third satellite. He says: "On the evening of the 3rd of February I observed the transit of the third satellite and that of its shadow. The satellite seemed almost black when it was upon the middle of the planet's disk, and notably smaller than its shadow, which was visible at the same time. In approaching the edge, the satellite disappeared, and reappeared soon after close by the edge, but as a bright point. This fact is not a new one for the other satellites, but for the third it is unique. This result shows, also, the great difference of luminosity at the centre and near the edge of the planet—a difference already con-firmed by photography." The same observations have, much more frequently, been made upon the transits of the first and second satellites. It must be remembered that this extreme blackness is witnessed when both planet and satellite are equally reflecting back the sun's light. This comparative difference in light can only be accounted for upon the supposition that Jupiter shines with a relatively stronger light than that of the satellite passing over him, and must, therefore, give forth some light of his own.

It has been shown, by the most careful measurements, that Jupiter emits three times the light that a body constituted like Mars would give, and four times as much as a body constituted like the moon. We therefore argue that Jupiter and the three other exterior planets perform the office of suns for the systems that revolve about them, that they are sources of heat, and give forth light to them from their own inherent power. This theory, which makes the present condition of the primaries unsuited for life, under any circumstances analogous to our own, exalt the satellites into worlds suitable for the abode of living beings, and surrounds life with every imaginable source of enjoyment, from variety of experience and favor of position in the universe of space.

No members of the solar system have received more attention from astronomers than the four satellites that unceasingly accompany Jupiter in his twelve-year revolution around the sun. A small telescope reveals them to the eye as four small sturs of brilliant lustre, apparently occupying a small field in the regions of space, but really forming, with the planet, an interesting system, measuring nearly two and a half millions of miles in diameter. On the supposition that the satellites are inhabited, it woult be difficult to imagine a more charming position for astronomical study than that presented from their surface, specially that of the nearest one.

This satellite, named Io, revolves around the planet in about forty-two hours, at a distance nearly corresponding to that of the moon from the earth. There is a probability that it revolves on its axis at least once during each revolution, and thus every portion of it enjoys a view of the great primary. During a revolution, if this supposition be true, the inhabitants of Io have seen more than four complete revolutions of Jupiter, four Jovian days and nights. Therefore, the Ionian astronomers must see the planet once in twenty-one hours reflecting sunlight, and once in twenty-one hours shining dimly by its own light, and also sort of pointer-nose for anecdotes. As a rule, he employs watch a part shining by sunlight. They will have also the big words which appear to lose their vitality under his curious experience of tracing the motions of the three other satellites, as with varying speed, constantly-widening orbit, and exhibiting every imaginable phase, they complete their swift circlet around the huge centre, and illustrate the great laws which sway the universe with their transits, eclipses, and occultations.

Astronomers tell us how grand a spectacle the earth presents as seen from the moon, exhibiting all the lunar phases in inverse order, but increased to thirteen times the size. We can then, try to imagine the appearance of

our moon. This great sphere, when not illuminated by sunlight, gives forth a dull-red or yellow-glare, like a light seen through a mist; but, when brought out by sunshine, it becomes a glowing orb, diversified with bands of gorgeous prismatic coloring, rose color mingled with yellow, abternating with brown, orange, blue and green, while their constant and marvellous changes of form afford the most sublime spectacle that fancy can paint.

But terrestrial astronomers have their compensations. The sun, as seen from the Jovian system, has only one twenty-fifth of the size of the sun we see, and gives forth only one twenty-fifth of the heat we receive. The rosy protuberances, the far reaching corona, and the huge sunspots, can by no means present to these distant orbs the magnificent proportions marked on the face of the great luminary whose phenomena our men of science delight to explore, whose gaseous clouds can often be seen by the naked eye, and whose epochs of magnetic storm are principally due to the giant planet whose satellites form the subject of this article.

One of the first discoveries made by Galileo with his telescope was that of the satellites of Jupiter, thus fully confirming the Copernican theory of the solar system. The eclipses of these satellites have been one of the most accurate methods we possess for measuring the velocity of light, and determining terrestrial longitude. And now we are indebted to the shining quartet, in their transits over the disk of their primary, for additional confirmation of the theory that not only Jupiter and his satellites, but the whole outer group of planets are partial suns to the orbs revolving around them.

We are contented for the present with the terrestrial star-gazing; but when the time comes for us to soar, ad sidera, we can think of no more attractive spot toward which to wing our flight than the little Io, the first and nearest satellite of Jupiter.-(Appleton's Journal.)

EMMA M. CONVERSE.

Literary Packmen.

We have had imaginative and fanciful critics-Leigh Hunt, for example—who hovered from shelf to shelf of a library as a bee does amongst flowers, and who took a kind of arch pleasure in often selecting apparently barren stalks for the manufacture of a clear, honeyed product. Then there were the valuable explorers of the old ways and bye-ways of literature, of whom the elder Disraeli was an illustrious example. He had all the passion and industry of the virtuoso in search of queer poets, quaint works, and suggestive anecdotes. He was the founder of a perfect museum of these curiosities; and if the museum, in some respects, serves a purpose analogous to that of the College of Surgeons, in others it has been as beneficial as an exhibition of designs based on principles of art that have proved themselves by longevity. But the literary packman of our time has no eclectic faculty. He starts on the trade of bookmongering with a gum-pot and scissors, and a sort of pointer-nose for anecdotes. As a rule, he employs pen, there being, in point of fact, no brain life in them. But he works at his book as swiftly as a tailor at a breeches, and to a great extent with the same implement. It does not in the least matter what his text may be. We have, for instance, numerous natural history packmen. One of these will fill a budget of stories concerning dogs with amazing rapidity. He unhesitatingly steals his wares, for though, easy as it is to invent an astonishing tarradiddle proving the foresight of a poodle, the literary packman is not equal to the enterprise. Or, instead of Jupiter from the nearest satellite, a red hot globe, looming dogs, he is contracted with for a volume of poets. "How up from the horizon fourteen hundred times the si zofe will you have them," he inquires of his employers "dead