

## SPEEDING THE PACE OF TECHNOLOGICAL DEVELOPMENT IN THE PETROLEUM INDUSTRY

**P**ERHAPS in no other branch of applied science has fundamental research, both in the field and in the laboratory, borne so much fruit in so short a time as that of petroleum technology. During the past thirty years, since the first World Petroleum Congress, the evolution of the industry has not only been underlined by its magnitude and spectacular accomplishments but also by the complexity of the problems, both human and technical, that such rapid advancement of our knowledge of this technology has engendered. It is, indeed, timely that attention has been directed to the more philosophical aspects of the trend of modern research in the industry and its possible limitations if certain human factors are not taken into account. In no more appropriate setting than that of the sixth World Petroleum Congress held in Frankfurt during June 19-26 could the facts and fears be proclaimed and few are better qualified than Mr. John Loudon, president of the Royal Dutch Petroleum Co. and senior managing director of the Royal Dutch/Shell Group of companies, to state the case as it really exists.

In his executive position in the industry and with all the experience he brings to bear, although he disclaimed at the outset of his address to the Congress: "any competence as an expert in science and technology", Mr. Loudon touched on some of the most sensitive aspects of planned research in the industry which have in recent years impressed themselves on the more far-seeing people concerned with guiding research teams and particularly with financing the adventures they are called on to undertake. For example, nobody could disagree with his contention ". . . that the limiting factor in science and technology is the number of creative individuals who provide the ideas from which all novelty comes". Again: "We have become so accustomed to thinking in terms of money and to assuming that more money will get us more of anything that is desired that we sometimes lose sight of other limitations. In research we may already have reached the state of diminishing returns for our investment—not only of industry but of society as a whole". Much has recently been heard of the lure of some of British top-grade scientists abroad, tempted by higher remuneration and alleged superior research facilities. But this competition is by no means confined to prospects overseas. The influence of Government Departments in Britain, quite apart from foreign interests, concerned with atomic energy, space research and national defence projects, for example, is felt in their ". . . competing for the limited available talent not only with industry and with universities but with each other". Mr. Loudon went on to say: "It is evident that much of the effort, both military and

civilian, has been devoted not to really original concepts but to the rapid exploitation in many different laboratories of the few ideas that are occasionally produced by brilliant individuals".

The trend of policy of the Royal Dutch Petroleum Co. can be discerned from the statement that economically the profitability of industrial research, while still high, is decreasing due, apparently, to the increasing number of instances of simultaneous inventions; these complicate patent portfolios and render it difficult to decide whether money should be invested for projects based on technical novelty or superiority which could well turn out to be illusory. Much the same precepts, we suspect, are influential in the research policy of the other major oil companies at the present time. Thus, both the technical and economical difficulties ahead can, Mr. Loudon argued, only be solved by using available brainpower efficiently. "In our efforts to truly speed the pace of technology in the petroleum industry we must try to do two things: first, by supporting and undertaking basic research increase the number of new ideas; secondly, encourage our applied scientists and our commercial staff to be adventurous in their choice of new processes and products for development. And as citizens, we should ponder the question of whether the world can long afford an inefficient use of our previous asset of brainpower".

Only creative human talent can provide the science and technology needed to-day. That talent is limited, as is the case throughout the world. It is not enough to seek refuge in criticism of our present educational systems, on one hand deploring the fact that not enough scientists and technologists are being trained to meet the needs of our culture, or, alternatively, that science and technology are being over-stressed at the expense of the humanities, to the future detriment of that culture. Mr. Loudon concluded this most stimulating discourse with a statement of his belief ". . . that with a modicum of good sense and a minimum of dogma the paradox (in the above opposing views) vanishes. Science and the humanities are by no means incompatible. . . . In our business particularly, we need men trained in the sciences with an understanding of the humanities, men trained in the humanities with an understanding of science". Moreover, ". . . the rare individuals who can master both worlds are those who are contributing most to the effective use of technology. Such men are also continuing to aid the universities, giving lectures, serving on advisory committees, sometimes even leaving us to take up permanent posts. And by prompt publication of our basic research we are contributing to the body of scientific knowledge". H. B. MILNER

## THE INTERNATIONAL SCIENTIFIC RADIO UNION

### FOURTEENTH GENERAL ASSEMBLY

By DR. R. L. SMITH-ROSE, C.B.E. (President)

**P**REPARATIONS are now well in hand for the fourteenth general assembly of the International Scientific Radio Union (URSI) which will be held at the Takanawa Prince Hotel, Tokyo, during September 9-20. For the past two years a large committee, appointed by the Science Council of Japan, has been preparing the general arrangements under the guidance of a smaller Executive Board, of which Prof. I. Koga, vice-president of the International

Scientific Radio Union, is the chairman, and Prof. S. Okamura the secretary. The detailed programme for the assembly is being organized by six small committees including two dealing with the scientific and ladies programmes respectively.

The forthcoming general assembly is noteworthy in that it will mark the fiftieth anniversary of the formation of the International Scientific Radio Union at a small