Devonian, and Mississippian Rock Systems. The uncrushed condition of even very delicate fossilized, marine organisms, such as bryozoans, shows that the great weights of strata above were not added until after long periods of stabilizing cementation had occurred. And also, most of the types of sedimentary rock layers found possess textures, lithification characteristics, and biogenic structures which demand that we recognize them as having been formed slowly in natural environments. However, a small but significant percentage of the strata show that they were deposited by sediment-gravity flows, rather rapidly. (For a listing and discussion of several of the rock characteristics which indicate necessarily slow deposition, and often the passing of long periods of time for lithification before other layers above were added, see Wonderly, 1987, p. 12-15, 27-31, 33-38.)

(2) Coal-Bearing Stratigraphic Columns

Let us come back to consider some of the most common types of rock strata and softer sediments which are usually found associated with beds of coal. First, we must realize that in a high percentage of the coal fields there are from a few to many beds or layers of coal lying one beneath the other, with other sedimentary strata such as shales, siltstones, limestones, and sandstones between the coal beds. (If a coal bed is thick enough to be of commercial value it is often called a "seam.") Usually there is a considerable thickness of shale next to the coal seam, and often a shale layer lies near the middle of the coal seam, making the mining process difficult because the shale has to be kept separate from the coal which is to be sold. The primary component of most shales is clay, but in shale which is closely associated with coal, a considerable percentage of finely divided carbonaceous material is mixed with the clay. However, it is extremely important to observe that the layers of shale (lithified clay and carbon) are regularly distinct from the coal which lies next to them, indicating that most of the components of the coal were already packed together before a layer of shale was deposited above them.

All of this is strong evidence against the hypothesis that these layers of coal and other rock were deposited rapidly by flood waters. Neither clay particles nor vegetable matter normally settle out of rapidly moving water. In fact, they both require very calm water, and a long period of time for settling. So, in the many coal-producing areas where there are several seams of coal, one above the other, with thick deposits of shale, mudstone, and even limestone in between, the evidence against rapid deposition is overwhelming. The offices of the West Virginia Geological Survey at Morgantown, W. Va., have on file the drilling records, rock samples, and cores from many "boreholes" which have been drilled in the coal-producing counties of the State. In almost all cases there is evidence of slow, natural deposition, and a sequence which could not conceivably have been deposited by the Flood. An example is the local stratigraphic column which was revealed by a borehole drilled in Logan County, W. Va., in 1975. The drilling record of this borehole lists 152 distinct changes of rock type from the surface to the bottom which lies at a depth of 814 feet below the surface. Of these 152 distinct parts of the column, 39 are listed as either "coal" or "boney coal," with at least one commercially valuable coal bed (called a seam) in each 100-foot section of the column, all the way down to 800 feet. These coal beds, with their many intervening beds of shale, sandstone, and other rock types are just nothing like what could be produced by a flood. And this Logan-County local stratigraphic column is typical of the columns found in many of the coal-producing counties of West Virginia, and throughout the world. The few coal seams which show some evidence of rapid deposition are very much the exception.