their primaries. The moon, for example, has a density little more than half that of the earth. The first satellite of Jupiter is less dense, though the other three are said to be more dense than the planet. Further, in the condition of the earth itself, a very light gaseous atmosphere forms the outer portion, beneath which lies a heavier layer of water, while within these two envelopes the materials forming the solid substance of the planet are so arranged that the outer layer or crust has only about half the density of the whole globe.

According to the hypothesis now under consideration it is conceived that, in the gradual condensation of the original nebula, each successive mass left behind represented the density of its parent shell, and consisted of progressively heavier matter.[2] The remoter planets, with their low densities and vast absorbing atmospheres, may be supposed to consist of metalloids, like the outer parts of the sun's atmosphere, while the interior planets are no doubt mainly metallic. The rupture of each planetary ring would, it is thought, raise the temperature of the resultant nebulous planet to such a height as to allow the vapors to rearrange themselves by degrees in successive layers, or rather shells, according to densities. And when the planet gave off a satellite, that body might be expected to possess the composition and density of the outer layers of its primary.[3]

For many years, the only evidence available as to the

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[2] On the origin of Satellites, see the researches of Prof. G. H. Darwin, Phil. Trans. (1879) clxx. p. 535. Proc. Roy. Soc. xxx. p. 1.

[3] Lockyer in Prestwich's Inaugural Lecture, Oxford, 1875, and in Manchester Lectures, Why the Earth's Chemistry is as it is. Readers interested in the historical development of geological opinion will find much suggestive matter bearing on the questions discussed above, in De la Beche's "Researches in Theoretical Geology," 1834—a work notably in advance of its time.