

In mentioning this use for coke oven gas, the writer is fully alive to its high hydrogen content, and the possible dangers resulting therefrom. Needless to say, that by the employment of such a "composite" as suggested the mixture of coke oven and furnace gases would have to be carefully regulated and governed. A haphazard mixture would be fatal to its success.

The advantages to be derived from following up this use for coke oven gas are:

Substitution of the producers and the cost of working the same and a gas of constant composition free from steam, the latter being a contingency attendant upon most producers with a resulting cooling and oxidizing effect upon the furnace.

For the rest, given the successful application of this use for coke oven gas, steel plants would be run on the gaseous surplus from the blast furnace side, an aim to which our president referred in his opening address, and which would result in an economy of 2s. to 3s. per ton of steel. A battery of coke ovens carbonizing 400 tons of coal per day, would produce sufficient surplus gas, when mixed with three times its bulk of blast furnace gas, to replace the ordinary producers required for the manufacture of 1,700 tons of steel per week.

The Utilization of Benzol as a Motor Fuel.

During recent years the low prices ruling for benzol have discouraged coke oven owners from its recovery, and in most cases benzol has been allowed to pass forward with the gases as boiler fuel. At plants where there is an abundance of cheap fuel this has always appeared to the writer to be wasteful, though possibly in some cases where there was a big demand for power, and fuel prices were high, there may have been little to gain by benzol recovery. The trouble has lain in a restricted market for the product. With the exception of the relatively small quantities of benzol which are used for solvent purposes, cleansing and the like, practically the whole of our benzol goes to the dye industry. There has been little competition for the product and prices have remained low.

Quite recently, however, there has been an upward movement, owing to the growing use of benzol for road motors. France has created a market for our product in this direction, and the large quantities of benzol which are now being exported to that country have raised the price of 90 per cent. benzol from 6d. per gallon to the present figure of 9d.—10d. In our own country, there has been nothing in the nature of a general movement for the employment of benzol in motor vehicles, though Messrs. Sadlers, of Middlesbrough, and one or two other firms have made a start in this direction. Needless to say, some hard things have been said against the new motor fuel, as is usual with all novelties, and motor benzol is having a hot time. Possibly the vested interests may be at the root of the disturbance, and the criticism may be unfair.

The writer has manufactured and had some experience of the use of benzol in road motors of many types, and has found that where due regard is paid to the greater density of benzol, that superior results are obtained over the foreign product. Coke oven benzol possesses a specific gravity of 0.885, whereas the specific gravity of petrol ranges from 0.68 to 0.78. This being the case, benzol contains a greater weight of combustible per unit volume, and, therefore, requires a greater amount of air for its perfect combustion. The sooty plugs and valves which have been complained of when using benzol, have been due to an entire disregard of this essential point. With an auxiliary air supply on

the induction pipe these troubles completely disappear. The greater density of benzol has likewise been a source of trouble to the unscientific chauffeur from a mechanical standpoint, since in the float carburetter a more rapid cut off of the fuel is effected by the denser benzol which leads to an insufficiency of supply to the cylinders. By a careful balancing of the carburetter float with suitable weights, the greater density of the benzol may be readily overcome, with the result that a greater weight of combustible is admitted to the engine, which, with the extra air supply before mentioned, will produce a far more effective result than is the case with the lighter spirit, petrol. Both petrol and benzol are sold per unit volume (i.e., per gallon), so that with petrol of gravity 0.7 and benzol 0.882, 1.82 pounds increase in weight of combustible are obtained per gallon in the case of benzol, i.e., an increase of 26 per cent. Making due allowance for the superior difference in calorific values of petrol, a net inducement of 20 per cent. is left to the consumer, reckoned on the volume content. As regards price, petrol is variously retailed in this country at 1s. 1d. to 1s. 3d. per gallon. Allowing 2d. per gallon to the middleman for handling, this would leave the wholesale price of petrol at 11d. to 1s. 1d. per gallon. Since benzol has now crept up to 10d. per gallon wholesale, there seems to have been a considerable amount of levelling up between the two commodities, which with continued perseverance on the part of benzol manufacturers is likely to last, but benzol could rise still further when recognized as a motor spirit.

The foreign interests have had numerous complaints to allege against the claims of the British spirit. It is stated to be highly sulphurous and therefore corrosive to motor engines. The writer prepared benzol containing 0.14 per cent. CS_2 against which this complaint was made, yet many cars have run continuously on such benzol for two years without any corrosive effect having been made manifest. It is not well to call the kettle black, but petrol is not altogether free from taint in this particular, as much as 0.1 per cent. to 0.2 per cent. of sulphur being present in the foreign spirit on some occasions. The last straw alleged by the opponents of benzol has been its foul smelling exhaust products. This is, indeed, calling the kettle black, petrol itself is not pleasant smelling; as regards this point, it is entirely a matter of usage. Exception has also been taken to the relatively high freezing point of pure benzol, whereby difficulties transpire in cold weather. On a few occasions the writer has met with this trouble, but by lowering the freezing point by admixture with naphthas, this difficulty has been overcome. In fact, in this connection, with suitable carburetters, crude coke oven naphtha may ultimately serve as a reliable motor spirit.

In order to set all doubts at rest concerning the applicability of benzol for motor use, the writer would suggest that comparative trials be made between petrol and benzol by the Automobile Association. The uses of benzol in internal combustion engines are not restricted to road motors. We live in an age in which air ships have been conceived, and the need for a national motor fuel is urgent. The writer is of the opinion that coke ovens will play an important part in this direction when their possibilities are fully realized.

The Use of By-Product Coke in Suction Producers and Stoves.

In many parts of the country, anthracite is extensively used in suction producers. Anthracite being a