Three out of thirteen references on "Copolymerization" are to U.S.S.R. work; two to British work. As the subject is considered in relationship to synthetic rubbers, is this so unbalanced as to justify Dr. Naunton's querulousness?

An official directive on Hycar OR, with Dr. Naunton's name attached, does not differ substantially from my own comments. I am somewhat mystified by the criticism.

I reiterate my belief that the industrial welfare of Great Britain can only be guaranteed by achievement based on hard work, and not merely by discussion and buying licences.

"Spinney Corner",
Bassett Avenue,
Southampton.

HARRY BARRON.

I CANNOT agree that the review of Dr. Barron's book was unfair. It was critical but definitely not unfair.

It is true that Dr. Barron states in the book that the commercial product known as butyl rubber contains only a small amount of diolefine, but the criticism was levelled at the general case of interpolymerizing of isobutylene and diolefines, where important generalizations have been missed and misleading facts and figures have been quoted. Dr. Barron would be well advised to put more trust in experimental work and less in published information. The *fact* remains that butyl rubber runs smoothly on a cold mill but breaks up on a hot one.

I think Dr. Barron is confusing intelligence with knowledge. The 'general reader' is often far more intelligent than the chemist, but no amount of intelligence without chemical knowledge will enable him to appreciate structural formulae.

I would remind Dr. Barron that I was not "querulous" about the emphasis which had been given to U.S.S.R. work on co-polymerization but on the narrower field of the constitution of co-polymers. The work of Hill, Lewis and Simonsen published in 1939 should surely have been mentioned.

In Dr. Barron's comment about Hycar OR, we see at last our different points of view. Dr. Barron wishes to paint a picture in which effect is obtained at the cost of only substantial accuracy, but a textbook as distinct from journalism is not a picture but a sharp photographic reproduction of facts.

Manchester.

W. J. S. NAUNTON.

Future of University Education

THE British Association report on Post-War University Education (see NATURE, December 19, 1942) contains some excellent suggestions. The plea for the further extension of residential facilities at the modern universities, for example, is fully justified by experience in the University of Reading, which was a pioneer in this field. Nor will anyone dissent from the Committee's premise that a scientific career should be broadly based upon the "humanities". One must, however, disagree with the conclusion which is drawn that a study of the "humanities" should be included as an essential part of the university 'honours courses' for science students. All freshmen will, before entering their honours course, have enjoyed some six or seven years of secondary education, and it is in the secondary school that the essential foundations of a general education should have been laid. The period available is ample, if wisely used, to stimulate any intellectual interests of which the student is capable, and of laying a founda-

tion upon which he should be able to develop those interests by leisure reading.

If, in point of fact, the schools have been betrayed (whether by the pressure of the university scholarship system, or other cause) into too great specialization, so that the present undergraduate is less widely read than his predecessors, the remedy is to be found by an overhaul of the school curriculum rather than by inserting irrelevant subjects into university courses. Omniscience is no longer a possible educational objective, and there must be some stage at which a science student begins to concentrate upon those special subjects, the mastery of which will enable him to make his specific contribution to the welfare of society. I suggest that this point comes naturally at the beginning of his university career. A wise tutor will, no doubt, encourage his students to a wide course of reading in their leisure time, and to a reasonable participation in undergraduate societies; but the student should not be distracted from his main objective by having to face an examination in any non-related subject.

There is one point, however, on which I believe the Committee has moved on to very dangerous ground. It is, perhaps naturally, expressed more clearly in the article in NATURE on the report than in the more cautious words of the Committee itself. I quote the relevant paragraph.

"It is therefore with a feeling of deep satisfaction that we note the Committee's insistence on training for world citizenship in all faculties, pass and honours, of our universities. . . . Social studies and the humanities must play a certain part in the training of all students. This applies especially to science students, for it is almost axiomatic that, in present circumstances, a man might gain a first-class degree in science and be no more appreciative of the essentials of world citizenship than any less fortunate individual who has not gone so far as through a secondary school."

To suggest that a graduate is, or ought to be, a higher type of *citizen* than the man whose gifts do not lead to a university education is to misunderstand the nature of citizenship in a democratic community. It has a totalitarian ring about it, and is calculated to arouse indignation in many manual workers who feel, and rightly so, that their conviction of what constitutes the basis of a sound social order is entitled to as much respect as that of the intellectual. I hear from colleagues who have recently been holding discussion groups with the Forces that similar pronouncements by our 'intelligentsia'—who are apt to take it for granted that high intellectual training is a pre-requisite for leadership in the new age—is already causing serious resentment.

Society will choose its own leaders; wisely, we may hope, but certainly for qualities in no way connected with academic distinction, even in sociological subjects. But society will also need, for its great task of restoration, men and women of high ability and intensive training in each of the sciences—and the humanities, too—and will welcome them, not as superior world citizens, but for the special contributions which their scientific education enables them to make. The education and training of these experts is the special function of the university, from which it should not be deflected. For the undergraduate who has the ability which justifies an honours course in science, the eager pursuit of the training which is to fit him for this task is his best form of social service.

University of Reading.

J. A. CROWTHER.