ASTRONOMY

Guide to The Moon

A number of fanciful figures are easy to see if you look for them; a good pair of field glasses reveals interesting surface features.

By MARTHA G. MORROW

➤ ADVENTUROUS boys and girls, thinking they may some day take that rocket trip to the moon and discover for themselves whether it is a deserted land of pumice and volcanic ash, may find a guide to the moon helpful in making their post-postwar plans. Servicemen in inactive areas will find the new map, which gives only the leading craters, mountains and seas, useful in exploring the moon today, just as many of us here at home will enjoy it.

If you look at the moon closely some evening when it is out in its full glory, you may be able to see the "seas" or dark areas without even using a pair of binoculars. These markings on the moon have been called the "man in the moon," "woman reading a book," and the "crab." A number of fanciful figures are easy to see if you look for them.

Many details of the moon become visible when you use field or opera glasses. These bring the moon, which ranges from 220,000 to 253,000 miles from us, to within about 30,000 miles. Then the surface of the moon, which is 2,163 miles in diameter, becomes much clearer. If you will mount your field glasses on a tripod or support it in some other way, you will be better able to distinguish the moon's features.

Dark Plains Visible

With field glasses you can see the wide, dark plains which Galileo and his contemporaries mistook for seas, just after invention of the telescope. They are shaded on both of the accompanying maps, and marked on the index map with capital letters.

Today we know there is no water on the moon and practically no air, but we still use the old Latin names for these "seas." Thus Mare Tranquilitas is the Sea of Tranquility; Mare Serenitatis, the Sea of Serenity; and Mare Crisium, the first of the dark areas visible on the new moon, is the Sea of Crises.

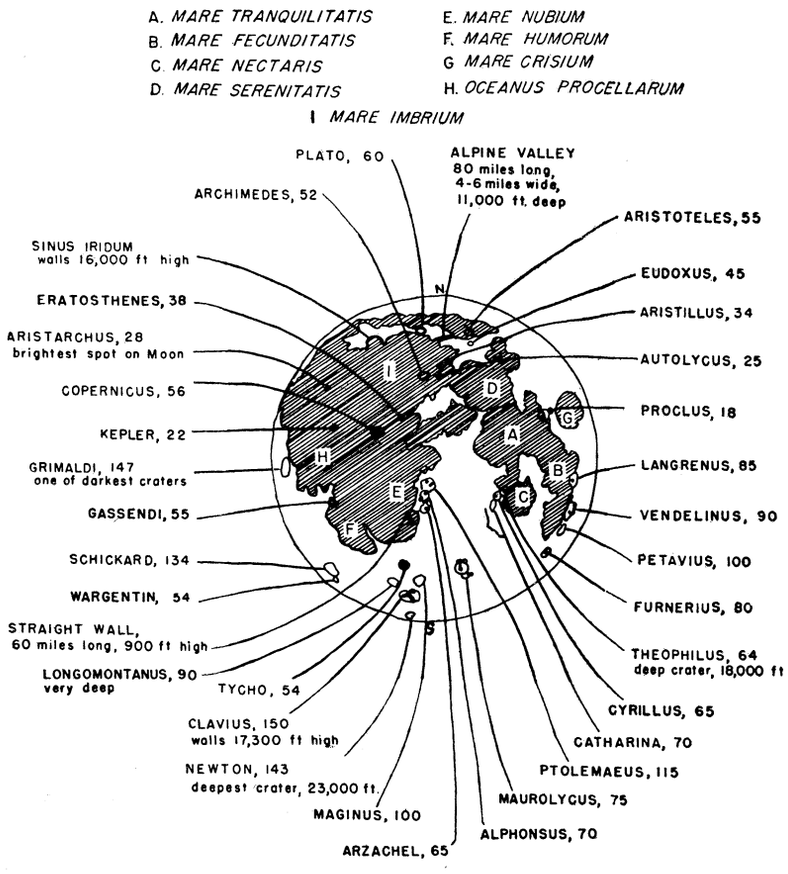
The craters, which may have been caused by volcanoes in the youth of the moon or have resulted from meteorites crashing on its face, can be seen in greater detail when the moon is in first or third quarter. Then the sides of the craters near the unilluminated regions of the moon are highlighted by the slanting rays of the sun, just as shadows here on earth are longer in the early morning and late evening than at midday.

The craters vary in size from pits but a few hundred feet across to great rings of mountains enclosing plains more than 150 miles from side to side. In the center of many craters you will notice a single sharp peak, rising almost as high as the walls. The craters were named after famous scientists of the past, such as Archimedes, Kepler, Copernicus and Newton.

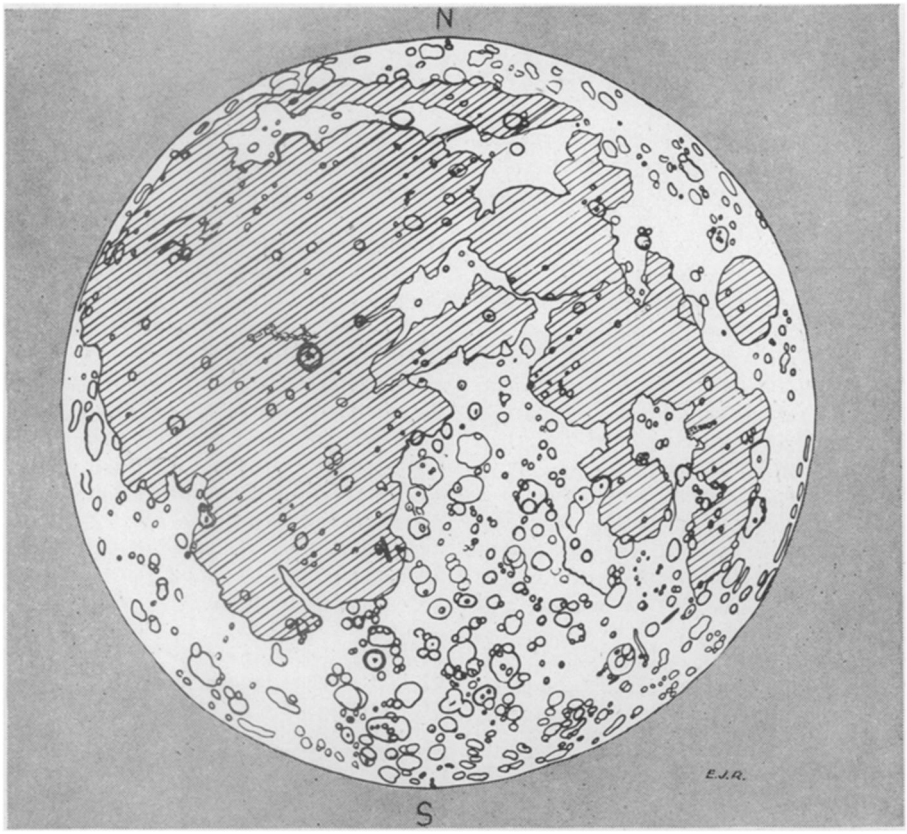
Mountain ranges on the moon, rising as high as 26,000 feet above the surrounding plains, are named after mountain ranges on the earth. The Apennines are found at the upper right of the crater Eratosthenes along the edge of Mare Imbrium, and the Alps, bordering the same sea, are at the lower right of Plato.

Several craters, especially Tycho and Copernicus, have light streaks called "rays" radiating from them. These are best seen at full moon. There are many cracks in the moon's surface called "rills," but none are shown on these maps because a large telescope is needed to see them.

Look for the craters, mountains and seas on the accompanying maps, pre-



INDEX MAP—The names of the leading craters, mountain ranges and seas on the moon are shown in the Ladd Observatory map. The approximate diameter of each crater in miles is listed beside the crater's name.



MOON'S SURFACE—With a good pair of field glasses or small telescope, the interesting features of the surface of the moon are revealed.

pared at Ladd Observatory of Brown University by Miss Jean Roberts under the direction of Prof. C. H. Smiley. Thinking of soldiers, sailors and those of us who have little equipment available, but can possibly borrow a pair of binoculars, they included only the most outstanding features. Some 20 maps and 30 photographs of the moon were examined, and the image of the moon as actually seen through a small telescope was also studied.

Map Is Turned

The map is turned to show the moon as it is seen with the naked eye or through field glasses. Should you be fortunate enough to have a telescope available, the features of the moon will be greatly magnified, but turned upside down. North will appear in the position now occupied by south and the sides likewise will be interchanged.

Month after month, as we look at the moon, which shines only in the reflected light of the sun, we see about the same features. The moon revolves about the earth once every 29.531 days on the average, and this is the interval from full moon to full moon, or between two new moons. When a thin crescent moon is visible in the skies, the remainder of the disk can be seen faintly illuminated by earthshine, sunlight reflected by the earth to the moon.

Just One Revolution

The moon makes just one revolution on its axis during the journey around the earth, thus the same portion always faces us. But frequently it is slightly out of its average position and we are able to peek into the little-known regions, seeing first a little farther around one side and then an extra portion around the other side. By repeated observations with the telescope and studying photographs taken at different times, astronomers have become familiar with almost 60 per cent of the moon's surface.

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Postwar *automobile drivers* will probably not use 100-octane fuel in their old cars because the engines are not designed to use superpower gasoline; motor car engines using 100-octane fuel may be available several years later.

ELECTRONICS

Miniature Electron Tubes Already in War Use

➤MINIATURE electron tubes recently developed in the laboratories of the Radio Corporation of America in Camden, New Jersey, will permit the construction of smaller home radio receiving sets and compact radio-television-record player combinations in postwar days. They are now in use in war equipment. Typical savings of 20% to 40% in equipment size will result.

The new tubes, some as small as the little finger, are a "wedding" of the acorn type tube, developed in the company's program of research in the ultra-high frequency field, and the filament-type miniature tube developed in 1938. By merging the special features of the two earlier types, a combination is made of the efficient high frequency performance of the acorn with the smaller size and lower cost of the miniature. The new tube has the cathode-type inner structure of the acorn, and the small envelope and base of the filament-type miniature.

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