Insurance Hazard of Gasoline and Gasoline Devices

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Petroleum, natural product was collected for use in the most remote ages of which we have many records. The following are some of the places where it was found and used for various purposes: In Babylon—(probably used for the hair) In Sicily—(for illumination), In China and Japan about the 7th Century the records contain many allusions to the use of natural gas for lighting and a liquid called burning water.

In Europe in 1226 A. D. the record of the Gas Springs of Northern Italy was made, also in the 13th Century Marco Polo refers to the Oil Springs of Baku on the Caspian Sea. In the 15th and 16th Centuries reference is made to the Earth balsam of Galicia. In 1595 Sir Walter Raleigh refers to the liquid in America. Then 37 years later mention is made of the Oil Springs of New York in Sagards History of Canada. In the 17th Century, Peter Kalm refers to the oils in Pennsylvania, while about the same time oil was reported to have been found in Roumania. It is rumored the petroleum secured from some of the oil wells near Calgary, Alta., is of a very inflammable nature—having been previously distilled—therefore extremely hazardous, in more ways than one.

Petroleum—(petra) rock, (eleum) oils is a term which embraces the whole of the hydro-carbon, gaseous, liquid and solid. This oil and its products, have, of late years, taken an important position in industrial arts.

Fluid petroleum is found in many parts of the world; in some localities oozing out of the earth in the form of natural springs; in others by boring it rises to the surface like artesian wells; and in still other cases it must be pumped from subterranean reservoirs.

Authorities are not agreed as to the origin of Petroleum, but the prevailing opinion is that it results from the natural distillation from carbon-aceous shales, proceeding within the bowels of the earth, in a manner analogous to that by which paraffin oils are distilled. It is worthy of remark that in very many instances the Petroleum springs occur in localities where there are extensive deposits of rock salt.

Petroleum is always submitted to fractional distillation, and the series of commercial oils thus prepared are brought into commercial use under a great variety of names, and consequently, much confusion exists regarding the exact composition of the substances.

Distillation is one of the oldest chemical processes, the object is to separate volatile from fixed substances. When heat is applied to a mixture of fixed and volatile substances, ebullition eventually takes place, and the volatile substances are gradually converted into vapour, if this vapour be caught and cooled, it will return to the liquid condition, leaving the fixed substances in the vessel in which they were heated. The most volatile is the first to assume the state of vapour; so that, on distilling a mixture of volatile bodies, the most volatile passes over first, leaving the less volatile to follow. But complete separation by means of a single distillation, can only be effected when the temperatures at which the different bodies boil are widely removed from one another and only then, if the different liquids are not chemically allied. The first portions of the distilled liquid (or distillate) always contain the largest proportion of the most volatile body, and the later portions, least. On subjecting the first distillate or (fraction) to a redistillation, and collecting the first portions that pass over separately, it will be found to contain a still larger proportion of the most volatile substance and on repeating for a greater or less number of times according to circumstances, the most volatile substance, can, in most cases, be completely isolated. In the same manner, by repeatedly rejecting the first portions of the distillate, and collecting the last, and by repetition of the process, the least volatile body may be obtained in pure condition. A thermometer is used and throughout the process, the temperature is carefully observed. As soon as ebullition commences the temperature is noted, and the distillation allowed to proceed till the thermometer marks a certain rise in the temperature of the vapour. The vessel into which the distilled liquid is flowing is now changed, and distillation continued during a fresh interval of heat application. The vessel is again changed, and so on till the whole of the liquid is distilled.

The out-put of Refineries in the United States for the first nine months of 1917 are as follows: (Roughly)

Crude Run, 231,000,000 barrels or 13,860,000,000,000 gallons. Gasolene, 1,960,000,000 gal.; Kerosene, 1,226,000,000 gal.; Gas and Fuel 4,548,000,000 gal.; Lubricatry, 533,000,000 gal.; Wax, 316,000,000 lbs.; Coke, 353,000 tons; Asphalt, 522,000 tons; Misc. 400,000,000 gal.; loss 8,600,000 barrels or 516,000,000 gallons.

I understand that about 330,000,000 barrels of Crude Oil were marketed during the whole of 1917.

The export of fuel oil and gasoline is very large owing to the fact that they furnish the driving power of the allied navies. and motive power for land transportation.

Chemical investigators find in Petroleum a splendid subject for the application of their scientific knowledge and training and are constantly bringing about changes and developments in refining methods.

It should be made a law that before containers of hazardous liquids can be installed, plans and specifications of same must be passed upon and approved by some authority.

There are several kinds of tanks or containers. The safest is the underground tank of galvanized steel equipped with a Standard Self-measuring pump.

General storage tanks as are found in distributing stations above ground are constructed principally of galvanized steel or metal of a certain thickness according to capacity.

1—30 gallons, thickness 18 gauge, 31—350 gallons, thickness 16 gauge, 351—1100 gallons, thickness 14 gauge.

Tanks with larger capacities are built and constructed stronger and not more than 30 feet high, man holes and openings are not to firmly attached, also provided with safety valve and air vent. All pipes should run directly as possible, with proper allowance made for contraction and expansion and if above ground—protected—all drawings should be by pump so as to have the liquid constantly under control, so there is no risk of its getting away.

Gasoline tanks that are inside buildings are dangerous for the simple reason that there is a quantity of oil in the building. If it is kept in a separate room, ventilators should be near the floor as gasoline vapour is heavier than air.—Gravity systems should never be allowed. All discharged containers should be immediately removed from the building with the plugs or taps replaced.

Owing to the cost of steel, concrete storage tanks are now used for Crude and Fuel Oil. Concrete tanks for gasoline are also being used, however, the oil companies using them, have not yet decided whether or not they are a success. Inspection bureaus have not yet set a rate applying particularly to underground concrete storage but some insurance companies have unofficially stated, a rate on such storage should not be more than fifty per cent of the present rate on steel above ground storage.

There is an ever present danger that steel tanks above ground may be struck by lightning. The principal disadvantage concrete has is that there is no salvage to it; also it may crack. A concrete tank once built would