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## THE HOOTY INHABITED.

GREAT

## ASTRONOMICAL DISCOVERIES,

LATELY MADE

By Sir John Herschel, L. L. D. F. R. S., &c.  
AT THE CAPE OF GOOD HOPE.

From supplement to the Edinburgh Journal of Science.

CONTINUED.

## NEW LUNAR DISCOVERIES.

Until the 19th of January, the observations  
were chiefly directed to the stars in the south-  
ern signs, in which without the aid of the hy-  
dro-oxygen reflector, a countless number of  
new stars and nebulae were discovered.  
But we shall defer our correspondents ac-  
count of these to future pages, for the pur-  
pose of no longer withholding from our readers  
the more generally and highly interesting  
discoveries which were made in the lunar  
world. And for this purpose, too, we shall de-  
fer Dr. Grant's elaborate mathematical de-  
tail of the corrections which Sir John Herschel  
has made in the best tables of the moon's  
tropical, sidereal, and synodic revolutions; and  
of those phenomena of the syzygies on which  
a great part of the established lunar theory  
depends.

It was about half past nine o'clock on the  
night of the 10th, the moon having then ad-  
vanced within four days of her liberation,  
that the astronomer adjusted his instruments  
for the inspection of her eastern limb. The  
whole immense power of his telescope was  
applied, and to its focal image about one half  
of the power of its microscope. On removing  
the screen of the latter, the field of view was  
covered throughout its entire area, with a  
beautifully distinct and even vivid representa-  
tion of *basaltic rock*. Its color was a greenish  
brown, and the width of the columns, as de-  
fined by their interstices on the canvas, was  
invariably twenty-eight inches. No fracture  
whatever appeared in the mass presented,  
but in a few seconds a shivering pile appear-  
ed of five or six columns width, which showed  
their figure to be hexagonal, and their ar-  
ticulations similar to those of the basaltic forma-  
tion at Staffa. This precipitous shelf was  
profusely covered with a dark flora, "pre-  
cisely similar says Dr. Grant, "to the Papaver  
Rhoeas, or rose-poty of our sublunar com-  
pounds; and this was the first organic produc-  
tion of nature in a foreign world, ever revealed  
to the eyes of man."

The rapidity of the moon's ascension or rather of the earth's diurnal rotation, being near-  
ly equal to a hundred yards in a second, would  
have effectually prevented the inspection of  
even the discovery of objects so minute as  
these, but for the admirable mechanism which  
constantly regulates, under the guidance of  
the sextant, the required altitude of the lens.  
But its operation was found to be so consum-  
mately perfect, that the observers could de-  
term the object upon the field of view for any  
period they might desire. The specimen of  
lunar vegetation, however, which they had  
already seen, had decided a question of too  
exciting an interest to induce them to retard  
its exit. It had demonstrated that the moon  
has an atmosphere constituted similarly to  
our own, and capable of sustaining organized,  
and therefore, most probable, animal life.—  
The basaltic rocks continued the inclined  
canvas plane, through three successive diam-  
eters, when a verdant declivity, of great beauty,  
appeared, which occupied two more.—  
This was preceded by another mass of nearly  
the former height; at the base of which they  
were at length delighted to perceive that  
novelty, a lunar forest.

"The trees," says Dr. Grant, "for a period  
of ten minutes, were of one unvaried kind,  
and unlike any I have seen except the largest  
class of yews in the English churchyards,  
which they in some respect resemble. These  
were followed by a level green plain, which  
as measured by the painted circle on our can-  
vas, of forty-nine feet, must have been more  
than a half a mile in breadth; and then ap-  
peared as fine a forest firs, as ever I have seen  
cherished in the bosom of my native mount-  
ains. Weared with the long continuance  
of these, we greatly reduced the magnifying  
power of the microscope, without eclipsing  
either of the reflectors, and immediately par-

ceived that we had been insensibly descending  
as it were, a mountainous district of highly  
diversified and romantic character, and that  
we were on the verge of a lake, or island sea;  
but of what relative locality or extent, we  
were yet too greatly magnified to determine.  
On introducing the feeblest achromatic lens  
we possessed, we found that the water whose  
boundary we had just discovered, answered  
in general outline to the Mare Nubium of  
Riccoli, by which we detected that instead of  
commencing, as we supposed, on the eastern  
longitude of the planet, some delay in the ele-  
vation of the great lens, had thrown us on the  
axis of the equator. However, as she was  
free country, and we not attached to any  
particular province, and moreover, since we  
could at any moment occupy our intended po-  
sition, we again slid our magic lenses to sur-  
vey the shores of the Mare Nubium. Why  
Riccoli so termed it, unless in ridicule of Cle-  
omenes, know not, for fairer shores never an-  
gle coasted on a tour of pleasure. A beach  
of brilliant white sand, and grit with wild  
castellated rocks, apparently of green marble  
varied at changes occurring every two or three  
hundred feet, with grotesque blocks of chalk  
or gypsum, and feathered and festooned at the  
summits with the clustering foliage of un-  
known trees, moved along the bright wall of  
our apartment until we were speechless with  
admiration. The water, wherever we obtained  
a view of it, was nearly as blue as that of the deep ocean, and broke in large white  
billows upon the stand. The action of very  
high tides was quite manifest upon the face of  
the cliffs, for more than a hundred miles; yet,  
diversified as the scenery was during this and  
a much greater distance, we perceived no  
trace of animal existence, notwithstanding we  
could command at will a perspective or a  
foreground view of the whole. Mr. Holmes,  
indeed, pronounced some white objects of a  
circular form, which he saw at some distance  
in the interior of a cavern, to be bona fide  
specimens of large cornu ammonis; but to me  
they appeared merely large pebbles, which  
had been chased and rolled by there by the tides.  
Our class of animal life was not yet to be re-  
warded.

Having continued this close inspection nearly  
two hours, during which we passed over  
a wide tract of country, chiefly of a rugged  
and apparently volcanic character; and having  
seen few additional varieties of vegetation,  
except some species of lichen, which grew  
every where in great abundance, Dr. Herschel  
proposed that we should take out all our  
lenses, give a rapid speed to the panorama,  
and search for some of the principal valleys  
known to the astronomers, as the most likely  
method to reward our first night's observation  
with the discovery of animated beings. The  
lenses being removed, and the exigence of  
our unutterably glorious reflectors left undi-  
minished, we found, in accordance with our  
calculations, that our field of view com-  
prehended about twenty-five miles of the lunar  
surface, with the distinctness both of outline  
and detail which could be procured of a ter-  
restrial object at the distance of two and a  
half miles: an optical phenomenon which you  
will find demonstrated in note 5. This afford-  
ed us the best landscape views we had hitherto  
obtained, and although the accelerated  
motion was rather too great, we enjoyed them  
with rapture.

Several of those famous valleys which are  
bounded by lofty hills of so perfectly conical  
a form as to render them less like works of  
nature than of art, passed the canvas before  
we had time to check their flight; but presently  
a train of scenery met our eye, of features so  
entirely novel, that Dr. Herschel signalled for  
the lowest convenient gradation of movement.  
It was a lofty chain of obelisk-shaped, or very  
slender pyramids, standing in irregular groups  
each composed of about thirty or forty spires,  
every one of which was perfectly square, and  
as accurately turntured as the finest speci-  
mens of Cornish crystal. They were of a  
faint black hue, and very resplendent. I  
now thought that we had assuredly fallen on  
productions of art; but Dr. Herschel remarked  
that if the Lunarians could build thirty or  
forty miles of such monuments as these, we  
should ere now have discovered others of a  
less equivocal character. He pronounced  
them quartz formations, of prob'ly the wine  
colored amethyst species, and promised us,  
from these and other proofs which we had ob-  
tained of the powerful action of the laws of  
crystallization in this planet, a rich field of  
mineralogical study. On introducing a lens  
his conjecture was fully confirmed: they were  
monstrous amethysts, of a diluted claret-color,  
glowing in the intensest light of the sun!  
They varied in height from sixty to ninety  
feet, though we saw several of a still more  
incredible altitude. They were observed in  
a succession of valleys divided by longitudinal  
lines of round breasted hills, covered with  
verdure and nobly undulated; but what is  
more remarkable, the valleys which contained  
these stupendous crystals were invariably  
barren, and covered with stones of a ferruginous  
hue which were probably iron pyrites.—  
We found that these curiosities were situated  
in a district elevated about half a mile above  
the valley of Mare Fecunditatis, of Mayer,  
and Riccoli; the shores of which soon hove in

view. But never was a name more inappro-  
priately bestowed. From Dan to Beersheba,  
all was barren, bare—she sea board  
was entirely composed of chalk and flint, and  
not a vestige of vegetation cou'd be discovered  
with our strongest glasses. The whole  
breadth of the northern extremity of this sea,  
which was about three hundred miles, having  
crossed our plane, we entered upon a wild  
mountainous region abounding with more ex-  
tensive forests of larger trees than we had be-  
fore seen—the species of which I have no good  
analogy to describe. In gentle contour they  
resemble our forest oak; but they were much  
more superb in foliage, having glossy leaves  
like those of the laurel, and tresses of yellow  
flowers which hung, in the open glades, from  
the branch to the ground.

These mountains passed, we arrived at a re-  
gion which filled us with utter astonishment.  
It was an oval valley, surrounded, except at  
narrow openings towards the south, by hills  
red as the purest vermillion, and evidently  
crystallized; for wherever a precipitous chasm  
appeared—and these chasms were very fre-  
quent and of immense depth,—the perpendicular  
section presented conglomerated mas-  
sages of polygon crystals evenly fitted to each  
other, and arranged in deep strata, which  
grew darker in color as they descended to the  
foundations of the precipice. Innumerable  
casades were bursting from the breasts  
of every one of these cliffs, and some so near  
their summits, and with such great force, as  
to form arches many yards in diameter. I  
never was so vividly reminded of Byron's sing-  
le, "the tale of the white horse in the rev-  
elations." At the foot of this boundary of hills  
was a perfect zone of woods surrounding the  
whole valley, which was about eighteen or  
twenty miles wide, at its greatest breadth, and  
about thirty in length. Small collections of  
trees of every imaginable kind, were scattered  
about the whole luxuriant area; and here  
our magnifiers blest our panting hopes with  
specimens of conscious existence.

In the shade of the woods, on the south east-  
ern side, we beheld continuous herds of  
brown quadrupeds, having all the external  
characteristics of the bison, but more diminu-  
tive than any species of the bosgenus in our  
natural history. Its tail was that of our bos  
grunniens; but in its semicircular horns, the  
hump on its shoulders, the depths of its dew-  
lap, and the length of its shaggy hair, it closely  
resembled the species to which I compared  
it. It had however one widely distinctive  
feature, which we afterwards found common  
to every lunar quadruped we have discovered  
—namely, a remarkable fleshy appendage  
over the eyes, crossing the whole breadth of  
the forehead and united to the ears. We  
could most distinctly perceive this hairy veil,  
which was shaped like the upper front outline  
of the cap known to the ladies as Mary  
Queen of Scots cap, lifted and lowered by  
means of the ears. It immediately occurred  
to the acute mind of Dr. Herschel, that this  
was a providential contrivance to protect the  
eyes of the animal from the great extremes of  
light and darkness to which all the inhabitants  
of our side of the moon are personally sub-  
jected.

The next animal perceived would be classed  
ed on earth as a monster. It was of a bluish  
lead color about the size of a goat, with a  
head and beard like him, and a single horn,  
slightly inclined forward from the perpendicular.  
The female was destitute of the horn  
and beard, but had a much longer tail. It  
was gregarious, and chiefly abounded on the  
accititous glades of the woods. In elegance  
and detail which could be procured of a ter-  
restrial object at the distance of two and a  
half miles: an optical phenomenon which you  
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like those of the laurel, and tresses of yellow  
flowers which hung, in the open glades, from  
the branch to the ground.

ing perfectly translucent. But this was in-  
self an interesting discovery, for more distant  
observers had questioned or denied the ex-  
istence of any humid atmosphere in this planet.

The moon being now low on her descent,  
Dr. H. inferred that the increasing refrangi-  
bility of her rays would prevent any satisfac-  
tory protraction of labor, and our minds being  
actually fatigued with the excitement of the  
high enjoyment we had partaken, we mutually  
agreed to call in the assistants at the  
lens, and reward their vigilant assistance with  
congratulatory bumper of the best "East India  
particular." It was not, however, without  
regret that we left the valley of the red moun-  
tains, which in complement to the arms of our  
royal patron, we denominated "the valley of  
the Unicorn;" and it may be found in Blunt's  
map, about midway, between the Mare Fecun-  
ditatis, and the Mare Nectaris."

The nights of the 11th & 12th being cloudy,  
were unfavorable to observation; but on those  
of the 13th and 14th, further animal discov-  
eries were made of the most exciting interest  
to every human being. We give them in the  
graphic language of our accomplished corres-  
pondent:

"The astonishing and beautiful discoveries  
which we had made during the first night's  
observation, and the brilliant promise which  
they gave of the future, rendered every moon-  
light hour too precious to be spared to the  
deprivation occasioned by these two cloudy  
evenings: (see the last number) and they were  
not borne with strictly philosophical patience,  
notwithstanding our attention was closely oc-  
cupied in subraces to the twenty-four feet  
tents, which we pertained the erection of ad-  
ditional props and found had somewhat vibra-  
ted in a high wind that arose on the morning  
of the 12th. The night of the 13th (January)  
was one of pearly purity and loveliness. The  
moon ascended the firmament in gorgeous  
splendour, and the stars, retiring around her,  
left her the unrivalled queen of the hemi-  
sphere. This being the last night but one,  
in the present month, during which we should  
have an opportunity of inspecting the western  
limb, which would thence immediately ensue.  
Dr. Herschel informed us that he should di-  
rect our researches to the parts numbered 2,  
11, 26, and 20 in Blunt's map, and which are  
respectively known in the modern catalogue  
by the names of Endymion, Clapendons, La-  
grenus, and Petavius. To the careful inspec-  
tion of these, and the regions between them  
and the extreme western rim, he proposed to  
devote the whole of this highly favorable night.  
Taking then our twenty-five miles breadth of  
her surface upon the field view, and redigging  
it to a slow movement, we soon found the first  
very singularly shaped object of our enquiry.  
It is a highly mountainous district, the lofty  
chains of which form three narrow ovals two  
of which approach each other in slender  
points, and are united by one mass of hills of  
great length and elevation; thus presenting a  
figure similar to that of a long skein of thread,  
the bows of which have been gradually spread  
open from their connecting knot. The third  
oval looks also like a skein, and lies as if care-  
lessly dropped from nature's hand in connec-  
tion with the other; but which might easily  
be supposed as having formed the second bow  
of this second skein, is cut open, and lies in scattered threads of smaller hills  
which cover a great extent of level territory.  
The grand plan of these mountains is so re-  
markable that it has been accurately repre-  
sented in almost every lineal map of the moon  
that has been drawn; and in Blunt's, which is  
the best, it agrees exactly with my descrip-  
tion. Within the grasp, as it were, of the  
broken bow of hills last mentioned, stands an  
oval shaped mountain enclosing a valley of an  
immense area, and having on its western  
ridge, a volcano in a state of terrific eruption.  
To the northeast of this, across the broken  
bow, or what Mr. Holmes called "the vagabond  
mountains," the largest and last of which is  
marked 11 in the catalogue, and finally de-  
ominated the Mare Mortuum, or mere ground  
the "Lake of Death." Induced by a  
curiosity to divine the reason of so sombre a  
title, rather than by any mere philosophical  
motive, we here first applied our hydro-oxy-  
gen magnifiers to the focal image of the great  
lens. Our twenty-five miles portion of this  
great mountain circus, had comprehended  
the whole of its area, and of course the two  
conical hills which rise within it about five  
miles from each other; but although this  
breadth of view had hitherto generally pre-  
sented its objects as if seen within a terrestrial  
distance of two and a half miles, we were  
in this instance, unable to discern these central  
hills with any such degree of distinctness.  
They did not appear to be any mist or smoke  
around them, as in the case of the volcano  
which we had left in the south west, and yet  
they were comparatively indistinct upon the  
canvas. On sliding in the glass light lens the  
mystery was immediately solved. They were  
old craters of extinct volcanoes, from which  
was still issued a heated though transparent ex-  
halation that kept them in an apparently  
latory or trembling motion, most

ly as we could judge under this obstruction.

were about fifteen fathoms deep, devoid of  
any appearance of fire, and of nearly a yellow  
brown color throughout. The diameter of each  
was about the diameter of our painted circle, or 450 feet, and the  
width of the rim surrounding them about one  
thousand feet; yet notwithstanding their narrow  
mouths, these two craters evidently filled the whole  
area of the valley in which they stood with the  
lava and ashes with which it was encumbered,  
and even added to the height, if not indeed  
caused the existence, of the oval chain  
of mountains which surrounded it. These  
mountains, as subsequently measured from the  
level of some large lakes around them, averaged  
the height of 2800 feet, and Dr. Herschel  
conjectured from this and the vast extent  
of their abutments, which ran for many  
miles into the country around them, that these  
volcanoes must have been in full activity for  
a million of years. Lieut. Donnell, how-  
ever, rather supposed that the whole area of  
this oval valley was but the exhausted crater  
of one vast volcano, which in exploding had  
left only these two imbecile representatives  
of its power. I believe Mr. Herschel him-  
self afterwards adopted this probable theory,  
which is, indeed, confirmed by the universal  
geology of the planet. There is scarcely a  
hundred miles of her surface, not even except-  
ing our largest seas and lakes, in which circum-  
of oval accumulations flights may not be easily  
found; and many, very many, of these  
having numerous incised hills in full vegeta-  
tive operation, which are now much lower than  
the surrounding circles, admit of no doubt  
that each of these great formations is the  
remains of one vast mountain which has built  
itself out, and left only these wide foundations  
of its ancient grandeur. A direct proof of  
this is afforded in a tremendous volcano now  
in its prime, which I shall hereafter notice.—  
What gave the name of "The Lake of Death,"  
to the singular mountain I have just described,  
was, I suppose, the dark appearance of the  
valley which it encloses, and which, to a more  
distant view than we obtained, certainly ex-  
hibits the general aspect of the waters on  
this planet. The surrounding country is like-  
ly to exceed, between this circle and No. 2 (Endymion) which we proposed first to ex-  
amine, we counted not less than twelve luxuri-  
ant flocks, divided by open plains, which  
waved in an ocean of verdure, and were prob-  
ably parades like those of North America.  
In three of these we discovered numerous  
herds of quadrupeds similar to our friends,  
the bisons,