

## Annual Report of State Supervisor of Natural Gas.

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Our present gas laws were enacted to protect the gas and oil interests in the Trenton fields of Indiana, as little was known of the geology of the other fields at that time, consequently the laws are inadequate to cover all conditions in other parts of the State, especially in the Oakland City, Princeton and Sullivan County fields, where the oil and gas are produced from the Mansfield sandstone and the upper strata of the Huron group.

The purpose of casing and plugging gas and oil wells in the manner described on page 234 of the 1909 Acts of Indiana, is to prevent the fresh water contained in the upper strata of rock from flowing into the gas or oil bearing strata, also to prevent the salt water of the gas or oil bearing strata from rising and contaminating the fresh water of the upper strata. The damage done by allowing fresh water to flow into the gas or oil bearing strata is due to the fact that the fresh water comes from the strata near the surface, and usually in a quantity that will keep the hole filled up to the fresh water level, thus making a pressure at the bottom of the hole equal to the weight of the column of water, and as the rock is more or less porous, the water under pressure finds its way all over the immediate field and drives back the gas and oil and oversupplies the rock with water.

The above mentioned laws cover all conditions necessary to protect the gas and oil in the Trenton fields, but in some parts of the State fresh water is entirely absent and salt water is obtained near the surface, and as the damage to the oil or gas strata from water of the upper strata is due to the pressure created, and not any particular kind of water, the above mentioned laws do not protect that part of the State where fresh water is absent.

In the Princeton, Oakland City and Sullivan County fields, where the drill passes through productive coal measures and the oil and gas are produced from the Mansfield sandstone and the different strata of the Huron group of sandstones and shales, in a great many places there are no fresh water strata passed through, and the salt water strata are reached very near the surface and the salt water is present in nearly all the rock, to near the bottom of

the well. In most cases the salt water has sufficient pressure to flow over the top of the well. In such cases the salt water flows into the small fresh water streams, which in some locations are the only source of stock water. Also, the salt water will rise to the level of the commercial veins of coal and flood it so that it makes it very hard to profitably remove the coal.

The Indiana laws requires mine operators to record the location of the mines and extensions at short intervals. For the protection of mine operators the law should require oil and gas operators to record the exact location of oil and gas wells drilled in the part of the State containing coal, so that a small block surrounding the well could be left undisturbed, thus preventing the flooding of the coal mines.

In some parts of the State the impervious layer of shale overlying the gas or oil bearing strata is only one to two feet in thickness. The manner of plugging prescribed by the plugging laws requires that the hole be filled with the filling material to a point twenty-five feet above the top of the gas or oil bearing rock, at which point there shall be placed the first dry pine plug, on top of which is placed twenty-five feet more of filling material and another pine plug and another twenty-five feet of filling material, the theory being that when used in the Trenton field, where immediately overlying Trenton rock there is about two-hundred feet of hard, impervious shale, the pine plug swells enough to shut up the hole, where in other fields if the usual manner of plugging be followed the pine plugs are set in what is most likely to be a porous stratum of sand or limestone, practically leaving the hole open.

I will suggest the following amendments: That in other than Trenton fields the regularly prescribed manner be used in plugging the top gas or oil bearing stratum, except that the first pine plug be placed immediately above the gas or oil bearing stratum and that where more than one gas or oil bearing strata are drilled through or penetrated, the hole below the top stratum shall be plugged in the usual manner and a pine plug set immediately above each gas or oil bearing stratum. That one bag of Portland cement be mixed with the twenty-five feet of filling material placed on top of the pine plug set immediately above the top gas or oil bearing strata. That whenever a salt water bearing stratum be penetrated or drilled through it shall be plugged the same as a gas or oil bearing stratum, or while the well is maintained shall be cased and shut in so that the salt water cannot reach the fresh water strata or overflow at the top.

That in all drillings for gas or oil the person or persons drilling same shall record with the county recorder of the county in which such drilling is done and report to the State Supervisor of Natural Gas, the exact location, the different strata of rock penetrated and passed through with the depth at which each is reached, together with the thickness of the same, stating what each stratum produced.

The gas laws of Indiana provide a penalty for their enforcement, which is one great means of enforcing the laws, but the benefit which comes out of the enforcement is limited, as it only prevents the violator from repeating the same offense, while it leaves the damage done by any particular offense standing; in other words, punishing the offender does not right the wrong already done.

There should be, in addition to the penalty to the laws, a provision making the offender liable civilly, providing damage to the injured, or, when possible, repairing the injury done.

The oil of Sullivan County is produced from the Mansfield sandstone and the upper strata of the Huron group, at a depth of from seven to eight hundred feet.

The field at present is confined to pools, three miles west of Shelburn, Ind., and three miles west of Sullivan, Ind., in addition to which are a few light wells scattered over the west side of the county, but so far no pools of any note have been developed other than the above mentioned.

There have been a few old wells in the Trenton field near Albany, Ind., drilled deeper, and in which a second pay of oil was reached at about three hundred and seventy-five feet in Trenton rock.

The Oakland City and Princeton fields on January 1, 1913, were producing from 264 wells 770 barrels daily, and on January 1, 1914, the same fields were producing from 242 wells 395 barrels daily.

In the Sullivan County field on January 1, 1914, 76 wells were producing 1,750 barrels daily.

Indiana produced 970,000 barrels of oil in the year of 1913.

The average pressure of the gas wells of Indiana is 81.8 pounds.

The average price per thousand feet at which natural gas is sold in Indiana is 30.6 cents.

There were 1,205 abandoned wells plugged in Indiana during the year 1913.