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Released upon receipt
but intended for use
August 28, 1933

? WHY THE WEATHER ? Mailed August 21, 1933

AN UPSIDE-DOWN RAINBOW

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Authority on Meteorology

Did you ever see a rainbow upside down in the sky -- a bow convex downward instead of upward? H. M. Payne, of Taos, New Mexico, writes of having beheld this interesting spectacle recently while motoring north of Santa Fe. A thunder-shower was passing to the eastward and the bow was seen as an inverted arc of about 120 degrees above a ridge of mountains on the eastern horizon. The date was July 20 and the hour about 4 p.m. The explanation is as follows:

Somewhere west of the observer--i.e., at his back as he faced the rainbow--there must have been a smooth sheet of water. This produced a mirrored image of the sun bright enough to form a rainbow on the curtain of falling rain in the east. Now the center of a rainbow is always diametrically opposite the source of light. The source in this case was, in effect, as far below the horizon as the sun was above it, and the sun was pretty high at the time mentioned. Hence the rainbow formed by the sun's image in the water was so high that it was entirely above the eastern horizon. If the curtain of raindrops had extended high enough, the observer would have seen the bow as a complete circle, but its height was only sufficient to form the lower portion of a circle; in other words, an arc convex to the horizon.

Such bows are called "reflection" rainbows. They are seen both single and double, and occasionally in conjunction with single or double ordinary rainbows formed directly by the sun.

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