

Reading Guide for September 24

from Cvancara, *Field Manual for the Amateur Geologist*

Chapter 19. The Geologist's Approach

p. 246. *Basic Premise: Uniformitarianism (Actualism)*. This section is an excellent explanation of the concept. Sometimes opponents of science present uniformitarianism as an obviously invalid straw-man caricature: the explanation here is thorough enough to show its reasonableness.

p. 247. *How do Geologists Think?* The short answer is visually.

pp. 247–249. *How to Mentally Attack a Geological Problem*. This section steps through a contrived example of applying the scientific process. Follow the reasoning given to consider the problem described, and also note how it corresponds to the steps of the scientific method described at the end of the section.

- What is the evidence that the benches flanking the river are former stream terraces?
- How did geologic uplift become the preferred explanation for the lowering of the stream?

pp. 249–252. *The Geologist's Approach to Finding Oil and Gas*. This section is the main reason I assigned this chapter. It explains how oil and gas reservoirs form, and how geologists look for them.

p. 249. “How Oil and Gas Form.”

- What type of rock can be a **source bed**?
- What is the physical relationship between a source bed and **reservoir rock**?
- What are the necessary physical characteristics of a reservoir rock?

pp. 249–250. “What the Geologist Looks For.”

- What is a **trap**?
- Why is a trap necessary for an oil or gas prospect?
- What type of rock is a necessary component of a trap?
- Note the four types of trap shown schematically in Figure 19-1.

pp. 251–252. “Some Tools of the Exploration Geologist.” This subsection gives a very brief overview of the process of locating and narrowing in on a hydrocarbon prospect. An exploration

geologist must be intimately familiar with all known details of the terrain being considered. Gathering more information is expensive, and always requires an analytical and creative mind to fill in the unknowns.

Although this section focused on the specific challenge of finding hydrocarbon reserves, very similar processes are followed for locating *any* geologic resource.