

with the X, Y, Z of the *Nautical Almanac*, have been found from—

$$\begin{aligned} x &= r[9.94281], \sin. (v + 207.51'8), \\ y &= r[9.98498], \sin. (v + 126.18'6), \\ z &= r[9.73737], \sin. (v + 60.32'2). \end{aligned}$$

Ephemeris for Greenwich Midnight

1879.	Right Ascension. h. m. s.	North Declination.	Log. distance from Earth.	Log. distance from Sun.
May 1 ...	5 45 30	59 42'0		
2 ...	5 57 36	60 38'4	9.8459	9.9366
3 ...	6 10 31	61 30'5		
4 ...	6 24 10	62 17'8	9.8422	9.9494
5 ...	6 38 31	63 0'1		
6 ...	6 53 37	63 36'4	9.8395	9.9621
7 ...	7 9 19	64 6'7		
8 ...	7 25 30	64 30'5	9.8381	9.9745
9 ...	7 42 5	64 47'3		
10 ...	7 58 55	64 57'1	9.8379	9.9866
11 ...	8 15 50	64 59'5		
12 ...	8 32 41	64 54'9	9.8388	9.9984
13 ...	8 49 16	64 43'3		
14 ...	9 5 28	64 24'9	9.8409	0.0100
15 ...	9 21 11	64 0'2		
16 ...	9 36 19	63 29'6	9.8441	0.0213
17 ...	9 50 46	62 53'5		
18 ...	10 4 30	62 12'4	9.8484	0.0323
19 ...	10 17 28	61 27'0		
20 ...	10 29 39	60 37'8	9.8538	0.0430
21 ...	10 41 5	59 45'2		
22 ...	10 51 49	58 49'7	9.8602	0.0535
23 ...	11 1 52	57 51'9		
24 ...	11 11 16	56 52'1	9.8675	0.0637
25 ...	11 20 5	55 50'6		
26 ...	11 28 20	54 48'1	9.8757	0.0736
27 ...	11 36 4	53 44'9		
28 ...	11 43 18	52 40'6	9.8848	0.0833
29 ...	11 50 5	51 36'2		
30 ...	11 56 28	50 31'8	9.8942	0.0927
31 ...	12 2 28	49 27'6		

THE DOUBLE-STAR, SOUTH 190.—Interest attaches to this object for more than one reason. The principal star possesses a large proper motion in which the companion participates, while there is a much slower change of relative position in the same way that we observe in 61 Cygni. Further, there would appear to be some evidence of variability of light in the principal star. Argelander in his memoir on the proper motions of 250 stars, assigns +0.0691s. in right ascension, and -1".766 in declination, or 2".015 annually in arc of great circle, in the direction 151° 14'. If we compare Lalande's observation on May 22, 1798, with the observations made at Bonn in 1864, and at Washington 1867-69, almost identical values with those given by Argelander will result. The following figures will sufficiently indicate the variation in relative position that has occurred since Piazzi observed the star early in the present century:—

	1806.7	Position 251.4	Distance 9.40
Piazzi ...	1806.7	251.4	9.40
Herschel and South ...	1823.32	270.1	10.82
Herschel (Cape Obs.) ...	1836.46	277.4	12.08
Jacob ...	1856.37	284.0	13.35
Stone (Cincinnati) ...	1877.37	290.3	14.92

The star forms one of Sir W. Herschel's catalogue of 145 new double stars, where the duplicity is stated to have been discovered in 1785; at the epoch 1791.39 the angle was estimated 270° —, distance IV.; an observation not easily reconciled with more recent ones.

As regards variability the principal star was rated 4m. in Argelander's zone No. 295, on May 20, 1850; it is 5.9m. in the second Radcliffe catalogue, while the Washington observers call it 6.6m.; Lalande and Piazzi estimated it 6m. Argelander calls the companion 8.4. The position of South 190 for 1880 is in R.A. 14h. 50m. 27s., N.P.D. 110° 52'.3. It is No. 1186 in the Greenwich catalogue for 1860.

THE MINOR PLANET HILDA.—This small planet, the most distant member of the group, which approaches the

orbit of Jupiter within 0.85 of the earth's mean distance from the sun, has been sought for unsuccessfully at Berlin, near the calculated position; there may now probably be a difficulty in recovering it.

GEOGRAPHICAL NOTES

WE hear that Sir Walter C. Trevelyan, who died lately at Wallington, Northumberland, has bequeathed to the Royal Geographical Society, of which he had been for many years a trustee in conjunction with Lord Houghton, the sum of 500*l.*, in addition to a valuable collection of books relating to the Faroe Islands, maps, &c.

THE geographical haze in which some of our daily contemporaries persist in enveloping themselves, appears to be growing denser. The "War at the Cape" is bad enough, but the telegram received last week from a special correspondent at Baku, informing a wondering public that "Krasnovodsk has returned with General Lazareff, and Lomakine's reconnaissance to the confluence of the Attrek and Sumbir [*sic*], &c.," fills the cup to overflowing. Krasnovodsk, we thought, was the name of a town and bay on the eastern shore of the Caspian, but the tangle is above our powers to unravel.

THE new part of the *Transactions* of the Asiatic Society of Japan is wholly occupied with Mr. John Milne's narrative of his journey across Europe and Asia to the Land of the Rising Sun. From some singular statements which he makes, we suspect that Mr. Milne was not sufficiently careful in making himself acquainted with the literature of Chinese travel before leaving; otherwise he would hardly venture to assert that the journey from Peking to Tientsin and overland to Shanghai has but seldom been made by Europeans. Mr. Milne's views on the subject of the rendering Chinese sounds are very remarkable.

THE Paris Society of Geography held its annual meeting for the election of officials on Friday, April 18. Admiral Laroncière le Nourry was returned president almost without opposition. The great gold medallist is Lieut. de Brazza, the Ogowé explorer. A gold medal was also awarded to Lieut. Wyse, of the French Navy, for his exploration of the Isthmus of Darien, for the construction of an inter-oceanic canal. The gold medal for Polar exploration was awarded to Sir George Nares, Commander of the last English Arctic Expedition. The Cross of the Legion of Honour was also given to M. Brazza and his fellow-explorer, Dr. Ballay. Lieut. Wyse and Lieut. Reeks received a similar honour for the Darien explorations. An address was given by Commander Perrier on the determination of longitudes by electricity. A map was distributed amongst members showing all the European and African towns whose longitudes have been determined by that process. They number about one hundred, extending from Oural to Valentia, and from Lapland to Sahara.

NO. 3 of this year's *Mittheilungen* of the Vienna Geographical Society contains an important paper, with map, on the sources of the Dniester and the valley-structure of the region of the Upper Dniester and Strwcaz. The first number of this year's *Boletín* of the Madrid Geographical Society contains, among other things, the first part of an account of an excursion in the La Plata Republics, by Capt. Carrasco y Guisasaola.

THE just published *Bulletin* of the Antwerp Geographical Society contains, amidst a considerable variety of matter, a paper by Mme. Dumas de Baiglie, entitled "Les Voyageuses illustres." The Society about a year ago resolved to admit ladies, and the author of this paper is a *membre associé*, who seems very grateful for this recognition of the rights of women.

AMONG the new bills introduced into the first session of the Forty-sixth U.S. Congress is one authorising the president to establish a temporary colony at some point north

of the eighty-first degree of north latitude, on or near the shore of Lady Franklin Bay, for the purpose of scientific observation and exploration, and to develop or discover new whaling grounds; such officers as may be necessary to be detailed to take part in the same, and with permission to use any public vessel or vessels in connection therewith. This is essentially Capt. Howgate's plan, and probably introduced by his request.

THE last number of the *Indian Antiquary* contains a note by Major J. S. F. Mackenzie on some curious customs current among the Komti caste in regard to marriage, &c. "A Folklore Parallel," by Prof. C. H. Tawney, of Calcutta, is also worthy of notice.

MGR. LAVIGERIE, Archbishop of Algiers, communicates to *Les Missions Catholiques* intelligence respecting the portion of the French missionary expedition in East Africa, which, under the leadership of Père Livinhac, was gradually making its way towards Lake Victoria. At the date of the letter (December) the five Europeans were all in good health, and were then in Mirambo's country, on the way to Uganda. Père Livinhac writes that they had been three months in Unyanyembe, and that they were then twenty or thirty days' march from the lake. In the same number of *Les Missions Catholiques* Mgr. Ridet continues the account of his recent captivity in Corea, in which he gives a terrible picture of the prisons of the country.

A TELEGRAM from Malmö states that the steamer *Nordenskjöld*, built for M. Sibiriakoff, to go to the assistance of Prof. Nordenskjöld's expedition, was launched on the 17th inst.

A VERY interesting narrative of travel has just been commenced in the *Tour du Monde*, entitled "Voyage en Nouvelle Guinée," by M. Achille Raffray. The first instalment deals with the Moluccas, which M. Raffray visited *en route*, but in the second he commences his work in New Guinea. The illustrations are unusually good.

BIOLOGICAL NOTES

THE EARLY TYPES OF INSECTS.—Samuel H. Scudder has published a memoir on the early types of insects (*Memoirs of the Boston Society of Natural History*, vol. iii. Part i. No. 11, March, 1879). He concludes that the hexapods, arachnids, and myriapods appeared together in the carboniferous strata. That the hexapod insects may be divided into a higher group (Metabola), and a lower group (Heterometabola), that the latter are Devonian and carboniferous, the former just appearing in the Jurassic period. The Devonian forms were in the early stages of their life, undoubtedly aquatic. Nearly all the palæozoic orthoptera belong to the lower Saltatorial families. It would seem that the earlier types were of inferior organisation, and that the general type of wing structure in insects has remained unaltered from the earliest times.

HALOSPHERA, A NEW GENUS OF UNICELLULAR ALGÆ.—Under this name Dr. F. Schmitz describes, in the first "Heft" of the first volume of the *Mittheilungen aus der zoologischen Station zu Neapel*, an organism which is found abundantly between the middle of January and the middle of April, floating on the surface of the water in the Bay of Naples. Hitherto known to collectors simply as *punti verdi*, Dr. Schmitz gives it the name *Halosphæra viridis*. It presents to the naked eye the appearance of minute just visible pale green globules, the largest having a diameter of from 0.5 to 0.6 mm., but with no independent power of motion like that of *Volvox*. Each globule consists of a tolerably thick perfectly smooth and colourless cell-wall, coated on the inside with a thin layer of pale green protoplasm, which incloses a single very large central vacuole filled with a colourless cell-sap.

The green colour of the protoplasm is due to its being interspersed with a small number of minute grains of chlorophyll; and there is also, at an early stage, a single globular nucleus with a somewhat darker nucleolus. As the cell increases somewhat slowly in size, the process of cell-division commences. The single nucleus divides into two nuclei, which gradually separate from one another; and this process is repeated time after time, until a very large number of nuclei, which the author reckons to average from 200 to 300, come to be tolerably regularly distributed through the parietal protoplasm of the mother-cell, which has by this time attained its full size. The layer of protoplasm then breaks up into a number of primordial daughter-cells, each surrounding one of the nuclei, and having the form of a hemispherical ball, the flat surface of which is in contact with the cell-wall of the mother-cell. They are of a uniform bright green colour, without apparently containing any distinct grains of chlorophyll. The external cell-wall of the mother-cell has now become differentiated into two distinct layers, the outer one of which bursts into two nearly equal halves, and becomes completely detached from the inner one, which now itself consists distinctly of two layers. The hemispherical green daughter-cells then become transformed into zoospores of a very peculiar shape. They begin gradually to detach themselves from the outer cell-wall, and to take up positions in the interior of the cell. In most cases each of them contracts in the centre into somewhat the shape of an hour-glass, but pointed at the two ends, ultimately dividing in the middle into two zoospores of conical shape, with a nearly flat base, but toothed at the edges, and a pointed apex. To a colourless protuberance in the centre of the nearly flat base are attached two very long vibratile cilia. Sometimes only a single zoospore is formed from each of the primordial cells, and occasionally more than two. The remaining cell-wall of the mother-cell has, in the meantime, been gradually swelling up and deliquescing, and has now become completely converted into mucilage, so that the zoospores escape free into the surrounding water. After moving about for some time with a rather slow swarming motion, they fall to the bottom; but their further development has not been followed up. Until its complete life-history is known, it is impossible to assign a systematic position to *Halosphæra*. It may possibly come near *Eremosphæra*, a genus of Conjugatæ; its resemblance to *Volvox* is clearly only superficial.

A NEW ALGA.—In the first Heft of the 1st vol. of the *Mittheilungen aus der zool. Station zu Neapel*, Dr. Falkenberg describes a new genus of Phæosporeæ under the name *Discosporangium*, with the following characters:—Thallus, an irregularly branched filament, consisting of a single row of cells, and growing by an apical cell. Reproduction by zoospores, which are formed singly in the compartments of multilocular zoosporangia. The zoosporangia are placed singly near the middle of the cells of the thallus, forming a square unilamellar plate, the compartments of which open separately when ripe on the upper side of the sporangium.

In the second Heft of the same publication Dr. Falkenberg gives a complete list of the marine Algæ of the Bay of Naples.

MARINE FLOWERING PLANTS.—Dr. I. B. Balfour has just published (*Transactions Bot. Soc. Edinburgh*, Session 1877-78) a most valuable and interesting memoir on two species of the genus *Halophila*, found very abundantly in widely extended patches on the reefs surrounding the island of Rodriguez. The island was visited in 1874 by Dr. I. Balfour as naturalist accompanying the "Transit of Venus" expedition. Of the two species one, *H. ovalis*, grows on spots which are just uncovered at low tides. The other, *H. stipulacea*, grows in places where it is always submerged. Specimens