

C. W. Knoll

HARPER'S WEEKLY

A JOURNAL OF CIVILIZATION.

VOL. XIII.—No. 661.]

NEW YORK, SATURDAY, AUGUST 28, 1869.

Entered according to Act of Congress, in the Year 1850, by Harper & Brothers, in the Clerk's Office of the District Court of the United States, for the Southern District of New York.

SINGLE COPIES, TWO CENTS.
\$2.00 PER YEAR IN ADVANCE.

SOLAR ECLIPSE,
1869.

TOTAL eclipses of the sun are very rare. HALLEY computed in 1715 that up to that date not much had occurred in London for a period of 375 years. And since that date London has been favored with this singular phenomenon in the country since 1834 not total eclipse of the sun, until the recent one, has occurred, and there will be another during this century.

The total eclipse of this year was visible along a track about 140 miles wide, and more than 5600 miles long. When this track is laid down on map, throughout its extent, it looks like a narrow ribbon, stretching across North America and a portion of Asia. It begins in Siberia, where it takes a northeasterly course, till it crosses a little south of Bering Strait, after which it turns its course southward, crossing the possessions of the Territory of Alaska, thence into British America, and through Montana, Dakota, Nebraska, Iowa, Missouri, Illinois, Indiana, Kentucky, Tennessee, and North Carolina. It ends in the Pacific Ocean, off the coast of the last mentioned State. On the central line of this track the total observation of the sun lasted for a period of four and one-half to nearly four minutes.

To various points along the line of total eclipses scientific parties went to make observations sent by the Government, and some by private individuals. But the principal point to which the attention of these parties was directed was the corona, observed in previous

THE SOLAR ECLIPSE, AUGUST 7, 1869—HARVARD ASTRONOMICAL EXPEDITION MAKING OBSERVATIONS AT SHELBYVILLE, KENTUCKY.

(PHOTOGRAPHED BY J. A. WHITFELD.)

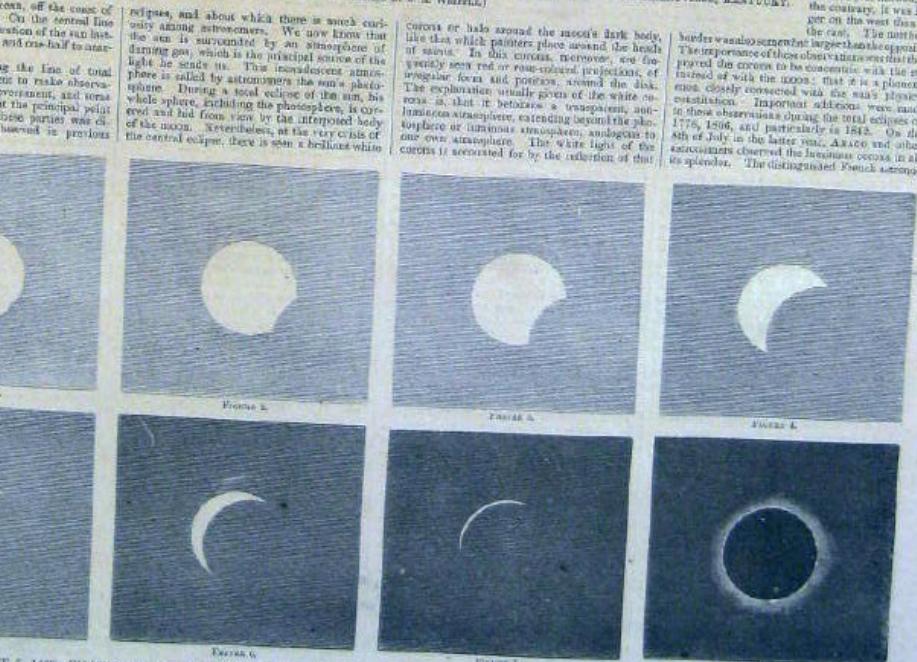


FIGURE 1.

FIGURE 2.

FIGURE 3.

FIGURE 4.

FIGURE 5.

FIGURE 6.

FIGURE 7.

FIGURE 8.

SOLAR ECLIPSE, AUGUST 7, 1869—PHASES OF THE ECLIPSE, AS SEEN AT SHELBYVILLE, KENTUCKY, FROM THE BEGINNING TO THE POINT OF TOTALITY.
(PHOTOGRAPHED BY J. A. WHITFELD.)

of the photosphere, very much as our own evening twilight is produced by the reflection of the sun's rays in our atmosphere. The irregular red masses are projected into the white corona, and may prove to be luminous volumes of incandescent smoke, or solid vapor particles precipitated from the hot gases surrounding which forms the corona.

Another question to be settled, if possible, was whether there is a planet between Mercury and the sun, as Le Verrier and Adams, in account of extraordinary perturbations of Mercury out of character explained.

The comet, or luminous mass moving around the sun in a retrograde motion, was observed at Moulins, in France, Lyon, and in London by H. D. Alex., in 1715. In the latter case the red accelerations were also observed. In 1721, Maraldi observed, for the first time, that this luminous comet was not concentric with the moon. At the beginning of the eclipse it appeared larger in the eastern than on the western side; at the end, on the contrary, it was larger on the west than on the east. The northern

borders was somewhat brighter than the opposite. The importance of these observations was that they proved the comet to be concentric with the sun, instead of with the moon; that it is a planet, and closely connected with the sun's physical constitution. Important additions were made to those observations during the total eclipses of 1770, 1806, and particularly 1843. On the 8th of July in the latter year, Arago and other astronomers observed the luminous corona in all its splendor. The distinguished French astronomer