The Geological Survey is making a geologic map of the United States, which necessitates the preparation of a topographic base map. The two are being issued together in the form of an atlas, the parts of which are called folios. Each folio consists of a topographic base map and geologic maps of a small area of country, together with explanatory and descriptive texts.

**THE TOPOGRAPHIC MAP.**

The features represented on the topographic map are of three distinct kinds: (1) quantities of the surface, called relief; as plateaus, plains, valleys, hills, and mountains; (2) distribution of water, called drainage, as streams, lakes, and swamps; (3) the works of man, called culture, as roads, railroads, boundaries, villages, and cities.

Relief.—All elevations are measured from mean sea-level. The heights of many points are accurately determined, and those which are most important are given on the map in figures. It is desirable, however, to give the elevation of all parts of the area mapped, to delineate the horizontal outline, or boundary, of all slopes, and to indicate their grade or degree of steepness. This is done by lines connecting points of equal elevation above mean sea-level, the lines being drawn at regular vertical intervals. These lines are called contours and the uniform vertical spacing between each two contours is called the contour interval. Contours and elevations are printed in bold.

In the manner in which contours express elevation, form, and grade is shown in the following sketch and corresponding contour map:

**EXPLANATION.**

2. Contours define the forms of slopes. Since contours are continuous horizontal lines conforming to the surface of the ground, they may be traced in smooth, curving lines, or may be straight, as in the case of flat or gently undulating country a small contour interval is used; for a steep or mountainous country a large interval is necessary. The smallest interval used on the atlas sheets of the Geological Survey is 5 feet. This is the same as the standards like the Mississippi delta shown. 5 The contour interval is used for the most rapid slope, or mountainous country a large interval is necessary. The smallest interval used on the atlas sheets of the Geological Survey is 5 feet. This is the same as the subdivision of the Geological Survey into 1 square mile to an inch. Each square mile to an inch represents nearly to 1 square mile of surface. The map is 1 mile to an inch. The scale is expressed by 125,000 or 1 inch to 5,000 feet. The map is numbered contour.

**SKETCH AND CORRESPONDING CONTOUR MAP.**

**The geological and geographic the surface of the ground, they wind through 180 feet. Each square mile 150 by 240 feet.**

*Fig. 1. Ideal sketch and corresponding contour map.*

3. Contours show the approximate grade of any slope. The vertical space between two contours is the same as that on the left the ground ascends steeply in a precipice. Contrasted with this precipice is a terrace on the right a hill rises gradually, while the supposed underground course is shown beneath its position in the sketch, by contours.

4. The manner in which contours delineate elevation, form, and grade is shown in the following sketch and corresponding contour map:

5. Contours show the approximate grade of any slope. The vertical space between two contours is the same as that on the left the ground ascends steeply in a precipice. Contrasted with this precipice is a terrace on the right a hill rises gradually, while the supposed underground course is shown beneath its position in the sketch, by contours.

The map is numbered contour.
forming another graduation into sedimentary deposits. Some of this glacial wash was deposited in tunnels and channels in the ice, and forms clear, active ridges and mounds of sand and gravel, known as eskers, or eskers, and kames. The material deposited by the ice is called glacial drift; that washed from the ice onto the adjacent land is called modified drift. It is usual also to class as surficial rocks the deposits of the sea and of lakes and rivers that were made at the same time as the ice deposits.

AGES OF ROCKS.

Rocks are further distinguished according to their relative ages, for they were not formed all at once, but from age to age in the earth's history. Classification by age is independent of origin; igneous, sedimentary, and surficial rocks may be of the same age.

When the predominant material of a rock mass is essentially the same, and it is bounded by rocks of different materials, it is convenient to call the mass throughout its extent a formation, and such a formation is the unit of geologic mapping.

Several formations considered together are designated a system. The time taken for the deposition of a formation is called an epoch, and the time taken for that of a system, or some larger fraction of a system, a period. The periods are mapped by formations, and the formations are classified into systems, and the systems into eras. The time taken for the deposition of a system is called an age; and the time taken for that of an era, a period. The periods are subdivided into periods. The names of the periods are given in proper order (from new to old), with the color in which they are found. Other types of rocks are divided into periods. The names of the periods are printed in proper order (from new to old), with the color in which they are found.

Each formation is further divided into periods. The time of the oldest fossiliferous rocks to the present, has been so great that their relative positions have to a great extent differed from those of other periods. The relations of the rocks have to a great extent differed from those of other periods. The relations of the rocks have to a great extent differed from those of other periods. The relations of the rocks have to a great extent differed from those of other periods. The relations of the rocks have to a great extent differed from those of other periods.