by removing sulphur, carbon, asphaltic bodies, etc., the oils being passed through a vessel charged with metallic oxides. This vessel is heated in a furnace to a temperature of 149° to 204° C., under a pressure of 3 to 6 atmospheres (45 to 90 pounds per square inch). The purified oils are then conducted through a settling vessel into an agitator, where the liquid oil is emulsified with water, the emulsion being subsequently forced, under a pressure of from 3 to 6 atmospheres, through a converter filled with iron or steel shavings. This converter is heated to 260° to 482° C. The emulsified products are then expanded through small jets into a large chamber, from which they are withdrawn by means of a pump and passed through a scrubbing vessel, where the heavier oils are recovered, the lighter oil vapors and permanent gases passing onward into a condenser.

CRACKING IN TUBES OR PIPES.

In 1908 Testelin and Renard [a] obtained letters patent for a process involving the passage of steam and liquid oil through a system of tubes inclosed in a furnace chamber, the tubes being kept at a temperature of 400° to 450° C. The mixture is then passed through another series of tubes filled with pieces of burnt porous clay and maintained at a temperature approximating that of red heat. The feed of steam and petroleum is so regulated that equal quantities of water and petroleum are condensed.

Hall [b] has brought forward a process involving the passage of a liquid hydrocarbon under a pressure of 70 pounds per square inch through a coil of pipe heated to approximately 650° C., the vapors then passing to a cooling chamber, where the temperature is lowered to approximately 200° C., and thence to a condenser, condensation taking place under pressure. In an improved form of this process [c] the oil is vaporized and passed at a rate of feed exceeding 70 gallons per hour through winding inclined metallic tubes 1 inch in diameter and 300 feet in length, in which are inserted rods of catalytic material, preferably nickel. The products are passed from these tubes into an expansion chamber, where the pressure is reduced from that existing in the cracking tubes (about 4 atmospheres) to atmospheric pressure. The expansion chamber consists of a tube 12 inches in diameter and 12 feet high. The speed of the vapors through the tubes approximates 6,000 feet per minute. The speed is reduced by causing the vapors to enter the expansion chamber through a confined space acting as a throttle and serving to impinge them against a baffle. It is claimed that the reduction of pressure causes

[a] Testelin, Auguste, and Renard, Georges, English Patent 16881, Aug. 11, 1908.
[b] Hall, W. A., English Patent 24491, Oct. 28, 1913.
[c] Hall, W. A., English Patent 17121, July 25, 1913.