

with some second-class hotel accommodation. This place was used as an observing station in 1769 by the Austrian Hell for the transit of Venus; and, being less than twelve miles directly north of the central line of shadow, might be advantageously occupied. It forms the most easterly station; being in longitude $31^{\circ} 8'$, and latitude about $70^{\circ} 22'$, it would have a duration of totality of over 1m. 31s., and the sun's altitude will be about $14\frac{1}{2}^{\circ}$. It is easily accessible, no high ground obstructs the view, and provisions and labour are to be had. Passing south down a dreary coast of quartzite rocks and Silurian slates, we come to Kilberg, about ten miles south, and two miles inland. There is a hill about 500 feet high, but although this would be only five or six miles north of the central line, it is not in other respects a desirable station. Steaming south-south-west we pass Store Ekkerø, a promontory some twenty-five or thirty miles west of Vadsø, which appears to have all the attributes of a good station, provided accommodation can be arranged for: the central line of totality passes over the southern point, and there is a free view to the south-south-east and east-north-east, the sun's azimuth at the local time of 18h. being 97° south towards east, and the duration of totality a maximum—viz. over 1m. 41s., the sun's altitude about $14\frac{1}{2}^{\circ}$. Passing on to Vadsø, the town of the Finmarken district, there are several hills, two or three hundred feet, easily accessible, and in all respects suitable for observing stations within three or four miles; indeed, Vadsø should be looked upon as the headquarters of an East Norway expedition. The local time of totality here would be 17h. 57m. 46s., and duration about 1m. 35s. All the aforementioned places are in telegraphic communication with most parts of Norway during the fishing season, and no doubt arrangements could be made for keeping the offices open as late as August 8. The temperature at Vadsø is remarkably high, probably between 50° and 60° F. in August, and there is every chance of fine weather at that time.

Crossing the Varanger Fjord we come to Bugø, a Lapp fishing station, and within a mile and a half of the central line; the longitude is about $29^{\circ} 50'$, and latitude $69^{\circ} 58'$. There the duration would be about 1m. 40s., with nothing to obstruct the view; frequent communication could be had with Vadsø at certain times of the day; heliograph signals might be transmitted; there are several sites hereabouts, but one in particular desirable. The Bugönæsfielld I will leave to those who like to be in the clouds! So little is known of it that every map shows it in a different position; but if intrepid mountaineers are fond of carrying half-hundred-weights up mountains, there is no reason why they should not have the satisfaction they desire, but they will find no one to do it for them.

In order to distribute the parties and multiply the chances of success, one party might proceed from Vadsø to Seida, on the Tana River. This station is a good one for all points except the length of totality, which is only about 1m. 12s., and has the sun at an altitude of about $13\frac{1}{2}^{\circ}$. Polmäk, some twelve miles due south (reached by polling up the river), is not so easily got at, but astronomically better situated, and south-east of it, about five miles, is a mountain over 1000 feet high. About forty or fifty miles further up this river, in a south-west direction, is Utsjoki, a place also that might be advantageously occupied in the Russian Lapland. The duration of totality there would be about 1m. 26s., and the sun's altitude about 13° ; both at Polmäk and Utsjoki camp equipage would have to be taken. Both are in telegraphic communication with Vadsø and Vagge, the latter place being at the mouth of the Tana Fjord. Karasjok is astronomically a good place, within four miles of central line, the sun's altitude being about $12\frac{1}{4}^{\circ}$ and duration of totality over 1 $\frac{1}{2}$ m. Much, of course, will depend on the number of observers it is proposed to send out, their powers of endurance, and knowledge of Lappish, Russian, and Norwegian for the east coast expeditions (except at Vardo).

To the information which Colonel Burton-Brown has brought together, we may add that the Orient Steam Navigation Company propose to send one of their large steamships to Vadsø, for the purpose of enabling observations to be made of the eclipse. The steamer will leave London on July 21, and, after calling at Odde, Bergen, Naes, Molde, Trondhjem, Hammerfest, and North Cape, will arrive at Vadsø on August 3. It will leave a week later, and will arrive in London on August 17. (Full particulars of this journey will be found in our advertisement columns.)

We are informed by Messrs. Cook and Son that the Bergenske

Steamship Company have consented, subject to certain conditions, to send one of their best steamers from Bergen and Trondhjem to Vardo and back, for the purpose of enabling persons interested in astronomy to view the eclipse. It is proposed that the steamer shall leave Bergen on July 31, calling at Trondhjem two days later, reaching Vardo on August 8, and remaining until 4 p.m. on August 9, returning to Trondhjem August 13, and Bergen August 15. The steamer will call at all the usual places visited by the tourist steamers between Bergen and the North Cape.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. Herman, of Trinity College, is appointed Chairman of the Examiners for the Mathematical Tripos.

The University Lecturer in Geography (Mr. H. Yule Oldham) announces a course of lectures on the Elements of Physical Geography during the present term. The Royal Geographical Society's Studentship of £100 will be awarded at Easter. Candidates must be members of the University who have attended the courses of the University Lectures.

The Council of the Senate recommend that the University of Allahabad be adopted as an affiliated University on terms corresponding to those in force for the University of Calcutta.

The report of the Syndicate on the Higher Local Examinations shows that good results have been attained in the scientific subjects. The new laboratory examination appears to work well, and has had a wholesome effect on the candidates' training.

Mr. W. C. D. Whetham and Mr. J. W. Capstick have been recognised as Teachers of Physics, and Mr. R. H. Adie as a Teacher of Chemistry, for medical degrees.

Among the freshmen who have matriculated this term, there are over 150 students of medicine.

SLOWLY, but surely, the system of paying teachers of elementary science according to the examinational successes earned by their students—in other words, according to their ability to cram young students with a large assortment of scientific facts, dogmatically stated and imperfectly understood—is giving way to one more calculated to create and foster a desire for natural knowledge. Within the past few days a Minute has been issued to schools under the Department of Science and Art, stating that the Lords of the Committee of Council on Education have decided to try the experiment of making grants for instruction in science and art depend partly upon the attendance of the student and partly on payments on results as tested by examination. The Committees of Science and Art Schools and Classes which have been in the receipt of grants from the Department for two consecutive years, or which are conducted by a local authority under the Technical Instruction Act 1889, or the Technical Schools (Scotland) Act 1887, will be allowed to elect to receive their grants on the scheme under which the payments on results will be one-half those on the present scale, while attendance grants will take the place of the other half, provided that the Inspector of the Department reports that the teaching and equipment of the school are thoroughly satisfactory, and that the class or classes are not too large for instruction by the staff of teachers. The attendance grant will be 1*d.* for each attendance of at least an hour's duration in a day science class, and 2*d.* in a night science class, and of 3*d.* for each attendance of one and a half hours' duration given to practical work in chemistry, physics, metallurgy, or biology, in a properly equipped laboratory. Applications to receive grants under the new Minute must be received before December 1, 1896, and in subsequent years before November 1. But the sanction to be so treated may be withdrawn at any time should it appear from the results of the examination in May, or from the reports of the Inspectors, that the instruction is not efficient; and no school can receive grants partly under the new Minute and partly under the ordinary scale of payments on results. Organised science schools are exempted from these attendance grants; nor can the grants be claimed on behalf of students who are on the register of an elementary school. The principle of recognising attendance at classes as one of the tests of the efficiency of a school has common sense at the back of it, and it should do something to reduce the baneful influence of the examination fend upon elementary scientific education.

DR. A. ROTHPLETZ has been appointed Extraordinary Professor of Geology and Palæontology in the University of Munich; Dr. Ernst Lecher, Professor of Physics in Innsbruck University, has been nominated to succeed Prof. Machs at Prague; Dr. F. Marés has been made Ordinary Professor of Physiology in the Bohemian University at Prague; and Dr. J. E. Humphrey has been appointed Lecturer in Botany at the Johns Hopkins University, Baltimore.

THE Calendar of the University College, North Wales, for the year 1895-96, has been received. The physical, chemical, and biological laboratories (plans of which are given in the Calendar) now cover an extensive area. Under Prof. Andrew Gray, the physical department has greatly developed; and the appliances and electrical installation with which it is equipped enable the College to offer a complete course of instruction in all branches of electro-technical education.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 14.—M. Janssen in the chair.—The decease of Baron Larrey, free member, was announced from the chair. He died on October 8. M. Émile Blanchard pointed out the great influence of the deceased in modern surgery.—The Prince of Monaco has sent to the Academy No. ix. of his publications concerning the scientific work done on his yacht: a contribution to the study of the Cephalopods of the North Atlantic, by M. Louis Joubin.—On a mechanical amplification of the horizontal component of the earth's rotation, by M. Jules Andrade.—On a hydraulic apparatus to show the movement of rotation of the earth, by M. Aug. Coret.—M. Aug. Fabre, in a memoir on "Integration of the equation to the derived partials of the first order, of a function x with n independent variables $x_1, x_2, x_3, \dots, x_n$ " gives a quick new method of arriving at the general integral of an equation $\mu(x, x_1, x_2, \dots, x_n, \rho_1, \rho_2, \dots, \rho_n) = 0$.—M. J. Janssen, in the name of the Bureau des Longitudes, presented the 1898 volume of "Connaissance des Temps." There has been added to the tables concerning the satellites of planets, a table giving the elements for the calculation of the position of Mars' satellites at any given moment. In the ephemerides of the fundamental stars, the brightness of those above the first magnitude has been given, taking Aldebaran as unit.—The Perpetual Secretary announced to be printed in the Correspondence, "Theorie der endlichen Gruppen von eindeutigen Transformationen in der Ebene," by M. S. Kantor.—On a class of linear equations to the derived partials, by M. H. von Koch.—On the surfaces of which the lines of curvature form a network with equal tangential invariants, by M. A. Thybaut.—On the double elliptic refraction and the tetra-refringence of quartz near its axis, by M. G. Quesneville.—On the estimation of argon, by M. Th. Schloesing. An apparatus with circulating mercury pump is described, which allows of the absorption of nitrogen and measurement of the residual argon. The whole arrangement is a modified form of Ramsay's apparatus for isolating argon.—On the action of hydrochloric acid on copper, by M. R. Engel. Copper decomposes a saturated solution of hydrogen chloride at 15°C., with liberation of hydrogen. This interaction does not occur if the concentration be less than that shown by the formula $\text{HCl} \cdot 10\text{H}_2\text{O}$. The presence of cuprous chloride retards the reaction greatly.—Action of potash and potassium ethoxide on benzoquinone, by M. Ch. Aste.—On combinations of antipyrine with the diphenols, influence of the respective positions of the hydroxyl groups, by M. M. G. Patein and E. Dufau. Pyrocatechol, resorcinol, and quinol (hydroquinone) behave differently with regard to antipyrine; the ortho- and para-diphenols combine with two molecular proportions, the meta- with one. The combination occurs through one of the nitrogen atoms and the phenolic hydroxyl, which loses this property when its hydrogen is replaced by a metal or radical.—Experiments on the reducing power of pure yeasts, means of measuring it, by M. Nastukoff.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Books.—Elements of the Mathematical Theory of Electricity and Magnetism: Prof. J. J. Thomson (Cambridge University Press).—Elementary Physiology: Prof. J. R. A. Davis (Blackie).—A Directory of Science, Art and Technical Colleges, Schools and Teachers in the United Kingdom: R. S. Lineham (Chapman and Hall).—A Manual of Physiology: Dr. G. N. Stewart (Baillière).—Movement: E. J. Marey, translated by E. Pritchard (Heinemann).—Fossil Children of the Air: S. H. Scudder (Boston, Houghton).—Darwin and after Darwin: Dr. G. J. Romanes, ii. (Longmans).—

Among Rhode Island Wild Flowers: Prof. W. W. Bailey (Providence, R. I., Preston).—Pagan Ireland: W. G. Wood-Martin (Longmans).—First Steps in Egyptian: Dr. E. A. W. Budge (K. Paul).—Birdcraft: M. O. Wright (Macmillan).—Fishes, Living and Fossil: Dr. B. Dean (Macmillan).—Science and Art Drawing: J. H. Spanton (Macmillan).—Great Astronomers: Sir R. S. Ball (Isbister).—Elektrophysiologie: Prof. W. Biedermann, Zweite Abthg. (Jena, Fischer).—Protozoen: Prof. A. Möller (Jena, Fischer).—The Tallerman-Sheffield Patent Localised Hot-Air Bath (Baillière).—University College of North Wales, Bangor, Calendar for the Year 1895-6 (Manchester, Cornish).—Atlas d'Ostéologie: Prof. C. Debierre (Paris, Alcan).—Evolution and Effort: E. Kelly (Macmillan).—A Handbook of British Lepidoptera: E. Meyrick (Macmillan).—Surface Currents of the Great Lakes: M. W. Harrington, revised edition (Washington).—Annuario p.p. Observatorio do Rio de Janeiro, 1895 (Rio de Janeiro).—U.S. Geological Survey Report, 1892-93, 2 parts (Washington).

PAMPHLETS.—Neue Versuche zum Saison-Dimorphismus der Schmetterlinge: Dr. A. Weismann (Jena, Fischer).—Neue Gedanken zur Vererbungfrage: Dr. A. Weismann (Jena, Fischer).—Cavendish Lecture on Dreamy Mental States: Sir J. Crichton-Browne (Baillière).—The People's Stonehenge: J. J. Cole (Sutton).—Iron and Steel Institute: Presidential Address: Sir D. Dale; Metal Mixers: A. Cooper; The Effect of Arsenic on Steel: J. E. Stead; The Mines of Elba: H. Scott; On the Manufacture of Steel Projectiles in Russia: S. Kern; Ternary Alloys of Iron with Chromium, Molybdenum, and Tungsten: J. S. de Benneville (Victoria Street).—The Siouan Tribes of the East: J. Mooney (Washington).—Archæologic Investigations in James and Potomac Valleys: G. Fowke (Washington).—Chinook Texts: F. Boas (Washington).

SERIALS.—Proceedings and Transactions of the Queensland Branch of the Royal Geographical Society of Australasia, Vol. x. (Brisbane).—Quarterly Review, October (Murray).—Journal of Anatomy and Physiology, October (Griffin).—Contributions from the U.S. National Herbarium, Vol. 3, No. 3 (Washington).—Jahrbuch der k.k. Geologischen Reichsanstalt, xiv, Band, 1 Heft (Wien).—Società Reale di Napoli, atti della Reale Accademia delle Scienze Fisiche e Matematiche, serie second, Vol. vii. Napoli).—American Journal of Psychology, Vol. vii. No. 1 (Worcester, Mass.).—Ethnologisches Notizblatt, Heft 2 (Williams and Norgate).—English Illustrated Magazine, November (198 Strand).—Transactions of the Academy of Science of St. Louis, Vol. vi. No. 18, Vol. vii. Nos. 1, 2, 3 (St. Louis, Mo.).—Transactions of the Wagner Free Institute of Science of Philadelphia, Vol. 3, Part 3 (Philadelphia).—Proceedings of the American Philosophical Society, January, 1895 (Philadelphia).—Proceedings of the Academy of Natural Sciences of Philadelphia, 1895, Part 1 (Philadelphia).

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