

XX. "DRILLITE" AND ITS SIGNIFICANCE TO THE GEOLOGIST

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From the Oklahoma Geological Survey.

The term "drillite" has been applied to an artificial metamorphic rock produced by the rotary core drill, particularly where fluid circulation has been cut off from the bit in contact with the rock, thus preventing the heat generated by friction from escaping rapidly from its point of origin.

The main outstanding feature of this material, in some instances, is its close superficial resemblance to basaltic igneous rock and the consequent mistake of the geologist in thinking that the drill has encountered a crystalline rock and the likelihood of the abandonment of the hole for this reason. This danger has been emphasized by Pratt* and by Wrathert† and its reality can be attested by the writer who was misled into making the following analysis of such a "drillite" or "fused core."

Analysis of "Drillite" from depth of 2985 feet in the Daymon well near Grandfield, Oklahoma, in SW $\frac{1}{4}$ sec. 35, T.3S., R.16W.

SiO ₂	49.60 Percent
Al ₂ O ₃	15.86 Percent
Fe ₂ O ₃	0.72 Percent
FeO	17.84 Percent
MgO	1.92 Percent
CaO	7.03 Percent
Na ₂ O	0.92 Percent
K ₂ O	2.12 Percent
H ₂ O	0.42 Percent
H ₂ O plus	1.98 Percent
TiO ₂	0.65 Percent
P ₂ O ₅	0.213 Percent
S	0.25 Percent
Cr ₂ O ₃	Very faint Trace
MnO	0.09 Percent
Total	99.613 Percent

Even the chemical composition is that of a rather unusual but not impossible basalt where ferrous iron largely replaces magnesia. However, this high ferrous iron is very remarkable and lead

*Pratt Wallace E. A note on supposed evidence of the volcanic origin of Gulf Coast domes"; Bulletin American Association of Petroleum Geologists, Vol. 5, No. 1, p. 91 Jan. and Feb. 1921.

†Wrathert, W. E. Supposed igneous rock from Wichita County, Texas wells; Bulletin, American Association of Petroleum Geologists, Vol. 5, No. 4, p. 512, July and Aug. 1921.

to the making of a thin section and a subsequent microscopic examination that revealed a total lack of the crystalline structure characteristic of basalt, but instead showed a dark color, a semi-opacity and a subcrystalline featureless texture for the most part, the only exceptions being a few grains of metallic iron and a small number of very small quartz particles.

The megascopic characteristics need not be entered into here inasmuch as Pratt* and Wrather† have quite fully considered that phase in their articles. This and other examples show, however, quite plainly how comparatively easy it is to generate a so-called igneous rock from a sedimentary by dynamic metamorphism alone.

Summary

The above paper calls further attention to the danger of confusing some "fused cores" or "drillites" with igneous rocks where a rotary core drill is used, contributes a complete chemical analysis of a supposed "drillite," describes the petrographic features of a thin section of this "drillite" and points out the ease with which sedimentary rocks could be transformed into so-called igneous or crystalline rocks.