it is preferable to use only one name for each of the alternative tautomers or to indicate that certain names are synonymous. Dr Schofield uses three different names (on pages 86, 104 and 111) for the oxo-tautomer of hydroxypyrrole.

A criticism which one can level at any book which aims at being a reference book as well as an informative text is that it soon becomes out of date. The fault often lies in the delays in publishing. Dr Schofield has attempted to rectify the fault and an addendum of work reported up to the end of 1965 is included at the end of each section of the original text. With the present day rapid expansion in heterocyclic chemistry, however, one must realize that the book is, in many respects, already out of date in 1968. If one accepts the inevitability of this situation, then it is extremely difficult to find any other book which compares with the high standard set by Dr Schofield.

R. Alan Jones

INTERNATIONAL FRICTION

Oil : The Biggest Business

By Christopher Tugendhat. Pp. xvi + 318. (London : Eyre and Spottiswoode (Publishers), Ltd, 1968.) 45*s*.

One of the charms (some would say hazards) of the development of industry in the twentieth century, with its dependence on the economies of scale, has been to make armed insurrection easier. By concentrating the centres of government, production and communications in a few places, society has allowed itself to become less flexible and more vulnerable to assault. The radio station, perhaps, is the first to fall, but the oil refinery is not likely to be far behind. Lord Curzon observed that the allies floated to victory in the First World War on a wave of oil—modern societies are swept along by a veritable flood of the stuff. It was no coincidence that the French Government managed in the recent crisis to arrange for petrol to be made available for the Whit holiday—nor is it surprising that this immediately made some people feel that everything was back to normal. This, of course, was not the first time that political survival has depended on the continued supply of oil, but it was a nice example of just how important a part it has come to play.

Christopher Tugendhat understands this well, and his interesting and well-informed book provides further examples. He begins his survey, quite properly, with an obscure railroad conductor called Edwin Drake, who turned up in Titusville, Pennsylvania, in 1859 and began to drill. Previously, people had been prepared to wait for oil to seep to the surface, but Drake recognized that this was a poor way of doing things. Within a few weeks Drake found oil, and the derision of the local people turned to envy. Within twenty years, the industry was large and flourishing, and entirely in the hands of one man, John D. Rockefeller. In its early years, the industry seems to have had a gift of throwing up extraordinary characters—as well as Rockefeller, there was Calouste Gulbenkian, who made millions of pounds a year out of an oilfield he never went to see, and Henri Deterding, who built up the Royal Dutch Shell group.

In recent years, perhaps inevitably, the oil industry has become a more conventional place to work, peopled with organization men who know the rules—odd though they sometimes are—and stick to them. Christopher Tugendhat's book reflects this change, and the second half is far less entertaining than the first. But the book does explain a number of things which the oil companies would doubtless have preferred to keep to themselves, while preserving a careful neutrality in matters of controversy. Should the producing countries dictate their terms to the companies, and finally gain control of their own reserves ? Mr Tugendhat favours a policy of gradualism, and quotes the fate of Dr Mohammed Mossadegh, who tried in 1952 to take over the oil reserves of Iran, his own country, from Anglo-Iranian (BP) who owned the concession. It is true, as Mr Tugendhat observes, that this dispute established where the balance of power lies between the producing countries and the international companies—it was a clear victory for the latter. And it is also true that the present arrangements, based on an inflated "posted price" on which the companies pay taxes, is more favourable to the producing countries than many other systems would be. But the same pressures which made it politically unwelcome for Britain and France to have their computer industries dominated by IBM will ultimately make life a good deal harder for Shell and BP, and no amount of good works or contributions to worthy causes will entirely remove suspicion of their motives. And this, one feels, is entirely as it should be.

Nigel Hawkes

PHILOSOPHY OF SCIENCE

Conceptual Foundations of Scientific Thought

An Introduction to the Philosophy of Science. By Marx W. Wartofsky. Pp. xii + 560. (New York: The Macmillan Company; London: Collier-Macmillan, Ltd, 1968.) 84*s*.

This is a welcome addition to the increasing number of textbooks on the philosophy of science which are coming out in response to the need of the many university institutions, both in this country and abroad, that are providing centres of study for a subject that is becoming progressively more specialized, with a danger of being cut off from the mainspring of scientific activity. The core of the book (part 2: The Methods of Science) includes the usual formal account of the central problems of the philosophy of science, including such topics as observation, formal systems, models, measurement, hypothesis, induction and probability, and the formalities of theory construction. This part is written clearly and economically, and at a level accessible to the beginner in the field. While including many of the traditional topics going back to the nineteenth century (for example, a discussion of Mill's canons, chance and probability), it also discusses and summarizes results of more recent controversies such as the logical status of scientific laws, the epistemological and ontological status of theoretical models and similar matters.

The student is, however, introduced to this part very gently, through an account of the emergence of scientific thought. This stresses the importance of the conceptual element in pre- and post-scientific modes of perception, although the discussion of these matters falls somewhat between the two stools of incipient psychological theory and rather obvious and commonsensical remarks, and therefore makes rather heavy, not to say dull, reading. This is followed by a useful device of contrasting scientific with pre-scientific ways of knowing, and a chapter on the rise of science in Greece, including brief sections on the Greek atomists, Plato and Aristotle. The brevity of the treatment can, of course, no more than whet a reader's appetite: Plato and Aristotle each get five pages. Here the account of genesis breaks off, giving the misleading impression that at this point both science and its philosophy somehow had gone into hibernation, emerging fully fledged at the rise of the seventeenth century. The concluding section of this part ("The Continuity of Greek Science and Contemporary Science") does nothing to lessen this impression, although there are a couple of appendices which mention developments in medieval mechanics as well as Alexandrian science. Still, one must be grateful that a formal textbook on the philosophy of science should