

Chemistry in Africa

This account of a conference held in Africa last December is by Professor F. R. Jevons, Department of Liberal Studies in Science, University of Manchester.

"CHEMISTRY is chemistry is chemistry," as Gertrude Stein might have said, had she been thinking of the supposedly supranational nature of science. But is science really so autonomous an activity as to be in essence the same in all countries of the world? It would be convenient if there were such a platonically ideal chemistry; it could then be taught in the same way everywhere, merely adding topical applications as adventitious appendages to give local colour. Or is there such a thing as African chemistry?

This question formed the most interesting theme running through the conference on University Chemistry Teaching held in the University of Nairobi, Kenya, December 14–18, 1971. The first such conference to be held in Africa, it was conceived and organized by D. McCormick of the Chemistry Department at Nairobi. About 70 delegates came from African countries, mostly the English-speaking ones south of the Sahara, but not including Rhodesia and South Africa. Africans, it was pleasing to note, were not too heavily outnumbered by expatriates.

School Curriculum

Even at school level, science is no longer regarded as so international that Nuffield, Chemstudy and Chemical Bond Approach can be thought of as brand names for which to set up local dealerships. Since 1968 the East African Secondary Science Project has been adapting Nuffield materials. The dominant feeling now is that one cannot go faster than the teachers can assimilate new approaches and one wonders how far "curriculum development" is really in-service training in disguise. In Lusaka, in the Curriculum Development Centre of the Zambian Ministry of Education, J. V. Huxley is producing booklets describing local chemistry-based industry so as to help expatriate teachers add relevance in spite of their usually short periods of service in the country. Zambia, however, differs from the countries of the East African Community (Kenya, Tanzania and Uganda) in that there are no sixth forms in the schools and first degree courses last four instead of three years.

With a few exceptions, like select Strathmore College in Nairobi, which prefers the London Board, most East

African schools have been taking the Cambridge Board's examinations. Now, however, many scripts are being marked locally. Socialist Tanzania has fewer secondary schools than Kenya but the proportion of Africans among the teachers is higher. Most of the science students at the University of Dar-es-Salaam are bonded to enter school-teaching after they graduate.

Objectives in Developing Countries

On the first day of the Nairobi conference there was a series of papers on objectives for chemistry in developing countries. Calls for university courses to be made relevant to Africa were strong and insistent; speaker after speaker rejected the too theoretical and esoteric aspects of "western" chemistry. F. G. Torto (Accra, Ghana), elder statesman among the African chemists, maintained that objectives should be related to the circumstances of the countries concerned and the need to advance their economic and social development.

Laboratory and workshop techniques should be taught to help graduates when they enter school or industrial laboratories poorly equipped with technicians. B. A. Dadson (Cape Coast, Ghana) felt that statistical thermodynamics and ligand field theory belong to "the dimly lit corridors of Oxford and Cambridge" and that African students should learn instead to understand their chemical environments and to see the potentialities of their own countries' resources.

Relevance in Teaching

The trouble with the "chemistry is chemistry" view, according to G. M. Barrow (ex-Case-Western Reserve), is that it makes the subject into a dead corpus of knowledge which can be given relevance only by adding or subtracting examples to or from the mummified body. He spoke of making chemistry respond automatically to time and place and of allowing it to grow organically as a study of the world the student lives in.

Barrow's eloquence did not still all doubts. How parochial does relevance have to be? Examples can be given to students from the first year onwards, said S. R. Landor (Makerere, Uganda), but they can be internationally relevant. One of the ubiquitous doubts about relevance—whether teaching can be related to the world outside the labora-

tory and at the same time serve as an adequate preparation for further study—remained unanswered except by affirmation of faith. In any case, said J. A. Leisten, Barrow's approach is not needed for his students in Malawi. Unlike many of those in advanced countries, they are highly motivated and do not need to be coaxed into taking an interest.

As well as attempts to make science courses relevant in themselves, there are naturally courses of the "science and society" type which try to add relevance as an accessory to science. "African Studies" at the University of Zambia seems to have had a mixed success so far. At Dar-es-Salaam, there is a course in "Development Studies" for all students; the course outline mentions topics like self-reliance, Tanzania socialism and "the need for a scientific and socialist view of industry in nature".

Practical Work

Many science teachers in Africa comment on the "anti-science" background of their students, but it should really be called non-science, because it is different from the sophisticated rejection of "scientific" values and modes of thought by western devotees of authors like H. Marcuse and T. Roszak. In such circumstances one would expect practical work to play a specially important role. Indeed, McCormick said, with characteristic vigour, "the lab's the place to hit them". Similarly, Joy Redhead (Ibadan, Nigeria) gave an enthusiastic exposition of the wide range of virtues of laboratory classes.

African Unity

Throughout the discussions at Nairobi there was no doubt that the chief problems were felt to be common to all the African countries. D. Odhiambo (Nairobi) suggested establishing an African journal and before the end of the conference preliminary steps were taken to implement this idea. Perhaps the journal will be called *Chemistry in Africa*. Later it may be possible to bring in the French-speaking countries and make it bilingual. There is little chance, though, of using national languages. Although Swahili comes close to being a lingua franca in East Africa, other countries are less fortunate. Zambia alone is reckoned to have about 70 languages, of which seven have been selected as media for teaching in schools. In these circumstances, the real hope must lie with the material for English medium primary education which has also been prepared.

I thank the British Council for making it possible for me to visit Zambia, Kenya and Tanzania.