little concerned with communicating ideas and information in such a way as to refresh and to enliven. Indeed, one of the reasons that the IEG system has given such offence to the established journals is the implication that material sent for publication would be brought by some other means to the attention of those most likely to find it interesting. In part, of course, the fault lies with the journals, which have often taken too solemn a view of their function. Fortunately, they have it in their own power to decide whether the literature is to be read now or only by posterity.

## MANNING THE COMPUTERS

THE advice which the British Government has been given on the training of people to run computers is probably sound but certainly unimaginative (see page 539). It is comforting, of course, to know that there is not much reason to worry about the training for the less demanding jobs—operating computers and writing programmes for them. The computer manufacturers will look after that. But the advice which the working group at the Department of Education and Science has provided on the impending shortage of systems analysts and systems designers, as they are called, is much less convincing. The working party may be right, but its arguments are a little pedestrian and therefore unconvincing.

The immediate problem is to know precisely what is meant by a systems analyst or designer. The working group does not help by saying that the terms are intended as a "generic rather than an exact description". The point seems to be that there is a great need among potential users of computers for men and women who can devise ways for making the best use of computers, and who can do so with such flair that they carry other people with them. Evidently, systems analysts are evidently the evangelists of the computer age. But is it not therefore in the nature of things that they will work themselves out of their jobs? Will the need of them be as conspicuous and particular when there is a more sensitive appreciation throughout British industry of the ways in which computers can bring rationality and better performance to many industrial and commercial organizations? Exact predictions are obviously impossible, but the working group may well have been too wooden in making a simple linear extrapolation into the seventies. Courses there should be, of course, but in the long run it may be more important that undergraduates in a variety of disciplines should be given an opportunity to learn at first hand what it is like to have to plan the efficient use of a large computer. The truth is that if systems analysis is as valuable as the working group believes, it should be made a leavening throughout society.