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 a geologic map of a small area of country, together with explanatory and descriptive texts.

EXPLANATION

2. Contours define the forms of slopes. Since contours are continuous horizontal lines conforming to the surface of the ground, they may pass smoothly over undulations, recede into all attenuant ranges of elevation, and project in every direction. The spacing, thickening, or thinning of contours near the base of hills, on a gentle slope one must go farther than on a steep slope, and therefore contours are far apart on gentle slopes and near together on steep ones. For a 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 smallest scale that can be used to depict the linear relations by lines connecting points of equal elevation. For intermediate relief contours intervals of 10, 20, 25, 50, and 100 feet are used.

Rivers.--Watercourses are designated by blue lines. If the stream flows the year round the course is drawn broken, but if the channel is dry part of the year the line is solid. Where a stream sinks and reappears at the surface, the exposed underground course is shown by a dotted line. In some places bodies of water are shown also by blue, approximate contours.

Colors.--The works of man, such as roads, railroads, and towns, are distinguished from those in Colorado, the interval may be 250 feet. In general country a large interval is necessary. The smallest interval used on the atlas sheets of the Geological Survey is 5 feet. This is the smallest scale that can be used to depict the linear relations by lines connecting points of equal elevation. For intermediate relief contours intervals of 10, 20, 25, 50, and 100 feet are used.

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forming another gradation into sedimentary deposits. Some of this glacial drift was deposited by the ice in tunnels and channels in the ice, and forms clear, flat-lying sheets of sand and gravel, known as tills, or related deposits. These sedimentary strata are frequently seen in the form of arches, or their parts, when the eroding force is high above the sea, forming a plateau, and their change of elevation shows that a portion of the earth's surface has eroded upwaard from a lower to a higher level. The strata of this set are parallel, a relation which is called conformable. The second set of formations consists of strata which form arches and troughs. These strata were once continuous, but the crests of the arches have been removed by degradation. The beds, like those of the first set, are conformable. The horizontal strata of the plateau rest upon the eroded, rounded edges of the beds of the second set at the left of the section. The over-lying, younger beds of the arches and the younger strata must have occurred between the deposition of the older beds and the accumulation of the younger. When younger strata thus rest upon an eroded surface of older strata the relation between the two is an unconformable one, and their surface of contact is an unconformity.

The section and landscape in fig. 2 are ideal, but they illustrate relations which actually occur. The sections in the structure-section sheet are related to the maps as the section is related to the map. The profiles of the surface in the section correspond to the actual slopes of the ground along the section line, and the depth of any mineral-producing or water-bearing stratum which appears in the section may be measured from the surface by using the scale of the sheet.

The various geologic sheets.

The historical sheet. This sheet shows the areas occupied by the various formations. On the margin is a legend, which is used for the purposes of the section, and the names of the formations are arranged in columnar form, according to the order of age, so far as known, the youngest at the top. The legend is a partial statement of the geologic history. In it the symbols and names are arranged, in columnar form, according to the order of the formations—surficial, sedimentary, and igneous—and within each group they are placed in the order of age, so far as known, the youngest at the top.

The economic geologic sheet. This sheet represents the distribution of useful mineral occurrences of artistic or other kinds of economic interest, shown by colored patterns. The localities of the formations are used in the principle of the same kind. The detail is obtained in the legend and the pattern of the symbols, when it is desired to find any given formation, its name is seen in the legend and its color and pattern noted, when the areas on the map corresponding in color and pattern may be traced out. The economic geologic sheet represents the distribution of useful mineral occurrences of artistic or other kinds of economic interest, shown by colored patterns. The localities of the formations are used in the principle of the same kind. The detail is obtained in the legend and the pattern of the symbols, when it is desired to find any given formation, its name is seen in the legend and its color and pattern noted, when the areas on the map corresponding in color and pattern may be traced out. The economic geologic sheet represents the distribution of useful mineral occurrences of artistic or other kinds of economic interest, shown by colored patterns.