MAPS CAN BE LIARS!

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THE GLOBE. The only true representation of the earth's surface is a globe.

A globe is not, however, the most desirable in other respects. To be accurate in detail, it must necessarily be very large. It has been estimated that a globe constructed on a scale of 15 miles to the inch would be nearly 40 feet in diameter! Even the smaller globes are cumbersome and expensive, and cannot be easily marked upon. Moreover, only a portion the globe can be viewed at a time. In order that the engineer, the navigator, and the military strategist be able to measure distances and plot positions conveniently, maps must be printed on flat surfaces.

Various schemes have been devised to obtain a plane representation of the earth, but all of them contain inherent errors. The basic cause for this is that you simply cannot make an orange peel lie flat and still keep it in one piece.[1]

OBTAINING A FLAT MAP. One map with which almost everyone is familiar is the rectangular map of the world known as Mercator's projection. It has been used since the 16th century, particularly as a navigation map. Figure 1 shows how it is produced.

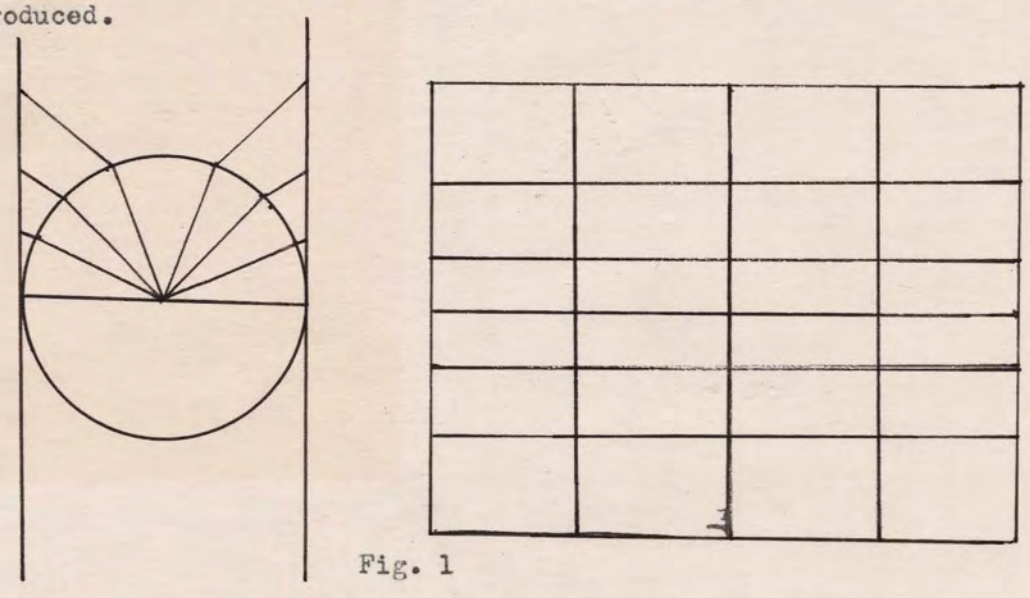

Fig. 1

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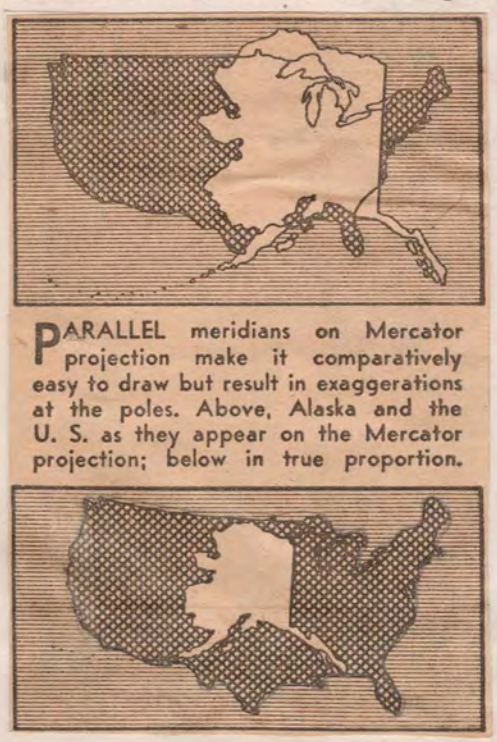
1 "Global Map Supplement." Washington Star, September 21, 1942.

Imagine that the earth is a hollow glass sphere, the land being painted black and the water left clear. Now suppose a cylinder of paper coated with a material sensitive to light is placed tangent to the earth, and a light placed at the center of the earth. The shadows of the earth's features will be projected upon the paper cylinder, which, upon being unrolled, will be a map of the earth. Near the poles the light rays have been assumed to bend, in order that they do not run off the map. The extreme polar regions cannot be shown at all.[2]

The main fallacies of this map are apparent from its construction. Although it is accurate in the neighborhood of the equator, it becomes increasingly distorted as one approaches the poles. Particularly noticeable is the distortion of areas in the polar regions. Greenland appears to be larger than the United States, while actually it is less than one-third as great. Alaska seems to contain at least one-half the area of the Unites States; in reality, the ratio is closer to one-fifth.



PARALLEL meridians on Mercator projection make it comparatively easy to draw but result in exaggerations at the poles. Above, Alaska and the U. S. as they appear on the Mercator projection; below in true proportion.

Fig. 2

In Mercator's projection, the shortest distance between two points would seem to be a straight line. The real minimum distance will appear as a curved line, the projection of a great circle. This fact explains some startling statements, such as: The shortest route from San Francisco to Singapore passes through Alaska; Detroit and other mid-western cities are closer to Russia than any of our seaports.[3]

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[2] William Alexander and W. J. D. Allan. The Observer's Handbook on Maps, Charts and Projections, London 1940, 56-62.

[3] "How Our World is Changing Shape." Reader's Digest, Feb., 1943, 88-92.

Other methods of flattening the earth's surface employ a tangent plane, a tangent cone, or a series of tangent cones. A moment of reflection will show that they, too, are accurate only near the points of tangency. Although some of them show marked improvement over Mercator's projection, the distortion of distance, area, and shape are still present.

DEPICTION OF THE EARTH IN THE SAME POSITION. Too many maps always depict the earth's features in the same position. Figure 3 is not readily recognizable as the United States because most are used to seeing it right side up. Yet, this is how it looks from the north pole.

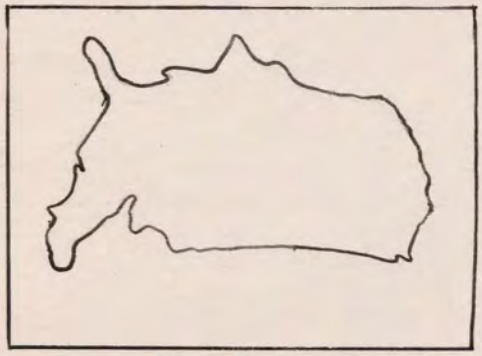

Fig. 3

The advent of the airplane particularly has rendered useless the conventional maps of the earth. The unusual map in figure 4 is an aviator's view of the world. Continents and oceans are no longer important; airplanes soar over them both with equal ease. Only the names and locations of places concern him. By taking the most direct routes, planes have been able to cut thousands of miles off of transport shipping distances.[4]

Fig. 4

[4] "How Our World is Changing Shape." Reader's Digest, Feb, 1942, 88-92.

THE QUEST FOR BETTER MAPS. The present day world has discovered that the maps it has been using for so long a time, are liars. They are inaccurate and worse, misleading. Every effort is now being made to obtain more adequate and precise maps of the world. It is hoped that the maps of the future will depict the earth as it really is, and that they will be used to their fullest advantage.

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