

"Journal of Chemical Physics," Vol. 4, No. 11, November 1936.

"Journal of the Indian Chemical Society," Vol. 13, No. 9, September 1936.

"Berichte der Deutschen Chemischen Gesellschaft," Vol. 69, No. 11.

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Government of India Publications:—

"Monthly Statistics of Production of Certain Selected Industries of India" (Department of Commercial Intelligence and Statistics), No. 5 of 1936-37, August 1936.

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"Indian Meteorological Department Scientific Notes: A Report on the Administration of the Meteorological Department to the Government of India in 1935-36."

"Indian Trade Journal," Vol. CXXXIII, Nos. 1586-1589.

"The Calcutta Medical Journal," Vol. 31, Nos. 4 and 5, October and November 1936.

"Medico-Surgical Suggestions," Vol. 5, No. 11, November 1936.

"Review of Applied Mycology," Vol. 15, No. 10, October 1936.

"Forest Research in India," 1935-36. Part I. The Forest Research Institute.

"Annual Report of the London Shellac Research Bureau for the year 1935-36."

"Carnegie Institution of Washington Bulletin," Vol. IV, No. 8.

"Journal of the American Museum of Natural History," Vol. 38, No. 4, November 1936.

"Nature," Vol. 138, Nos. 3495-3498.

"Journal of Nutrition," Vol. 12, No. 4, October 1936.

"Science and Culture," Vol. II, No. 5, November 1936.

"Arkiv fur Zoologie," Vol. 28, No. 3, 1936; Vol. 28 A, No. 17, 1936.

Catalogues:

"Mitteilungen über Neuerscheinungen und Fortsetzungen, 1936," No. 5 (Messrs. Verlag Von Gustav Fischer in Jena).

"Books on Astronomy and Mathematics" (Messrs. Wheldon & Wesley, Ltd., London).

ACADEMIES AND SOCIETIES.

Indian Academy of Sciences:

October 1936. SECTION A.—B. L. GULATEE: *On the Variation of Latitude at Dehra Dun.*—The diurnal and annual terms in the variation of latitude are discussed. K. C. SUBRAMANIAM: *The Diamagnetism of Some Metallic Halides.*—With zinc, cadmium and mercury halides, there is a general increase in susceptibility when the salts are dissolved in water or methyl alcohol. This is attributed to the release of deformation of the ions of the molecule by the action of the solvent to the extent of ionisation. C. S. Venkateswaran: *The Raman Spectra of Sulphur and Phosphorus. Part II.—Lattice Oscillations.*—An intense sharp line at 36 cm. for solid phosphorus and at 80 cm. for rhombic sulphur are attributed to lattice oscillations. P. NILAKANTAN: *The Magnetic Anisotropy of Rhombic Sulphur.*—The data are in general agreement with results of X-ray measurements. M. K. PARANJPE: *The Convection and Variation of Temperature near a Hot Surface. Part I.—The Dust-Free or Dark Layer in Relation to Surface Convection.*—The formation of a dark or dust-free layer in a space between a hot surface (above) and a cold surface (below), is discussed. B. S. MADHAVA RAO: *Semi-Vectors in Born's Field Theory.* RAM KUMAR BOUNTRA AND KANTILAL C. PANDYA: *The Acid Content of Some of Our Vegetable Food-stuffs. Part II.—Amchur or Mangifera Indica.*—Three organic acids, tartaric, citric, oxalic, have been found in proportion 6, 4, and 1% respectively. CH. V. JOGARAO: *An Optical Investigation of Some Indian Oils. II.—Raman Effect.* V. T. CHIPLONKAR: *The Relative Efficiencies of the Multistage and One Stage Process in the Electrolytic Preparations of Heavy Water.*—Compared

with a single stage process, there will be no loss in efficiency if fresh-water is added continuously. R. R. KHANOLKAR, P. M. BARVE AND B. N. DESAI: *Condition of Sparingly Soluble Substances in Gels. Part I.—Silver Chromate in Gelatine.*—Changes in the conductivity and colour of Silver Chromate in gelatine solution have been studied. G. F. MANKODI, P. M. BARVE AND B. N. DESAI: *Importance of Dialysis in the Study of Colloids. Part III.—Colloidal Prussian Blue.*—The changes in cataphoretic speed and viscosity under different conditions show that neither the views of Dhar nor of V. Smoluchowski can individually explain the results. HANS RAJ LUTHRA AND DR. V. I. VAIDHIANATHAN: *Uplift Pressures under Weirs with Three Sheet Piles.*—Working results have been obtained for the design of weirs with three sheet piles.

November 1936. — SECTION A. — B. N. ACHARYA, A. M. PATEL and B. N. DESAI: *Conductivity and Cataphoretic Speed Measurements of Benzopurpurin AB, Congo Red and Sky Blue F.F.*—The changes observed with concentration are explained on the basis of aggregation of the dye ions to form micelles. B. Y. OKE: *Lattice-Theory of Alkaline Earth Carbonates. Part II.—Elasticity Constants of Aragonite. Part III.—Lattice Energy of the Crystals of Calcite and Its Thermo-Chemical Applications.* B. R. SETH: *On the Flexure of a Hollow Shaft—I.* P. NILAKANTAN: *Magnetic Anisotropy of Naturally Occurring Substances. II. Molluscan Shells.*—The crystalline character of the elements as well as their regularity of arrangement have been established and the probable orientations deduced. E. GORA: *On Fermi's Theory of β -Decay.* S. PARTHASARATHY: *The Visibility of Ultrasonic*

Waves in Liquids.—It is shown that the Heide-mann effect repeats at intervals of $d = \lambda^2/2\lambda$ for standing waves, in agreement with the theory of Nagendra Nath. A simple method of deriving the periodic visibility is given as an Appendix by N. S. N. Nath. K. SUBBA RAO AND B. SANJIVA RAO: *Studies in Adsorption on Gels. I. A Comparative Study of Selective Adsorption from Binary Mixtures of Liquids on Gels of Silica, Alumina and Ferric Oxide.*—The chemical nature of a gel markedly affects selective adsorption from binary liquid mixtures. H. GUPTA: *On Sums of Powers.* B. S. MADHAVA RAO: *Complex Representation in Born's Field Theory.* C. B. JOSHI, P. M. BARVE AND B. N. DESAI: *Importance of Dialysis in the Study of Colloids. Part IV. Colloidal Arsenious Sulphide.*—The results are complicated by changes in the composition of the sol. B. ANAND: *Raman Effect in Di-basic Acids in Crystalline State.*—A technique is described for studying Raman Spectra of Crystalline and Amorphous Solids. Results for the first three members of the oxalic acid series are given.

October 1936.—SECTION B.—MANECK B. PITHAWALA: *A Geographical Analysis of the Lower Indus Basin (Sind). Chapter I. Physiography. Chapter II. The Indus—Its History, Regimen and Physics.*—The physiography of Sind has been dealt with especially with regard to the problems of water-supply, economic resources, industrial possibilities, population, etc. The origin of the Indus Basin has also been discussed. The second chapter deals with the geological and recent history of the principal water course of the land, viz., the Indus River. Appropriate maps, sketches, graphs, and charts have been provided and the study constitutes the first pioneering attempt to analyse the geographical features of an Indian Province.

November 1936.—SECTION B.—B. S. KADAM: *Genetics of the Bansi Wheat of the Bombay-Deccan and a Synthetic Khapli—Part I.*—The inheritance of pubescence of glumes, colour of grain, colour of glumes, and colour of awns and their interactions is reported. A. VENKATASUBBAN, (MISS) R. KARNAD AND N. N. DASTUR: *Urease Activity of Germinated Seeds.*—Germination of urease-containing seeds brings about the solubilisation of the desmo enzyme present in the seeds. B. N. SINGH AND B. R. SINGH: *Growth and Water Requirement of Crop Plants in Relation to Soil Moisture.*—The transpiration rate is analysed with special reference to the growth and water requirements of the plants. The plants studied have either two or three critical periods located in seedling, pre-flowering and ripening stages, when they require a very large amount of water. These periods cover varying number of days in different crops. FROILANO DE MELLO AND (MISS) CIRIACA VALES: *Hæmogregarina thyrsoidea N. Sp., Parasite of the Indian Eel Thyrsoidea macrurus Bleeker.* M. S. RANDHAWA: *A Short Note on an Indian Variety of Sphaeroplea annulina (Roth.) Agardh, Var. multiseriata Var. Nov. A New Species of Cylindrocapsa from India.* M. S. RANDHAWA: *Cylindrocapsa oedogonioides sp. nov.* G. N. RANGASWAMI AYYANGAR, K. KUNHI KRISHNAN NAMBIAR AND P. KRISHNASWAMY: *Studies in Dolichos lablab (Roth.) and (L.)—The Indian Field and Garden Bean. III.*—In field varieties of *lablab*, there are seven purple pigmented and one green type. Along with the four

seed coat colours, Black, Chocolate, Khaki and Buff, there results sixteen genotypes. These arise by the interaction of four factors K, P, Ch and I, of which K is the basic factor for the seed coat colour series. Data from 160 segregating families are presented in support of the above interpretation.

The Indian Physico-Mathematical Society (Journal, 7, No. 2):

S. C. DHAR: *On the Uniformisation of Algebraic Curves of Genus Four:*

The differential equation

$$y'' + \frac{3}{16} \left[\frac{f'(z)}{f(z)} - \frac{2n+2}{2n+1} \frac{f''(z)}{f(z)} \right] y = 0$$

where $f(z) = (z - e_1)(z - e_2) \dots (z - e_{2n+2})$, occurs in connection with the determination of a variable t such that $s = s(t)$, $z = z(t)$ where $s^2 = f(z)$ and $s(t)$, $z(t)$ are single-valued functions. It is known that t is the quotient of any two solutions of the differential equation. The author shows in this paper that the uniformising variable for the curve $s^2 = 1 + z^9$ which is of genus 4, admits of a Fuchsian group of transformations, and mentions that in a communication to the London Mathematical Society he has proved the result for a curve of any genus belonging to the above type.

RAM BEHARI: *On Levi-Civita's 'Anormalita' of a Rectilinear Congruence:*

Considering a rectilinear congruence in which a typical line passes through (x, y, z) and has direction cosines (X, Y, Z) where x, y, z, X, Y, Z are functions of two parameters u, v , Levi-Civita's Anormalita A is defined by the equations

$$\frac{\partial Y}{\partial z} - \frac{\partial Z}{\partial y} = AX, \quad \frac{\partial Z}{\partial x} - \frac{\partial X}{\partial z} = AY, \quad \frac{\partial X}{\partial y} - \frac{\partial Y}{\partial x} = AZ.$$

The author has introduced in a previous paper (*J. Ind. Math. Soc.*, Vol. I (New Series), p. 135), the concept of 'pitch' of a given ray of the congruence. The pitch p is defined by

$$\int_C Xdx + Ydy + Zdz \text{ where } C \text{ is a closed curve}$$

on the director surface forming the boundary of an area dS cut off by a thin pencil of rays of the congruence adjacent to a given ray. In the present paper, the author proves that $\frac{dp}{d\sigma} = A \frac{eg - ff'}{EG - F^2}$ where $d\sigma$ is the element of area of the spherical representation of dS , and the other letters have their usual meanings in the theory of rectilinear congruences.

The Indian Mathematical Society (Journal, 2, No. 3):

RAM BEHARI: *Ruled Surfaces through a Ray of a Rectilinear Congruence:*

Through a line of a rectilinear congruence two ruled surfaces belonging to the congruence can be drawn so as to have any one of the properties: (a) They have the same central point on the line, (b) Their lines of striction lie on the focal sheets, (c) Their parameters of distribution are equal to a given constant.

Some properties of these surfaces are considered, mainly dealing with the 'pitch' of the line.

R. C. BOSE: *A Theorem on Equiangular Convex Polygons Circumscribing a Convex Curve:*

The following theorem is proved :

Given a closed convex curve V , with perimeter L and an integer $n \geq 3$ we can find at least two n -sided convex equiangular polygons, circumscribing V and having the perimeter $\frac{nL}{\pi} \tan \frac{\pi}{n}$, i.e., a perimeter equal to the perimeter of a regular n -gon circumscribing a circle of perimeter L .

As a corollary, if \bar{S} and S denote the maximum and minimum perimeters of n -sided convex equiangular polygons circumscribing V , then

$$\bar{S} \geq \frac{nL}{\pi} \tan \frac{\pi}{n} \geq S$$

T. VENKATARAYUDU: *On the Significance and the Extension of the Chinese Remainder Theorem:*

The so-called Chinese Remainder Theorem is interpreted by the author as establishing a definite isomorphism between a vector modular algebra and a scalar modular algebra. An extended form of the theorem is set forth, and this is employed to determine a set of normal basis elements from a given set of basis elements of an Abelian group.

V. LEVIN: *Two Remarks on Hilbert's Double Series Theorem:*

An improved form of Hilbert's Double Series theorem (*vide* Hardy, Littlewood and Polya: *Inequalities*, Chap. IX) is given, viz.,

$$\sum_{m=0}^{\infty} \sum_{n=0}^{\infty} \log \frac{(m+n)^{m+n} (m+n+2)^{m+n+2}}{m+n+1} a_m b_n < \pi \left(\sum_{m=0}^{\infty} a_m^2 \right)^{\frac{1}{2}} \left(\sum_{n=0}^{\infty} b_n^2 \right)^{\frac{1}{2}}$$

where a_m and b_n are real positive numbers, all the a 's or b 's not vanishing.

Another theorem, again an improvement upon a known inequality, is given, viz.:

If

$$p > 1, q > 1, \frac{1}{p} + \frac{1}{q} \geq 1, p' = \frac{p}{p-1}, q' = \frac{q}{q-1},$$

$$\lambda = \frac{1}{p'} + \frac{1}{q'}, \text{ then}$$

$$\sum_{m=1}^{\infty} \sum_{n=1}^{\infty} \frac{a_m b_n}{(m+n)^{\lambda}} \leq K \left(\sum_{m=1}^{\infty} a_m^{p'} \right)^{1/p} \left(\sum_{n=1}^{\infty} b_n^{q'} \right)^{1/q},$$

when

$$K \text{ is taken as } \left(\pi \operatorname{cosec} \frac{\pi}{\lambda p'} \right)^{\lambda} = \left(\pi \operatorname{cosec} \frac{\pi}{\lambda q'} \right)^{\lambda}.$$

If $q = p'$, this gives the known best value of K for this case, viz., $\pi \operatorname{cosec} \pi/p$.

S. S. PILLAI: *On Sets of Square-free Numbers:*

Let $N(x) = N(x, d_1, d_2, \dots, d_{r-1})$ denote the number of groups of square-free numbers q_1, q_2, \dots, q_r not exceeding x , such that $q_m - q_1 = d_m - 1$, ($m = 2, 3, \dots, r$). Let $f(p)$ be the number of different residue classes modulus p^2 and not congruent to 0 contained in the set d_1, d_2, \dots, d_{r-1} . Then it is proved that

$$N(x) = Ax + O\left(\frac{x}{\log x}\right) \text{ where } A = \frac{\pi}{p} \left\{ 1 - \frac{1+f(p)}{p^2} \right\}.$$

S. S. PILLAI: *On* $ax - by = c$:

By using Aaron Herschfeld's method of proof for the special case $2^x - 3^y = d$ (*Bull.*

Amer. Math. Soc., XLII) and the results of a previous paper by the author (*J. I. M. S.*, Vol. XIX), it is proved here that when c is large the equation $ax - by = c$ has at most one solution. Further, if a, A, b, B, c are given positive integers and c is sufficiently large, then the equation $Aax - Bby = c$ can have at most one solution.

J. L. SHARMA: *On Integrals Involving Lamé Functions:*

Lamé's differential equation

$$\frac{d^2 y}{du^2} = [n(n+1) \wp(u) + B] y \text{ where } n \text{ is integral, admits the solutions}$$

$$F_n(u) = \frac{n}{1} \left[\frac{\sigma(u+a_r)}{\sigma(u)\sigma(a_r)} e^{-u\zeta(a_r)} \right]$$

$$F_n(-u) = \frac{n}{1} \left[\frac{\sigma(a_r-u)}{\sigma(-u)\sigma(a_r)} e^{u\zeta(a_r)} \right]$$

Calling these functions as generalised Lamé functions, the author proves that they form a non-orthogonal set of functions.

Also, the integral of the product of any two solutions of Lamé's equation for a fixed value of n is different from zero unless both of them are of the first kind and of the same species.

Indian Mathematical Society:

The Mathematical Student, June 1936.—

E. H. NEVILLE: *Two Determinants.*

Let a_1, a_2, \dots and d_1, d_2, \dots be two sets of numbers, and let $a_r^{(s)} = (a_r + d_1)(a_r + d_2) \dots (a_r + d_s)$.

$$\text{Then } \begin{vmatrix} 1 & a_1^{(1)} & a_1^{(2)} & \dots & a_1^{(n-1)} \\ 1 & a_2^{(1)} & a_2^{(2)} & \dots & a_2^{(n-1)} \\ \dots & \dots & \dots & \dots & \dots \\ 1 & a_n^{(1)} & a_n^{(2)} & \dots & a_n^{(n-1)} \end{vmatrix} = (\zeta^{\frac{1}{2}}(a_1 a_2 \dots a_n),$$

the product of all the differences $a_r - a_q$ with $r > q$.

If we consider a similar determinant with one absent column, i.e., if F_q be a determinant with a typical row

$$[1, a_r^{(1)}, a_r^{(2)}, \dots, a_r^{(q-2)}, a_r^{(q)}, a_r^{(q+1)}, a_r^{(q+2)}, \dots, a_r^{(n)}],$$

then $F_q = \zeta^{\frac{1}{2}}(a_1, a_2, \dots, a_n)$

$\{A_{n-q+1} + A_{n-q} H_1 + A_{n-q-1} H_2 + \dots + A_n H_{q-1}\}$ where A_1, A_2, \dots stand for $\sum a_1, \sum a_1 a_2$, etc., and H_s is the sum of the homogeneous products of degree s that can be formed from d_1, d_2, \dots, d_s .

B. RAMAMURTI: *On the Lines of Striction of a Quadric.*—Let a central quadric be referred to its generators such that λ and μ , the parameters of the generators through any point are equal for every point on the conic section q at infinity, and let this common value be also the parameter of the point considered as a point on the conic q . If $ax^4 = 0$ give the parameters of the points of contact with q of the common tangents between q and the circle at infinity Ω , then the two lines of striction are given by $a_\lambda^3 a_\mu = 0$ and $a_\mu^3 a_\lambda = 0$. The author deduces from this that the two curves intersect in ten points, six of which are the vertices of the quadric, and the other four are the points of contact of the isotropic tangent planes.

V. THÉBAULT: *On Certain Remarkable Points Connected with a Triangle.*—Certain elementary

calculations are worked out connected with the associated points and circles of a triangle. The following theorems are deduced:—

Let (α, β, γ) and $(\alpha', \beta', \gamma')$ be the centres of the squares constructed exteriorly and interiorly on the sides of a triangle ABC which is not right-angled, O the centre of the circumcircle, H' the orthocentre of the pedal triangle A'B'C'. If we take the nine perpendiculars from (α, β, γ) or $(\alpha', \beta', \gamma')$ to the three sides of the triangle as representing nine forces, these have a resultant which is represented in magnitude and direction by the line Segment OH'.

The resultant of nine forces represented by the perpendiculars from (α, β, γ) or $(\alpha', \beta', \gamma')$ to the three sides of the right-angled triangle ABC, is represented in magnitude and direction by the line segment OK' joining the circumcentre O to its "symétrique" K' with respect to the Lemoine point K of ABC.

C. N. SRINIVASIENGAR: *On the Nature of Contact between $S = 0$ and $S - \lambda T = 0$.*—The theorem on this topic given by S. S. Pillai in *Math. Student*, Vol. III, No. 4, is proved here by a different method which is applicable to any system of Cartesian co-ordinates. The theorem is also extended to three dimensional geometry as follows, with a suitable definition of internal and external contact.

The two surfaces $S \equiv F(x, y, z) = 0$ and $S - \lambda T = 0$ where $T \equiv (x - x_1) \frac{\partial F}{\partial x_1} + (y - y_1) \frac{\partial F}{\partial y_1} + (z - z_1) \frac{\partial F}{\partial z_1}$, and $F(x_1, y_1, z_1) = 0$, touch each other internally or externally according as $\lambda < 1$ or $\lambda > 1$.

A. NARASINGA RAO: *On the Contact of Varieties in n -Space.*—Two varieties in $[n]$ which touch at O are defined to have external or internal contact according as every plane section of them through O but not lying in the tangent prime at O gives curves which have external or internal contact. If the contact is external for some sections and internal for others, the contact is said to be "neutral".

Let a variety in $[n]$ touching $x_n = 0$ at O be written

$$x_n = \sum a_{rs} x_r x_s + \sum a_{rst} x_r x_s x_t + \dots$$

Calling $\sum a_{rs} x_r x_s$ as the asymptotic form of the variety at O, the author proves that two varieties in $[n]$ which touch at O have non-neutral contact when their asymptotic forms at O are either both definite or if indefinite, one is a multiple of the other. In the former case, the contact is internal or external according as the definite forms are of like or unlike sign: in the latter, according as the numerical multiplier is positive or negative. In every other case, the contact is neutral. The author thence works out the generalisations for n -space the results of S. S. Pillai and C. N. Srinivasiengar for [2] and [3], and points out that the character of the contact is unaltered by projective transformations.

V. RANGACHARIAR: *Note on Convergence of a Certain Series:*

Consider the power series $y = a_0 + a_1 z + a_2 z^2 + \dots$ where $zx = 1$ and $a_n (A + B_n) - a_{n-1} (C + D_n) + a_{n-2} (E + F_n) = 0$. For the case $A = 0, B = a_0 = 1, C + D = a_1$, the sum of the series is shown to be of the form $(1 - \frac{a}{x})^{-a}$

$(1 - \frac{b}{x})^{-\beta}$, where a, b, α, β are constants depending on B, C, D, E, F.

Mr. V. Ganapati Iyer explains that the solution in the general case depends on the solution of a certain differential equation of the first order, regular at $Z = 0$ and taking the value $y = a_0$ when $z = 0$. S. SURYANARAYANA IYER: *A Proof of Newton's Theorem.*—The author points out a fallacy which may arise in the application of Newton's Theorem about conics, and gives a new geometrical proof of the theorem.

C. N. S.

Calcutta Mathematical Society:

November 29, 1936.—R. C. BOSE: *Theory of Skew Rectangular Pentagons in Hyperbolic Space. Part II.* M. DE. DUFFAHEL (STAMBOUL): *Sur l'Equation aux derivees partielles qui se presente dans la theorie de la propagation de l'Electricite.* M. DE. DUFFAHEL (STAMBOUL): *Sur les couples de Fonctions uniformes d'une variable.* B. B. SEN: *Note on the Transverse Vibration of Freely Supported Plates under the Action of Moving Loads and Variable Forces.* R. S. VARMA: *An Infinite Integral Involving Bessel Function and Parabolic Cylinder Function.* N. RAMA RAO AND BASAVA RAJU: *An Extension of Wilson's Theorem.* S. P. SLOGUINOFF (PERM, U. S. S. R.): *Equation de Laplace dans l'espace a'deuse dimensions.* OLGA TAUSKY (CAMBRIDGE): *Rings with Non-Commutative Addition.* S. GHOSH: *On the Solution of Laplace's Equation Suitable for Problems Relating to Two Spheres Touching each other.* S. GHOSH: *Stress Distribution in a Heavy Circular Disc held with its Plane Vertical by a Peg at the Centre.*

Indian Chemical Society:

August 1936.—S. S. BHATNAGAR, A. N. KAPUR AND P. L. KAPUR: *A Magnetic Study of Colour Changes in Cobalt Chloride. Part II.* PRIYADARANJAN RAY AND AMALENDRA NARAYAN GHOSH: *Complex Metal-ammonium Selenites and Selenito-metal-ammines.* C. C. PALIT AND N. R. DHAR: *Oxidation of Glucose in Presence of Insulin Glutathione and other Substances and the Probable Mechanism of Biological Oxidations.* S. C. DE AND P. C. RAKSHIT: *Synthesis in the Pyrazolone Series. Part IV.—Action of Aminoguanidines on β -Ketonic Esters and β -Diketones.* MATA PRASAD, M. P. LAKHANI AND JAGDISH SHANKAR: *An X-Ray Investigation of the Crystals of p-Nitrodiphenyl.* DINES CHANDRA SEN: *Studies in the Camphor Series. Part III. Tautomeric Behaviour of Thiocamphor and the Activity of its Sodium Derivatives.* M. Q. DOJA: *The Quaternary Ammonium Iodides of Dimethyl-p-toluidine.* RADHA RAMAN AGARWAL: *Chemical Examination of Cuscuta reflexa Roxb. Part IV.—Isolation of a New Yellow Flavone Colouring Matter from the Seeds.* NRIPENDRA NATH CHATTERJEE: *Spiro-compounds. Part I.—A New Route to Spiro-compounds. Synthesis of Cyclohexane-spiro-cyclopentan.* M. Q. DOJA AND A. MOKEET: *Preparation of p-Diethylamino-benzaldehyde.* M. B. RANE, K. KONDAIAH, AND M. K. RATNAM: *Removal of Antimony from its Solutions by Nitric Acid.* S. D. SUNAWALA: *A Note on the Estimation of Formic Acid in Commercial Acetate of Lime. Review.*

Society of Biological Chemists, India :

Oct. and Nov. 1936.—A. KRISHNAMURTY : *Some Aspects of Malting*. B. A. SUNDARA IYENGAR : *Iron Mobilization and Plant Growth in Water-logged Soils*. PROF. C. R. NARAYAN RAO : *Is Man Part of the Animal World?* K. RAMI REDDI : *Biochemistry of Sonti Fermentation*. K. VENKATA GIRI : *Rôle of Phosphatases in Plants*. N. N. DASTUR AND K. V. GIRI : *In vitro Digestion of Fats*. V. K. BADAMI : *Influence of X-Rays on Plants*. K. V. GIRI AND P. N. BHARGAVA : *New Methods for the Detection of Adulteration in Food-stuffs*. A. Sreenivasan : *Influence of par-boiling on Quality of Rice*.

Indian Botanical Society :

October, 1936.—M. A. GINAI : *Further Contribution to Our Knowledge of Indian Coprophilous Fungi*. J. C. BANERJI : *Studies on the Myxophyceae of Lower Bengal. I.—Preliminary Observations on the Group in Relation to Salient Ecological Factors and Systematic Enumeration of a Few Chroococcaceae*. R. H. DASTUR AND D. E. WADIA : *A Study of Some Physico-Chemical Changes in Leaf Movements*. M. O. P. IYENGAR : *Characiosiphon, a new member of the Chlorophyceae.—Preliminary Note*. B. SAHNI : *Wegener's Theory of Continental Drift in the Light of Palaeobotanical Evidence*.

December, 1936.—V. S. RAO : *Studies on Capparidaceae II.—The Embryology of Gynandropsis Pentaphylla*. R. K. SAKSENA : *Structure of the Nucleus in the Genus Pythium*. A. R. RAO : *A New Form of Botrydium from Lucknow*.

Meteorological Office Colloquium, Poona :

September 15, 1936.—MR. M. K. PARANJPYE : *'The Dust-Free or Dark Layer in Relation to Convection near Hot Surfaces.'*

October 10, 1936.—DR. S. CHANDRASEKHAR (Fellow of the Trinity College, Cambridge, and Associate Research Professor of the Chicago University), "Luminosity of Gaseous Nebulae" :—After describing the characteristic features of gaseous nebulae, Dr. Chandrasekhar discussed the physics of the luminosity of gaseous nebulae. The luminosity of these bodies is now known to be derived from the radiant energy received by them from an adjacent star. The primary process is the ionization of the gaseous matter of the nebulae—mostly hydrogen and helium. The subsequent return of the electron to the ionized atom causes the emission of the Lyman lines and of the He I and He II lines. These, in their turn, cause secondary emission of lines from atoms of the same kind and also from certain other atoms. For example, a few O III and N III lines are selectively excited by certain chance coincidences of He II, O III and N III lines. Another important mechanism of emission is the following : In the primary process of ionization, electrons are ejected from hydrogen and helium with energies equal to the difference between the energy of the incident quantum and the energy equivalent of the ionization potential of the atom. These electrons have comparatively low potential energies and their impact on atoms like O III and N III is responsible for raising them to metastable states and subsequent emission of low potential forbidden lines.

October 27, 1936.—DR. S. R. SAVUR.—"An improvement of the existing forecasting formulae."

October 30, 1936.—DR. K. DAS described the Cosmic Ray apparatus used by Dr. Victor Neher (of the Californian Institute of Technology) at Madras where he let off a number of these instruments with balloons during October 1936, assisted by Dr. Das. With the help of an instrument which had kindly been sent by Dr. Neher on loan, he explained the mechanism of its working.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.**University of Allahabad :**

Mr. S. P. Naithani, Lecturer, B grade, Botany Department, returned from abroad after taking his PH.D. degree from the London University.

The Right Hon'ble Sir Tej Bahadur Sapru has donated a sum of Rs. 900 a year for the award of scholarships to poor students in the manner decided by the Vice-Chancellor. A similar donation of Rs. 500 from Professor Amaranatha Jha, Dean of the Faculty of Arts, Allahabad University, has been placed at the Vice-Chancellor's disposal for any non-recurring expenditure which may be considered desirable in the interests of the University. Messrs. H. K. Ghosh, Beni Madho and I. D. Varshney have offered scholarships for the B.COM. students of the University from this session.

The Ordinances for the degrees of D.Sc. and D.LITT. have been thoroughly revised and a new D.PHIL. degree has been instituted under the Faculties of Arts and Science.

Messrs. R. N. Kaul and M. U. Ahmad, Lecturers in the Philosophy Department, have been appointed delegates to the Philosophical Congress which will be held at Delhi in December 1936.

Aligarh Muslim University :

Mr. Mohd. Afzal Husain Qadri, M.Sc. (Alig.), has been awarded the degree of Doctor of Philosophy, in Zoology, of the Aligarh Muslim University. He submitted the following four papers bearing on the work done under the guidance of Dr. M. B. Mirza, Director, Zoological Laboratories.

- (1) "Studies on the Mallophaga of North-Indian Birds." (*Zeit. f. Parasit.*, 1935, 8, Ht. 2).
- (2) "Studies on the Mouth Parts of Mallophaga infesting North-Indian Birds." (*Proc. Ind. Acad. Sci.*, 1935, 3, No. 5).
- (3) "Some New Mallophaga from North-Indian Birds." (*Zeit. f. Parasit.*, 1936, 8, Ht. 6).
- (4) "The Male Genitalia of Mallophaga Infesting North-Indian Birds." (*Proc. Ind. Acad. Sci.* (in press).

Lucknow University :

The following Science Lectures have been arranged for the Winter Session (1936-37). The lectures will be held at 6-30 P.M. in the halls indicated.

*Dec. 4 and 5 (Chemistry Theatre).—

"The mechanism of chemical reactions." By Dr. A. C. Chatterji.