grained rocks cannot, therefore, serve this purpose, and for this reason shales are not important oil or gas-containing rocks. In Ohio three types are found —limestones, sandstones and conglomerates. The limestones contain the immense repositories in the north-western part of the State, but are not productive in other fields in Ohio. Analyses show the rocks to be strongly magnesian and much weight has been placed on this feature, since limestones of this type are notably porous when compared with those of the ordinary or calcareous type.

Recent developments in Texas, however, show that calcareous limestones may serve as a reservoir for oil. Thus, according to an analysis, the oil rock in the great Beaumont field contains over 97 per cent. carbonate of lime. When it is considered that this rock has yielded by far the greatest wells yet drilled in the United States, it is apparent that ordinary limestone may serve as efficiently as that of the magnesian type.

Sandstone is the most common reservoir rock, and perhaps the Berea Grit is the best illustration of this. The rock is composed of moderate-sized grains of silica. However, it appears compact, and the quantity of oil which it contains often seems out of proportion to the porosity of the rock. In fact it is hard to believe that this formation ever contained the great volume of oil that has been taken from it in places. This appears all the more remarkable when it is recalled that the so-called pay-streak usually composes a small part only of the rock. Sands of this character do not yield great wells, but their life as a rule is long. These characters are certainly in harmony with the porosity of the rocks. The Berea is the finest-grained of the important oil or gas sands of the State.

Sandstones grade imperceptibly into conglomerates, and hence it is not easy to say when one leaves off and the other begins. Many of the so-called conglomerates of Ohio vary in texture rapidly, changing in a short distance to a sandstone. Some of the sands are conglomeritic in places, but more commonly they are coarse sandstones. They make excellent reservoir rocks, and the wells sometimes have large initial productions. The decline, however, is almost invariably more rapid than in the Berea. The production is often long maintained.

Shales are not important sources of either oil or gas, though small quantities of both are often found in them. In the coarser grades of these rocks oil and gas may occupy the spaces between the grains, but in the finer grades the fuels in question probably lie between the layers of the rock rather than between the component particles.

The necessity of an impervious cover is apparent. Without it the gas would have risen to the surface and been lost ages ago, and the more volatile parts at least of the oil would have met a similar fate. Not uncommonly the rock is very compact at the top forming the "cap" of the driller. This may serve to retain the oil and gas below. Generally, however, a bed of shales lies above the formation, and serves to prevent the ascent of the fluids. A thin bed of fine clay also would serve admirably to seal in the oil and gas.

The third geological condition is structural, and is commonly known as the anticline or terrace. This permits the oil and gas of a relatively large area to accumulate in a much smaller one. This theory is very generally accepted by geologists and equally so by laymen. In many cases important reservoirs have been located by applying the principle—in Eastern Ohio, West Virginia and Pennsylvania. In the north-western part of Ohio the rocks form a broad arch, dipping to the north-west on one side and to the south-east on the other. The arch contains minor irregularities, such as the well-known Findlay break. It was on or near this break that many of the largest gas wells were found, and in general it may be stated that the richest oil territory has been found where the Trenton rock lies highest.

It cannot be said that all oil or gas fields in Ohio are associated with anticlines or terraces. Several well-known gas and oil fields have not as yet been demonstrated to lie on these structures. However, the reverse has not been conclusively demonstrated, and the fields in question may still fall in with the anticline or terrace theory. The great reservoir at Beaumont, Texas, also appears to stand in opposition to this theory.

INTERNATIONAL COMPANY'S COAL MINE AT COLEMAN, ALBERTA.

(By E. Jacobs.)

GOOD progress is being made at the International Coal & Coke Company's colliery at Coleman, Alberta, both with the development of the coal mines and the construction of the surface works.

The coal lands acquired by this company are those known as Paulson and Newport's, situated between four and five miles west of the town of Blairmore. They extend about seven miles north and south on the strike of the coal measures, and have a width of one mile. The greater length of these coal lands is south of the railway, which, following the course of the Crow's Nest or Old Man River, runs close to where the coal seams pass under the wash in the valley, or rather have been eroded away, only to re-appear in the hills to the northward. So advantageously are these lands situated that the railway passes within 200 yards of the main entry to the mine now having chief attention as development proceeds.

Of the nine seams of coal stated to be known to occur on the company's lands only five have as yet been prospected. Three have been opened near the railway. These seams run in a northerly and southerly direction through the property and are reported as being regular and consistent, and in good condition wherever tested. They have a westerly dip and, with one exception, are all east of and under that now known as No. 2 and on which for the present most of the development work is being done. No. 1, the