

naphtha, and others. It is evident that natural gas may wander farther away than oil from the formation in which it originates; and hence there may be more difficulty in tracing it to its real source. It may become widely separated from apparent connection with oil. It may also be distilled from shales not possessing the requisite richness to afford oil. Hence, in some regions, as Fremont, Cleveland, and other localities in northern Ohio, it issues from Cambrian strata which furnish no indications of oil. In western Pennsylvania, within the Coal Measures, the great supplies of gas are yielded probably, by the same formations as supply petroleum. This, however, is a question still under investigation.

Now let us look into the relations of things in some of the principal oil-producing regions. The most famous is that of northwestern Pennsylvania. The surface rocks are Coal Measures or Lower Carboniferous Sandstones (Waverly or Catskill sandstones) or Chemung sandstones—according to the locality. The oil is found accumulated in the sandstones; but its source is believed to be the Genesee Black Shale, near the top of the Hamilton Group (See Table, page 73.) There are in all productive situations, shaly strata also, above the sandstone reservoir, which prevent the oil from escaping to the surface. The situations are similar in eastern Ohio and southern New York.

In Ontario are two kinds of oil, and two different reservoirs. The thick lubricating oil accumulates in a gravel bed at the bottom of the Drift, and is confined by the clay sheets of the overlying Drift. Its source is probably the Genesee Shale, which immediately underlies, but thins out a half mile further east. The more abundant petroleum is found stored in fissures and cavities of the Hamilton limestone; and its source is probably the black Marcellus shale next below the limestone. These cavities often contain water under the oil, and gas above it. If the auger enters the upper part, gas escapes at first, but when this is exhausted, oil may be pumped. When the oil is exhausted, water follows. If the