

## THE CHAMBERS OF THE SOUTH—JOB, IX, 9.

BY THEODORE COOPER.

“Look unto the Heavens and see.”

WHEN Job, on a cold starry night, from his ash heap on the shores of a sea, cried

“Which alone stretcheth out the heavens  
And treadeth upon the waves of the sea,  
Which maketh the Bear, Orion and the Pleiades,  
And the Chambers of the South,”

his hand swept over the sea and through well-known constellations, and rested at two dark spots in the south just above the horizon, where “He hath described a boundary upon the face of the waters”; true chambers of mystery, which sailors have named “the Holes in the Sky.”

This is the impression conveyed to the mind of one who for over half a century has been a star gazer on land and sea, under both northern and southern skies.

The most beautiful and impressive portion of the heavens is centered about the south celestial pole. It contains the continuation and brightest part of the Milky Way, the Magellan clouds which are great patches of the Milky Way gone astray, the Southern Cross, the Holes in the Sky and a quarter of all the stars of first magnitude in the heavens.

These “Holes in the Sky” and the adjacent Southern Cross are  $25^{\circ}$  to  $30^{\circ}$  from the celestial pole and on the same meridian as the handle of the Great Dipper. Under favorable conditions at points south of north latitude  $25^{\circ}$ , the Southern Cross and the Dipper can be seen in the heavens at the same time. These “Holes in the Sky” are great islands in the Milky Way absolutely free from stars. By contrast to the brightness of the surrounding Milky Way

and the neighboring stars of first and second magnitude, they appear to the naked eye almost black. Their darkness and sharply defined edges give the impression of holes broken through the blue and starry firmament to an outer region of utter darkness. The name given them by the early sailors is a perfectly expressive one. There is nothing like them elsewhere in the heavens. They are not inconspicuous, their apparent sizes being about 80 to 20 times the size of the moon. They impress the thoughtful observer with awe and a deep realization of the immensity of space and the infinite.

Sir John Herschel describes the large spot under the name of the "Coal Sack" (savors more of the era of steam than of sailing ships), as follows:

"In the midst of this bright mass [the Milky Way] surrounded



THE "HOLES IN THE SKY" ABOVE THE SOUTHERN HORIZON.

by it on all sides, and occupying about half its breadth, occurs a singular dark pear-shaped vacancy, so conspicuous and remarkable as to attract the notice of the most superficial gazer, and to have acquired among the early southern navigators the uncouth but expressive appellation of the Coal Sack....Its blackness is simply due to the effect of contrast with the brilliant ground with which it is on all sides surrounded."

They can only be seen in northern latitudes, where they must be close to the horizon, under favorable local, seasonal and atmospheric conditions. A free horizon or one unobstructed by natural objects, trees, hills or mountains, and an absence of mist, haze or the refraction of heated air currents would be needed. The few hours they would be above the horizon must also occur at night.

A sea horizon and a cold winter night would be favorable conditions. Job and his friends apparently had these conditions:

“Out of the Chamber of the South cometh the storm,  
And cold out of the North.” R. V.

By this time, but one of the Holes in the Sky is visible; the other has perhaps passed below the horizon or been obscured by the approaching storm.

In the above quotation the word *mezarim*, which has been replaced (not translated) by the word “North,” Professor Schiaparelli, the Italian astronomer, translates as “the winnowing pans,” and suggests that since these pans were similar in shape to our dippers, the same groups of stars that we know as the Dippers and the Chinese as the Ladles,<sup>1</sup> may have been intended. The above quotation could then be paraphrased:

“Out of the Hole in the Sky cometh the storm  
And cold out of the Dippers.”

In considering the probability of the Holes in the Sky being conspicuous objects on or above the horizon in the days of Job, the following general statement must be made:

1. The free horizon of any locality is a level plane tangent to the earth's surface and comprises a view of one-half of the celestial sphere. At any latitude, as N.  $40^\circ$ , we can see to the north, stars  $40^\circ$  below the north pole and to the south, stars  $40^\circ$  above the south pole (under favorable atmospheric conditions).

2. The direction of the earth's axis as referred to the fixed stars is a changeable one, varying about  $47^\circ$  in a cycle of about 20,000 years.

About 4000 years ago, the north and south celestial poles, or points about which the stars appeared to rotate, were some  $22^\circ$  from their present positions. Due to this “precession” of the earth's axis, stars and constellations in the southern heavens, which are not visible now were then visible in northern latitudes.

The Holes of the Sky, which are now 25 to  $30^\circ$  from the present south celestial pole, being partially above the horizon at N. Lat.  $28^\circ$ , and fully above at N. Lat.  $24^\circ$ , would in ancient times have been

<sup>1</sup> The Chinese character *teu*, commonly translated “bushel,” sometimes “peck,” also “ladle,” looks like a cross with two dots in the upper left-hand corner, and with a somewhat slanting cross-beam. The lower part is intended to represent the handle of a grain measure. Possibly the two dots are meant to indicate the grain. It is an essential part of the meaning of “bushel” that it possesses a handle, for it was also used for winnowing. The Chinese *teu* holds ten pints.—Ed.

22 degrees higher above the horizon at the same latitudes; or could possibly be seen at latitudes  $22^{\circ}$  further north.

These holes, under favorable conditions, could have been seen as far north as

N. Lat.  $35^{\circ}$  in 500 B. C.

N. Lat.  $38^{\circ}$  in 1000 B. C.

N. Lat.  $40^{\circ}$  in 1500 B. C.

N. Lat.  $47^{\circ}$  in 2500 to 4000 B. C.

the last being about the extreme northern point at which they could ever have been seen. These estimates are for an unobstructed horizon at the sea level.

The sky line, generally called the horizon, is always higher, even in countries considered as level, than the sea-horizon. For inland regions which are hilly or mountainous, the sky line may be 10 or more degrees above the sea-horizon. A range of hills 500 feet high at a distance of one mile will cut off 6 degrees; and at a distance of half a mile, 12 degrees from the true horizon.

For an observer standing on the shore of any body of water to see that "boundary described upon the face of the waters," the distance across the water must be far enough to sink the hills or mountains on the opposite shore below the horizon. This would require 32 miles for hills 500 feet high, and for hills 1000 feet high 36 miles. The only seas connected with "Bible lands" of sufficient size, considering the characters of the shores, to permit a free horizon are the Mediterranean, Red Sea and Persian Gulf, all seas "closed with doors."

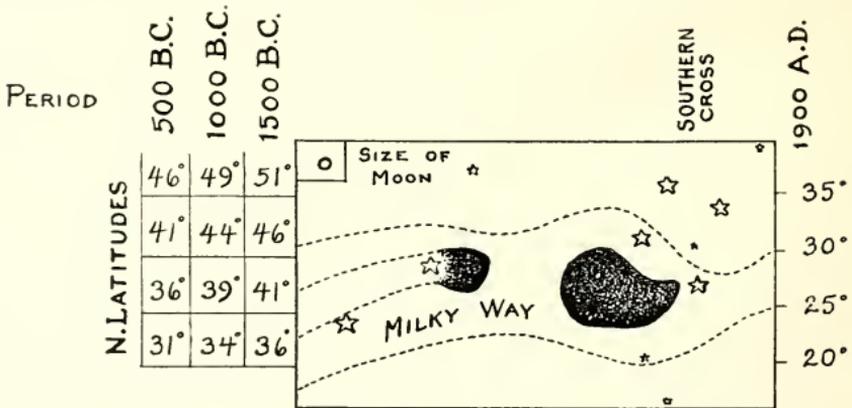
Considering the mountainous character of the countries of Greece and Asia Minor, it is doubtful if in ancient historic times the "Holes in the Sky" could be seen, except from the coast of Southern Greece and adjacent islands, from points on the Red Sea and Persian Gulf and from certain inland districts south of N. Lat.  $30$  to  $33^{\circ}$ .

The northern part of the Red Sea—Mount Sinai Peninsula or the Land of Midian, where one tradition says Moses, previous to the Exodus, found this poem, would be a suitable locality for its birth place. From here, Job and his friends by travel and intercourse with traders passing back and forth, could gather that intimate knowledge of the natural history of Egypt, Ethiopia and Arabia, which they either possessed or were endowed with by the author of the poem. They also could see from here, down the Red Sea, the Chambers of the South, just above the horizon on a cold starry night.

That Biblical commentators and astronomers have never found any reasonable explanation for the Chambers of the South and have overlooked what the writer thinks a natural and appropriate explanation, can only be due to the supposition that they never have seen these holes in the sky. Their impressive appearance is not shown on celestial charts.

The absence of any recognition of these mysterious spots in the mythology and literature of the Greeks, Egyptians and Israelites may be due to the same lack of knowledge.

Since commentators differ widely as to the location and period of this poem, the accompanying sketch of the region of the heavens about the Southern Cross and Holes in the Sky has been prepared to enable any reader to determine for himself the possibility of their



THE "HOLES IN THE SKY" AT THEIR HIGHEST ELEVATION.

being seen at any desired location and time. In the corner is placed the moon on the same visual scale. At the sides are scales giving the relative north latitude for several periods from the present to 1500 B. C.

The reader, by placing a card or paper horizontally across the sketch can see how these holes would appear at the sea level, for any date and latitude.

By putting a pin through the card vertically below the center of the sketch at the point of zero level on any selected scale and then rotating the sketch or card, the appearance of these spots, rising or setting, and the number of hours they will be above the horizon can be demonstrated.