practice at Cleveland and Pittsburg. Some redistil the last ten per cent., the colored portions of the burning oil, with the crude oil.

Some place the crude petroleum in large stills and blow steam through it, and thus take off the crude naphtha, before the oil is run into the fire still.

Some manufacturers, who pride themselves upon the superior quality of their special brands of oil, separate certain portions of the distillate, and send them to market as unusually safe oils.

The "*Astral Oil*" is probably the oil which runs from about 54° to 44° B., in other words, the "heart" of the burning oil. As it does not contain the lighter portions of the ordinary oil, its flashing point is 125° F., or 25° above the standard of safety, although its average gravity is 49° B. The "*Mineral Sperm*"* is a heavy oil, which probably runs between 40° B. and 32° B., averaging 36° B. This is so heavy, and requires so high a temperature to volatilise it, that it does not evolve an inflammable vapor below 262° F., nor take fire below 300° F. Practically it is as safe as whale oil.

After the oil has been fractioned it is subjected to the action of sulphuric acid to remove a little color, but more particularly to *sweeten* it, *i.e.*, to remove the disagreeable odor which it still retains. About two per cent., by measure, of acid is poured into the oil, the mixture is thoroughly agitated, and, on standing, a dark, tarry sediment separates; this is removed, and the clear oil is then agitated with water, then with alkali, either caustic soda or ammonia. This neutralises the last traces of acid, and, after removal by water, leaves the oil "*sweet.*" Some of the more careful refiners then subject it to a somewhat elevated temperature to expel a small percentage of naphtha or benzine which it still contains, while a few subject it to redistillation.

Why most of the Kerosene in the market is unsafe.

The crude naphtha sells at from three to five cents per gallon, while the refined petroleum or kerosene sells for twenty to twenty-five cents. As great competition exists among the refiners, there is a strong inducement to turn the heavier portions of the naphtha into the kerosene tank, so as to get for it the price of kerosene. They change the direction of the stream from the coil of the still when it reaches 65° to 63° B., instead of waiting till it reaches 58°. Thus the inflammable volatile naphtha or benzine is allowed to run into the kerosene, rendering the whole highly dangerous. Dr. D. B. White, President of the Board of Health of New Orleans, found that, experimenting on an oil which flashed at 113 F., an addition of

* For the manufacture of this, the safest burning oil yet made from petroleum, see the *American Chemist* for May, page 404.