From Prof. A. Riccò, who writes from Palermo on February 28, we learn that he has found the spectrum to be formed of the three bands of hydrocarbons, with an extremely faint continuous spectrum of the nucleus; the sodium line (D) was not present.

The comet is receding from the earth as well as from the sun. The elements have but little similarity to those of any comet previously calculated.

THE GREAT COMET OF 1882.—Prof. Julius Schmidt has published some particulars of his observations of this remarkable body since the commencement of the present year. On Jan. 3 the tail was traced through upwards of 11° with the naked eye; on the 10th it was visible for 8°, on the 28th it had diminished to 5½°, but was readily seen without the telescope; on the 30th its length was 3°. On February 5 a tail 2° in length was perceptible to the naked eye; Prof. Schmidt obtained his last distinct glimpse of the comet without the telescope on February 7.

Dr. B. A. Gould, director of the Observatory at Cordoba, who is now in London *en route* for the United States, informs the writer, that on February 11, three days out from Rio Janeiro, he was satisfied of the visibility of the tail of the comet to the naked eye; its distance from the earth at this time was 2·48, and its distance from the sun 3·05.

THE VARIABLE STAR U CEPHEI.—Mr. G. Knott secured a good observation of the minimum of this variable, at Cuckfield, on the night of March 2. An uninterruptedly clear sky enabled him to keep a watch on the star from 7h. 24m. to 14h. 30m. G.M.T. At about 8h. 15m. it began to fade from 7·2m., and at 14h. 30m. it had risen again to 8·1m. The observed time of minimum was 12h. 36m., or seven minutes earlier than the time assigned in the ephemeris in NATURE, and the magnitude at minimum was 9·45. The star remained at minimum for nearly 2½ hours. The low magnitude attained, Mr. Knott considers, is confirmatory of a suggestion he made from his earlier observations, that at alternate minima the star touches a lower magnitude than at those which intervene.

NEW NEBULÆ.—M. Stephan, director of the Observatory at Marseilles, publishes a catalogue of fifty nebulæ observed there, forty-five of which he believes to be new. A group of four pretty bright nebulæ he gives as identical with *h*, Nos. 2352, 2356, 2358, and 2359, but their relative positions resulting from his observations are not in accordance with Sir John Herschel's Catalogue. The Marseilles places and descriptions are—

	R.A. 1880·0. h. m. s.	N.P.D. ° ′ ″	
No. 42 ...	11 9 8·45	... 71 14 8·7	Assez belle, assez petite, ronde, condensation centrale.
,, 43 ...	11 10 28·49	... 71 19 39·1	Assez belle, assez petite, ronde, condensation centrale.
,, 44 ...	11 10 36·52	... 71 17 35·0	Belle, ronde, assez étendue, condensation graduelle centrale très forte.
,, 45 ...	11 10 40·73	... 71 11 46·7	Assez belle, ronde, condensation graduelle centrale assez forte.

The catalogue is published in the *Comptes Rendus de l'Académie des Sciences* of February 26.

GEOGRAPHICAL NOTES

WE are now enabled, on the authority of Dr. Oscar Dickson, to give the following particulars of the programme of Nordenskjöld's proposed expedition:—The expedition will leave Sweden early in May next, in all probability in the Government steamer *Sophia*, and if the state of the ice is favourable to a landing on the east coast this will be effected; but as this is not expected to be the case until later in the season, Baron Nordenskjöld will proceed to the west coast, not for geographical discovery, but to study the appearance and extent of the inland ice on this side before attempting to penetrate from the eastern side. There are also known to exist on the west coast some very large blocks of ironstone, perhaps of meteoric origin, which a party of the expedition will be despatched to examine. When these researches are finished, and the state of the ice more favourable, the vessel will make her way from Cape Farewell along the eastern shore in the open channel, which is generally found between the coast and the drift-ice. With regard to the "break" or oasis, believed by Baron Nordenskjöld to exist in the interior of Greenland, to which we have previously referred, the explorer has been led to this conviction during his wanderings on the inland ice on a former occasion. He maintains that not only the constant advance of the ice-mass, but the fact that the country does not rise continually in the interior, show that the whole land is not covered with perpetual snow and ice; and this theory, he states, has been further corroborated by the studies made by him and others of the temperature and moisture of the air on the inland ice. The expedition, which will be accompanied by a complete scientific staff, will also aim at studying the conditions of the drift-ice between Iceland and Cape Farewell, the fossil remains in Greenland, as well as the appearance and quantity of the cosmic dust there. One object will also be, if possible, to discover traces of the former Norse settlements. It is expected that the party will return in September next. We understand that the reason why Baron Nordenskjöld has not issued any official programme concerning his expedition is that, being occupied with preparations for his journey and public duties, he would not be able to enter into any critical controversies as to his plans and theory.

IT appears from a letter of Dr. L. E. Regel to the Secretary of the Russian Geographical Society, that this Central-Asian traveller successfully pursued his explorations during last summer. He left Samar-land at the end of June last, and to reach Hissar he chose the shortest route, *viâ* Penja-kent. This route, by which the expedition visited the Fan River and Lake Iskander-kul, and crossed the Mur Pass, was very difficult; but the botanical collections and the geographical results were all the richer. In the centre of this region is situated a great mountain range, whose summits—the peaks of Kuli-kalan and the Chandar and Bodhan Mountains—are seen from Samarkand. To the south of this range runs the Saridagh valley, beyond which rises the Hissar range proper; to the north it has the Kul-i-kalan plateau and the valleys of a tributary of the Voron and the Pasrut River. The plateau of Kul-i-kalan has a circumference of about thirteen miles, and is dotted with five lakes 10,000 feet above the sea-level. The mountains around it have no real glaciers, but there are old moraines which can be traced also along the tributary of the Voron, which is fed by one of these lakes. We have here a separate Alpine landscape, the mountains of which are mostly fossiliferous limestones (sandstones with casts of thick fossil trees are found in the Pasrut valley), and with a vegetation not only richer than that of any other part of the basin of the Zarafshan, but also more varied as to its distribution. The forest vegetation is richest in the zone between 4000 and 8000 feet above the sea-level: M. Regel found there apple, cherry, and nut trees, together with the *Archa*. The upper zone, where the *Archa* also predominates, contains birches, willows, and an arborescent *Ephedra;* it reaches 10,500 to 11,000 feet, and the vegetation altogether goes higher up than the limit of perpetual snow. The Mur Pass—about 14,000 feet high—is very steep; the expedition had to cross snow-fields for nearly four miles, and found on the southern slope immense accumulations of snow, which probably is due to the foggy climate of Hissar,, although the amount of rain is small in this region. The vegetation of the southern slope is very rich and much like that of Karateghin. The range is composed of syenite; the next range, of the same height, between Khoja-Hassan and Hakimi, consists of granite, syenite-gneiss, and fossiliferous slates. Between Hakimi and Karatagh there is a series of lower parallel ridges, consisting of fossiliferous sandstones. The same sandstones are met with also between the two main ranges; they contain fossils at Khoja-Hassan. Changing his former plan, M. Regel proceeded further directly to Kala-i-Khumb, while his topographer was despatched to Kulab, *viâ* Hissar, the two to meet in the Darvaz. The remainder of M. Regel's letter gives several interesting topographical details, and information about different routes, as well as an enumeration of the chief questions that must be resolved as to the topography of this region.

WE announced last week that a Danish expedition would explore the east coast of Greenland during the summer. The funds required for this expedition were voted by the last Danish Parliament, and it will consist of two lieuteuants in the navy, G. Holm, and T. Garde, with two scientific men, but the remaining members will be natives of Greenland. The expedition will only employ boats for their purpose.

THE Ural Mountains are again becoming the field of exploration for Russian geologists and geographers. We learn from the *Izvestia* of the Russian Geographical Society that M. Nasi-

loff is spending a third year in the exploration of the Northern Ural. After having explored the river Lala under 59° N. lat., where he discovered layers of spherosiderites which were not yet known on the eastern slope of the Ural Mountains, he explored the banks of the Sosva—their geological structure, and the koorgans that are met with in its basin, as well as the fauna and flora of the region. In 1882 he visited the banks of the Lozva and Sosva, and the old mines of this locality, and made large geological, botanical, and ethnographical collections. He followed the Lozva to its junction with the Tavda, and went up the Sosva. The collections brought home by M. Nasiloff are now in the Mining Institute, in the St. Petersburg University, and in the Geographical Society. Another member of the Geographical Society, M. Malakhoff, continued his zoological and ethnographical researches on the Middle Ural. He explored the lake-dwellings discovered in the neighbourhood of Ekaterinburg, and, together with a member of the Mineralogical Society, explored the 3000 feet high mountain, Kachkanar, making there interesting collections of plants and insects. Later on in the summer he visited the districts of Irbit, Ekaterinburg, and Trvitsk, and discovered close by Irbit very interesting accumulations of bones, lake-dwellings on Lake Ayat, containing large implements of slate, and finally stone and bone implements in a cavern close by the Mias ironworks. At Lake Bagaryak he discovered interesting forms for casting animal and human figures during the prehistoric epoch.

HARTLEBEN of Vienna has published a unique little work by Dr. Jos. Chavanne, on "Afrika's Ströme and Flüsse," in which the author briefly surveys the hydrography of Africa as far as recent discoveries have furnished them. The book is accompanied by a well-drawn hydrographical map.

IN the March number of Hartleben's *Deutsche Rundschau* for geography and statistics, Dr. Chavanne has a sketch of the progress of discovery in Africa during 1882. There are interesting biographies, with portraits, of General Strelbitski and the late Prof. Henry Draper.

THE following papers will be read at the third German "Geographentag," which will be held at Frankfort-on-the-Maine on the 29th-31st inst:—On the importance of Polar research to geographical science, by Prof. Ratzel (Munich); on the commercial conditions of South Africa, by Dr. Buchner (Munich); on the significance of the International Colonial Exhibition at Amsterdam with regard to geographical science, by Prof. Kan (Amsterdam); on the reciprocal relations of climate and the shape of the earth's surface, by Dr. Penck (Munich); on the means of determining the geographical position at the time of great discoveries, by Dr. Brensing (Bremen); on the latest efforts made to determine more accurately the shape of the earth, by Dr. Günther (Ausbach); memoir of Emil von Sydow, by Dr. Cramer (Gebweiler); on topography as an introduction to geography, by Dr. Finger (Frankfort); on the pedagogic requirements and principles in drawing wall-maps for the use of schools, by Herr Coordes (Cassel); on the method of representing various objects on maps, by Prof. Jaroslaw Zdenek (Prague); on the Prussian teaching order and examination with reference to geographical instruction, by Dr. Kropatschek (Brandenburg); on the geographical handbooks of M. Neander, by Dr. Votsch (Gera). Three other highly interesting papers are also promised, viz. notes from his botanical journeys in Tropical America extending over five years, by F. R. Lehmann; on the Balkan Mountains, by Prof. Toula (Vienna); and a report on his great journey across Africa, by Lieut. Wissmann.

NEWS from Zanzibar, dated November 8, 1882, brings the sad announcement of the death of Dr. Kayser, who had been sent by the German African Society to their station on the shores of Lake Tanganyika, together with Drs. Boehm and Reichard, and who had left his station and was on his way to the Gold Coast.

THE CONSERVATION OF EPPING FOREST FROM THE NATURALISTS' STANDPOINT[1]

THE great expanse of primitive woodland in the immediate neighbourhood of East London declared "open" to the public on May 5, 1882, by Her Majesty the Queen, should be regarded as one of the numerous bequests to posterity marking the enlightenment of our times. The feelings leading to the agitation for the preservation of open spaces in and around the metropolis are sure indications on the part of the public of a recognition of the necessity for protecting and conserving our common lands for outdoor recreation—a recognition which must be considered as marking a decided advancement in the ideas of the British holiday-maker. If we compare a map of the environs of London of, say, twenty years ago, with the actual state of the country at the present time, it will be seen that large tracts of open land have disappeared; shady coppices and furze-clad heaths have been inclosed and built upon, and the country-loving Londoner has had to go further and further afield for his rambles. If it is obviously true that increased pressure of population demands more dwelling accommodation, it is equally true that a denser population requires more open spaces. The indifference of the public in former times to their own rights and to the wants of their successors is naturally making itself more and more seriously felt with a rapidly augmenting population and a corresponding spread of buildings. The formation of such public bodies as the Commons Preservation Society and the Epping Forest Fund was a healthy sign that people were beginning to be alive to the gravity of the situation, and we may now fairly say that rural London is on the defensive. The remarks which I am about to offer on the present occasion are based on an unpublished article written many months ago, when that wooded area in which our interest as a society centres was threatened by tramway invasion. The withdrawal of the Great Eastern Railway Company's bill for extending their line from Chingford to High Beech in 1881, and the apparent collapse of the tramway scheme had led to the hope that the "people's forest" would remain unmolested, and that the Epping Forest Act of 1878 would be carried out in spirit and in letter. But unfortunately new grounds of alarm have recently arisen, and our honorary secretaries, to whom I showed the original manuscript, did me the honour of thinking that the views which I had expressed would still be found to be in accordance with those of our own and kindred societies.

Like other open tracts in the metropolitan district, the great Waltham Forest, which comprised the forests of Epping and Hainault, was rapidly undergoing absorption. From the report of the Select Committee of the House of Commons presented in 1863, it appears that of the 9000 acres which constituted the Forest in 1793, only 6000 acres then remained uninclosed. In 1871, when the Corporation of London took up the Forest question, this area had been reduced to 3500 acres. I do not here propose to trouble you again with the now familiar history of the rescue of this picturesque remnant of primeval Britain (see Mr. J. T. Bedford's "Story of the Preservation of Epping Forest," *City Press* Office, 1882). The work—commenced more than a decade ago by the Corporation of London—received its crowning reward at the late Royal visitation. We shall the more appreciate the results of the action taken by the Corporation when we bear in mind that the total area dedicated to the public last May is very nearly equal to the expanse of 6000 acres reported upon by the Select Committee of 1863. But whilst expressing the gratitude of metropolitan field naturalists generally for the restoration of one of their largest and most accessible hunting grounds, it certainly does seem to me that the shout of triumph raised by the Conservators has been allowed to drown the smaller voices of those who had previously demonstrated to certain rapacious lords of manors by somewhat forcible means that a "neighbour's landmark" was not a movable thing. It must not be forgotten that prior to the year 1871, besides many vigorous individual protests, both the Commons Preservation Society and the Epping Forest Fund had declared war against illicit inclosure. The restoration of the Forest to the people has cost a sum of money considerably exceeding a quarter of a million pounds sterling, and it will be generally admitted that this amount has been well if not wisely spent in the public cause. There are no doubt many who have suffered by their own cupidity, or by that of former manor lords, who still feel aggrieved at the action of the Corporation, and it must indeed be conceded that many whose estates have suffered curtailment have been the unconscious receivers of illegally acquired property and are thus deserving of commiseration. The principles involved in the conflict between public rights on the one hand and manorial actions on the other are of the very deepest importance to the community at large, and it is therefore no matter of surprise that the "Forest Question" should have acquired

[1] Being a paper read before the Essex Field Club, at the meeting held on February 24, by Raphael Meldola, vice-president of the Club.