

by a general reporter's summary giving the trend of present-day thought and research at a glance.

Geologists throughout the world are bringing the resources of science to bear on vexed problems of petroleum source-rocks, their geographical limits and the principles governing distribution of oil-fields. Geophysical science has advanced rapidly during the last ten years, and papers on this subject provide an excellent basis of assessment of capabilities and relative usefulness of the numerous instruments now available. The value of aeroplane reconnaissance and photography appears to be capable of enhancement, and an urgency is obviously felt by its sponsors and operators for its more universal application to cover the vast amount of pioneer work still to be done. Stress is also laid on analysis and interpretation of oil-well data acquired during drilling—now a very exact science—and on the great assistance which such data, though not always appreciated, provide to field operators. Drilling, production, transport and storage of oil form the main themes in the Production Section. In the first instance, opinions are collected and problems discussed chiefly in connexion with pressure drilling, use of mud fluids and oil-well cementation. The second group comprises contributions describing actual production methods as now practised and their relation to reservoir conditions, while the last group is of interest mainly from the point of view of modern pipeline construction and protection.

Vol. 2 contains a great deal more subject matter, and includes papers on cracked gasoline refining and the use of inhibitors for gum prevention, determination of gum in gasoline, knock-rating for motors and aviation, gasoline fuels for high-speed compression-ignition engines, hydrogenation, extraction processes for the refining of oil, lubricating oil, viscosity, bituminous materials and emulsions, kerosene, alternative fuels, oil-coal fuels, petroleum as a chemical raw material, and measurement of oil in bulk. Two important considerations concern nomenclature from the legal aspect and international co-operation in standardisation.

Both volumes conclude with an account of the formal adoption of resolutions, Sir John Cadman's lecture on "Science in the Petroleum Industry" and also Mr. J. B. Aug. Kessler's paper on "Rationalization of the Oil Industry", reports of which duly appeared in *NATURE*. There are author and subject indexes at the end of each volume, which, in the latter case, might with advantage have been made fuller, in view of the technical value of these volumes as standard works of reference.

The editing of such a large number of papers dealing with so many different subjects and presented in such diverse ways was, however, nothing short of a Herculean task, and the editors are to be congratulated on the efficient manner in which they have discharged it. H. B. MILNER.

Short Reviews

A Short Course in Elementary Meteorology. By W. H. Pick. (M.O. 247.) Fourth edition, completely revised. Pp. 143. (London: H.M. Stationery Office, 1933.) 2s. 6d. net.

THE material of this book is divided into three parts under the headings general meteorology, synoptic meteorology and the upper air, the first part dealing with wind, temperature, humidity and ordinary weather phenomena, the second with the modern synoptic weather chart and the systems of forecasting based upon it, and the third with the physical structure of the atmosphere from the ground up to the highest levels to which recording instruments have been taken by sounding balloons.

The descriptions are generally clear and contain few of the inaccuracies which are so common in most works of this scope. The author rightly emphasises in the introductory chapter how important it is for the student to remember always that meteorology is a branch of the wider science of physics. It is, however, from the point of view of physics that objection may be made

to some of the author's statements: for example, when he discusses (pp. 16-17) the diurnal range of temperature on land and on sea, he attributes part of the greater magnitude of the former to the action of the principle that a good radiator is also a good absorber, but overlooks the fact that it is largely the absorption of radiation of short wave-length (visible radiation) that has to be considered during the daytime, and that even if it be demonstrable that the solid surface of the earth absorbs such radiation better than does water, it does not follow that the land is a better radiator for the much longer wave-lengths emitted at night. A small error deserves notice in section 102 (p. 95), where it is stated that in the northern hemisphere the eye of a tropical cyclone generally moves eastwards. As it is the active stage of a cyclone that is being discussed, the movement would be nearly always westwards whether in the northern or southern hemisphere, for these storms spend a large proportion of their active life within the tropics. E. V. N.