

Kiel on the 10th, and one made at the Imperial Observatory at Strasburg on the 15th, and communicated by Prof. Winnecke:—

Perihelion Passage, January 19 18017, Greenwich M.T.

Longitude of the perihelion	... 200 5 2	} Apparent
" " ascending node	187 14 22	
Inclination to the ecliptic	... 27 5 13	
Logarithm of perihelion distance	9.907086	

Heliocentric motion—retrograde.

According to this orbit the comet was distant from the earth, at the time of discovery, 0.45, the earth's mean distance from the sun being taken as unity. Its apparent path in the heavens about the perigee, and up to March 6, will be sufficiently defined by the following ephemeris:—

For Greenwich Midnight.			
	Right Ascension.	North Polar Distance.	Distance from the Earth.
February 13.....	262 50	70 22	0.324
15.....	266 21	57 2	0.292
17.....	272 10	41 42	0.279
19.....	283 10	26 48	0.288
21.....	307 40	15 35	0.318
23.....	359 21	11 52	0.363
25.....	27 41	15 9	0.418
27.....	42 51	19 43	0.479
March 6.....	58 51	31 1	0.719

From the above figures it will be seen that the diurnal motion, about the middle of the present month, amounted to 8° in arc of great circle; the comet was nearest to the earth soon after midnight on the 17th. At the time of perihelion passage it would be situated about 6° to the east of Antares, distant from the earth 1.15.

There is a certain similarity, but by no means a striking one, between the elements of this comet and those of the comet of 1590, observed by Tycho Brahe, the orbit of which was first calculated by Halley, and, in 1846, after a new reduction of Tycho's observations, by Mr. Hind (*Ast. Nach.*, No. 584). It may be worthy of remark that shortly after the passage of the ascending node, the comet of 1590 approaches very near to the orbit of the planet Venus, the least distance not exceeding 0.04. Still the differences between the elements of the comets of 1590 and 1877, especially in the perihelion distance, are material.

THE "BERLINER ASTRONOMISCHES JAHRBUCH."—Under the active superintendence of Prof. Tietjen, the *Berliner Jahrbuch* continues the heavy labour involved in the preparation of ephemerides of the extensive group of small planets, a work which for many years past has been made its specialty. In the volume for 1879 now before us, we have the places for 1877 of 151 out of the 172 actually known members of the group, No. 164, *Eva*, being the latest discovery included in the list. Also the elements of their orbits and the opposition magnitudes, a very useful addition towards the identification of these minute bodies amongst the fainter stars. The portion of the volume devoted to the small planets extends to 106 pages. The judicious transfer of the ephemeris of the moon, derived from Hansen's Tables from our *Nautical Almanac*, which appears between one and two years earlier, to the pages of the *Berliner Jahrbuch*, after adaptation to the meridian of Berlin, whereby a most serious expenditure of time and labour is saved, has already been noted in this column; it is a step which no doubt assists materially in completing the peculiar work of the *Jahrbuch*.

The following are names which have been recently proposed, for discoveries made within the last few years: No. 139 *Fuwa*, 149 *Medusa*, 150 *Nuwa*, 155 *Scylla*, 160 *Una*, 161 *Athor*, 163 *Erigone*, 164 *Eva*. No. 162 is not yet named.

Only four of these planets (in addition to two of the old members) attain 8.5m. or upwards at their oppositions in 1877. *Ariadne*, in opposition on July 24, approaches the earth within about 0.84 of the earth's mean distance from the sun, and *Iris*,

which at her opposition on November 18, is calculated to be 6.8m. or on the limit of acute unaided vision, will be distant from us 0.86—affording an opportunity which may be utilised for attempting direct measures of her diameter, though if we are not mistaken some pretty satisfactory measures were made at a favourable opposition a few years since, with a powerful refractor in this country. This planet when near the earth has a decidedly red light; at two oppositions within the last fifteen years it might be identified amongst the neighbouring stars by this circumstance alone.

CHEMICAL NOTES

ABSORPTION OF LIGHT IN THE BLOOD.—In a number of cases of unintentional poisoning caused by carbon monoxide in Berlin during the past winter, oxygen has been used as an antidote. Dr. Baeblich, of Berlin, lately showed the desirability of the method by means of spectroscopic proof in a public lecture. As is well known, the spectrum of blood shows two well-defined bands between Fraunhofer's lines D and E. By the absorption of CO the position of these bands is very slightly changed in the direction of the red part of the spectrum. The difference is more strikingly shown by the addition of sulphide of ammonium. In the case of healthy blood the two bands of the spectrum disappear and are replaced by a single one situated midway between the positions of the former pair. Blood poisoned with CO shows no change in the bands by the same treatment. If oxygen is, however, added to it before the reduction with sulphide of ammonium, the characteristic spectrum of healthy blood is at once produced.

PHYSICAL PROPERTIES OF GALLIUM.—M. Lecoq de Bois baudran has introduced a new method for the extraction of this metal, and has investigated some of its physical properties. Its crystalline form is octahedral; the mean of six experiments gave as its melting point 30.15. Its specific gravity is 5.956; when fused it has a silver lustre, but on solidifying it shows a tinge of blue, losing its brilliancy. It is hardly acted on by nitric acid when diluted with an equal bulk of water.

POTASSIUM TRI-IODIDE.—Mr. G. S. Johnson has recently published an investigation on this body, which is prepared when a strong solution of potassium iodide is saturated with iodine, and the resulting liquid allowed to evaporate slowly over oil of vitriol. The crystals are sometimes long and isolated, sometimes appearing as hexagonal plates exhibiting a stepped arrangement like those of potassium iodide. They have a steel-blue lustre, are very deliquescent, fusing at about 45° C., and have a specific gravity of 3.498. When the temperature is raised above 100°, iodine is freely evolved from the crystals, a white mass of potassium iodide alone remaining. On analysis the crystals yielded 90.2 to 90.4 per cent. of iodine and 9.2 per cent. of potassium; the theoretical quantities required, supposing the body to be KI₃, are iodine 90.692 per cent. and potassium 9.307 per cent. An excess of water decomposes potassium tri-iodide, with precipitation of the most of the iodine; the crystals, however, may be dissolved in small quantities of water or alcohol, and recrystallised over sulphuric acid.

SOLUTION OF GASES IN IRON, STEEL, AND MANGANESE.—MM. Troost and Hautefeuille have published in the *Ann. Chim. Phys.*, [5] vii., a reprint of their researches on this subject, previously published in other journals. When cast iron is fused in contact with silica or silicates, carbonic oxide is produced by the action of the iron carbide on silica; the iron thus becomes richer in silicon, the carbon diminishing. Melted cast iron seems to occlude considerable quantities of hydrogen, this occlusion being increased by the presence of manganese and diminished by the presence of silicon. Carbonic oxide is not taken up to so great

an extent as hydrogen by melted cast iron, its occlusion is almost entirely prevented by the presence of manganese. Gases are retained by pig iron after cooling, but can be extracted by heating the metal to 800°. Steel occludes less gas than cast iron, hydrogen predominating over carbonic oxide; on the other hand more carbonic oxide than hydrogen is occluded by soft iron. Finely divided iron free from gases decomposes water slowly at the ordinary temperature, rapidly at 100°, the decomposition being more rapid the finer the state of division of the iron.

NOTES

THE golden Baer medal was awarded this year, by the St. Petersburg Academy of Sciences, to Prof. Bunge, for his various works upon the flora of Russia. The Lomonosoff premium, value 1,000 roubles, was awarded to Prof. Beilstein, of Kazan, for researches on the properties of bodies of the benzoil series.

M. ANDRÉ, the astronomer who was sent by the French Institute to New Caledonia to observe the transit of Venus, has been appointed director of the new observatory established at Lyons by M. Waddington.

AT the half-yearly General Meeting of the Scottish Meteorological Society, held yesterday, the Duke of Richmond was elected President. The following papers were read:—1. On methods of estimating ozone and other constituents of the atmosphere, by Mr. E. M. Dixon, B.Sc., Office of Health, Glasgow. 2. On the peculiarities of the weather of December and January last, by Mr. Buchan, Secretary. 3. Observations of rainfall at sea on board ship, by Dr. Black, Surgeon-Major.

THE Report of the Treasury Meteorological Commission appointed in the autumn of 1875 has now been published. The chief recommendations are that ocean meteorology be transferred from the Meteorological Office to the Admiralty, that the annual Parliamentary Grant be increased from 10,000*l.* to 14,500*l.*, and that, in addition to the above, some pecuniary assistance, the amount not being specified, be given to the Scottish Meteorological Society, on whose claims to Government support the Commission was specially instructed to report.

WE recently announced (p. 116) that the city of Brunswick was making preparations to celebrate the 100th anniversary of the birth of Carl Friedrich Gauss, the "prince" of mathematicians, who was born in that city on April 30, 1777. It is proposed to erect a monument in Brunswick to Gauss, and from the circular which has been sent us we learn that the Monument Committee consists of the principal officials of the city, civil, professional, and commercial. No doubt many English men of science might wish to contribute to this monument; contributions should be addressed to the Gauss Monument Fund, Brunswick Bank.

WE can do no more this week than refer to the fact that the Oxford and Cambridge Universities Bill passed the second reading on Monday, as might have been expected, practically without opposition. The Bill does not differ essentially from those introduced last year in reference to the two Universities.

THE fourth Congress of Russian Archæologists will be opened on August 12, at Kazan. All communications should be addressed to Count Oubaroff, at the Moscow Archæological Society.

WE are glad to hear that the founding of a Russian Anthropological Society at St. Petersburg may be considered as finally settled. Certainly many Russian scientific bodies have now special anthropological sections which, as for instance that of the Moscow Society of Friends of Natural Science, have done a good deal of valuable work, but it is also very desirable that the separate efforts of Russian anthropologists be more concentrated than they are at present.

THE Senatus Academicus of the University of St. Andrews have conferred the degree of LL.D. upon Dr. B. W. Richardson, F.R.S., and Dr. James Murie, F.L.S.

IN a small *brochure* recently published, Prof. Ragona, of the Royal Observatory of Modena, advocates the formation of an "Italian Meteorological Society." There are at present more than 100 meteorological stations throughout the peninsula, at various heights from the sea-level to 2,550 metres. Most are occupied also with magnetic observations; some are devoted almost exclusively to seismometry. The Minister of Agriculture, Industry, and Commerce publishes an *Italian Meteorological Bulletin*, and the Naval Minister sends out daily intimations of the state of the atmosphere throughout Europe, and of probabilities of weather. The proposed Society might hold an annual congress now in one city, now in another, and might, like the Austrian, receive a grant from Government.

DR. GABRIEL, of the University of Breslau, a well-known morphological investigator, has been sent by the Berlin Academy of Sciences to Naples to carry on for four months an extended series of observations on microscopic marine organisms. The necessary funds have been granted partly by the Academy and partly by the Prussian department of instruction.

THE Great Northern Railway Company have a bill now before Parliament for the construction of a line of railway from Shepeth to March, which will pass at a distance of not more than 1,700 feet from the Cambridge Observatory. From the experience of other observatories, and from the evidence of private letters, which Prof. Adams has received from several eminent astronomers, the Syndicate have strong reason to believe that the passage of trains, so near the Observatory, would very seriously affect the accuracy of the observations, or even cause their entire loss. The Syndicate therefore recommend, on good grounds, that the University should petition Parliament against the passing of the bill above referred to.

RUSSIA expended 345,000*l.* upon her seven universities during the past year.

OF the 13,356 new works issued in Germany during the past year, 848 were devoted to the natural sciences, 296 to geography and travel, and 190 to mathematics and astronomy.

It is proposed to open before long a good aquarium at St. Petersburg. The institution is patronised by the Society of Acclimatisation, which will have, in connection with the aquarium, a garden for scientific experiments relative to the acclimatisation of plants.

THE immense number of wolves in Russia, to which reference was made some time ago, seems not to have been overrated. An official report of the *Zemstvo* of the Kerensk district (Penza Government), just published, estimates the ravages of wolves during the years 1874 and 1875 at 270 horses, 200 cows, 822 foals, 707 calves, 1,812 sheep, about 1,000 pigs, 3,616 geese and ducks, and 253 dogs.

WE recently announced the death of the eminent American palæontologist, Mr. F. B. Meek. He died within the walls of the Smithsonian Institution, where he had been permitted to occupy rooms for about eighteen years. He had been connected with the U.S. Geological and Geographical Survey of the Territories for the greater portion of the time since its first organisation in 1867. Mr. Meek was born in the city of Madison, Ind., December 10, 1817. From his earliest recollection he was interested in the Silurian fossils so abundant in the rocks of the neighbourhood of his home. He had then never heard of geology, but studied them with admiration and wonder as to their origin. Against his own wishes he entered into business, but during the financial crisis of 1847 he failed,