

Geologic Time Scale Compared to a Calendar Year

| Geologic Era | Geologic Period | Beginning (Million Years Ago) | Comparative Date ¹ | | | |
|-------------------------------|-----------------|-------------------------------------|-------------------------------|-----|----|-----|
| | | | | Day | Hr | Min |
| Cenozoic ("Recent life") | Quaternary | 1 | December | 31 | 22 | 03 |
| | Tertiary | 70 | December | 26 | 7 | 44 |
| Mesozoic ("Middle life") | Cretaceous | 135 | December | 21 | 1 | 12 |
| | Jurassic | 180 | December | 17 | 9 | 36 |
| | Triassic | 220 | December | 14 | 3 | 44 |
| Paleozoic ("Ancient life") | Permian | 270 | December | 10 | 2 | 24 |
| | Pennsylvanian | 320 | December | 6 | 1 | 04 |
| | Mississippian | 350 | December | 3 | 14 | 40 |
| | Devonian | 400 | November | 29 | 13 | 20 |
| | Silurian | 430 | November | 27 | 2 | 56 |
| | Ordovician | 490 | November | 22 | 4 | 37 |
| | Cambrian | 600 | November | 13 | 16 | 00 |
| Precambrian | | 4,500 | January | 1 | 0 | 00 |

¹Determined by A. J. Myers.

Figure 4. Geologic time scale compared to a calendar year.

Stratigraphy

The branch of geology that deals with descriptions of sedimentary rock, or rock strata, is known as stratigraphy; and examining and describing rocks in the field is the first step for a geologist who is studying an area. The geologist records such things as rock type, color, thickness, orientation, and areal distribution; then from this information he compiles a detailed description of the formations that make up the stratigraphy of the area. From these findings, a geologic map of the area can be produced. Plate 1 (in pocket) is a geologic map of the Robbers Cave State Park area. It shows those parts of T. 6 N. that are present on the Quinton South and Wilburton 7½-minute topographic maps and includes the eastern part of R. 18 E. and most of R. 19 E.

Northern Latimer County was mapped by Dearl T. Russell for his master's thesis in 1958 for the School of Geology and Geophysics at the University of Oklahoma; and Oklahoma Geological Survey Circular 50, *Geology of Northern Latimer County, Oklahoma* (1960), is the published version of that thesis. The stratigraphy of northern Latimer County is summarized by the columnar section in figure 6

that contains the name of each rock unit, lithologic type, and average thickness.

The oldest formation exposed in northern Latimer County is the Atoka Formation. It was named for the town of Atoka in Atoka County, Oklahoma, and is composed of gray to brown silty shale and brown sandstone. The shale is easily eroded and forms valleys, whereas the resistant sandstone forms ridges and caps many hills in the southern part of Latimer County. The Atoka Formation is not exposed in the park or map area.

Overlying the Atoka Formation is the Hartshorne Formation, which is named for the town of Hartshorne in Pittsburg County, Oklahoma. The Hartshorne is gray to brown silty sandstone interbedded with thin, gray silty shales. The formation ranges in thickness from 84 to 316 feet. In the upper part is the upper Hartshorne coal, which is 4 to 6 feet thick and has been mined by surface mining. The Hartshorne Formation is not exposed in the park but is exposed in the extreme southwestern part of the geologic-map area (pl. 1).

The McAlester Formation overlies the Hartshorne Formation and was named for the town of McAlester in Pittsburg County, Oklahoma. It consists of in-