March, 1942.

Derby and Crow #1 Steele,
C NE NW NW, 9-6S-20W
Elevation 3130'

Pennsylvanian conglomerate 3600-3613'

3600-3610 Limestone, fragmental, porous. A reefoid or barrier bench type of lime. Porosity is mainly between fossil fragments. Oilstained. This is not lithologically a conglomerate but genetically closely related to it.

3610-3613 The above lime grades downward into sand. Scattered grains appear in the lime, followed by limy sand with a friable layer of a foot or two at the base. The contact may be as low as 3615', with some feldspar grains in the loose basal Pennsylvanian sand. Mr. Carmody called the contact at 3613', apparently on the presence of feldspar.

Pre-Cambrian Top 3613' Sub-sea, minus 1475'

3613-3635 Porous quartzose aggregates, in many cases containing small plates of biotite, and rarely, feldspar. Schistose planes, on which are mica flakes, together with a tendency toward parallel orientation of crystals, show that the material is Pre-Cambrian rather than a Pennsylvanian arkose. The porosity is due to nearly complete weathering of the feldspars, which leave behind a white, powdery mineral similar to kaolinite. It is probable that some of the porosity and a good bit of the permeability are jammed up with this clay. Fractures, open to the Pennsylvanian surface, are probable, as some sand aggregates are present as are dolomitic vein linings. The porosity seems to be well distributed and is strongly oilstained.

3635-3639 Fresh, non-porous, arkosic quartzite which would undoubtedly be called a fine-grained granite without the evidence seen in the weathered section. The contact is probably gradational and neither 3635' nor Mr. Carmody's 3637' is a certain point.

Remarks: Mr. Cole notes that the pay zone in this test has been considered to be Penn. ls; Penn. sand; Reagan; and Pre-Cambrian by various workers. As noted by Mr. Carmody and shown by the above description, there are two porous, oilstained zones. Either one or both are capable of producing, with the odds on the lime as being the most likely to have commercial permeability. The significant thing is that a lime bench or reef shoreline impinges on the Pre-Cambrian surface, furnishing a possible source of the oil, not only here, but also at Ray. It is conceivable that the lime and basal Penn. sand may produce in spots in which there is neither Reagan sand nor porous Pre-Cambrian; also that this type of Pre-Cambrian may form a trap in its own right, fed by a Penn. oil source.

LL