

tentative and approximate. He estimates the heat radiated to the earth from the full moon is equal to the heat which would radiate from a globe of the moon's size and position if it were kept at a constant temperature of one hundred and ten degrees centigrade. This it has been estimated, would give a maximum temperature not exceeding 200° and a minimum temperature not much below zero centigrade. To some extent this agrees with Sir John Herschel's opinion of the moon's climate: "An unmitigated and burning sunshine, fiercer than an equatorial noon continued for a whole fortnight, and the keenest severity of frost, exceeding that of our polar winters for an equal time."

Such a climate precludes the supposition that water can now exist on the moon, whatever may have been the case in times past.

The opinion of Bessel that the moon's atmosphere is about the one thousandth the density of that of the earth has till recently been the commonly received opinion. His conclusions were derived from an investigation of the refraction of a ray of light undergoing in passing through the lunar atmosphere. Later research in the same direction has led to the opinion that the lunar atmosphere has a density greater than Bessel concluded it to have. A density one three hundredth part the density of the earth's atmosphere is given by Nelson as agreeing with Prof. Airy's careful investigations of the refraction the lunar atmosphere produces.

Nelson argues at some length that, as what must have been portions of the atmosphere and ancient seas of the earth are now locked up in the immense masses of our terrestrial strata, a similar process may have gone on in the moon; and that as she has a larger proportion of surface to mass the absorption of the lunar seas and atmosphere will have been proportionately more rapid. This, in his opinion, is the best possible explanation of the present non-existence of the seas which the moon appears at some early period to have had. This is a part of Nelson's general theory: That the forces which have made both the earth and moon what they are, are analogous in nature if not in degree. To any one who has seen through a telescope the

death like stillness which appears to reign over these quiet plains and sparkling mountains, this theory might at first sight seem false, but we must remember our own busy world at the same distance would seem as still.

There are few sights more impressive than a telescopic view of the moon under favorable circumstances of illumination. Who that has once watched the slow advance of a mountain-ringed lunar plain into the sunlight can ever forget the sight? Peak after peak stealthily peers through the gloom, such like some faintly sparkling gem in the darkness, the whole formation growing more distinct, and seeming nearer, till at length it stands suffused in light made brighter by the contrast of the cool gray lunar shadows.

Still, the best student of lunar phenomena has higher aims than to merely measure and name every tiny gray patch and ringed dot he can spy out on the moon's disk, or to please himself with pretty pictures of the lunar shadows hiding themselves away at the approach of the beaming sun. He is invulnerable to such shafts of satire as old Sam Butler hurled against the idle dreamers of his day, who ended their wits merely to know

"Whether the moon be sea or land,
Or charcoal, or a quenched firebrand,
Or if the dark holes that appear,
Be only pores not cities there."

All these maps and measurements and all this scrutiny are but scaffolding to the building; means to worthier ends. How well these ends have been achieved, the merest glance at the history of lunar investigation cannot fail to show. And as this branch of knowledge has more than met the expectations of an age which does not fail to require *quid pro quo* for all outlay; and has the higher merit of having furnished us with our best clue to a rational conception of the marvelous order of the universe; are we not warranted in concluding so bright a past presages a still brighter future?

"For we doubt not through the ages one increasing purpose runs,
And the thoughts of men are widened by the process of the suns."

