primes among its factors, then the corresponding factors are to be omitted out of the product. We thus see that if two even numbers of considerable magnitude lie adjacent or tolerably near to each other, one of which is the double of a prime, but the other six times a prime, the number of preter-primes relative to the latter will be about twice as many as those relative to the former. For the purpose of greater simplicity of explanation, the formula of approximation has been stated above with less accuracy than it admits of being stated with. Instead of the total number of odd primes being multiplied by the product of factors last described, those only should have been taken which are not intermediate between 2 and $\sqrt{n}$, and the result so modified should have been stated to be the probable value not of the total number of preter-primes, but only of such of them (by far the larger number) as are not of the excluded class above described, nor subtracted from n, give rise to remainders belonging to such class. The author has found by actual trial on an extensive scale, that the estimated values of the number of decompositions never differ by more than a moderate, and in some cases exceedingly slight, percentage from their actual values determined by the use of Borchardt's tables. The same methods enable him also to assign a probable value to the number of modes of resolving an odd number into the sum of one prime and the double of another, and in general lead to an approximate representation of the number of solutions in prime numbers of any system of linear equations of which the total number of solutions is limited, and even to resolve approximately such questions as that of determining how many prime numbers there are inferior to a given limit, which are followed by prime numbers differing from them by any assigned interval. Since the communication made to the Mathematical Society, the secretaries have been favoured with a note from which they understand that Dr. Sylvester has verified his results by quite a different method. The exact number of the solutions of the equation $x + y = n$ in prime numbers may be expressed algebraically by means of the method of generating functions in terms of the inferior primes to n. The expression will be found to consist of two parts, one a constant multiple of n, the other, a function of the roots of unity corresponding to the several inferior primes and their combinations. The former non-periodic part may obviously be regarded as the even value of the expression, and Dr. Sylvester has found that it is identical with the value obtained by the method of averages previously employed. In order to prove strictly Euler's theorem, it only remains to show that the entire expression can never become zero. This Dr. Sylvester believes he has the means of doing, and at the same time of assigning exact limits to the number of solutions in question; but in a matter of so much moment, and of such singular interest, does not wish to express himself in a more decided manner, until he has had the opportunity of subjecting his method to a further rigorous examination.

Royal Astronomical Society, November 17.—Mr. W. Lassell, president, in the chair. The Astronomer Royal showed a drawing of Encke's comet made by Mr. Carpenter of Greenwich; it gave the impression of a somewhat shuttlecock-shaped nebulous haze, with two wings of much fainter light, extending on either side, giving a flattened appearance to the head of the comet. Dr. Huggins made a drawing which coincided in all essential particulars with that of Mr. Carpenter. He thought that he had detected a very minute but distinctly-marked nucleus in the paraboidal-shaped head of the shuttlecock. The whole light of the comet was very faint, but he had succeeded in obtaining its spectrum, which, as in the case of that of Comet II, 1868, consisted of three bands, apparently identical with the bands in the spectrum of the vapour of carbon. The middle band situated near "little b" was much brighter than the other two, and he was quite satisfied of its identity with the middle bands of carbon vapour; the two outlying bands were much too faint for him to speak with confidence of their identity, but they appeared to correspond. The Astronomer Royal showed a celestial globe, on which he had fixed a small white wafer in the place occupied by the sun, and a piece of white paper cut out to represent the comet. He pointed out that its longer axis was directed almost exactly to the sun, and that its head and nucleus were turned away from the sun. This appears to be the almost universal rule with the smaller class of comets. Unlike the sheep of little Bo Peep they carry their tails before them, and not until their smaller fan-shaped appendages have been well warmed by the sun's rays, do they begin to shoot out large tails in the other direction.—A paper was read by Prof. Grant, in which he pointed out that as early as the year 1852 he had recognised the continuity of a red envelope enclosing the sun, of which the prominences were merely the more elevated portions; he had come to this conclusion from a comparison of the observations made during the total eclipses of 1842 and 1851.—A discussion then followed as to whether there were any permanent markings upon Venus. Dr. W. De la Rue and Mr. Browning affirmed that they often saw spots and other irregularities of surface. The authority of Mr. Dawes, and many other observers of note, was cited to the contrary.—Some careful drawings of the Zodiacal light as seen by Captain Tupman while cruising in the Mediterranean were handed round. It was pointed out by Mr. Ranyard that the axis of symmetry of the light was in many instances greatly inclined to the ecliptic, and that the distance of the node of the axis from the sun was in some instances more than 40°.

BOOKS RECEIVED

ENGLISH.—The Geology of Oxford and the Thames Valley: J. Phillips (Macmillan and Co.).—Weale's Treatises: Rudimentary Geology; Historical: R. Tate (Lockwood and Co.).—Profitable and Ornamental Poultry: H Piper (Groombridge and Sons).—Ganot's Elementary Treatise on Physics, Experimental and Applied: Translated by G. Atkinson, 5th edition (Longmans and Co.).—Tables of Velocity, Time of Flight, and Energy of Various Projectiles; Bashforth Chronograph (E. and F. Spon).—The Discovery of a New World: G. Thomson (Longmans and Co.).

FOREIGN.—(Through Williams and Norgate)—Les Migrations Humaines en Océanie d'après les faits naturelles: Jules Garnier.

DIARY

THURSDAY, NOVEMBER 23.

ROYAL SOCIETY, at 8.30.—On the Behaviour of Supersaturated Saline Solutions when Exposed to the Open Air: C Tomlinson, F.R.S.—On Experimental Determination of the Velocity of Sound: E. J Stone, F.R.S; (1) Second Paper on the Numerical Value of Euler's Constant, &c.; (2) Second Paper on the Numerical Values of ϵ, $\log \epsilon^2$, $\log \epsilon^3$, $\log \epsilon^5$, and $\log \epsilon^{10}$, &c.: W. Shanks.

SOCIETY OF ANTIQUARIES, at 8.30.—On Mediæval Representations of the Months and Seasons: James Fowler, F.S.A.—On some Casts of Ivories from Cologne: Augustus W. Franks

LONDON INSTITUTION, at 7.30.—The Influence of Geological Phenomena on the Social Life of the People: Harry G. Seeley, F G.S.

FRIDAY, NOVEMBER 24.

QUEKETT MICROSCOPICAL CLUB, at 8.—On the Minute Structure of Tremelloid Uredines: M. C. Cooke.

MONDAY, NOVEMBER 27.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Exploration of the Volcanic Districts East of Damascus: Capt. R. F. Burton.—Journey in Southern Arabia: Baron de Maetzan.

LONDON INSTITUTION, at 4.—Smell, Taste, and Touch: Prof. Huxley, LL.D., F.R.S. (Course on Elementary Physiology).

WEDNESDAY, NOVEMBER 29.

SOCIETY OF ARTS, at 8.—On Tramways and their Structure, Vehicles, Haulage, and Uses: W. Bridges Adams.

ARCHÆOLOGICAL ASSOCIATION, at 8.

THURSDAY, NOVEMBER 30.

ROYAL SOCIETY, at 8.30.—President's Address.

SOCIETY OF ANTIQUARIES, at 8.30.

LONDON INSTITUTION, at 7.30.—Science and Commerce, illustrated by the Raw Materials of our Manufactures. (II.) P. L. Simmonds, F.R.C.I.

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