

If after an interval of three or four hours, when the stars have equal zenith distances (and therefore are relatively but little displaced by refraction), the observation be repeated, the comparison of the two measures gives the means of determining the amount of refraction with great accuracy. For the success of the method it is, of course, essential that the measured distance should be absolutely independent of every possible displacement of the various parts of the apparatus in the interval between the observations. This result is attained, M. Lœwy considers, by placing the double mirror in such a position that the planes of reflection for the two stars coincide, as he finds that under these circumstances, whatever small displacements the prism may undergo, the distance in the field of the telescope measured in the plane of reflection or the projection of this distance on the trace of the plane of reflection in the field remains invariable.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 JANUARY 31—FEBRUARY 6

(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 January 31

Sun rises, 7h. 42m.; souths, 12h. 13m. 42' 5s.; sets, 16h. 46m.; decl. on meridian, 17° 19' S.; Sidereal Time at Sunset, 1h. 29m.

Moon (New on February 4) rises, 4h. 54m.; souths, 9h. 21m.; sets, 13h. 47m.; decl. on meridian, 18° 25' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	7 8 ...	11 8 ...	15 8 ...	22 23 S.
Venus ...	8 2 ...	13 48 ...	19 34 ...	3 30 S.
Mars ...	20 36* ...	3 7 ...	9 38 ...	5 23 N.
Jupiter ...	21 44* ...	3 43 ...	9 42 ...	0 59 S.
Saturn ...	13 15 ...	21 26 ...	5 37* ...	22 40 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Phenomena of Jupiter's Satellites

Jan.	h. m.	Feb.	h. m.
31 ...	1 21 I. occ. reap.	5 ...	1 7 II. ecl. disap.
31 ...	22 30 I. tr. egr.	5 ...	5 32 I. ecl. disap.
Feb.		5 ...	5 47 II. occ. reap.
2 ...	22 19 III. ecl. disap.	6 ...	3 36 I. tr. ing.
3 ...	1 14 III. ecl. reap.	6 ...	5 51 I. tr. egr.
3 ...	2 19 III. occ. disap.	6 ...	21 53 II. tr. ing.
3 ...	5 1 III. occ. reap.		

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

Feb. h. m. 6 ... 9 ... Venus at least distance from the Sun.

Variab'le-Stars

Star	R.A.	Decl.	Feb.	h. m.
	h. m.	°		
U Cephei ...	0 52' 2 ...	81 16 N.	1, 23 0 m	
Algol ...	3 0' 8 ...	40 31 N.	6, 22 39 m	
λ Tauri ...	3 54' 4 ...	12 10 N.	3, 4 4 m	
ζ Geminorum ...	6 57' 4 ...	20 44 N.	6, 0 53 m	
U Monocerotis ...	7 25' 4 ...	9 32 S.	3, 2 6 m	
δ Libræ ...	14 54' 9 ...	8 4 S.	2, 9 30 M	
U Coronæ ...	15 13' 6 ...	32 4 N.	3, M	
U Ophiuchi ...	17 10' 8 ...	1 20 N.	5, 0 20 m	
		and at intervals of 20 8	6, 5 23 m	
R Scuti ...	18 41' 4 ...	5 50 S.	1, 0 51 m	
β Lyræ ...	18 45' 9 ...	33 14 N.	5, m	
δ Cephei ...	22 24' 9 ...	57 50 N.	1, 17 0 m	
			4, 2 30 M	

M signifies maximum; m minimum.

Meteors

The *Virginids*, R.A. 175°, Decl. 14° N., form the principal February shower. Fireballs may be looked for on February 2.

GEOGRAPHICAL NOTES

THE *Ivestia* (1885, v.) contain another letter from M. Potanin, describing his interesting journey to the Upper Hoang-ho. Leaving Si-nin (Tsin-ning) on May 2, the Expedition visited the Humbum Monastery—a trading-place for Russian goods brought from Urga and transported further to Thibet—and

crossed a high ridge of mountains, the pass having an altitude of no less than 12,000 feet above the sea. Following the valley of the Lan-chou (Dun-ho-tsiang on Prjevalsky's map), they ascended to the plateau of Rechandza-tan, about 10,000 feet above the sea, leaving to the north the snow-clad mountains of Naryn-jamba, where Prjevalsky spent the winter of 1880. Only Tanguts inhabit this elevated table-land, and a few lamas who occupy several monasteries. Descending from the plateau into a deep valley, Naryn-jamba, which joins that of the Urung-vu River, they were soon compelled to climb another plateau of the same height, the Ganja-tan, also peopled by Tanguts. The Amni-Tunglyng Mountains raise their snow-covered summits towards the north. On May 16 the Expedition reached the Labran Monastery, situated at an altitude of 10,000 feet, and still containing several hundred well-built houses, some of them with two and three stories. The Gue-guen—a religious chief, who is also chief of the neighbouring Tanguts—resides at this rich monastery. From Labran, MM. Potanin and Skassi again climbed a high plateau, and followed it until they arrived at the Renu-kika Pass. A high snow-covered ridge extending west and east on the left bank of the Tao-ho, was seen to the north; it is inhabited by a tribe of Tangut robbers—the Tebu. The Tao-ho flows along a valley more than half a mile wide, between picturesque craggy mountains, the slopes of which are thickly wooded. The town Ming-cheu, situated in the same valley, could thus soon be reached. Leaving it on June 16, the Expedition easily reached also the Yali-san Mountain, which is the watershed between the tributaries of the Tao-ho and the Yang-tse-kiang, the ascent to the watershed offering no difficulties. The further journey to Si-gu-sian was made in an alpine country, intersected by deep and narrow valleys, which have a flora offering some notable differences from that of the Si-nin and Min-cheu region. The town Si-gu-sian is situated in the region of the monsoons. The further intentions of the Expedition were to go to Niang-pin, leaving M. Berezowski at Si-gu-sian to make collections of mammals and birds.

AN extraordinary meeting of the Geographical Society of Paris was held on the 21st inst. to receive M. de Brazza on his return from his latest expedition to that part of Western Africa which is now described as the French Congo. M. de Brazza gave an account of his journey undertaken in the summer of 1883, on a subsidy from the Government of 1,250,000 francs (50,000*l.*). In the beginning of June he and his party had reached Franceville on the Ogowai. At this place he concluded new treaties with the chiefs of the tracts adjoining the river, and opened warehouses for carrying on trade. After instructing in their duties the Europeans who were to remain at Franceville, M. de Brazza crossed the elevated tract which separates the basins of Ogowai and Alima to join Dr. Ballay, who was conducting negotiations with the Bapfourous, a tribe settled near the junction of the Alima with the Congo. Dr. Ballay had a steamer on the latter river, the first French vessel of the kind which had penetrated so far into these regions. M. de Brazza then narrated his adventures in the two years and nine months during which he was engaged in exploring the banks of the Ogowai, the Alima, and the Congo, in laying the foundation of eight stations.

THE *Calcutta Englishman* states that Mr. Needham, of the Assam Police, and Capt. Molesworth, of the Bengal Staff Corps, who left Sadiya on December 12 for Rima, in Thibet, have returned to Dibrugarh. They reached Rima, but were unable to enter the place, owing to the hostility of the Thibetans. Having followed the course of the Brahmaputra the whole way from Sadiya to Rima, they are able to state authoritatively that the river corresponding in size to the "Sanpo," as described by the explorer "A. K.," falls into it; and that the identity of the "Sanpo" with the Dijong may be deemed to be finally settled.

THE Government of the Congo State has commissioned several geographers to execute maps of the entire State. Lieut. Massari is surveying the right bank of the Congo between the Alima and Mobangi Rivers. The topographical party under Lieut. Junghers has surveyed Banana completely, and is now engaged, in two divisions, in surveying the districts between Banana and Boma, and between Boma and Vivi. The Swedish geographer Herr Hakanson has drawn a map of the district between the village of Mvinda, above Vivi, and the Issanghali Station.

ADVICES received in Berlin contradict the statement of the death of the German traveller, Dr. Büttner, who is now alleged

to have escaped all the dangers that beset him in the Congo region, and to be on his way back to Europe.

WITH the beginning of next month a party organised by the German New Guinea Association will start from Hamburg. The command of the expedition has been intrusted to Dr. Schrabber, one of the staff of the Hamburg Observatory, who was chief of the scientific expedition sent in 1882 to the southern hemisphere. The preparations are almost completed. Six experienced foresters have been already sent on in advance. Fifteen block-houses have been constructed, some at Hamburg, some in Norway, to be put together at chosen points in New Guinea. Forty Malays have been hired in Java to act as bearers and servants, and five persons trained in various branches of natural science will form the staff of the party. Their explorations will be confined to the portion of the island which is under the German protectorate, and will, it is expected, occupy about three years.

THE Milan Society for the commercial exploration of Africa is preparing a new expedition to Zeila and the neighbouring districts. It will be led by Count Peter Porro.

THE census returns of the provinces of Bosnia and Herzegovina for 1885 show an increase of 15 per cent. in the population since the previous returns for 1879, the respective figures being 1,158,440 and 1,336,101. Nearly all the inhabitants are of South Slavonic (Servo-Croatian) stock and speech, and, according to religions, they were distributed in 1885 as follows:—Mussulmans, 492,710; Orthodox Greeks, 571,250; Roman Catholics (Greek and Latin rites), 265,788; Jews, 5805; Miscellaneous, 548.

THE Viennese firm of Hartleben has begun the publication of Dr. F. Umlauf's important work on the Alps, entitled "Manual of Alpine Sciences." It will be issued in fifteen parts.

FATHER LEO M. ALISHAN, of the Armenian Mekhitarist Congregation of St. Lazarus near Venice, has recently published a sumptuous work entitled "Sissian," the term applied by the Armenians to the province of Kilikia at the end of the twelfth century, when it was governed by Leo the Magnificent. The work deals with the physical geography, history, and literature of this region of Asia Minor, and contains numerous maps, fac-similes, and illustrations, besides several valuable unedited documents.

THE *Bollettino* of the Italian Geographical Society for December has a short obituary notice of the distinguished geographer and geologist, Prof. Giuseppe Ponzi, who was born in Rome in 1805, and died there on November 30, 1885. He filled the Chair of Geology in the Roman University since the year 1866, and on his careful surveys of the basin of the Tiber were based the first geological maps of that district.

THE same *Bollettino* contains some particulars of the Capucci-Cicognani Expedition, which arrived at the capital of the Anfari (Sultan) of Aussa at the end of August. Here it was detained by the Anfari, who demanded 3000 dollars for the right of passage, and after tedious negotiations Capucci returned to Assab in order to procure this sum, and thus obtain permission to pass on to the kingdom of Shoa in Southern Abyssinia. On his return he induced the Anfari to accept less than half the amount claimed, on payment of which the Expedition continued its journey through Gafra for Shoa.

To the *Bollettino* Count A. Salimbeni sends a description, with illustration, of the bridge he has now completed over the Temcha, a river in Gojam, which flows through the Birr to the Abai (Bahr el-Azrag, or Blue Nile). The bridge, the first constructed in Abyssinia since the time of the Portuguese, spans the river with three arches of 85 metres each, is 4 metres wide, and has a total length of 38 metres. The work, which was begun in December 1884 and finished the following March, is looked on as a marvel by the natives, and has given great satisfaction to King John.

THE BENEFITS WHICH SOCIETY DERIVES FROM UNIVERSITIES¹

NEXT, I mention as the subject for university study, Psychology, the nature of man's soul, the characteristics of his mental and moral activity. This science has lately made great progress,

¹ An Address by D. C. Gilman, President of the Johns Hopkins University. Continued from p. 283.

—it has improved its methods and enlarged its scope. Those who are devoted to it appreciate the inherited experiences of the human race and are not indifferent to the lessons which may proceed from intuition and introspection; they study all the manifestations of intellectual and spiritual life; but, on the other hand, they are not afraid to inquire, and they know how to inquire, into the physical conditions under which the mind works; they watch the spontaneous, unconventional actions of children; they investigate the laws of heredity; they examine with curious gaze the eccentricities of genius, and with discerning, often with remedial eye, the alienation of human powers, and they believe that by a combination of these and other methods of research, among which experiment has its legitimate place, the conduct of the human understanding and the laws of progressive morality will be better understood, so that more wholesome methods of education will be employed in schools of every grade. They acknowledge the superiority of the soul to the body, and they stand in awe before the mysteries which are as impenetrable to modern investigators as they were to Leibnitz and Spinoza, to Abelard and Aquinas, to Aristotle and Plato, the mysteries of man's conscious responsibility, his intimations of immortality, his relations to the Infinite.

I do not know whether philosophy is on a "return to Kant," or to common sense, but I believe that standing firm on the postulates, God, Soul, and Immortality, it will in years to come disentangle many perplexities, brush away heaps of verbal accumulations, and lead the mind to purer and nobler conceptions of righteousness and duty. I go even farther, and, as I believe that one truth is never in conflict with another truth, so I believe that the ethics of the New Testament will be accepted by the scientific as well as the religious faculties of man; to the former, as Law; to the latter, as Gospel.

In confirmation of these views, let me quote to you the language of that one among us who is best qualified to speak upon this subject.

"The new psychology, which brings simply a new method and a new standpoint to philosophy, is, I believe, Christian to its root and centre; and its final mission in the world is not merely to trace petty harmonies and small adjustments between science and religion, but to flood and transfuse the new and vaster conceptions of the universe and of man's place in it—now slowly taking form and giving to reason a new cosmos and involving momentous and far-reaching practical and social consequences—with the old scriptural sense of unity, rationality, and love beneath and above all, with all its wide consequences. The Bible is being slowly re-revealed as man's great text-book in psychology, dealing with him as a whole, his body, mind, and will, in all the larger relations to nature and society, which has been so misappreciated simply because it is so deeply divine. That something may be done here to aid this development," continues the lecturer, "is my strongest hope and belief."

The study of Society engages the earnest interest of another set of men, and the apparatus of their laboratory includes archaeological and historical memorials of the activity of the race. The domain of history and political science has never been cultivated as it is in modern times. The discovery of primæval monuments and the interpretation of long hidden inscriptions, the publication of ancient documents once hidden in monasteries and governmental archives, the inquiry into primitive forms of social organisation, the development of improved modes of research, the scientific collection and classification of facts which illustrate the condition of ancient and modern communities and especially the interest awakened in the growth of institutions and constitutions, give to this oldest of studies the freshest interest. Papers which have lately been printed on rudimentary society among boys, on the laws of the mining camp, on the foundations of a socialist community, on the differences between parliamentary and congressional government, on the derivation of modern customs from the ancient beginnings of the Aryan people, on the nature of communism and many more such themes, afford illustrations of the mode in which the historical student among us, following the lines of Stubbs, Maine, Freeman, Seeley, Bluntschli, Roscher, and other celebrated workers, are advancing historical science, and developing the true historical spirit. The aim of all these inquiries is to help on the progress of modern society by showing how the fetters which now bind us were forged, by what patient filing they must be severed, and at the same time to work out the ideal of a society in which Liberty is everywhere, but "Liberty sustained by Law."

Languages and Literature have always received attention in universities, and will always be dominant for reasons which are