

some hydrocarbons of even greater complexity being produced at the same time. Though simple in principle, cracking has offered many difficulties in practice: it is largely practised, and the total amount of petrol yielded by a ton of crude oil has materially increased in consequence, thus helping to conserve the world's oil resources.

At the well-head a great quantity of gas is liberated saturated with the lighter liquid hydrocarbons, though in itself it consists mainly of methane. It is customary and necessary to scrub out these liquid fractions before the natural gas can be pumped great distances, so there is available a considerable quantity of highly volatile spirit which is blended so far as possible with the ordinary distillates. There is naturally a limit to this blending process, and at the moment the large amount of butane for which there is no use remains one of the problems of the industry.

Every means is thus taken to obtain the maximum amount of motor fuel from a particular crude oil, which then is subjected to a drastic refining process so as to remove all constituents likely to be harmful to the engine of a motor-car, in particular the sulphur compounds—this subject receives full treatment by the authors.

In countries like our own, where there is no natural source of oil, other home sources of fuel naturally receive consideration. One of these is benzole, a by-product of the coking and the gas industry. The first effort to market this by William Butler of Bristol in 1903 was not very successful, and it was not until the formation of the National Benzole Association in 1919 that a satisfactory marketing organisation for this product, which is sold mixed with petrol, was attained. To-day 'National Benzole' is a well-known product, and the quantity of benzole produced in Britain is continually increasing, though it remains small compared with the total amount of motor fuel.

Considerable interest is attached to a second motor fuel, namely alcohol, which in many lands is likely to be widely used as the result of legislative enactments. The advances in fermentation technique, the use of cheap molasses as the source of sugar and the discovery of processes of dehydrating alcohol so as to make an anhydrous product miscible with petrol in all proportions, have done much to make alcohol practicable as a motor fuel and competitive so long as petrol bears its present high rate of duty. Methods have been worked out for making alcohol from ethylene gas, and where this is available in quantity the process is also a commercial one. If the supply of petrol failed or the product became very costly, there is no doubt alcohol could largely take its place. A lengthy chapter

is devoted to the intricacies of this question: it handles also the production of methanol from water gas and the use of this alcohol as a fuel.

The production of oil from coal, either by low-temperature carbonisation or hydrogenation, is as yet in its infancy, though there is a certainty that progress will be made in both directions during the next decade. Such oils are to be regarded as home-produced crudes of special character, and they will come into the hands of the refiner for treatment. In comparison with the processes discussed, the crude oil obtained by distilling shale is barely competitive, and in normal times cannot be regarded as a serious source.

Prof. Nash has given us a scholarly and informative work which should have wide patronage. He makes clear the advanced state of the industry as regards scientific knowledge and the amount of research and development which is taking place. It is satisfactory that there are in Great Britain schools of petroleum technology of university rank and high standing. It is desirable, however, that the practice of refining be also encouraged by every possible means, lest from lack of practical operation we lose contact with what perhaps are the most forceful developments of the day in chemical engineering technology. E. F. A.

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The New America: the New World  
By H. G. Wells. Pp. 96. (London: The Cresset Press, Ltd., 1935.) 2s. 6d. net.

STRESSING the general problems rather than details, Mr. Wells in a series of four short but brilliantly written chapters emphasises the necessity for the deliberate readjustment of the social mechanism, so as to realise the possibilities of human expansion that are now running to waste and disaster. He holds that, if an effort is to be made at all to find a way out from catastrophe to a new lease of life for civilisation, the main part of it should come from America, as no other country has the necessary freedom of speech and mind left and all other communities are confused by the war threat.

During his recent visit to America, two aspects of that country's effort to adapt itself to the new conditions seemed to Mr. Wells unique. The first is that the struggle to reconstruct in America goes on in an atmosphere of unbridled public discussion, whereas in Britain it is restrained by habit and custom and by the centralisation of the Press in London. The second is the relative unimportance of large mass antagonisms. There is no widespread conception of a class-war ruling the situation as in Russia, or of racial incompatibility as in Germany or any such exacerbation of xenophobia as in Italy or Japan. There are conflicts of regional interests, indeed, but little regional bitterness.