

out the length of the valley. A complete section is afforded from the base of the Black River formation through the Trenton and terminating in the Utica. Species hitherto reported only from Canadian localities are found associated with those characteristic of the Trenton Falls type-province, showing the Champlain connection of Ordovician seas. Several zones characterized by restricted species are located, and also "conglomeratic zones." The fauna is very abundant and supplies a basis of comparison for similar detail study from other provinces. The occurrence of the Hudson River and Oneida groups in the region is questioned.

The repeated statement of many geologists that the Utica of the Lake Champlain Valley is everywhere found lying unconformably over the Trenton is no doubt based on accurate local observation. It must not be argued however that the Utica is thus related to the Trenton. Dr. T. Sterry Hunt used to insist that the Utica and Trenton were not conformable to each other and connected by passage beds. If such be the case in the Lake Champlain region, such a view cannot for a be held in a basin like the Ottawa Palæozoic Basin. The occurrence, relative abundance or paucity of certain forms at different horizons in the Trenton of the Lake Champlain Valley showed considerable variation as compared with forms found by us in the Ottawa and St. Lawrence Valleys.

### "Structure of the Iola Gas Field, Allen Co., Kansas."

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The following is the abstract submitted by Prof. Orton, the most eminent authority on "Natural Gas."—Natural Gas is more widely distributed, geologically and geographically, and exists in larger quantity than any one would have claimed twenty or even ten years ago. Its productive horizons cover the entire palæozoic column of the country. Cities supplied, at least partially, with natural gas for fuel and light are no longer uncommon. Two distinct divisions can be made of gas accumulations, viz.: That which is stored in *impervious rocks* as shales, most limestones, etc., and that which is found in *porous rocks*. These divisions may be provisionally styled *Shale gas* and *Reservoir gas*; each having characteristics of its own. *Shale gas* occurs in comparatively small wells. Its wells lack uniformity of rock pressure. It does not occupy definite horizons; it exists independently of petroleum in many cases, has *staying* properties—does not depend on the structural arrangement of the strata that contain it. *Reservoir gas* is found in great wells; approaches uniformity of rock pressure in each subdivision of territory, occupies definite horizons, is accompanied by oil, its wells generally come to a sudden end—is entirely controlled by the structure of the rocks in which it is accumu-