

old alumni and other friends come to the rescue. A large part of the income of the University is derived from the farms which form part of its endowment, and the recent depreciation of this kind of property has seriously affected the moderate income of the University, which we hope will be able to weather the storm.

THE University of Buda-Pesth, which was founded in 1635, intends to celebrate, on May 13, the hundredth year since its revival and development by Maria Theresa. There will be a thanksgiving service in the morning and a grand academical and civic procession through the streets. An oration will be delivered and an ode recited, and there will be a banquet, to be followed by a grand ball. In honour of the occasion medals will be struck, honorary degrees will be conferred on distinguished men, and a work by the Hungarian Minister of Justice, Pauler, describing the work of the University during the last 100 years, will be published.

IN consequence of the unavoidable absence of Dr. C. W. Siemens, his paper at the Society of Telegraph Engineers, on "The Application of the Dynamoelectric Current to the Fusion of Defractory Materials in considerable Quantities," which was to have been read on the 14th inst., is postponed until the 28th inst. The papers to be read will be seen from our Diary.

BAUMGARTNER, the inventor of a navigable balloon, having three cars attached, each with ten or twelve wings, set in motion by a crank, has attempted an ascent at Leipzig. On the rope being cut the balloon rose very slowly, skimming the house-tops, whereupon the two assistants jumped out of the centre car in alarm. The balloon shot up to a great height, then burst and fell. Baumgartner was not seriously hurt, and is resolved on a second experiment.

THE ship *Border Chief*, which arrived at Melbourne from London on February 14, reports seeing an iceberg of very large proportions in lat. 47° S. and long. 52° E. This ice island was considered to be about 250 feet high and about five miles in length. Another vessel, it is stated, struck an iceberg on March 26, in lat. 46° N., long. 48° W., and sank next day. A Cardiff steamer on her homeward voyage from New York encountered an immense mass of drift-ice, which it took forty-eight hours to get clear of; in steaming through it she received several injuries. No fewer than 100 icebergs are stated to have been seen on the passage.

THE season is extremely rainy in Algeria, and an almost unexampled occurrence has taken place; inundations have destroyed some houses at Nemours, and the traffic on the railway from Arzew to Saïda has been obstructed by the fall of rocks undermined by the recent rains. A magnificent crop is anticipated, and travelling in the Sahara will be exceptionally easy this summer.

WE have on our table the following works:—"The Field Naturalist's Handbook," Rev. J. G. Wood and Theodore Wood (Cassell); "Water Analysis," E. Frankland (van Voorst); "Botany for Children," Rev. G. Henslow (Stanford); "Ethnology," J. H. Painter (Baillière); "Guide to the Electric Testing of Telegraph Cables," V. Hoskier (Spon); "The Influence of Colloid upon Crystalline Form and Cohesion," Dr. W. M. Ord (Stanford); "Introduction to the Science of Language," 2 vols., A. H. Sayce (Kegan Paul); "Indian Notes," F. K. Hogg, M.D. (Churchill); Publications of the Cincinnati Observatory; "Micrometrical Measurements of Double Stars;" "The Constitution of the Earth," R. Ward (G. Bell and Sons); "The Disestablishment of the Sun," John Bland (Sprague and Co.); "Abbildungen von Vogel-skeleten," Dr. A. B. Meyer (Dresden); "A Criticism of Dr. Croll's Molecular Theory

of Glacier Motion," J. J. Harris Teall (Simpkins); "Secret of a Good Memory," J. Mortimer Granville (Bogue); Journal of the Royal Society of New South Wales, and Annual Report of the Department of Mines of New South Wales (Trübner); "Notes of Observation of Injurious Insects;" "Astronomie Populaire," Camille Flammarion; "Practical Chemistry," W. A. Tilden (Longmans); "The Sidereal Messenger of Galileo Galilei," E. S. Carlos (Rivington); "British Marine Polyzoa," 2 vols., Thomas Hincks (van Voorst); "United States Geological Survey," vol. xii. 1879; "Testing Instructions," vol. ii., Schwendler (Trübner); "Physiology of Religion," part I, Henry Lee (Trübner); "Transactions of the Cremation Society of England" (Smith, Elder); "International Dictionary for Naturalists and Sportsmen," E. Simpson Baikie (Trübner); "The Geological Record for 1877," edited by W. Whitaker (Taylor and Francis); "Henry's Contribution to the Electro-Magnetic Telegraph," W. B. Taylor (Washington); "Die Beobachtung der Sterne, Sonst und Jetzt," J. Norman Lockyer (Vieweg und Sohn); "Japanese Metric and English Weights and Measures," Edward Kinch (Tokio); "Annuaire de l'Académie Royale des Sciences;" "Elements of Modern Chemistry," Adolphe Wurtz (Swan, Sonnenschein, and Allen); "Geography," Keith-Johnston (Stanford); "Philosophie Scientifique," H. Girard (Trübner); "Australian Orchids," part 5, R. D. Fitzgerald (Trübner).

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. G. Kirby; a Prince Albert's Curassow (*Crax alberti*) from Columbia, presented by Mr. H. B. Whitmarsh; a West African Love Bird (*Agapornis pullaria*) from West Africa, presented by Mr. J. W. Gillespie; a Long-eared Owl (*Asio otus*), captured in the Red Sea, presented by Dr. Wm. Anderson; a Greater Black-backed Gull (*Larus marinus*), European, presented by Mr. E. Thornhill; a Slow-worm (*Anguis fragilis*), British, presented by Mr. Leslie Jeyes; two Dingo Dogs (*Canis dingo*), two Red Kangaroos (*Macropus rufus*), two Vulpine Phalangers (*Phalangista vulpina*, var.), two Mauge's Dasyures (*Dasyurus maugei*), a Short-headed Phalanger (*Belideus breviceps*), two Emus (*Dromæus novæ-hollandiæ*) from Australia, two Common Wombats (*Phascolomys wombat*), from Tasmania, a Weeper Capuchin (*Cebus capucinus*) from Brazil, a Horned Tragopan (*Cerionis satyva*) from the South-east Himalayas, deposited; a Feline Dourocouli (*Nyctipithecus vociferans*) from South Brazil, a Rock Cavy (*Cerodon rupestris*), a White-spotted Rail (*Rallus maculatus*), an Orinoco Goose (*Chenalopez jubata*), a Brazilian Teal (*Querquedula brasiliensis*) from Brazil, purchased.

#### GEOGRAPHICAL NOTES

As might have been expected, Prof. Nordenskjöld and his companions have met with an enthusiastic reception in Paris, both from Government, from the scientific societies, and from the general public. Delegates from the Government received him on his arrival, the unusual honour of a Commandership of the Legion of Honour has been conferred upon him, while Capt. Palander has been made an officer. He was present at the public meeting of the Sociétés Savantes, when he received a warm reception, while the Geographical Society received him publicly in the Cirque of the Champs Elysées. On Sunday a banquet at the Hôtel Continental was given him, with Prince Oscar of Sweden as president, and on Monday another banquet by the Geographical Society as a body, while the municipality of Paris presented him with a special gold medal. We wonder if any member of the municipality of London could tell who Nordenskjöld is, or what he has done, that all Europe, except England, should make so much fuss about him. Such a reception as he has had in Paris in its nationality and publicity contrasts markedly with the treatment he received here. No doubt he arrived at an unfortunate time, but

surely, if the transition state of the Government excused inaction on its part, the Geographical Society could have organised a meeting, even although a prince was not at hand to take the chair. Possibly after all our insular want of sympathy with foreign enterprise, however great, may account for the absence of that enthusiasm which greeted our own abortive expedition of three years ago. The English edition of Prof. Nordenskjöld's narrative will be published by Macmillan and Co.; it will appear simultaneously in English, Swedish, German, and French.

M. J. PALMARTS has published at Brussels a pamphlet entitled "Projet d'Exploration au Pole Nord," in which, after a preliminary disquisition of a general nature, he expounds his plan for the construction of a submarine apparatus to attain the object in view. The *Times* Naples correspondent states that the *Cristoforo Colombo* is now in course of preparation for an exploring voyage in the North Seas.

THE current number of the Geographical Society's *Proceedings* contains Mr. J. Thomson's report of his journey from the head of Lake Nyasa to the south end of Lake Tanganyika, followed by Maj. Gen. Sir M. A. S. Biddulph's paper on Pishin, and the routes between India and Candahar, which furnishes a vast amount of new topographical information. In order to make this more readily intelligible, it is illustrated by some excellent wood-engravings from, we believe, the author's own sketches, and a good map of part of southern Afghanistan, constructed from surveys made during the late expedition, on which the unexplored country to the east is usefully indicated. A proposal is made by Admiral Ryder to found medals for the encouragement of surveying by naval officers, which the council of the Society, after careful consideration, think had better be placed in other hands. Among the remaining matter is Dr. Holub's address on the subject of the Marutse-Mabunda empire, but the publication of the map to illustrate his former paper appears to be unavoidably postponed.

It is stated that a new Belgian expedition is to leave this month for the purpose of establishing commercial stations along the Congo.

M. SLATIN, an Austrian traveller, is about to visit Dara, in Darfur, and proposes to explore the country to the south of Hofrat-el-Nahas and Kalaka. MM. de Müller-Capitany and de Lucken have recently left Cairo for Massowah, whence they intend to visit the region bordering on Northern Abyssinia. After spending a year there they will direct their course to Fazokl, by way of Valkait and Gallabat, and they will then endeavour to penetrate southwards into the Galla country.

MM. POPELIN AND CARTER, with the second Belgian Expedition, have arrived at Karema, M. Cambier's station on Lake Tanganyika, but it is said that only one elephant has survived the journey. Under the auspices of the King of the Belgians an establishment is to be formed in Eastern Africa for the capture and training of elephants. A further Belgian expedition is to be despatched to Karema under Capt. Ræmaekers and his brother, who will take with them three artisans and also a small steamer for use on Lake Tanganyika.

THE French Committee of the International African Association have despatched M. Bloyet to Zanzibar to undertake the formation of their station in Usagara.

COL. GORDON-PASHA has recently informed the Church Missionary Society that the Egyptian military station on the Uganda frontier had been moved back, and that consequently the country between Egypt and Mtesa's kingdom is in an unsettled and insecure state, being overrun by Kaba Rega's men. The road to the Victoria Nyanza by way of the Nile is therefore not now practicable. The two members of the Nyanza Expedition, the Rev. C. I. Wilson and Mr. Felkin, with three Waganda chiefs, are expected to arrive in England during the present month, as they had reached Suakim on March 16. Mr. Wilson will thus be the first Englishman, since Speke and Grant, who has traversed Africa from Zanzibar to Uganda, and thence down the Nile.

HERR CARL LAMP gives some striking illustrations in *Globus* of the hatred that exists between the Mayos of Yucatan and the Mexican Creoles. He shows how important the exploration of the country would be, but the explorer must take his life in his hand. The same number (13) of *Globus* contains some interesting details of Mr. C. M. Doughty's journeys in North Arabia.

THE leading contribution to the new number of the *Annale de l'Extrême Orient* is Count Meyners d'Estrey's paper on Sumatra, being a communication recently made by him to the Société Académique Indo-Chinoise.

THE new part of *Le Globe* contains a suggestive paper on the rôle of missionaries, looked at from a geographical standpoint.

ON the 16th inst. Prof. Vambéry is to read a paper at the Society of Arts on "Russia's Influence over the Inhabitants of Central Asia during the last ten years." Prof. Vambéry's intimate knowledge of Central Asia lends great value to anything he may say, though it is well known his opinions are rather violently anti-Russian. He is coming to London expressly to read the paper, and is expected here on the 13th. Sir Douglas Forsyth is announced to preside at the meeting.

ACCORDING to an evening contemporary the Moscow correspondent of the *Kölnische Zeitung* writes that a war between Russia and China may result in the occupation of Tchikislar, and that the fanatical Mahomedan population of Tchikislar is the surest ally for Russia! At first sight this was rather confusing, but the further statement that Russia "has a pretender for Tchikislar *in petto*—an elder son of Yakooob Khan," inclines us to the belief that the writer may not impossibly be confounding Kashgar with Tchikislar!

### THE HISTORY OF MUSICAL PITCH\*

"PITCH" is itself merely a sensation due to, and hence measured by, the number of double or complete vibrations, backwards and forwards, made in one second of time by a particle of air while the sound is heard. It is convenient to call the pitch of a musical sound the number of vibrations to which it is due. "Musical pitch" is the pitch of the "tuning note," or that by which all other notes on an instrument with fixed tones is regulated according to some system of tuning or "temperament." Of these, two are of prominent importance in the history of pitch, the "Mean-tone" and the "Equal," the first being also frequently called "unequal." In mean-tone temperament, completed by Salinas in 1577, all harpsichords and pianos were originally tuned in England till 1844, and all organs till 1854. It may still be heard on Green's organs at St. George's Chapel, Windsor, Kew Parish Church, and St. Katharine's, Regent's Park, and on a few country organs. It consists in flattening the Fifths of the scale sufficiently to make the major Thirds perfect, so as to sound without beats. As long as the player did not employ more than two flats or three sharps this answered very well indeed. But on introducing a third flat or fourth sharp he had to play them by substitution, and hideous noises, called "the wolf," were produced, and hence players have agreed to accept the much less perfect equal temperament, in which the Fifths are scarcely perceptibly flattened, and the major Thirds are made very much too sharp (producing the unpleasant "grittiness" of the harmonium), because at any rate all the keys are alike and the wolves are reduced to cubs.

It is convenient to consider A as the tuning note in all cases, but pianos and organs are usually tuned to C. The following relations give an easy sum in the rule of three for passing from A to C, and conversely. In equal temperament A 444, that is, the note A making 444 double vibrations in a second, corresponds to C 528, and conversely. In mean-tone temperament A 418 corresponds to C 500, and conversely, whereas for a perfect minor Third between A and C, A 440 corresponds to C 528, and conversely.

Man's memory of pitch is generally weak and short, though there are a few exceptions. Even in running down an octave unaccompanied singers will often flatten pitch. Hence some means of handing down pitch is necessary. The only carriers of pitch which need be noticed are the organ-pipe and the tuning-fork, which dates from 1711, so that for all older pitches the organ-pipe is the sole, as it still is the principal, authority. Both pipe and fork alter with temperature. The pipe alters, roughly speaking, by one vibration in every thousand for each degree Fahrenheit, sharpening by heat and flattening by cold. This is an extremely important change, and all pitches of organs must be reduced to one standard temperature, for which 59° F. =

\* Re-arranged and abridged by the Author from a paper on the same subject read before the Society of Arts on March 3, 1880, by Alexander J. Ellis, F.R.S., F.S.A. For a detailed authentication of the facts herein mentioned reference must be made to the *Journal* of the Society of Arts for March 5 and April 2, 1880.