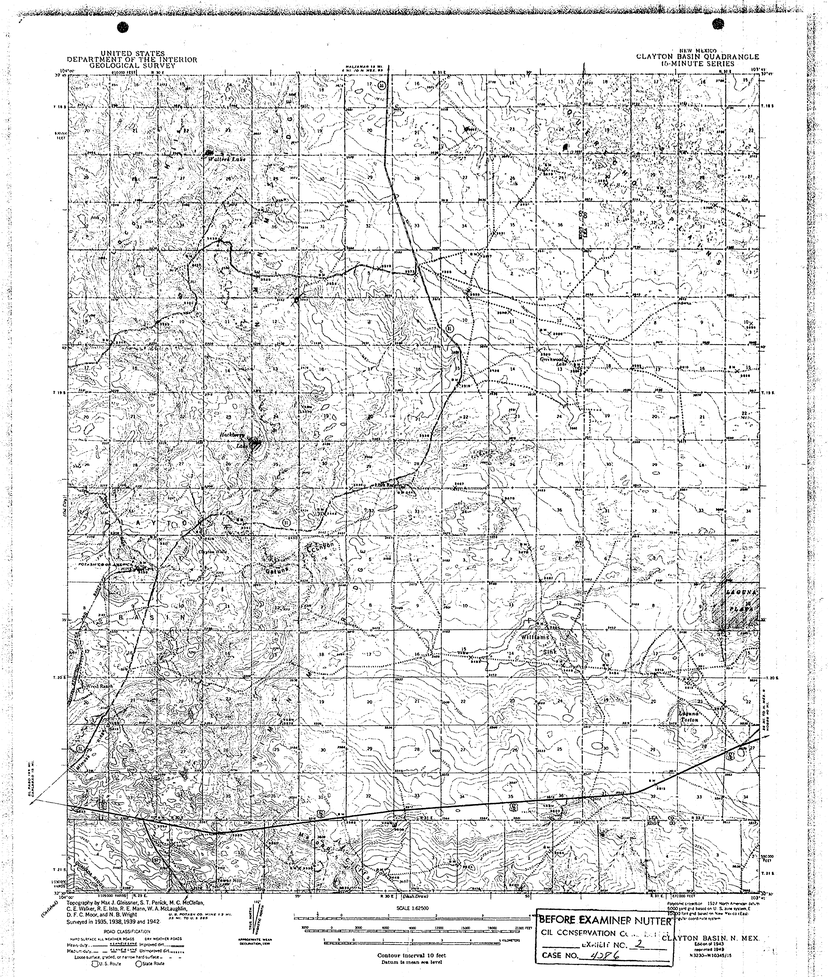
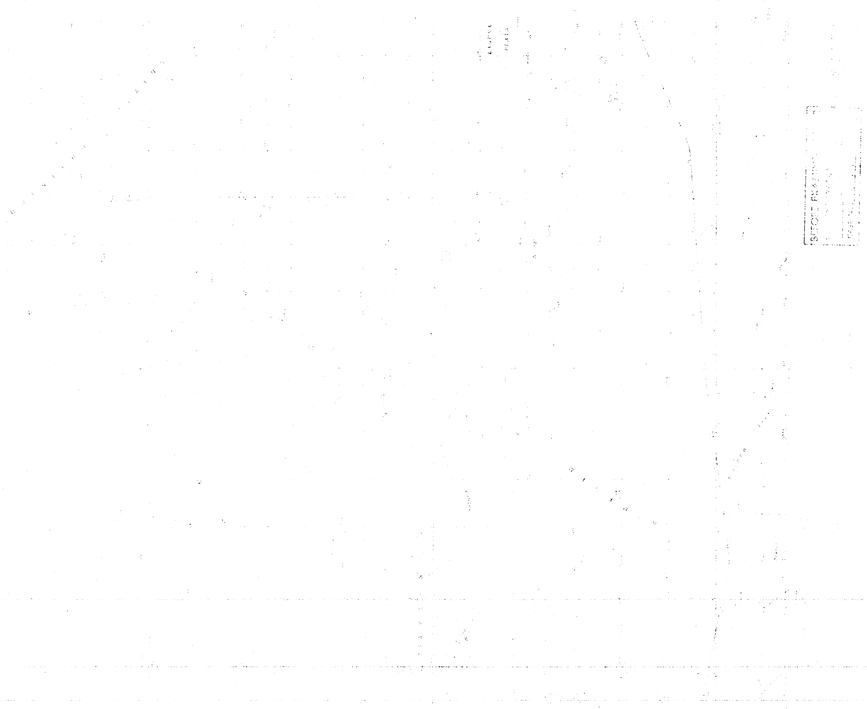
Case No.
4286

Large Exhibits





THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a series of detailed topographic maps to cover the United States. This work has been in progress since 1882, and the published maps cover more than 47 percent of the country, exclusive of outlying possessions.

The maps are published on sheets that measure about 18½ by 20 inches. Under the general 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, the areas that they represent are of different sizes. On the lower margin of each map are printed graphic scales showing distance in feet, meters, miles, and kilometers. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distance on the ground. For example, the scale $\frac{1}{62500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 of the same 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 and the resulting maps have for many years been of 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 swamp areas—are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{31680}$ (1 inch nearly ½ mile) or $\frac{1}{62500}$ (1 inch nearly 1 mile), with a contour interval of 10 to 100 feet.

2. Surveys of areas in which the problems are of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{62500}$ (1 inch nearly 1 mile), with a contour interval of 10 to 100 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, and the high mountain area of the northwest, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{125000}$ (1 inch nearly 2 miles) or $\frac{1}{250000}$ (1 inch nearly 4 miles), with a contour interval of 20 to 250 feet.

The aerial camera is now being used in mapping. From the information recorded on the photographs, planimetric maps, which show only drainage and culture, have been made for some areas in the United States. By the use of stereoscopic plotting apparatus, aerial photographs are utilized also in the making of the regular topographic maps, which show relief as well as drainage and culture.

A topographic survey of Alaska has been in progress since 1898, and nearly 11 percent of the area has now been mapped. About 15 percent of the Territory has been covered by maps on a scale of $\frac{1}{250000}$ (1 inch nearly 4 miles). For most of the remainder of the area covered the maps published are on a scale of $\frac{1}{625000}$ (1 inch nearly 10 miles). For some areas of particular economic importance, covering about 4,200 square miles, the maps published are on a scale of $\frac{1}{62500}$ (1 inch nearly 1 mile) or larger. In addition to the area covered by topographic maps, about 11,500 square miles of southeastern Alaska has been covered by planimetric maps on scales of $\frac{1}{62500}$ and $\frac{1}{125000}$.

The Hawaiian Islands have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62500}$.

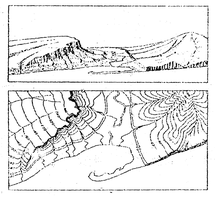
A survey of Porto Rico is now in progress. The scale of the published maps is $\frac{1}{20000}$.

The features shown on topographic 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 single blue lines and the larger streams by double lines. The larger streams, lakes, and the sea are accentuated 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 a few 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 datum or zero of altitude of the Geological Survey maps is mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet above mean sea level. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. 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 from 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 connected at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep cliff, from which it slopes gradually away and forms an inclined tableland 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. The interval differs according to the topography of the area mapped; in a flat country it may be a small as 1 foot; in a mountainous region it may be as great as 250 feet. In order that the contours may be read more easily certain contours (usually every fourth or fifth, as may be most convenient) are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road intersections, summits, surfaces of lakes, and bench marks—are also given on the map in figures, which show altitudes to the nearest foot only. More precise figures for the altitudes of bench marks are given in the Geological Survey's bulletins on spirit leveling. The determinations of triangulation and transit traverse also published in bulletins.

Lettering and the work of certain [illegible] in black. Boundaries such as those of a State, county, city, [illegible] grant, township, or reservation, are shown by continuous [illegible] lines of different kinds and weights. Public roads suitable for motor travel the greater part of the year are shown by solid double lines; poor public roads and private roads by broken double lines; trails by dashed single lines. Additional public road classifications if available is shown by red overprint.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. More than 4,100 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.

Geologic maps of some of the areas shown on the topographic maps have been published in the form of folios. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped, and several pages of descriptive text. The text explains how the rocks and the topographic and geologic features of the country and its mineral products. Two hundred twenty-five folios have been published.

Index 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 topographic maps may be obtained for 10 cents each; geological maps are sold at different prices. A discount of 40 percent is allowed on an order amounting to $5 or more at the retail price. The discount is allowed on an order for maps alone, either of one kind or in assortment, or for maps together with geologic folios. The geologic folios are sold for 25 cents or more each, 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

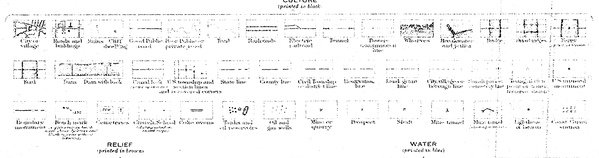
THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

November 1907.

STANDARD SYMBOLS

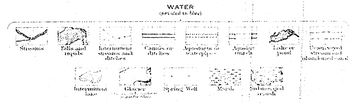
NOTE.—Effective on and after October 1, 1908, the price of standard topographic quadrangle maps will be 10 cents each, with a discount of 20 per cent on orders amounting to $20 or more at the retail rate.

CULTURE
(printed in black)



RELIEF
(printed in brown)

WATER
(printed in blue)



WOODS
(when shown, printed in green)