

AN important step has been attained in telephony by Dr. Cornelius Herz, by which the principle of magnetism has been entirely discarded and the magnetic receiver abolished. A long series of experiments have been successfully conducted under the patronage of the French Government on the telegraphic lines of the State; concluding trials were witnessed, among others, by M. Cochéry, Minister of Postal Telegraphy, M. Jules Ferry, Prime Minister, M. Leon Say, President of the Senate, M. Becquerel, and other Members of the Academy of Sciences, and other Members, Senators, Deputies, and a great number of engineers. One of the most extraordinary experiments was the transmission of speech on a single wire from Tours to Brest, on a wire passing through Paris, the length of which exceeded eight hundred miles. One single Leclanche's element was the sole battery in use.

SOME dredging work which is going on at Zürich in the bed of the Limmat has brought to light the shore pillars of a Roman bridge, as well as the skeleton of a prehistoric stag.

INTERESTING new discoveries have been made at Pompeii. In block 7 of the 9th district a house has been excavated which was in course of construction when the terrible catastrophe occurred, and which differs materially from all other Pompeian houses in its plan. In another house a large square piece of black glass was found fixed into the wall, which when slightly moistened forms the most perfect mirror. In a third house various wall-paintings were discovered, which however are rather of artistic than scientific interest.

THE newly-elected Municipal Council of Paris has been summoned by the Prefect of the Seine for a session which will begin on the 11th inst. It is stated that one of the proposals made will be to establish in Paris a system of police telephonic stations, as practised in Chicago.

M. JULES FERRY has created a library for patients in every hospital in Paris. The system will be extended to the whole of France.

AT the meeting of the Royal Academy of Sciences at Berlin on January 27 last, the year's report (for 1880) for the Humboldt Institution for Natural Research and Travels was read. Prof. du Bois Reymond, in conjunction with Prof. G. Fritsch, is about to publish the observations and experiments made by the late Dr. Karl Sachs on *Gymnotus electricus* in South America during 1876 and 1877, by order of the Institution. The present traveller of the Institution, Dr. Otto Finsch, after staying for nearly a year upon Talint Island (one of the Marshall group) proceeded to Matupi (on the north coast of New Britain) at the end of last year. His last letter is dated October 27, 1880, and he announces that he has made rich zoological collections. He intended to visit New Ireland and New Guinea if possible, and then to return to Europe by way of Dutch East India. Four of Dr. Finsch's collections have arrived at Berlin; a fifth is announced by his first letter from Matupi. The funds of the Institution have been increased by small legacies. The sum which will be at the disposal of the Institution for 1881 is 12,750 marks (635*l.*)

THE Sydney correspondent of the *Colonies* writes:—"We have long had in Sydney splendid botanical gardens, containing the choicest plants in the world, but we have only recently started a 'Zoological Gardens,' though Melbourne has had one many years, which has been brought to a high degree of perfection. Last week a deputation waited on our Colonial Secretary, asking for funds to stock the Gardens. Sir Henry Parkes replied that if the members of the Zoological Society would undertake next year to put as many animals in the grounds of the Sydney Zoological Gardens as they have in Melbourne, he would guarantee them 10,000*l.* from the Government. The offer was not accepted."

THE *Chrysanthemum* is the title of a monthly magazine "for Japan and the Far East," the first number of which has been sent us. The contents are mostly of a literary character, the main object of the magazine being "to aid in bringing the pales of Eastern and Western thought into such contact as may result in the diffusion of a general warmth and light around us." The publishers are Kelly and Co. of Yokohama, the English agents being Trübner and Co.

A SKELETON of a mammoth has been discovered at Bendery, Government of Bessarabia, in the upper clay drift.

THE St. Petersburg Society of Naturalists has already 276 Fellows; the Mineralogical Society has 398 members.

THE Commission of Fisheries of the United States have sent a quarter of a million ova of the American whitefish to Bremen, en route for the Lake of Constance, where the attempt to acclimatise this fish is to be made.

THE centenary of the birth of the philosopher Karl Christian Friedrich Krause will be celebrated on May 6 next at his birth-place, Eisenberg (Saxe-Altenburg). At the same time a simple monument with a bronze bust of Krause will be unveiled. The design is by Herr Enger of Altenburg, the bust by Robert Henze of Dresden. A Krause Scholarship has also been established at the Gymnasium.

WE have on our table the following books:—"Practical Plane Geometry," John W. Pallister (Simpkin); "Introduction to Study of Indian Languages," J. W. Powell; "Journal of Iron and Steel Institute, 1880" (Spon); "Practical Botany," D. Houston (W. Stewart); "Popular Scientific Lectures," 2nd series, Helmholtz (Longmans); "The Evolutionist at Large," Grant Allen (Chatto and Windus); "Journal of Royal Society of New South Wales;" "Extinct British Animals," J. E. Harting (Trübner); "Calendar of University of Wales, 1880-81;" "The Silk Goods of America," 2nd edition, W. C. Wyckoff; "London Catalogue of British Mosses" (Bogue); "The Statistical Atlas," part 1, G. P. Bevan (W. and A. K. Johnston); "Kamelaroi and Kurnai," Fison and Howitt (Macmillan and Co.); "Meeresfauna," K. Möbius (Otto Enstin); "Annuaire pour l'an 1880" (Villars, Paris); "A Polar Reconnaissance," A. H. Markham (Kegan Paul); "Natural History of British Fishes," Frank Buckland (S.P.C.K.); "Ventilation and Heat," Frederick Edwards (Longmans); "Practical Physics," A. H. Worthington (Rivington); "Muscles and Nerves," Dr. T. Rosenthal (Kegan Paul); "Natural Philosophy Examination Papers," Rev. G. Molloy (Browne and Nolan); "On some Properties of the Earth," O. Reichenbach; "Evolution, Expression, and Sensation," John Cleland (Maclehose, Glasgow); "The Wild Coast of Nipon," Capt. H. C. St. John (Douglas).

#### OUR ASTRONOMICAL COLUMN

THE SO-CALLED NOVA of 1600.—Referring to a note which recently appeared in this column on "Janson's Star of 1600," Prof. van de Sande Bakhuisen, Director of the Observatory of Leyden, writes us that "Janson or Gulielmus Jansonius is Willem Jansz Blaeu, who is well known as the maker of globes, which are now very rare, and as editor of a treatise on the use of globes, of different treatises on navigation, and of a great number of charts and different atlases. From 1598 till his death in 1638 he lived in Amsterdam. Janson signifies that he was the son of Jan (John), but his family name was Blaeu." This explanation will be acceptable to those who may have been perhaps somewhat in doubt as to the correct form of identifying the discoverer of the variable star of 1600; Kepler styled him Jansonius, without reference to what Prof. Bakhuisen states to have been his surname; and he is frequently called Jansen. Lalande refers to the globes constructed by Blaeu as the best of the period, and the fact of his remarking the star in question, of which there is no previous mention, proves that he was a careful



observer of the heavens. In the *Bibliographie Astronomique* we find an astronomical work printed in 1625, attributed to him as Willem Jansz Blauw.

It will be seen from the works of Kepler and Cassini that Blaeu's star (34 Cygni of our present catalogues) at no time rose higher than the third magnitude, though even Mädler (*Populäre Astronomie*) has so far overlooked its history as to tell us "it reached the first magnitude"; and he attributes its discovery to Kepler.

THE "ASTRONOMISCHE NACHRICHTEN."—Contrary to what has been lately stated, it appears that this periodical will still be edited by Dr. C. F. W. Peters, who has for some time conducted it, and we are informed there is a probability that Prof. Krüger may set afloat a new astronomical journal under his own management. Whether the multiplication of high-class astronomical journals to the extent we are likely to witness is a practical advantage may perhaps be doubtful. For many years the *Astronomische Nachrichten* contained almost all that bore upon the progress of exact astronomy; *sed tempora mutantur, et nos mutantur in illis*.

THE COMET 1880 *e* (SWIFT, OCTOBER 10).—The completion of the mounting of the large Merz-Repsold refractor at the Imperial Observatory, Strassburg, enabled Prof. Winnecke to observe this interesting comet as late as January 26, when unfavourable weather interfered, and he was not without the hope that it would be within reach after the next period of absence of moonlight. Even if this should not prove to have been the case, there will be more than fifteen weeks' observations available for the determination of the actual orbit of the comet, affording every reason to expect that its track in the heavens nearly eleven years hence, or at its next visible return, may be pretty closely predicted. The following positions are deduced from MM. Schulhof and Bossert's last elements:—

1881.	R.A.			Decl.	Log. distance from	
	h.	m.	s.		Earth.	Sun.
Feb. 14	6	42	20	+21	21'4	9'9007 ... 0'2147
16	6	44	54	21	10'4	9'9158 ... 0'2192
18	6	47	29	20	59'8	9'9307 ... 0'2236
20	6	50	5	20	49'7	9'9454 ... 0'2280
22	6	52	41	20	39'9	9'9600 ... 0'2323
24	6	55	18	+20	30'4	9'9745 ... 0'2366

Prof. Winnecke reports that the Merz-Repsold refractor is a great success; *Mimas* is an easy object, and it may be hoped that the observation of the nebulae, to which it is understood the instrument is to be chiefly directed, may not prevent attention being given to the closest of Saturn's satellites.

THE PERSEIDS IN AUGUST, 1880.—M. Baillaud, Director of the Observatory of Toulouse, has published the results of the watch for meteors, maintained by three observers on the nights of August 9, 10, and 11 in the past year: 1172 shooting-stars were observed, and 83 of the longest tracks were traced upon a chart; generally the tracks were very short, and their extremities pretty distant from the radiant. The meteors appeared to diverge from two points—the more numerous group from R.A. 42° 37', Decl. 56° 39'; and a group of about one third the former, from R.A. 60° 39', Decl. 62° 4'. The maximum occurred on August 10, between 14h. and 15h., in which interval 200 meteors were noted.

### PHYSICAL NOTES

M. WIESNEGG has lately constructed for M. d'Arsonval a new steam-pressure regulator which deserves notice. It fulfils, according to the inventor, the following conditions:—(1) It maintains a perfectly constant pressure of steam in a boiler, whatever the actual output; (2) it maintains the consumption of fuel at a rate proportional to the output of steam; and (3) it is absolutely automatic, and therefore prevents all risks of explosion. This regulator is of very simple construction. A lead pipe from the boiler leads to a little apparatus somewhat resembling an ordinary lever safety-valve, but in which the valve-plug, instead of fitting into the usual conical seat, rests upon a thin disk of india-rubber. This disk rises when the pressure from below exceeds the downward pressure of the plug and the superincumbent lever, and of the weight which it carries. It cannot get hot, as it is far from the boiler, and the space below the disk is filled with water con-

densed from the steam. The upper surface of the valve-plug regulates by its movement the flow of gas, which comes in and goes out by two pipes leading to the upper part of the regulator. One of these comes from the gas mains, the other goes out to the burners under the boiler. By this arrangement, whenever the pressure in the boiler reaches any desired maximum, the apparatus itself reduces the supply and turns down the flame, thus maintaining the pressure constant and the consumption proportional to the output of vapour. It will be seen that the invention is only applicable to the case where the fuel employed is gas. The apparatus is also in itself an automatic safety valve, putting out the fire when the pressure exceeds the limit. M. Wiesnegg has had practical experience during three years of the working of the new regulator, which appears to leave nothing to be desired in its performance. The same gentleman has constructed a constant-pressure air-blast on the same principle.

PROF. CASSANI invites attention in the *Rivista Sci. Ind.* (November 30) to some singular phenomena of geometrical optics, thus indicated:—The real images, presented by a concave mirror or by a convergent lens, of a plane or spherical mirror, a lens or a prism, may by a suitable arrangement be made to appear like a real mirror, lens, or prism respectively. An observer stands opposite a concave mirror supported (with slight slant) at a distance greater than the radius of curvature, and receiving no other light than that reflected from his face (illuminated by a dark lantern). A small plane mirror placed in a position nearer the concave mirror than the observer, and sloping in opposite direction (it is concealed from his eye). The effect is that, on looking obliquely upwards, the observer seems to see a plane mirror (which is of larger size than the other) with his direct image in it. The illusion is the more complete if the actual plane mirror have an ornamental frame, and this be illuminated by a special lamp. As the image in the ideal mirror is always rather small and too near the mirror, this may arouse suspicion, the more so when the image is seen to diminish on receding and increase on advancing; but a person not familiar with the phenomena of concave mirrors may easily be deceived, thinking he sees a real mirror.

IN the *Proc. R.S.E.* Sir W. Thomson describes a thermo-magnetic thermoscope of an ingenious nature. It is well known that the "permanent" magnetism of steel magnets is not constant, but changes slightly with changes of temperature, the magnet becoming weaker when warmed, and recovering its strength as it is cooled. The magnetic thermoscope is intended to indicate differences of temperature by showing differences between the magnetic moments of steel magnets. Two thin wires of hard steel, each one centimetre long, are arranged so as to form a nearly astatic couple, being magnetised to equal strength and set in opposite directions, but not quite parallel, so that they set at right angles to the magnetic meridian. Two other magnets, about twice the size of the former pair, are placed one on each side of this astatic couple as "deflectors," being laid in one line nearly along the magnetic meridian, with their similar poles facing one another at about two centimetres apart. When properly adjusted the little astatic pair suspended between them will be found to be excessively sensitive to the least change in the strength of either of the deflectors, and if they are at different temperatures will turn through an angle which if small may be regarded as a measure of the temperature-difference. A small mirror suspended from the lower needle of the pair serves to reflect a spot of light on to a scale in the usual way.

IN 1870 and 1871 MM. Leverrier and Crova experimented with an optical telegraph between Nîmes and Redessan. Their system of signals were made by means of oil lamps or petroleum lamps fed by oxygen from a supply that could be turned on or off at will by an operator, who thus produced intermittent brilliant outbursts of flame according to a pre-arranged code. During December, 1880, a similar device was conceived by M. Mercadier, against whom M. Crova now reclaims the essential principles of his invention. He adds that two of the requisites of success lay in the use of oxygen under very low pressure, feeding the flame by an orifice in the midst of the flame, and in the employment of keys opening and shutting the gas-passages very suddenly by means of strong springs, without which the changes in the intensity of the flame go on too slowly to be comfortably observed. In the experiments of 1870-71 the lights at Nîmes were visible at Redessan and *vice versa*, even in broad daylight. The oxygen supply was contained in ordinary gas bags of caoutchouc and prepared in the usual manner.