

Petroleum as Fuel.

The experiments which for several months have been in progress at Boston, looking to the successful application of petroleum as fuel for steamships, have been watched with much interest and their results have been very important. These results, as claimed by the inventor of the system under trial, are a saving of four or five to one of space required for the storage of fuel, and of at least five-sixths of the labour required for feeding and tending the fires, to say nothing of the actual cost, which depends upon the relative prices of coal and oil. Application was made to the Secretary of the Navy in November last, for unity to test the practicability of petroleum as fuel upon a Government vessel. The Department had already, in 1862 appointed a committee of naval engineers to experiment upon this subject, and upon this application a Board of three Chief Engineers was ordered to examine the proposed experiments, the gunboat "Palos" being selected for the trial. Previous to entering upon the petroleum trial, her engines were tested with coal, thirty-six revolutions per minute with thirty pounds of steam, being obtained. In the first petroleum test, thirty-four revolutions were obtained with the same head of steam, and in the second test, fifty revolutions, with a pressure of thirty pounds. A comparison of the weight of the oil and the coal showed that one pound of oil had done the work of eight pounds of coal, and the general comparison of weight has shown one barrel of petroleum to be equal to one ton of coal.

Crude oils are used of a gravity ranging from 31 to 46 degrees. The oil is first conveyed directly to a cast-iron retort, and vaporized by means of a slight fire underneath. Due proportions of steam and common air are incorporated with the vapour, and the gases thus evolved constitute the fuel. This burns with an intense heat, and the combustion is so perfect that no smoke is visible at the outlet of the smoke-stack. The fire is under perfect control, and there being no ashes, clinker, nor refuse coal to clog the fires, they may be run an indefinite time without stoppage for cleaning. The burning of coal upon the "Palos" required the services of twenty-one firemen and coal-passers; with the petroleum only three men were needed. This same principle may be applied to locomotives as well as steamers, and, indeed, upon the Franklin and Warren Railroad, in Western Pennsylvania, a petroleum burning apparatus has been successfully employed. The petroleum regions are making still further use of the oil by applying the necessary apparatus to the fires of the engine houses at the wells, thus saving a very large outlay for wood or coal. During the height of the speculative fever, when dozens of wells were being sunk upon each acre in the favourite localities, all the coal for the engines was transported for miles over frightful roads at a great wear and tear of horses and waggons, and at a corresponding cost to the well owner. Nearly all this great expense might have been saved, had the use of petroleum for fuel been practically understood. The experiments at Boston are to be continued, and petroleum tested upon a sea voyage. The importance of the subject should insure for it a rigid and persistent investigation. Should the results of the experiments

continue to be satisfactory, the carrying capacity of our steamers will be largely increased, while the pay-rolls will be greatly diminished, and a vessel may leave New York with enough fuel on board to propel her round the world.—*N. Y. World.*

Petroleum and Freezing Water.

At one of the Scientific Institutions of New York. Prof. van der Wyde, so says the *American Artizan*, explained the chemical composition of petroleum, and also made the experiment of freezing water in a vacuum. The professor stated that the agents that have been used for this purpose are ether, ammonia, and liquid carbonic acid gas; but he had employed liquid petroleum gas with good results. This gas can be easily collected at the oil distilleries, as it at present is not utilized, and the whole expense would be the cost of collecting it. The professor then poured water into testing-tubes, placed these tubes in a wine-glass, poured a quantity of the petroleum gas into the glass, and placed the whole under the receiver of an air-pump; after exhausting the air and allowing the test-tubes to remain in the vacuum for a few minutes, they were removed and the water contained in them was found to be frozen quite solid. The professor then stated that he thought that ice could be produced at a less cost than that of collecting it in winter. His plan is to form two iron vessels similar to locomotive boilers and fitted with tubes in the same manner. He would place the air-pump between the two vessels or reservoirs, so that the liquids or gases might be pumped from one to the other alternately as the ice was formed.

Australian Oil.

An Australian paper announces the recent discovery of a new liquid gum, or oil, in that country. A tract of land not less than ten miles square had been discovered which everywhere abounded with bubbling springs of this gum, or oil, while all around were vast quantities of the gum solidified into the consistency of india rubber. This when exposed to a fire, burns with a bright flame, accompanied by a thick smoke and a smell like old grease. The substance is light and floats in water.

Miscellaneous.

The Metric System.

The International Congress, recently assembled in Paris, in connection with the great Exposition, to devise a uniform system of weights, coins, and measures, have made a report, in which it is stated that "it is most desirable that Governments take, henceforth, the following measures, viz:—

1. To order the teaching of the metric system in public schools, and to require that it should form part of the public examinations.
2. To introduce its use into scientific publications, in public statistics, in postal arrangements, in the custom houses, and other branches of Government administration.
3. The commission does not consider, as appertaining to its mission, the duty of making stand-