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dence we have as to the brightness of Saturn and Jupiter. If these planets were perfectly cloud-encompassed, we should expect them to shine much more brightly than earthy or rocky globes of equal size, similarly placed, and surrounded only with a tenuous atmosphere. In fact, we should expect the planets, if cloud-encompassed, to shine about four times as brightly as though they were constituted like our moon. They would in that case, however, be white planets, not only as seen by the naked eye, but when examined with the telescope. In point of fact, they shine, according to the very careful measurements of Zöllner, about as brightly as though they *were* perfectly cloud-enveloped; but they are neither of them found to be white under telescopic scrutiny. Bond, of America, says, indeed, that Jupiter shines *fourteen* times as brightly as he would if constituted like the moon; and though this is a surprising result, and would imply that some portion of Jupiter's light is certainly inherent, it is well to notice that it is confirmed by De La Rue's photographic researches; for he found that a photographic image of the moon can be taken in about two-thirds of the time required in Jupiter's case, whereas the moon should require but a twenty-fifth of the time required by Jupiter, if her reflecting power were equal to his, since Jupiter is five times as far away from the sun. It would follow from this that Jupiter shines nearly seventeen times as brightly as he would if he were constituted like the moon. Taking the lowest estimate, however, we find that both Saturn and Jupiter shine much

more brightly than planets of equal size and similarly placed, but having a surface formed of any kind of earth or rock known to us. And, taking into account the well-marked colors of these planets, it follows as an almost demonstrated fact that each shines with no inconsiderable portion of inherent light. ^[1]

So soon as we view Saturn as a globe intensely heated, and the scene of forces of enormous energy, we are compelled to dismiss the idea that he is the abode of life. But, singularly enough, this conclusion, which was rejected by Brewster as rendering apparently unintelligible the existence of so large and massive an orb, girt about by a system so complex and beautiful, does in reality at once present, in an explicable aspect, not merely the vast bulk of Saturn himself, but the scheme over which he bears sway; for, as it seems to us, not the least of the objections against the theory that Saturn is an inhabited world, is found in the useless wealth of material exhibited, on that

1. [↑]I might take, as equally convincing proof of the intensely heated condition of these giant planets, the fact that the shadows of the nearer satellites, which theoretically should be black, have *sometimes* been seen to be gray, and never appear to be much darker than the fourth satellite in transit. And, as sufficient proof of the great depth of Jupiter's atmosphere, I could take the fact that sometimes two shadows have been seen, both belonging to the same satellite. However, it would require more space than can here be spared to show the force of these facts. I remind the reader that whatever is proved respecting the condition of Jupiter, may be regarded as rendered probable of his brother giant, Saturn.

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