

then move the cylinder so that the multiplier is at the fixed index. The product is read off at one of the movable indices, bearing in mind that the number of figures in the product is the algebraic sum of the number of figures in the multiplier and multiplicand, if it is not read upon the same index as the latter, but it is one less than that sum if read upon the same index. The use of the scales n and m is shown by the following: n being read from the lowest line of the top spiral and m from the vertical edge of the former. To find the value of 5^{13} : on placing c to 500 scale n reads '68, and scale m '01897, which gives '69897 for the logarithm of 5. '69897 \times 13 = 9'08661. Next placing the cylinder so that it reads '08661 on scales m and n the index c reads 12207, hence the required power is 1220700000 consisting of ten figures as required by the logarithm above. Where a considerable degree of accuracy is required we believe this slide rule will be found of much service, but it cannot compete on the one hand, on account of its somewhat cumbrous nature, with the ordinary patterns of slide rule for rough and ready work, or on the other with a table of logarithms for calculations requiring close approximation.

OUR ASTRONOMICAL COLUMN

A NEW NEBULA.—Dr. Tempel, of the Observatory of Arcetri, Florence, notifies his discovery of a nebula on March 14 in a part of the heavens which has been most rigorously scrutinised in searching for these objects. For this reason it was at first supposed to be a faint comet, and was compared with the seventh magnitude following, W.B. XI. 305; but on March 16 its place was found to be unchanged. Dr. Tempel says it is properly a double nebula, with two small but distinct nuclei, distant from 15" to 20", and he adds the nebula Herschel II. 32, which is in the vicinity, was on both evenings much smaller and fainter than the new one. Herschel's nebula is caught at once in slow sweeping with a 6 or 7-inch refractor, so that an object to be very decidedly more conspicuous, must be within reach of ordinary telescopes, and it is hardly credible that its appearance can have long been as Dr. Tempel now describes it, without its being previously detected. Mr. Lassell's Catalogue of 600 new nebulae discovered at Malta contains several in the immediate neighbourhood, so that the observer, Mr. Marth, could hardly have failed to have his attention called to the object in question, if then as visible as at present. Dr. Tempel's nebula is obviously worthy of immediate and continued observation; its position for 1879 is in R.A. 11h. 18m. 5s., N.P.D. 86° 1'4, or it precedes the seventh magnitude above named 1m. 27s., nearly on the parallel. Chacornac, in his Chart No. 34, has a star 12'13 mag. within about 3' from the above position, but shows no nebulosity; this circumstance is of itself sufficient proof that the nebula was not visible twenty-five years since. We would suggest that the position of this object relatively to the stars near it should be determined with all possible accuracy; it will be remembered that the centre of condensation in the variable nebula in Taurus has appeared to oscillate about the point where it was first remarked in October, 1852; or, to speak perhaps more correctly, nebulosity has at times been quite imperceptible in the original place, though apparent at a very short distance from it.

BRORSEN'S COMET.—In No. 2,254 of the *Astronomische Nachrichten* Dr. Armin Wittstein of Leipsic has given an orbit and ephemeris for this comet, founded upon a correction of the elements of Prof. Schulze by means of observations at Leipsic on March 19 and 26. There appears, however, to be error in the work; the new elements differing much from an observation on April 14, and so far as we can see, it is probable that the ephemeris for May, which has appeared in NATURE, will be much nearer the truth than Dr. Wittstein's figures; at

the same time it is to be remarked that the predicted elements require sensible correction, though not to such an extent as his calculations would indicate. Were it considered worth while, an orbit might be deduced from the observations already made at the present appearance, which would afford the means of following the comet closely during the remainder of its visibility, but the predicted elements with a correction to the time of perihelion passage, will doubtless suffice for finding the comet readily, as long as it is within reach.

RE-OBSERVATION OF TEMPEL'S COMET, 1867 II.—In a communication to the Paris Academy it is announced that the comet of short period discovered by Dr. Tempel in 1867, and observed again at its return to perihelion in 1873 after experiencing heavy perturbation from the action of Jupiter, was found once more by its original discoverer, at the Arcetri Observatory on April 24. At 14h. 30m. Florence mean time, its R.A. was 16h. 50m. 59s. and its declination 13° 32' south, so that its position corresponds nearly with that given in the first of M. Raoul Gautier's three ephemerides in *Astron. Nach.*, No. 2,242, in which the perihelion passage is assumed May 6'9416 Berlin M.T. Dr. Tempel says he had searched for it in vain during the rarely fine nights of February and March. The comet is faint and diffused, with a granulated appearance about the centre, and 2' in diameter. This granular characteristic of comets, by the way, is one which has been frequently noted by Dr. Tempel, and which other observers do not appear to recognise so often. He directed particular attention to it when announcing his discovery of the comet of the November meteors, 1866 I.

If the perihelion passage of the comet 1867 II. be assumed to take place, 1879, May 6'9537 M.T. at Greenwich, and the mean diurnal motion = 593"184, with the other predicted elements of M. Raoul Gautier, it is probable that the comet's position will be given very nearly during its present appearance. The co-ordinate constants in his orbit, for apparent equinox of June 1, are:—

$$\begin{aligned} x &= r [9'99389], \sin. (v + 328 \text{ } 2'4), \\ y &= r [9'95727], \sin. (v + 242 \text{ } 33'4), \\ z &= r [9'65727], \sin. (v + 218 \text{ } 41'7). \end{aligned}$$

GEOGRAPHICAL NOTES

THE steamer *Nordenskjöld*, Capt. Sengstake, belonging to Herr A. Sibiriakoff, is almost ready to sail from Gothenburg for Behring Straits, *via* the Suez Canal, to search for the *Vega*, along with the *Jeanette*, belonging to Mr. Bennett, of the *New York Herald*. Herr Gregorieff, of the St. Petersburg Geographical Society, sails with the *Nordenskjöld*. Herr Sibiriakoff is sending off two coast searching parties to Behring Straits, one from Nischni Kolymsk and the other from the mouth of the Anadyr.

THE current number of the Royal Geographical Society's monthly periodical contains ample evidence of the good work which is being done by our missionaries towards making geography. Dr. James Stewart contributes an account of the second circumnavigation of Lake Nyassa, Dr. Laws a report of his journey along part of the west side of that lake, and Mr. G. Blencowe notes on the physical geography of Zululand and its borders, based on nineteen years' experience on the Natal and Transvaal frontiers. The geographical notes are fairly good, the more important being those which describe a new route from the Caspian to Kungrad, and recent explorations in Persia and Central Australia, but we cannot refrain from expressing our surprise that in a periodical, which ought to be the leading authority on geography, more space is not devoted to this department, the most important of all, for therein should be recorded brief accounts of all that is being done in the way of travel and exploration throughout the world. It will interest many of our readers to learn that the full text of

Prof. Geikie's able lecture on geographical evolution is promised for the June number.

WE understand that, chiefly through the instrumentality of a veteran Arctic officer, the Council of the Royal Geographical Society were some time back induced to urge upon H.M. Government the propriety of despatching a vessel to the relief of Prof. Nordenskjöld early in the present season. The matter, of course, was referred to the Admiralty, and "My Lords," after mature deliberation, have arrived at the conclusion that the matter had better be left to private enterprise. This resolution may be looked upon as a tolerably sure indication that the present Government are not disposed to embark upon an Arctic expedition of any description.

WE hear that Mr. Keith Johnston, the leader of the Geographical Society's East African Expedition, was to leave Zanzibar at the end of last month for Dar-es-Salaam, on the mainland, with the view of making final preparations for his journey to Lake Nyassa. The fact of his having been fortunate enough to secure the services of Chuma, Livingstone's old follower, will, no doubt, smooth away many difficulties, which otherwise would have caused him much trouble. Mr. Johnston has, we believe, turned his somewhat lengthy stay at Zanzibar to good account in the accumulation of all the information that could be procured respecting the tribes through which he will have to pass; and in this matter he has received very great assistance from an Arab named Bushire bin Selim, who is acquainted with some part of the country between the coast and Lake Nyassa, and who states that, though there is no direct road from the coast, the region at the north end of the lake is regularly visited by branch routes from the main road between Bagamoyo and Ujiji.

M. DE SEMELLÉ, whose death was we are glad to say prematurely announced, has succeeded in ascending the Niger and the Binué as far as Okeri, a point, it is stated, which has not hitherto been explored. He has collected valuable information on the products of the country, and the history and traditions of the people. He intends meantime to return to France for further subsidies to enable him to continue his exploration. M. Soleillet, who had to return to St. Louis in Senegal, after reaching Segou, is to set out on a new expedition for "Tichid, Wallatana, Timbuctoo, the Touat, and Algiers." M. Soleillet has brought back much interesting information concerning the people among whom he has been travelling, and of whom he speaks in very high terms for their intelligence and culture.

M. SAVORGNAN DE BRAZZA is about to set out for further exploration in the Ogowé region; he will endeavour to penetrate to the interior by the Alima and the river into which it falls.

IN No. 4 of the *Mittheilungen* of the Vienna Geographical Society, Count Stefanovic von Vilovo discusses the causes of the recent disastrous floods at Szegedin. Five years ago, it seems, he prophesied that some such catastrophe must happen, but he was only laughed at. He showed that this would be caused by the damming back of the water in the narrow rocky passes at Plocsa, and in the Kazan, in the narrow pass between Bazian and the Iron Gates, the surplus water being thus forced back into the nearest tributaries, the Morava, the Temes, the Save, and above all the Theiss. He maintains that the present disasters are solely the work of those rocks at Plocsa and in the Kazan, preventing the carrying off of the unusual quantity of water thrown into the river by the rains and snows of last autumn. Dr. Holub's paper on the Marutse-Mambunda is continued, with many illustrations and vocabularies, as also the papers of Prof. Benoni, on the sources of the Dniester, and Hesse-Warteg's, on the river-bed of the Mississippi. Herr von Hochstetter contributes an illustrated paper on the magic instruments of the rain-maker among the natives of Inner Australia.

A LETTER from Herr Déchy, dated Darjeeling, March 9, in the *Mittheilungen* of the Vienna Society, states that in a day or two he expected to leave with a well-equipped expedition for exploration in Western Sikkim. He was to go through the valley of the Great Runget to the south foot of Kinchingunga; thence, climbing the Pundim-Nursing ridge into the Testa Valley, he was to explore the valleys, mountains, and passes of the Thlonok and Zemu rivers. Herr Déchy expects to add much to our imperfect knowledge of these regions, and his expedition is well supplied with instruments for scientific observation.

THE new number of *Les Annales de l'Extrême Orient*, which is doing good service by its translations of the accounts of Dutch explorations in Oceania, &c., contains remarks by H. von Rosenberg on the Schouten Islands at the entrance to Geelvink Bay, New Guinea, and brief notes by M. van Hasselt on Alahan-Pandjang in Sumatra, accompanied by a map. This periodical, it may be mentioned, records the proceedings of the Société Académique Indo-Chinoise.

WE understand that Prof. P. J. Veth, of Leyden, the learned president of the Geographical Society of the Netherlands, has been elected an honorary corresponding member of the Royal Geographical Society.

WE learn from the *Colonies and India* that a very interesting operation has been performed in the Thames River, New Zealand, viz., the blowing up of the Awotonga Falls, near the Awoka mountain. They were 75 miles from the mouth of the river, and had been a great hindrance to navigation. The falls were blown up with 200 lbs. of dynamite, the column of water rising to a height of 470 feet, and forming a magnificent spectacle. In addition to these falls, there have been removed in a similar manner several dangerous and impassable rapids and upwards of 500 "snags," varying from two to eight feet in diameter, and some of them 120 feet long. The clearing of this river, it is said, will open up a million acres of excellent land, which the Government have obtained from the natives.

TRENHAM REEKS

WITH much regret we record the death of Mr. Trenham Reeks, the esteemed Registrar of the Royal School of Mines, Jermyn Street. He had been ailing for some weeks, and last week the complaint assumed the serious form of inflammation of the lungs. There was still hope of his recovery a few days ago, but he expired on Tuesday morning, the 5th inst. By his death one of the oldest associations of the Geological Survey and School of Mines is severed. While still young he became connected with the infant museum established by the energy of his friend, Sir Henry de la Beche, in Craig's Court; and on the enlargement of that establishment and the creation of the School of Mines, he was appointed to the office which he has held up till now. Having in early life devoted himself to chemistry and mineralogy, he took great pride in the mineralogical collection under his charge in Jermyn Street, and from year to year enriched it with fresh acquisitions. He had a great knowledge of pottery, and gained it at a time when the taste was far less general than it is now. The illustrated hand-book which, in conjunction with De la Beche, he prepared of the ceramic collection in the Jermyn Street Museum, though long ago out of print, is still a valued work of reference. Personally, he was singularly courteous and obliging, though tenacious of purpose and not easily defeated in any matter wherein he had resolved to succeed. He thoroughly identified himself with the interests of the School of Mines, to which his loss must now be great.

Not a few who read these lines will long remember the