

## Day Five: Saturday Morning, August 29, 1835

### GREAT ASTRONOMICAL DISCOVERIES

Lately Made

BY SIR JOHN HERSCHEL, L.L.D, F.R.S, &c.

#### At The Cape of Good Hope.

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[Continued from yesterday's Sun]

"The surface of the moon, when viewed in her mean libration, even with telescopes of very limited power, exhibits three oceans of vast breadth and circumference, independently of seven large collections of water, which may be denominated seas. Of inferior waters, discoverable by the higher classes of instruments, and usually called lakes, the number is so great that no attempt has yet been made to count them. Indeed, such a task would be almost equal to that of enumerating the annular mountains which are found upon every part of her surface, whether composed of land or water. The largest of the three oceans occupies a considerable portion of the hemisphere between the line of her northern axis and that of her eastern equator, and even extends many degrees south of the latter. Throughout its eastern boundary, it so closely approaches that of the lunar sphere, as to leave in many places merely a fringe of illuminated mountains, which are here, therefore, strongly contra-distinguished from the dark and shadowy aspect of the great deep. But peninsulas, promontories, capes, and islands, and a thousand other terrestrial figures, for which we can find no names in the poverty of our geographical nomenclature, are found expanding, sallying forth, or glowing in insular independence, through all the 'billowy boundlessness' of this magnificent ocean.

One of the most remarkable of these is a promontory, without a name, I believe, in the lunar charts, which starts from an island district denominated Copernicus by the old astronomers, and abounding, as we eventually discovered, with great natural curiosities. This promontory is indeed most singular. Its northern extremity is shaped much like an imperial crown, having a swelling bow, divided and tied down in its centre by a band of hills which is united with its forehead or base. The two open spaces formed by this division are two lakes, each eighty miles wide; and at the foot of these, divided from them by the band of hills last mentioned, is another lake, larger than the two put together, and nearly perfectly square. This one is followed, after another hilly division, by a lake of an irregular form; and this one yet again, by two narrow ones, divided longitudinally, which are attenuated northward to the main land. Thus the skeleton promontory of mountain ridges runs 396 miles into the ocean, with six capacious lakes, enclosed within its stony ribs. Blunt's excellent lunar chart gives this great work of nature with wonderful fidelity, and I think you might accompany my description with an engraving from it, much to your reader's satisfaction.

"Next to this, the most remarkable formation in this ocean is a strikingly brilliant annular mountain of immense altitude and circumference, standing 330 miles E.S.E, commonly known as Aristarchus (No. 12), and marked in the chart as a large mountain, with a great cavity in its centre. That cavity is, now, as it was probably wont to be in ancient ages, a volcanic crater, awfully rivaling our Mounts Etna and Versuvius in the most terrible epochs of

their reign. Unfavorable as the state of the atmosphere was to close examination, we could easily mark its illumination of the water over a circuit of sixty miles. If we have before retained any doubt of the power of lunar volcanoes to throw fragments of their craters so far beyond the moon's attraction that they would necessarily gravitate to this earth, and thus account for the multitude of massive aerolites which have fallen and been found upon our surface, the view which we had of Aristarchus would have set our scepticism forever at rest. This mountain, however, though standing 300 miles in the ocean, is not absolutely insular, for it is connected with the main land by four chains of mountains, which branch from it as a common centre.

The next great ocean is situated on the western side of the meridian line, divided nearly in the midst by the line of the equator, and is about 900 miles in north and south extent. It is marked C in the catalogue, and was fancifully called the Mare Tranquillitatis. It is rather two large seas than one ocean, for it is narrowed just under the equator by a strait not more than 100 miles wide. Only three annular islands of a large size, and quite detached from its shores, are to be found within it; though several sublime volcanoes exist on its northern boundary; one of the most stupendous of which is within 120 miles of the Mare Nectaris before mentioned.

Immediately contiguous to this second great ocean, and separated from it only by a concatenation of dislocated continents and islands, is the third, marked D, and known as the Mare Serenitatis. It is nearly square, being about 330 miles in length and width. But it has one most extraordinary peculiarity, which is a perfectly straight ridge of hills, certainly not more than five miles wide, which starts in a direct line from its southern to its northern shore, dividing it exactly in the midst. This singular ridge is perfectly sui generis, being altogether unlike any mountain chain either on this earth or on the moon itself. It is so very keen, that its great concentration of the solar light renders it visible to small telescopes; but its character is so strikingly peculiar, that we could not resist the temptation to depart from our predetermined adherence to a general survey, and examine it particularly. Our lens Gx brought it within the small distance of 800 yards, and its whole width of four or five miles snugly within that of our canvass. Nothing that we had hitherto seen more highly excited our astonishment. Believe it or believe it not, it was one entire crystallization! -- its edge, throughout its whole length of 340 miles, is an acute angle of solid quartz crystal, brilliant as a piece of Derbyshire spar just brought from a mine, and containing scarcely a fracture or a chasm from end to end! What a prodigious influence must our thirteen times larger globe have exercised upon this satellite, when an embryo in the womb of time, the passive object of chemical affinity! We found that wonder and astonishment, as excited by objects in this distant world, were but modes and attributes of ignorance, which should give place to elevated expectations, and to reverential confidence in the illimitable power of the Creator.

"The dark expanse of waters south of the first great ocean has often been considered a fourth; but we found it to be merely a sea of the first class, entirely surrounded by land, and much more encumbered with the promontories and islands that it has been exhibited in any lunar chart. One of its promontories runs from the vicinity of Pitatus (No. 19), in a slightly curved and very narrow line, to

Bullialdus (No. 22), which is merely a circular head to it, 264 miles from its starting place. This is another mountainous ring, a marine volcano, nearly burnt out, and slumbering upon its cindres. But Pictatus, standing upon a bold cape of the southern shore, is apparently exulting in the might and majesty of its fires. The atmosphere being now quite free from vapor, we introduced the magnifiers to examine a large bright circle of hills which sweep close beside the western abutments of this flaming mountain. The hills were either of snow-white marble or semi-transparent crystal, we could not distinguish which, and they bounded another of those lovely green valleys, which, however monotonous in my descriptions, are of paradisiacal beauty and fertility, and like primitive Eden in the bliss of their inhabitants.

Dr. Herschel again predicted another of his sagacious theories. He said the proximity of the flaming mountain, Bullialdus, must be so great a local convenience to dwellers in this valley during the long periodical absence of solar light, as to render it a place of populous resort for inhabitants of all the adjacent regions, more especially as its bulwark of hills afforded an infallible security against any volcanic eruptions that could occur. We therefore applied our full power to explore it, and rich indeed was our reward.

"The very first object in this valley that appeared upon our canvass was a magnificent work of art. It was a temple -- a fane of devotion, or of science, which, when consecrated to the Creator is devotion of the loftiest order; for it exhibits his attributes purely free from the masquerade, attire, and blasphemous caricature of controversial creeds, and has the seal and signature of his own hand to sanction its aspirations. It was an equitriangular temple, built of polished sapphire, or of some resplendent blue stone, which, like it, displayed a myriad points of golden light twinkling and scintillating in the sunbeams.

Our canvass, though fifty feet in diameter, was too limited to receive more than a sixth part of it at one view, and the first part that appeared was near the centre of one of its sides, being three square columns, six feet in diameter at its base, and gently tapering to a height of seventy feet. The intercolumniations were each twelve feet. We instantly reduced our magnitude, so as to embrace the whole structure in one view, and then indeed it was most beautiful. The roof was composed of some yellow metal, and divided into three compartments, which were not triangular planes inclining to the centre, but subdivided, curbed, and separated, so as to present a mass of violently agitated flames rising from a common source of conflagration and terminating in wildly waving points.

This design was too manifest, and too skillfully executed to be mistaken for a single monument. Though a few openings in these metallic flames we perceived a large sphere of a darker kind of metal nearly of a clouded copper color, which they enclosed and seemingly raged around, as if hieroglyphically consuming it. The was the roof; but upon each of the three corners there was a small sphere of apparently the same metal as the large centre one, and these rested upon a kind of cornice, quite new in any order of architecture with which we are acquainted, but nevertheless exceedingly graceful and impressive. It was a half-opened scroll, swelling off boldly from the roof, and hanging far over the walls in several convolutions. It was of the same metal as the flames, and on each side of the building it was

open at both ends. The columns, six on each side, were simply plain shafts, without capitals or pedestals, or any description of ornament; nor was any perceived in other parts of the edifice. It was open on each side, and seemed to contain neither seats, altars, nor offerings; but it was a light and airy structure, nearly a hundred feet high from its white glistening floor to its glowing roof, and it stood upon a round green eminence on the eastern side of the valley.

We afterwards, however, discovered two others, which were in every respect fac-similes of this one; but in neither did we perceive and visitants besides flocks of wild doves which alighted upon its lustrous pinnacles. Had the devotees of these temples gone the way of all living, or were the latter merely historical monuments? What did the ingenious builders mean by the globe surrounded by flames? Did they by this record any past calamity of their world, or predict any future one of ours? I by no means despair of ultimately solving not only these but a thousand other questions which present themselves respecting the objects of this planet; for not the millionth part of her surface has yet been explored, and we have been more desirous of collecting the greatest possible number of new facts, than of indulging in speculative theories, however seductive for the imagination.

[To be continued.]