Imbrium’s Impact

The Moon’s surface was scarred far and wide by one of the most important events in lunar history.

When big asteroids slammed into the lunar surface billions of years ago, where did all the material they blasted out go? All over the Moon. And some probably ended up on Earth too.

The Orientale Basin is the youngest giant impact on the Moon and, as such, the source of the best preserved deposits of ejected debris. But because Orientale is situated near the Moon’s western (left-hand) limb, it’s difficult to appreciate from Earth.

Fortunately the Moon’s second youngest big basin is much better positioned. Imbrium dominates the Moon’s northwestern quadrant. Mare lavas cover the entire floor of the 720-mile-wide (1,160-km) impact basin. That ocean of solidified rock is known as Mare Imbrium. And though much of the Imbrium ejecta also lies buried under lava, you can see the aftereffects of this powerful impact in many locations — if you know what to look for.

Start your ejecta hunt north of Imbrium at a crater named after the first director of Harvard College Observatory, William C. Bond. W. Bond (L76 in the Lunar 100) is an old, 97-mile-wide crater with a worn-down rim. Interestingly, its floor is at the same elevation as that of its surroundings.

When W. Bond first formed it must have looked something like a larger version of Copernicus. It would have had terraced walls leading down about 3 miles to a flat floor that featured a cluster of central mountain peaks. But none of that is visible today. Something filled W. Bond.

### The Lunar 100

<table>
<thead>
<tr>
<th>Name</th>
<th>Size (miles)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>L67 Fra Mauro</td>
<td>—</td>
<td>Apollo 14 landing site on Imbrium ejecta</td>
</tr>
<tr>
<td>L76 W. Bond</td>
<td>97</td>
<td>Large crater degraded by Imbrium ejecta</td>
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<tr>
<td>L92 Gyldén Valley</td>
<td>60</td>
<td>Part of the Imbrium radial structure</td>
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</tbody>
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### Moon, March 2008

- **New Moon** Mar. 7, 1:16 UT
- **First quarter** Mar. 14, 10:46 UT
- **Full Moon** Mar. 21, 18:40 UT
- **Last quarter** Mar. 29, 21:47 UT
- **Perigee** Mar. 10, 22° UT (dist. 227,607 miles; diam. 32' 37")
- **Apogeee** Mar. 26, 20° UT (dist. 251,173 miles; diam. 29' 30")
- **Min. libration** 5.4°, Mar. 8, 1" UT
- **Max. libration** 7.0°, Mar. 13, 13" UT
- **Min. libration** 5.1°, Mar. 19, 10" UT
- **Max. libration** 7.3°, Mar. 31, 16" UT

For key dates, black dots on the map indicate what part of the Moon’s limb is tipped the most toward Earth by libration. Amounts are listed as left.

The large, northerly crater W. Bond is nearly filled to the rim with debris excavated by the violent impact that formed the nearby Imbrium basin. The crater is best seen when the Moon's phase has just reached first quarter.