

theless, he is known to have his pet theories about the antiquity of the Moa, and is very impatient of any contradiction.

I have thought it right to offer this explanation in order to prevent your readers being misled on a subject of considerable scientific interest.

JULIUS VON HAAST

Canterbury Museum, Christchurch, N.Z., March 14

Visibility of the Satellites of Uranus

THE question of the visibility of these satellites in telescopes of moderate dimensions has lately excited considerable attention, but it does not appear that this question can be settled by any amount of verbal discussion. I take the liberty, therefore, to propose two test objects by means of which any one can, I think, satisfy himself whether he can see these satellites or not.

1. The companion of Regulus, north, preceding, and distant about three minutes of arc, has itself a small companion, which was discovered by the late Prof. Winlock. Any one who can see this small companion may be certain that he can observe the two *outer* satellites of Uranus and the satellite of Neptune.

2. The star of fifth magnitude, A Leonis, has a companion discovered at the Naval Observatory by Mr. G. Anderson. Any one who can observe this companion can, I think, see the two *inner* satellites of Uranus when at their elongations.

Of course in the case of such faint objects very much depends on the condition of the atmosphere, but the above tests are very nearly correct.

ASAPH HALL

Washington, May 14

Protective Resemblance in the Sloths

IN a note upon the above subject, dated December 29, 1875, which appeared in vol. xiii. p. 187 of NATURE, I omitted to quote a passage from a letter written by Dr. Berthold Seemann to the late Dr. J. E. Gray (dated April 1, 1871), with regard to a specimen of *Acotopithacus*, of a well-marked green colour, obtained by the former naturalist in Nicaragua. Of this Sloth he says, *inter alia* :—"It should be borne in mind that it has almost exactly the same greyish-green colour as *Tillandsia usneoides*, the so-called 'vegetable horsehair' common in the district; and if it could be shown that it frequented trees covered with that plant (a point I hope to ascertain during my next visit in June next), there would be a curious case of mimicry between this Sloth's hair and the *Tillandsia*, and a good reason why so few of these sloths are seen." (Note on the species of *Bradypodida* in the British Museum, by Dr. J. E. Gray, F.R.S., *Proc. Zool. Soc.*, May 2, 1871.) It would be interesting to know whether Dr. Seeman succeeded in solving this question; I am, however, not aware of any later reference made by him to this subject.

I here take the opportunity of correcting two misprints in my former letter, both of them in the Latin quotations, viz., "cum" for "eum," after the word "velleri," in the first, and "coque" instead of "eoque" after the word "possint," near the end of the second passage.

J. C. GALTON

OUR ASTRONOMICAL COLUMN

THE SECONDARY LIGHT OF VENUS.—During the next few weeks a very favourable opportunity will be afforded to observers in these latitudes for further examination of the planet Venus, with the view to a satisfactory solution of what must yet be regarded as a *questio vexata*—the visibility of that part of the disc, which is unilluminated by the sun, as the planet approaches or recedes from the inferior conjunction.

The subject is treated in detail in a communication to the Bohemian Academy of Sciences, from Prof. Safarik of Prague, entitled "Über die Sichtbarkeit der dunklen Halbkugel des Planeten Venus," which appears in *Sitzungsberichte der k. böhmischen Gesellschaft der Wissenschaften*, July 18, 1873. The author has collected together the many scattered observations extending over upwards of one hundred and fifty years, and presents also an outline of the various explanations which have been put forward.

The earliest mention of the faint illumination of the dark side of Venus is by Derham, in a passage in his *Astro-Theology*, to which attention was first directed by Arago. Derham refers to the visibility of the obscure part of the globe "by the aid of a light of a somewhat dull and ruddy colour." The observation is not dated, but appears to have been prior to the year 1714. A friend of Derham's is also stated to have perceived the same illumination very distinctly.

The next observations are by Christfried Kirch, second astronomer of the Berlin Academy of Sciences, June 7, 1721, and March 8, 1726, and were found in his original papers and printed in *Ast. Nach.* No. 1586. The image on the first occasion was tremulous, but though he could hardly credit his vision, he appeared to discern the dark side of the planet. In 1726 he remarked that the dark periphery seemed to belong to a smaller circle than the illuminated one. Kirch observed with telescopes of sixteen and twenty-six feet focal length, powers 80 and 100. Two other persons confirmed his observation in 1726.

The next observation in order of date, was found by Olbers, in "Observationes Veneris Grypswaldensis," cited by Schröter in his observations of the great comet of 1807. It was made by Andreas Mayer, Professor of Mathematics at Greiswald: on October 20, 1759, he observed the meridian passage of the planet, then at a south declination of $21\frac{1}{2}^{\circ}$, with a six-foot transit instrument by Bird, power not much over 50, and has the remark—"Etsi pars lucida Veneris tenuis admodum erat, nihilominus integer discus apparuit, instar lunæ crescentis quæ acceptum a terra lumen reflectit." As Prof. Safarik justly observes, considering the circumstances under which Mayer's observation was made with the planet only 10° from the sun, and not more than 14° above the horizon, the phenomenon on this occasion must have had a most unusual intensity.

It does not appear that Sir W. Herschel at any time perceived the secondary light of Venus, though he remarked the extension of the horns beyond a semi-circle.

Von Hahn, at Remplin, in Mecklenberg, the possessor of excellent telescopes by Dollond and Herschel, was fortunate in viewing the dark side of Venus on frequent occasions during the spring and summer of the year 1793, and he is considered by Safarik to have witnessed the illumination of this part of the disk under more varying conditions than any other observer. The light is described as grey verging upon brown. Von Hahn's observations were made with various instruments and at different hours of the day.

Schröter, at Lilienthal, on several occasions between the years 1784 and 1795, had remarked in full sunshine the extension of the horns of the crescent many degrees beyond the semicircle, the borders of the dark hemisphere being faintly illuminated with a dusky grey light; but on February 14, 1806, at 7 P.M., he saw for the first time the whole of the dark side, as he expressed it, "in äusserst mattem dunkeln Lichte." The sharply-defined contour had an ash-coloured light; the surface was more dimly illuminated. Schröter, in recording this observation, expresses his surprise that during the many years he had observed the planet, part of the time with his 27-foot reflector, with the full aperture of 20 inches, he had not previously perceived the whole of the dark side, but he was satisfied there was no illusion. At this time one-eighth of the diameter of Venus, about $48''$, was fully illuminated, the planet casting a very sensible shadow.

Harding, observing at Göttingen on January 24 of the same year, with a 10-foot Herschel reflector, power 84, and full aperture of 9 inches, saw the whole dark side of Venus shining with a pale ash-coloured light, very distinctly perceived against the dark ground of the sky. The appearance was too evident to allow of the suspicion of an illusion; it was the same in all parts of the field of