

With Compliments

SIDNEY-BARTON LIMITED

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FLUID CATALYTIC CRACKING

Catalytic cracking is a process used in modern oil refineries to produce first quality gasoline (petrol) with the aid of a "catalyst," a substance which accelerates the reaction without itself suffering any chemical change. Amongst several catalytic cracking processes the one most widely used is probably the "Fluid" or "Fluid Bed" process, so called because the catalyst employed is a very fine powder which behaves much like a fluid when in a gas stream.

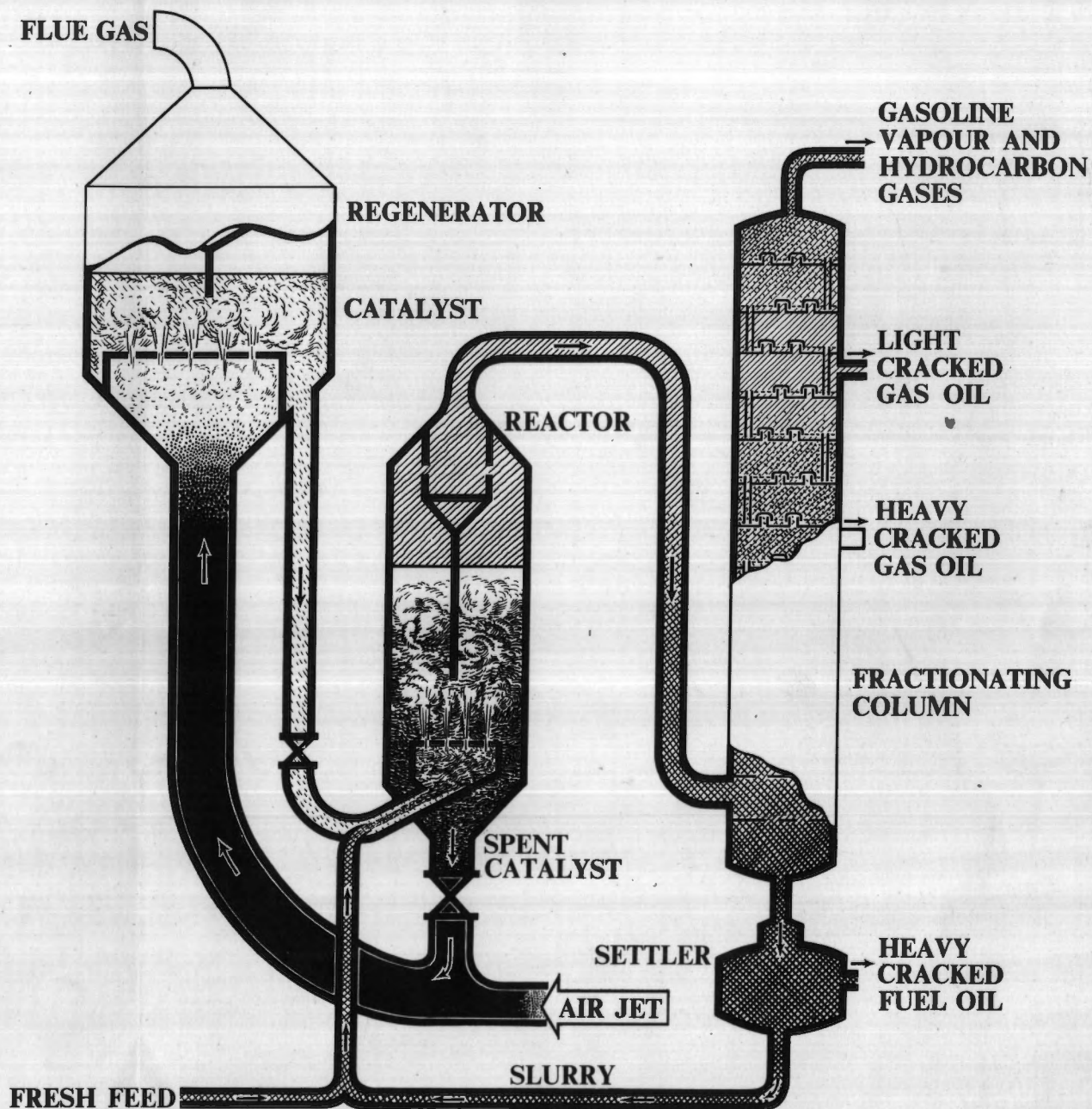
The hot "feed" obtained from primary distillation of petroleum (usually gas oil but sometimes heavy kerosene) vaporises on meeting a stream of very hot catalyst and carries it into the "Reactor."

In the Reactor, where cracking takes place at temperatures sometimes as high as 1,000° F., the catalyst separates from the vapours and sinks to the bottom where it is kept at a definite level known as the "bed." During cracking, the carbon deposits which form on the catalyst spoil its efficiency and the "spent" catalyst is, therefore, withdrawn from the bottom of the Reactor. A stream of hot air blows the catalyst back into its original container or "Regenerator" where the carbon is burnt off and the catalyst thus regenerated for use again.

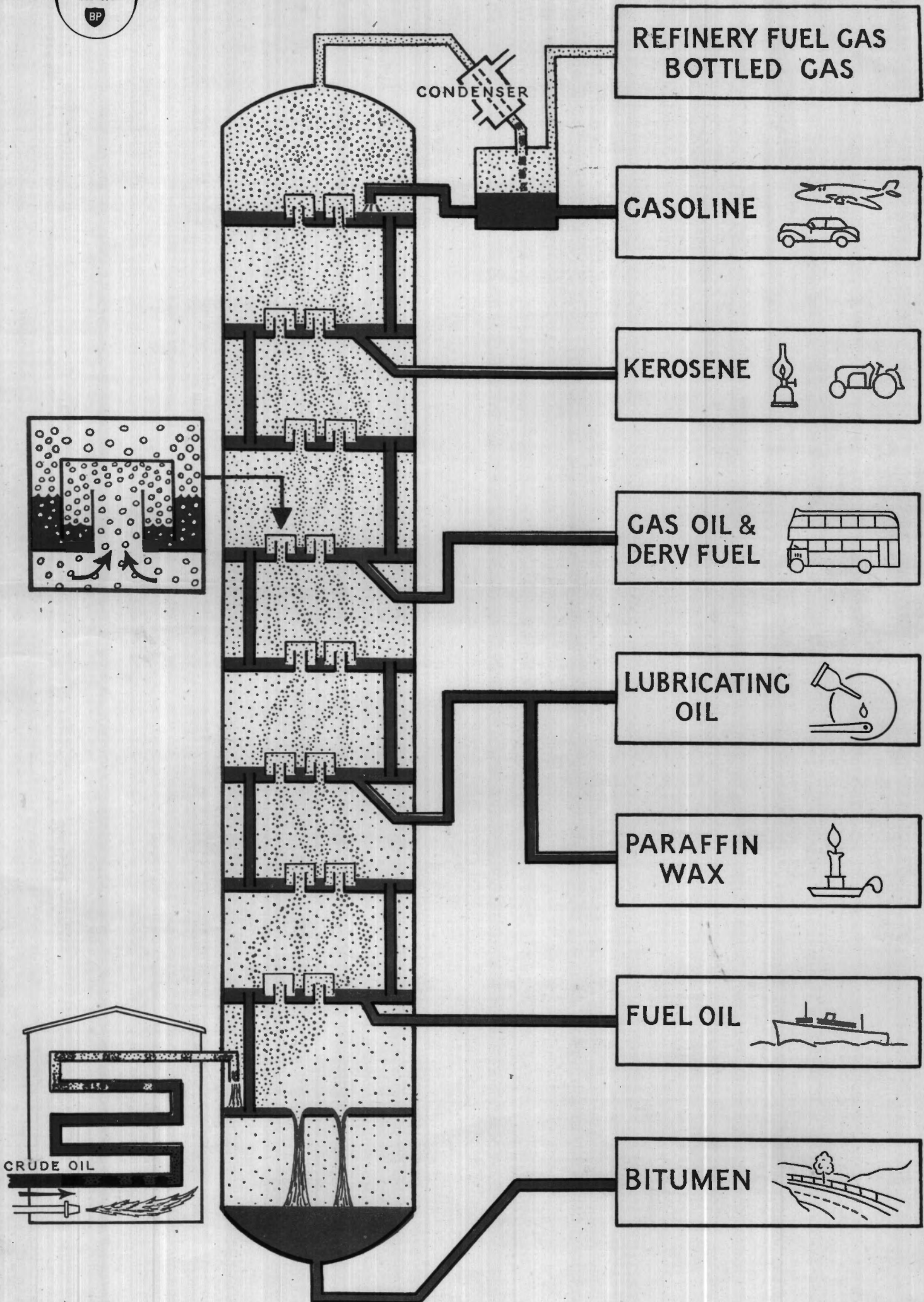
From the top of the Reactor vapours pass into the Fractionating Column. The heavier fractions, which still contain traces of catalyst, descend to the bottom of the Column and pass into a Settler, where the clean "heavy cracked fuel oil" is removed. The "slurry" of oil and catalyst which remains is continuously "recycled" back into the clean feed.

The cracked vapours ascend the Fractionating Column, which operates in the same manner as a primary distillation column. The two "side streams" drawn from the Column are light and heavy gas oil.

Cracked gasoline vapour together with "saturated" and "unsaturated" hydrocarbon gases, as for instance "Ethane and Ethylene," "Propane and Propylene," "Butane and Butylene," etc., leaves the top of the Column. The cracked gasoline vapour is condensed in water cooled condensers; the hydrocarbon gases, which will not condense at atmospheric temperature, are led off and are used as base material for the petroleum chemical industry and for making "high octane" components for aviation and motor spirit.



DISTILLATION





NEWS ITEM

BRANDED PETROL

STATEMENT BY MR C.M. VIGNOLES,
MANAGING DIRECTOR OF SHELL-MEX AND B.P. LTD

For some time past there has been much public speculation about the reintroduction of branded petrol. I have asked you to come here today in order to give you the fullest information I can on this subject.

Let me first sketch in the background to the present situation.

Since the end of the war, as you know, the oil industry has been engaged in a very large expansion of its refining facilities in Great Britain. This programme has made very good progress and, in fact, will be virtually completed next year.

As an integral part of this refinery programme six catalytic cracking plants were planned. One specific object of these plants was to provide the British market with first quality petrol.

The construction of these "cat. crackers", as they are commonly called, together with the whole of the refinery programme, has been undertaken with the full support of the Government.

For those of you who are curious about the technical details of these plants I have arranged for a simplified diagram and description to be available for you here.

The principal product which comes from them is a high-quality gasoline, or petrol. In addition, a valuable quantity of such gases as propylene and butylene are produced which are, among other things, essential base materials for Britain's new petroleum chemicals industry. Fuel oil components are also produced, and last, but by no means least, sulphur - a commodity which has recently been in seriously short supply.

As I have said, however, the primary product is a petrol of a quality properly suited to the modern high-compression engine - an appreciably higher quality than the Pool petrol which is all that we may market at present in this country.

As the programme of building the cat. crackers has neared completion the companies concerned have naturally been anxious to know when the Government was going to permit a premier grade of petrol to be marketed. An application was accordingly made in December last year by two of the leading companies but was rejected, as announced by the Minister of Fuel and Power in the House of Commons on 27th February of this year.

Sir Frederick Godber, Chairman of the "Shell" Transport and Trading Company, referred to the cat. cracker at Stanlow Refinery in his annual report to shareholders in June. It was, he said, "the basis of the plan to give the consumer in the United Kingdom the quality of motor

spirit necessary to meet modern requirements. This has unfortunately been denied him for the time being by the Government - in our opinion mistakenly. The unit was expensive and cost between £8 - £9 million. The matter is still under discussion and we hope to see the decision reversed".

A further application was made by Shell-Mex and B.P. Ltd in June, and since then discussions have taken place between the Government and the industry.

What are the points under examination?

The Government, with a proper concern for the national fuel position, wished to investigate the possibility of converting the cat. crackers to simple distillation units with the object of turning out the maximum quantity of petroleum products of what I might term a utility quality. It has, however, been shown that the conversion of the cat. crackers in this manner not only would take two years to carry out, cost between £5 million and £10 million, and require many thousands of tons of steel, but would involve a serious dislocation of a major industry with a most undesirable loss in production of a number of products. In any case it would now seem that the recent improvement in the country's fuel outlook raises grave doubts as to the justification for such a retrograde step out of keeping with the general tenor of Britain's industrial endeavour.

The Government has naturally also concerned itself with the balance of payments problem, but they have been informed that the extra requirements of foreign exchange would be no more than about £250,000 per annum for ethyl fluid - and even that would not be needed for more than a year or two.

In the meantime, cat. crackers are operating in the country but are having to be operated uneconomically. The high octane gasoline produced has to be blended with low grade gasoline from other plants in the refineries to produce our standard Pool petrol.

The ball is now in the Government's court. The companies concerned have recognised the Government's desire to examine thoroughly the question of the best possible use of the oil industry's production potential and the reason for governmental caution in this matter, which has been fully justified by the country's uncertain fuel outlook in the past. But the time has surely come when the British motorist should be able to obtain the high quality petrol he is clamouring for. Shell-Mex and B.P. can see no reason why a favourable answer cannot be given now and we believe this opinion is shared by the industry.