THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a standard topographic atlas of the United States. This work has been in progress since 1889, and its results consist of published maps of more than 49 per cent of the country, exclusive of military possessions.

This topographic atlas is published in the form of maps on sheets measuring about 16½ by 20 inches. Under the present plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, they represent areas of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, and miles. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale 1:62,500 means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 similar units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys for the United States proper and the resulting maps have for many years been divided into three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swampy areas—are made with sufficient accuracy to be used in the publication of maps on a scale of 1:62,500 (1 inch = nearly 1 mile), with a contour interval of 1, 2, or 10 feet.

2. Surveys of areas in which there are problems of average public importance, such as much of the basin of the Mississippi and its tributaries, are made with sufficient accuracy to be used in the publication of maps on a scale of 1:24,000 (1 inch = nearly 1 mile), with a contour interval of 10 to 25 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, are made with sufficient accuracy to be used in the publication of maps on a scale of 1:62,500 (1 inch = nearly 2 miles), with a contour interval of 25 to 100 feet.

A topographic survey of Alaska has been in progress since 1898, and nearly 93 per cent of its area has now been mapped. About 10 per cent of the Territory has been covered by reconnaissance maps on a scale of 1:62,500, or about 10 miles to an inch. Most of the remaining area surveyed in Alaska has been mapped on a scale of 1:125,000, but about 4,000 square miles has been mapped on a scale of 1:62,500 or larger. The Hawaiian Islands, with the exception of the small islands at the western end of the group, have been surveyed, and the resulting maps are published on a scale of 1:62,500.

The features shown on these maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture (works of man), such as towns, cities, roads, railroads, and boundaries. The symbols used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by blue lines and the larger streams, the lakes, and the sea by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on some maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The line of the sea-coast itself is a contour, the datum or zero of altitude being mean sea level. The 20-foot contour would be the show line if the sea should rise 20 feet. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitudes. Successive contour lines that are far apart on the map indicate a gentle slope; lines that are close together indicate a steep slope; and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.

The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly enclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep escarp, from which it slopes gradually away and forms an indented table-land that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: In a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. Certain contour lines, every fourth or fifth one, are made heavier, than the others and are accompanied by figures showing altitude. The heights of many points—such as road corners, summits, surfaces of lakes, and bench marks—are also given on the map in figures, which show altitudes to the nearest foot only. More exact altitudes—those of bench marks—as well as the geodetic coordinates of triangulation stations, are published in bulletins issued by the Geological Survey.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Good motor or public roads are shown by fine double lines, poor motor or private roads by dashed double lines, trails by dashed single lines. Each quadrangle is designated by the name of a city, town, or government, or by the letters assigned, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. Over 3,300 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

The topographic map is the base on which the geology and agriculture of a quadrangle are represented, and the maps showing these features are bound together with a descriptive text to form a folio of the Geologic Atlas of the United States. More than 220 folios have been published.

In maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 per cent is allowed on an order for maps amounting to $5 or more at the retail price. The geologic folios are sold for 25 cents or more, the price depending on the size of the folio. A circular describing the folios will be sent on request.

Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

September, 1928.

STANDARD SYMBOLS

CULTURE (printed in black)

RELIEF (printed in brown)

WATER (printed in blue)

WOODS (lakes shown, printed in green)
TABLE OF DISTANCES

<table>
<thead>
<tr>
<th>Place</th>
<th>Distance (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonto</td>
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</tr>
<tr>
<td>Apache</td>
<td>123456789101123456789</td>
</tr>
<tr>
<td>Stewart</td>
<td>123456789101123456789</td>
</tr>
<tr>
<td>Boulder</td>
<td>123456789101123456789</td>
</tr>
</tbody>
</table>

Boulder Dam (1)

Located 75 miles south of Kingman in Boulder County, this is the most spectacular of all Hoover Dam recreation projects, which were built at a cost of nearly seven times the $1,100,000. It is one of the most popular of Arizona's picturesque spots. In the early 1930's the dam was being built, during which time many stories about Hoover Dam and its construction were told.

Zion National Park (2)

This National Park is located 120 miles north of Las Vegas, and it is a magnificent scene with precipitous walls, sheer cliffs and broad gorges. It can be reached from Las Vegas by following U.S. 93 north for about 150 miles, then turning east on SR 93A and continuing north.

Pipe Spring National Monument (3)

This monument is located 10 miles west of Kanab, Utah, and it is the site of an ancient Indian settlement. The monument contains ruins of an ancient Indian village and a museum that tells the story of the people who lived there.

Canyon de Chelly (4)

This canyon, near the New Mexico border, offers excellent hiking trails and good rock formations. It is located 10 miles north of Window Rock, Arizona, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Hopi Indian Village (5)

The Hopi Indian Village is located 15 miles north of Window Rock, Arizona, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Painted Desert (7)

The Painted Desert, one of Arizona's most scenic attractions, can be viewed from U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Petitified Forest (8)

This forest is located 10 miles north of Window Rock, Arizona, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Granite Dells (9)

This forest is located 10 miles north of Window Rock, Arizona, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Dinosaur Canyon (11)

Dinosaur Canyon, 10 miles north of Flagstaff, is surfaced with unmarked, narrow roads. This section of the canyon is surrounded by a fence which is marked "No Trespassing" and "No Trespassing".

Wrigley Monument (12)

Wrigley Memorial, located 5 miles east of Flagstaff, is surrounded by the Wrigley Family Preserve. The Preserve is located 5 miles east of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

San Francisco Peaks (13)

These peaks, located 10 miles west of Flagstaff, are surrounded by a fence which is marked "No Trespassing" and "No Trespassing".

Oak Creek Canyon (14)

Oak Creek Canyon, located 10 miles west of Flagstaff, is surrounded by a fence which is marked "No Trespassing" and "No Trespassing".

Sunset Crater (15)

This crater, located 10 miles west of Flagstaff, is surrounded by a fence which is marked "No Trespassing" and "No Trespassing".

Walnut Canyon Monument (16)

This monument, located 10 miles west of Flagstaff, is surrounded by a fence which is marked "No Trespassing" and "No Trespassing".

Carl Pleasant Dam (22)

This dam is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Stewort Mountain Dam (23)

This dam is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Apache Trail (24)

This trail is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Apache Dam (25)

This dam is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Cocodium Dam (27)

Cocodium Dam is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Bucey Thompsons W. Arboretum (28)

This arboretum is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Casa Grande Ruins (29)

This ruin is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.

Casa Grande Ruins Park (30)

This park is located 10 miles west of Flagstaff, and it can be reached by following U.S. 70 north for about 150 miles, then turning east on SR 59 and continuing north.
Exhibit A

Portion of Claims of Mammoth St. Anthony Co. (shaded blue) and Claims of Mammoth Tiger Extension Mining Co; Old Glory #1, 2, 3, 4, 5. (shaded red)

Scale 1" = 300'.
Portion of Claims of Mammoth St. Anthony Co., (shaded blue)
and
Claims of Mammoth Tiger Extension Mining Co.; Old Glory #1, 2, 3, 4 & 5, (shaded red)

Scale 1"=300'.