

petroleum in contact with the hydrogen to supply the heat—that is, it would be a regenerative gas furnace. The hydrogen could be obtained in this manner. A current of steam being passed through scraps of old iron kept at a red heat, would oxydize the iron and set free the hydrogen of the vapor to be used as above stated. To produce 1 lb. weight of hydrogen, 28 lbs. of scraps of old iron would have to be oxydized. Now it takes about 100 cubic feet of hydrogen to weigh a pound, and that is a considerable volume, and we should think that 28 lbs. of old iron would not cost more than a shilling. Further, the pure carburetted hydrogen might be used for lighting purposes, and would be infinitely superior to anything we know of in the shape of coal-gas. It would be equal in every respect to resin gas, and we remember well the brilliant white light that gas used to give—no soot and no sulphurous acid fumes. Of course, for the general manufacture of gas it could not be used—the supply is too limited; but wherever it might be used as a fuel, there it might be used also for lighting.

Then the question arises as to price. Could it be used with economy in lieu of coal. Well, the better kinds of petroleum are being attempted to be used, and it is said they can be used with economy, and if they can this certainly can, for it is a by product remaining after the manufacture of other valuable products. The great thing aimed at hitherto has been a lamp to burn this heavy oil. but no success has hitherto attended the efforts of the ingenious; but, doubtless, there will be, and it would be a great triumph if we were to be enabled to make our own gas on our tables as we required it. We do not despair of even that. Would not that humble the gas monopolists? We have been talking for some time about the exhaustion of our coal-fields, and here is some little hope for us in the produce of the oil wells and the distillation of shales, and, no doubt, long before that dreaded exhaustion arrives many other sources of light and heat will be discovered. We are aware that attempts have been made to burn heavy petroleum in furnaces, and with somewhat of success. This has been obtained by a sufficient blast to thoroughly burn up the carbon, by bringing an excess of atmospheric air in contact with it while in combustion. Mr. W. Young has attempted to utilize some of the first volatile spirit that first passes over in distilling bituminous coal and shale. He caused this volatile vapor to pass back again into the still, towards the end of the distillation of the coal or shale, that it might take up some of the carbon and come over in the form of easily condensable and-non volatile oil. He took out a patent for this process in connection with a Mr. Brash; but we suppose not having found the thing to succeed to their expectations they abandoned it. Theory and practice do not always agree, but do not let the half-informed cry out against theory on that account, as is their wont. Sound theory must precede and guide all successful practice.—*Mechanics' Magazine*.

PETROLEUM AS STEAM FUEL.

This important subject is still occupying the attention of experimenters, while the scientific and the commercial world are looking on with interest, and not without hopes of its ultimate success. The same may be said of the Americans, but their Government evinces a more active interest in its success, while an influential company is at work acquiring and thoroughly testing the comparative merits of every patent brought out. We have all along recorded the experiments conducted here and in America, and now, after a short interval, we find both countries renewing their efforts. Colonel Julius Adams, who has for years directed his attention to the best mode of substituting oil for coal in marine and other boilers, has not relinquished his project. He lately memorialized the Chief Engineer to the American Navy for an appropriation of 5000 dollars to be applied to a new series of experiments by the Petroleum Light Company of New York. The tests will be made in the Brooklyn Navy-yard, and, according to American newspaper accounts, the difficulties in the mode of burning petroleum in England are supposed to be obviated by American inventions. Be that as it may, we know that the eyes of all who hold an interest in an oil well, a refinery, or even a shale pit, are looking upon what is passing with only such anxiety as can be experienced by those who cast their chances upon trade which has turned out worse than profitless, and which would be at once redeemed were some means of consumption found for the glut of heavy oils which are upon the market.

By far the most important experiments ever conducted in England in connection with the substitution of mineral oil for coal as steam fuel took place on Saturday last in the yard belonging to the Canal Iron Works, Millwall. The experiments were made under the direction of Mr. Barff, of Glasgow, part proprietor of the patent taken out early last year by Messrs. Sim and Barff, of that city. The simple principle involved in this patent, as named in the illustrated description of it published in *The Oil Trade Review* of July 7 last, is the placing within the fire-box a furnace of an ordinary locomotive, marine, land, or other boiler, a generator, in which hydrocarbon or even animal and vegetable oils may be admitted. The generator is heated to a low red heat, and the oil is then admitted in a small continuous stream or evenly regulated drops. The oil is, of course, converted instantaneously into a permanent gas, and, being burnt as it comes off, creates an intense heat. In order that the surplus carbon deposited in the retort may be economised, a jet of steam is introduced, and the decomposed water mixes with the hydrogen and oxygen of the water, making the combustion perfect.

Mr. Barff, since our last notice of the patent has been almost daily engaged in perfecting the application of his patent. Twice has he propelled a vessel down the Thames by liquid fuel, and for several weeks a boiler has been under trial at Millwall. On Saturday last, the experiments were of a semi-public character, and the following gentlemen were present: Col. Goodenough, Major. Goodenough (Royal Artillery), Capt. Blane, R. N., Capt. Thorp, R. N., Capt. McKillop R. N., Capt. J. Vine Hall, Capt. Luckie, James Samuel, C. E., Mr. J.

The great desert of Sahara is in process of transformation into a garden. Every day new oases are produced by the multiplication of artesian wells which supply vast quantities of water.