

is $\frac{1}{5693309}$. The latest value of the mass resulting from theory is that given by Leverrier (*Annales*, vol. xi. p. 3), viz., $\frac{1}{5513526}$.

Prof. Hall compares his elements with the observations made at other observatories, of which those of Cambridge, U.S., Glasgow, U.S., Pulkowa, and Mr. A. Common, of Ealing, were the most successful. The magnitudes of the satellites, free from the glare of the planet, were estimated at about 12 and 11½, *Phobos* being the brighter of the two. On October 15, when their distances from the centre of the planet were respectively 23" and 57"·5, they were of nearly equal brightness. Prof. Hall further remarks: "The chief difficulty of observing these satellites is on account of the brilliancy of the planet. At their elongations at opposition in 1877, they appeared to me brighter than the outer satellites of Uranus and much brighter than Hyperion, and on October 31 Deimos resembled Umbriel, the second satellite of Uranus, which, at elongation, is fainter, I think, than any other satellite."

With the angular values of the mean distances given above, the real distances of the satellites from the centre of their primary will be for *Phobos*, 5,800, and for *Deimos*, 14,500 miles; the former, from the rapidity of its motion (it performs more than three revolutions in the Martian day) will appear to rise in the west, meeting and passing the outer moon, and setting in the east, and it will have a horizontal parallax amounting to 21".

Prof. Hall has definitively adopted the names proposed by Mr. Madan, of Eton, in the columns of NATURE.

THE SATURNIAN SATELLITE, TITAN.—The following are the approximate times of conjunction of the great satellite of Saturn, with the perpendicular to the plane of the ring, during the next month, at which times occultations by the planet, or transits over its disc take place. The elements used are very nearly those of Bessel, but with a somewhat larger ellipticity of the planet.

	G.M.T. of conjunction. h.	Angle of position.	Distance from Saturn's centre.	Saturn's polar semi-diameter.	
Oct. 8 ...	13·9 ...	4·2 ...	8'·17 ...	8'·69 ...	On disc?
„ 16 ...	5·7 ...	184·3 ...	7·32 ...	8'·64 ...	Occulted.
„ 24 ...	11·7 ...	4·3 ...	6·53 ...	8'·58 ...	On disc.
Nov. 1 ...	3·5 ...	184·4 ...	5·91 ...	8'·50 ...	Occulted.
„ 9 ...	9·6 ...	4·4 ...	5·42 ...	8'·40 ...	On disc.

WINGLESS INSECTS OF THE FALKLAND ISLANDS

WHILST on an excursion to Port Darwin, in the Falkland Islands, during the visit of H.M.S. *Challenger* to that group, I found at Darwin Harbour, Choiseul Sound, some insects which are of considerable interest, since, as I believe, they are closely allied to those of Kerguelen's Land. Amongst them were a gnat, practically wingless (*Tipulidæ*), and a fly with rudimentary wings. The gnats were found crawling on the rocks on the sea-shore, in sheltered places, and also on the sunny, sheltered side of a fence composed of a peat bank, with furze growing on the top of it. They run quickly, and, when in danger, draw up their legs and drop in order to escape, and they are not by any means easy to catch amongst the grass.

The flies were found only on the sea-coast, in hollows under overhanging slabs of the sandstone rocks, sheltering themselves in crevices. They have short wings, which they seem to use in jumping, and they spring nimbly, like fleas or small grasshoppers, and are difficult to catch. On comparing specimens of these flies with specimens of *Amalopteryx maritima*, one of the flies of Kerguelen's Land, with rudimentary wings, described by Mr. Eaton (Rev. E. A. Eaton, the *Entomologist's Monthly Magazine*, August, 1875), I have little doubt that

they are very closely allied to this species, and to be referred at least to the same genus. Dr. Kidder describes the habits of the Kerguelen *Amalopteryx* as closely similar (J. H. Kidder, M.D., *Bulletin United States National Museum*, No. 3, 1876, ii. p. 52). Von Willemoes Suhm found a species of the same genus in Marion Island, and we all observed the fly at Kerguelen's Land as well as the wingless gnat which Mr. Eaton has named *Halyritus amphibius*, and which lives on the Kerguelen sea-shore amongst sea-weed constantly wetted by the tide. It would be interesting if the Falkland Island gnat proved allied to the Kerguelen one on further examination.

I found one beetle with wings at the same locality in the Falklands, and one wingless species. All the Kerguelen beetles are wingless. Two genera and all the species of that island are endemic (Mr. C. O. Waterhouse, *Entomologist's Monthly Magazine*, August, 1875, p. 50). The close connection between the Fuegian flora and that of the far distant Kerguelen's Land is well known from the investigations of Sir Joseph Hooker. It is interesting to find a further connection in the insects. The four wingless flies of Kerguelen's Land are assigned by Mr. Eaton to four new genera. I believe, though I am no entomologist, that the Falkland Island and Marion Island fly will come under one of these, and possibly further search may prove the existence of representatives of some of the other genera in Fuegia or the Falklands. I see from the "Histoire Nat. des Insectes Diptères" of the Suitesa Buffon, the only authority immediately at hand, that a wingless gnat, *Chionea araneoides*, is found in Sweden in woods on the snow throughout the winter, whilst two flies with rudimentary wings, *Apterina pedestris* of France and Germany, and *Myrmemorphia brachyptera* of Spain, exist in Europe. These merely as examples. Prof. Westwood tells me many other such diptera are known to entomologists, and he has shown me a specimen of a wingless fly, *Borborus apterus*, which occurs in England.

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SUN AND EARTH

THE Meteorological Reporter of the Bombay Presidency, Mr. F. Chambers, at the end of his recently-published report for 1877-78 gives us the first results of some important researches which he has not yet been able to complete, owing to want of clerical assistance. In a brief sketch of the meteorology of the Bombay Presidency in 1876 prepared for the Bombay Administration Report for 1876-77, he showed that the abnormal meteorological conditions which produced the famine of 1877 were of the same type as those which produce the usual alternations of seasons, and therefore are attributable to similar causes.

A commencement was made some time ago with the discussion of the Kurrachee wind observations. One of the most important results already obtained is that the numerical relation existing between the abnormal wind and abnormal barometric movements is exactly similar to the relation between the annual variations of the wind and barometer leading to the same conclusion as above, viz., that most of the abnormal variations of weather in India are due to causes which are similar to, if not identical with, those which produce the normal variations. The comparison of the normal and abnormal barometric movements at different stations points decidedly in the same direction, and Mr. Chambers believes that further investigation will prove this to be a general law, affecting perhaps all abnormal meteorological variations which are not cyclonic. He adds:—

"The fact that a famine has been raging in China, at the same time that one has ravaged Southern India, does not appear to be without its significance, in pointing to