

The values of the mass of Neptune from his measures at different oppositions, and from those of Lassell and Marth and of Holden differ sensibly. The mean result from Hall's own observations is $\frac{1}{19092}$; he remarks that his distances are generally smaller than those of other observers, and believes that, in order to eliminate the effect of such personal equation from the determination of the mass of a planet, the only way will be to increase the number of observers and to take a mean of their results. Hall's value approaches nearly to that found by Prof. Newcomb, $\frac{1}{19380}$.

On favourable nights examinations of the region about Neptune were made, but no other satellite was detected.

VARIABLE STARS (1).—The following Greenwich times of geocentric minima of Algol have been deduced from elements corrected by the later observations of Schmidt:—

		h. m.		h. m.	
November	8	... 15 7	December	7	... 7 16
	11	... 11 56		18	... 18 33
	14	... 8 45		21	... 15 22
	17	... 5 34		24	... 12 11
	28	... 16 49		27	... 9 0
December	1	... 13 38		30	... 5 49
	4	... 10 27			

(2) R Leonis will now be approaching a maximum; there would appear to be indications of a sensible perturbation in the period during the last twenty years or more. (3) V Piscium, one of Argelander's supposed variables, is now favourably placed for observation; his estimates vary from 6.7 m. to 9 m.; the position of this star for 1885.0 is in R.A. 1h. 48m. 18s., Decl. + 8° 12' 9". (4) Argelander's formula of sines makes a maximum of *Mira Ceti* due on December 19, but it may probably occur earlier.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, OCTOBER 11-17

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on October 11

Sun rises, 6h. 20m.; souths, 11h. 46m. 41' 8s.; sets, 17h. 14m.; decl. on meridian, 7° 11' S.; Sidereal Time at Sunset, 18h. 36m.

Moon (three days after New) rises, 9h. 40m.; souths, 14h. 28m.; sets, 19h. 13m.; decl. on meridian, 15° 18' S.

Planet	Rises	Souths	Sets	Decl. on meridian
	h. m.	h. m.	h. m.	° ' "
Mercury	... 5 55	... 11 35	... 17 15	... 4 35 S.
Venus	... 10 17	... 14 23	... 18 29	... 21 28 S.
Mars	... 0 11	... 7 49	... 15 27	... 17 44 N.
Jupiter	... 3 54	... 10 16	... 16 38	... 3 38 N.
Saturn	... 21 8*	... 5 16	... 13 24	... 22 18 N.

* Indicates that the rising is that of the preceding day.

Phenomena of Jupiter's Satellites

Oct.	h. m.		Oct.	h. m.	
12	... 4 37	IV. ecl. disap.	14	... 4 50	I. tr. egr.
13	... 4 51	I. ecl. disap.	16	... 4 7	II. tr. ing.

The Phenomena of Jupiter's Satellites are such as are visible at Greenwich.

Oct.	h.	
11	... 12	Venus in conjunction with and 6° 23' south of the Moon.
16	... 10	Mercury in superior conjunction with the Sun.
17	... 2	Venus at greatest distance from the Sun.

GEOGRAPHICAL NOTES

ACCORDING to the report by Lieut. Wissmann on his last exploration in the Congo region, the Lower Kassai constitutes a magnificent fluvial artery, frequently of enormous breadth, and leads without obstacle into the heart of the new Congo State. Between the station of Kwamouth and the confluent of the Lulua and above the station of Luluaburg the Kassai, with a breadth of about 600 kilometres, is everywhere open for navigation. It runs through a country of wonderful fertility, presenting

alternately plains and virgin forests, and inhabited by a dense population. With about one exception the travellers have been received everywhere with eagerness by peaceable tribes, all disposed to trade. During the forty-two days employed in the voyage from Luluaburg to Kwamouth the health of the expedition was excellent. There was no loss of life, except that two natives were drowned in the rapids of the Lulua. The five white men and the 200 Negroes of the Expedition arrived all in good health at Léopoldville on July 16.

THE current number of *Petermann's Mittheilungen* contains the conclusion of M. Thoroddsen's paper on a lava desert in the interior of Iceland. It supplies certain geographical and scientific observations of the writers, such as the superficial dimensions, height, &c., hydrography, climate, geology, volcanoes, glaciers, botany, and zoology of the interior of Iceland. Herr Hasenstein describes, with a large map, Bohndorff's journeys in Central Africa between 1874 and 1883. The usual geographical information for the month, and account of the literature concludes the number.

THE most interesting contribution, however, to *Petermann* this month is a short prefatory sketch on the history of the great geographical house of Perthes of Gotha, September 11 being the centenary of its foundation. In 1801 the first geographical work was published by Perthes, and in 1809 he published a large atlas by Prof. Heusinger. Under the second proprietor, Wilhelm Perthes, who was head of the establishment between 1816 and 1853, the publications of the house assumed their geographical and cartographical character. In 1817 appeared the first edition of Stieler's Atlas, consisting of fifty maps, and between 1823 and 1831 a supplement of twenty-five more was added. This Atlas has now for nearly seventy years been the principal work published by the house of Perthes. It has been kept up to date, and the number of the maps, which in 1862 was 84, grew in 1871 to 90, and in 1879 to 95. The total number of maps, old and new, amounts to 197. Besides Stieler, Berghans (1797-1884), Spruner and Sydow supported Perthes. In 1832 Berghans's great atlas of the extra-European countries appeared. It was a financial failure, but it carried the name of the house abroad, and laid the foundation of its world-wide fame. In 1838 the publication of the same author's Physical Atlas in 93 maps was completed. Between 1837 and 1852 Spruner's Historical-geographical Atlas appeared, and was followed by various editions. Wilhelm Perthes died in 1853, and Bernhardt Perthes reigned in his stead for only four years, leaving a posthumous son, the present Justus Perthes. Petermann, who died in 1878, commenced his celebrated *Mittheilungen* in 1855. The publications of the house since that date are well-known to all geographers; Behm's "Geographical Year-Book," and Behm and Wagner's "Population of the Globe," are works of world-wide celebrity.

ON Friday last, after an absence of nearly three years, the Danish exploration expedition to the east coast of Greenland, under Lieutenants Holm and Garde, returned to Copenhagen in the ship *Constance* from Godthaab. We have from time to time given particulars of the progress of this expedition, the chief object of which was to penetrate as far north along the east coast as possible, and to attempt to reach certain native settlements known to exist between latitudes 65° and 66° N. The expedition has fulfilled all expectations, besides the collection of a valuable scientific material, Lieut. Holm having wintered in lat. 65°-66°, the highest point reached being lat. 66° 08' N., the northernmost ever reached by Europeans. Lieut. Holm is stated to have made some very valuable geographical and ethnographical discoveries, having spent last winter among East Greenlanders never before visited by Europeans. He has named the stretch of coast explored, King Christian IX.'s Land.

A WRITER who has travelled widely through Tonquin and Southern China describes, in a recent number of the *République Française*, the route from Lao-Kai, on the Red River, to Meng-tze in Yunnan. Premising that the river from the mouth to Lao-Kai, on the Tonquin border, is tolerably well known, he refers to the various routes for getting into South-Western China, but is far from enthusiastic about any of them, although he thinks that France in Tonquin has as much chance of getting the China trade as any of her rivals in the south. The writer then describes the route along the river from Lao-Kai to Manhao, the head of the Red River navigation. From this point the road to the plateau of Yunnan is said to be mountainous and