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(1)

In the winter of 1876-77 several things occurred that led ~~me~~^{Prof. A. H.} to consider the question whether Mars had moons or not. On Dec. 7th, 1876 ^{he} I discovered a white spot on Saturn which ^{he} I followed till Jan. 2, 1877, and the observation of which gave ^{him} me a good determination of the time in which Saturn rotates, or the length of Saturn's day. This I found to be $10^{\text{h}} 14^{\text{m}} 23.8$, some ⁱⁿ 15^m different from what is

As a matter of interest to
the scientific world, I send to
the Academy an accurate but brief
account of the astronomical discovery
recently made at the Nat. Ob^y 7
in this city.

The fact that an important
astronomical discovery had ~~been~~
recently been made at the
N. O. in this city was duly
telegraphed to Europe, but perhaps
the readers of the A may be
interested in the subsequent particulars

given in the best books, ⁽²⁾ ~~the~~
discovery of such a gross
error led me to distrust the
statements of books, and when
I read this statement "Mars
has no moon," in one book
after another, I was not so
well disposed to believe it.

Again my friend Dr Peter
of Hamilton College, N. York,
wrote me last Spring that
the great telescope making
for Vienna would be finished

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this year. This telescope has an
object glass 27 inches in diameter,
and very naturally I looked
around to see what could be
done before such a powerful
rival entered the field.

The very favorable ^{approaching} opposition
of Mars attracted my notice,
and last May I looked up
the history of what had been
done in searching for a
moon to this planet.

I found, ~~this~~ to my surprise, ⁽⁴⁾
that no careful search had
~~been~~ been made in modern
times, or since the time of
Sir W. Herschel, except by
an astronomer, this astronomer
was Professor D'Arrest, formerly
Director of the Observatory
at Copenhagen, Denmark.
D'Arrest was a student of
Encke's, and a remarkably
careful and accurate observer.
From the imperfect account

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that I have of his search,
which I suppose to have been
made during the favorable
opposition of 1862, I inferred
that D'Arrest, reasoning from
the resemblance Mars has to
our own Earth, had sought
for a moon some 25 or 30
diameters distant from Mars.
From the known carefulness of
D'Arrest and his thoroughness
in work, it seemed that if
the planet had a moon

it must be very faint, or very
near the planet. I confess I
had not much faith in the
success of the search for a
moon, but the opportunity ^{during this year} was
too good to be neglected, and
my wife encouraged me in
the undertaking.

During August I was left
entirely alone and had an
excellent opportunity to make
the search. The weather was

un favorable in the early part
 of the month. On Aug 10 I
 began the search, but the
 images were very bad so that
 I could not search close to
 the planet with much chance
 of finding anything. On Aug 11
 in the latter part of the
 night the sky was very
 clear, and at 14^h ^{his} ^{was} 2^u
 the morning of the 12th I first
 saw the outer moon of Mars.

The river fog stopped my work,
so that I could not decide
that night whether the object
was really a satellite or a
fixed star. The weather became
bad for several days. On the
night of Aug 15th I went to
the Observatory and after a
rain storm in the early part
of the night the sky cleared
up at 11. ^{pm} I examined Mars
but the images were very

bad, and I saw nothing. It ⁽⁹⁾
happened that this outer moon
was at that time so
unfavorably situated that I could
not see it. This was disappointing.
On the next night however, Aug 16
I found the moon at 11^h 40^m
and observed it for more than
two hours. These observations
showed beyond a doubt that
the object was a satellite
of Mars, since it was moving
through the heavens with the

Maul. My wife had known of
my work all along, but on the
night of the 16th as the evidence
was coming, I told my assistant
George Andersen that no doubt
I had discovered a satellite of
Mars; but I ordered him to
keep still, as I wished to pour
the discovery beyond suspicion
before announcing it. George is
an old soldier and obeyed
orders, but I could hold in

no longer, and on the 17th at ⁽¹¹⁾
about half past one o'clock I
told Prof. Newcomb, when he
came into my room to eat his
lunch. We kept the matter
till the morning of the 18th
when it was let loose; and
on the night of the 17th I
found the inner Moon yellow.

I have observed them two moons
very carefully since I discovered
them, and shall ^{this year} get sufficient

data for a good determination
of their orbits. As soon as
these orbits are known the mass
of Mars results with very little
trouble.

There are many interesting points
about their moons which you
will see noticed by writers, the
inner moon revolves in less
than one third the time in
which the outer rotates. This
is a case unique in our

color system, so far as we know.
 Hence it must rise in the west
 and set in the east. What the
 nebular theories will do with
 such a moon I don't know.

1877, Feb. 26

C. Looman Esq.

Dear Sir:

I find you have not
 rapidly written down, as I have no
 much time. Please omit my name
 as you propose in your letter.

Yours truly
 A. Hall