The Illustration Stations in Prince Edward Island, Nova Scotia, New Brunswick, Quebec and Ontario, for the years 1931, 1932 and 1933.

Do. in Manitoba, Saskatchewan, Alberta and British Columbia, for the years 1931 and 1933 inclusive.

Varietal Studies of Flue-Cured, Burley and Dark Tobaccos, by N. A. Macræ and R. J. Haslam, Bulletin No. 178—New Series.

The Vegetable Garden, by W. S. Blair, Pamphlet No. 166—New Series."

"Department of Commerce and Industries, Fisheries and Marine Biological Survey," Fishery Bulletin No. 1 (Union of S. Africa).

"Medico-Surgical Suggestions", Vol. 4, No. 8.

"Memoirs of the Indian Meteorological Department," Scientific Notes, Vol. VI, No. 64.

Some Observations on the Thermal Structure of Cumuliform Cloud, by Flt.-Lieut. R. G. Veryard, B.SC., R.A.F.

"Journal of the Indian Mathematical Society," Vol. I, No. 6.

"Scripta Mathematica," Vol. III, No. 3, July 1935.

"Nagpur Agricultural College Magazine." Vol. 10, No. 1.

"Nature," Vol. 136, Nos. 3434–3438.

"The Journal of the Bombay Natural History Society," Vol. 38, No 2.

"The Journal of Nutrition," Vol. 10, No. 2.

"The Journal of Chemical Physics," Vol. 3, No. 9.

"Science and Culture," Vol. I, No. 5.

"The Indian Trade Journal," Vol. CXVIII, Nos. 1525–1528.

"Indian Journal of Venereal Diseases," Vol. I. Nos. I–III.

CATALOGUES.

"Mitteilungen über Neuerscheinungen und Fortsetzungen," 1935, Nummer 4 (September) (Verlog von Gustav Fischer in Jena).

New Books, Autumn 1935 (Messrs. Edward Arnold & Co., London).

Academies and Societies.

National Institute of Sciences of India:

August 24th, 1935. The following papers were read and discussed:—

(1) R. N. CHOPRA, S. N. MUKHERJEE AND K. V. KRISHNAN: *A Note on the Role of Electrical Charge in the Phagocytosis of Red Cells in Malaria.*– It is now an accepted fact that the immunity as observed in malaria is the outcome of the phagocytic activity of leucocytes. The idea regarding this activation on the part of the phagocytes still centres round the formation of a specific antibody in the system as in bacterial infections, although the existence of such an antibody could not be definitely established by different workers; (Thomson, J. G., *Brit. Med. Jour.*, 1913, **2**, 628; Kingsbury, A. N., *Trans. Roy. Soc. Trop. Med. Hyg.*, 1927, **20**, 359: Manson Bahr, P., *Trans. Roy. Soc. Trop. Med. Hyg.*, 1927, **21**, 63, etc.). Brown (*Brit. Jour. Exper. Path.*, 1933, **14**, 413) from an analogy of the changes in the proteins of the serum and in the electrical charge of red cells indirectly indicated the probability of the existence of an antibody which, by reducing the electrical charge on red cells, was instrumental in bringing about ingestion by leucocytes, though he admitted that the action of serum in such cases was not specific. The work of Chopra and Chaudhury (*Ind. Jour. Med. Res.*, 1933, **21**, 273) showed however that the electrical charge of red cells in human malaria did not always show a reduction, but on the contrary a marked increase in many cases. Hence the immunochemical explanation of the increased phagocytosis in malaria did not seem to be adequate specially in view of some definite biochemical alterations observed in the blood.

The present work was done on *Silenus rhesus* monkeys with a heavy infection (nearly 70% of the red cells) of *Plasmodium knowlesi*. Migration velocity in an electric field of infected and uninfected red cells were determined in the different stages of parasites' growth. The migration velocity of the reticulocytes, popularly believed to be free from protozoal attack, was also determined.

The first point observed was an inequality of speed between infected and uninfected cells that was manifested by the overtaking of one cell by another. Infected cells, in general, were found to be slower. This was contrary to all experience in the case of normal cells. Secondly, a study of the variation of migration velocity in different stages of parasites' growth revealed an increase of migration velocity in the ring stage and a marked decrease in the fully mature schizont stage as compared to normal cells. The healthy cells in these infected specimens all along showed a slight increase. An inference was arrived at from these observations that towards the end of schizogony when the mobility was comparatively lower, the phagocytosis of such infected cells should be more prominent. The equality of the migration velocities of reticulocytes and adult red cells pointed to the possibility that reticulocytes should be equally liable to be infected with parasites as adult red cells are found to be. Infected reticulocytes were actually detected in one case and the relative freedom of these from infection was explained as not due to any peculiarity on the part of such cells but probably to their insignificant numbers in the blood, owing to which, according to the calculus of probability, a small infection should be the result.

The relationship between the migration velocity and the electrical charge was discussed in the light of Lamb-Helmholtz equation: $U_o = D.E/4\pi$. The relationship between electrical charge and phagocytosis was again given by the term $e\text{-}q \cdot q'/D.d.k.T$. U_0 represents migration velocity per unit time, per unit potential gradient: D, the dielectric constant of the medium; E, the potential of the Helmholtzian double layer; q, the charge on a red cell; q', the charge on an ingesting white cell; d, the distance between the centres of these two types of cells at the point of their nearest approach; k, the Boltzmann constant; T, the temperature in the absolute scale and e, the base of natural logarithms. This term was deduced from a consideration of the

electrical work necessary for the approach and collision between two similarly charged particles as in the case of colloid micelles. From this the inadequacy of the part played by the electrical charge of red cells alone in such phenomenon was clearly evident; the importance of the charge of white cells as well as of the dielectric constant of the medium was simultaneously brought out from a theoretical point of view. The changes in the cholesterol content of the plasma and its effect upon the phagocytosis of red blood-cells in a few cases justified our conclusions to a certain extent. The phagocytosis of the actual protozoa during their short extracellular existence was dealt with from the mathematical considerations of probability and finally the importance of the physical factors and of the biochemical alterations in the plasma were also brought out from a theoretical point of view.

(2) W. D. WEST: Nappe *Structure in the Archæan Rocks of the Central Provinces.*—Evidence is brought forward to show that around Deolapar, in the Ramte tahsil of the Nagpur district, there occurs a sharp discordance in the succession of the Sausar series, at which position one or more stages are missing. The trace of the discordance is an irregular closed line, and it is clearly not a simple thrust. The details of the structure suggest that there is a recumbent fold resting upon the surrounding rocks, from which it is separated by the discordance. Both the recumbent fold and the "slide" upon which it rests have been further folded into a syncline. A study of the lithology also supports this view of the structure, since the rocks forming the *nappe* are of a different facies from the rocks surrounding it. It is suggested that the two sets of rocks were far separated at the time of their deposition, and have since been brought into juxtaposition with one another by horizontal movement along the slide.

(3) HORACE BARRATT DUNNICLIFF AND JNANENDRA NATH RAY: *Loss of Morphine in Indian Opium on Storage.*—(*a*) Moist opium does not lose morphine on storage. (*b*) Opium dried at 60° C. stored in contact with air suffers a rapid loss of morphine. This is not completely prevented by storage in corked and paraffined bottles. (*c*) Opium dried at 98–100° and stored out of contact with air does not lose morphine to any appreciable extent. (*d*) There is no evidence of the formation of ammonium salts as a result of the oxidation. (*e*) An enzyme (peroxidase) has been isolated from Malwa opium which may be the factor responsible for the decomposition of morphine. (*f*) A fungoid growth noticeable on moist opium has been identified as that of *Scopulariopsis brevicaulis*, var. *glabra Thom*. (*g*) When this fungus is made to grow in a dilute solution of morphine hydrochloride in a suitable nutrient medium, a slight fall in the concentration of morphine is observed but the specific rotation of the solution does not change appreciably.

Indian Academy of Sciences:

September 1935. SECTION A.—R. PADMANABHAN: *Fluorescence in Cyclohexane.*—With the help of a continuous distillation apparatus it is shown that pure cyclohexane has no fluorescence. K. L. RAMASWAMY AND G. GUNDU RAO: *The Density and Compressibility of Silicane and Silicoethane.*—A convenient apparatus for their simultaneous measurement and the results obtained are given. R. S. KRISHNAN: *Molecular Clustering in Binary Liquid Mixtures (Variation with Composition and Temperature).*—A study of the intensity and depolarisation of the light scattered transversely by mixtures of phenol and water at different temperatures shows that formation of clusters and their size depend upon temperature and composition. M. A. GOVINDA RAU AND S. SATYANARAYANA RAO: *On the Dipole Moment of Tetralin.*—The moment is only small of the order 0.4×10^{-18}, and not 1.66×10^{-18} as reported in the literature. B. V. RAGHAVENDRA RAO: *Doppler Effect in Light Scattering in Liquids. Part II.—Polarisation of the Transversely Scattered Radiations.*—With the typical liquids carbon tetrachloride, toluene and carbon disulphide, it is significant that besides the two Doppler components, the central component is also practically completely polarised. I. CHOWLA: *A Theorem on the Addition of Residue Classes: Application to the Number $\Gamma(k)$ in Waring's Problem.* V. N. THATTE: *Magnetic Double Refraction and Light Scattering in Fused Nitrates.*—The magnetic and optical anisotropies of the NO_3 group are the same as in nitric acid and crystalline nitrates. S. RAMACHANDRA RAO: *Diamagnetism of Copper.*—On colloidalisation of copper, the diamagnetic susceptibility increases, the critical diameter below which large changes occur being $0.8\,\mu$. C. S. VENKATESWARAN: *The Raman Spectrum of Phosphorus.*—Yellow phosphorus as vapour, liquid, solid and solution in carbon disulphide has been studied. M. V. NABAR AND T. S. WHEELER: *The Kinetics of Heterogeneous Organic Reactions: The Reaction between Benzyl Chloride and Solid Silver Nitrate.*—The reaction is independent of the amount of benzyl chloride but is proportional to the surface of silver nitrate present. C. S. VENKATESWARAN: *The Raman Spectra of Dioxane and Tetralin.* R. ANANTHAKRISHNAN: *The Raman Spectra of Heavy Water.*—The principal band is found to have a triple structure and two other new bands have also been observed. S. BHAGAVANTAM: *Raman Spectrum of Deuterium: I.*—With deuterium at 17 atmospheres, five rotational lines and one vibrational line are recorded. The positions and intensities of these lines provide the first experimental confirmation of the theories regarding the D_2 molecule. S. BHAGAVANTAM: *Raman Spectrum of Hydrogen Deuteride.* L. SIBAIYA: *Hyperfine Structure in Selenium, Palladium and Gold.*—In Selenium and Palladium none of the levels examined reveals any even isotope displacement.

SECTION B.—T. N. S. RAGHAVACHARI AND P. V. SEETHARAMA IYER: *The Use of Activated Carbon in the Purification of Water in the Tropics (The Madras City Water Supply).*—Activated granular carbon when used in a slow sand filter, as a sandwiched layer 1½″ thick, is effective in removing the colour, taste and odour. The organic matter is reduced; the carbon maintains its efficiency even after 2 years' continuous service. CHARLES S. PICHAMUTHU: *The Conglomerates and Grits of Kalburga, Kadur District, Mysore.*—As the result of a detailed study of the pebbles and the matrix, the writer has come to the conclusion that the conglomerates are not autoclastic as held hitherto, but that they are of a sedimentary origin.

M. J. PRESSWALLA AND C. J. GEORGE: *The Respiratory System and the Mode of Respiration of the Water-Bug,* Sphærodema rusticum *Fabr., with Remarks on those of* Nepa, Laccotrephes *and* Ranatra.—The respiratory systems of the two forms of adult *Sphærodema rusticum* exhibiting peculiar alary dimorphism have been studied in detail. (MISS) KAMALA BHAGVAT AND MOTNAHALLI SREENIVASAYA: *A Dilatometric Method for Studying the "In Vitro" Digestibility of Milks.*—The dilatometric method affords an accurate and simple method for studying the digestions of milks. The behaviour of the casein particles in cow's milk towards tryptic digestion does not appear to be different from that of the casein particle in artificial solution. N. C. DATTA: *Investigations on Metallic Contamination of Foods. Part II.—Effect of Cooking and Storage of Foodstuffs in Aluminium Vessels.*—Feeding experiments with rats have shown that food prepared in aluminium vessels has no harmful effect on growth, reproduction and general well-being of the animals. H. B. SREERANGACHAR: *Dilatometric Studies in the Enzymic Hydrolysis of Polysaccharides. III.—Hydrolysis of Starch, Amylose and Amylopectin by Takadiastase.*—The depression per millimol release of maltose from potato starch, soluble starch (Lintner), amylose and amylopectin, are respectively 4.0, 4.0, 3.6 and 3·6 mm.^{3}. The depression per degree fall in rotation is 10.7 mm.^{3} in the case of both amylose and amylopectin.

Symposium:

October 5th and 6th, 1935. *Disease Resistance in Plants* (held at Coimbatore).

GENERAL.

(1) L. D. GALLOWAY (Pusa): *The Control of Fungal Parasites by the Plant.*—The control of harmful fungi can be considered under (*a*) infection, (*b*) humidity, (*c*) nutrition, (*d*) temperature, and (*e*) atmosphere. Infection may be seed, soil or air-borne and disease may be avoided by minimising chances of infection. In the study of the onset and progress of diseases humidity is an important factor but very little work appears to have been done. The problem of specificity of certain pathogenic fungi and the cosmopolitan nature of others has not been satisfactorily solved. The role of soil nutrient and the action of poisons and toxins on plants has to be clearly investigated. The growth of the parasites and the resistance of the host are controlled by temperature and the aid of certain chemicals like CO_2, NH_3, $CH_3.CHO$, which have an inhibitory effect on the growth of fungi can be invoked for controlling several fungus diseases. The mechanism of disease resistance presents fresh series of problems for each host plant and each parasite and no general formula is to be anticipated.

DISEASES OF THE PULSE CROPS.

F. J. F. SHAW (Pusa): *The Inheritance of Morphological Characters and of Wilt Resistance in Rahar* (Cajanus indicus).—From a study of the F_1, F_2 and F_3 generations of a cross between a resistant and susceptible varieties of *Cajanus indicus*, evolved at Pusa, it has been shown that the resistance to wilt is conditioned by the presence of the complimentary character. Morphological characters like flower colour, erect or spreading habit of growth, tall or short structure of plant, crowded or open inflorescence and brown and grey markings of the seeds are inherited *independently* of the factors influencing the resistance to wilt.

V. RAMANATHA IYER AND R. BALASUBRAHMANYA IYER (Coimbatore): *A Preliminary Note on the Mode of Inheritance of Reaction to Wilt in* Cicer arietinum.—The reaction to wilt in this crop belongs to the blending type of inheritance manifesting transgressive variation. The type of branching and the colour of the seed coat do not bear any relation with the reaction to disease.

DISEASES OF THE COTTON.

K. N. AMBIGAOKAR AND YESHAVANT D. WAD (Indore): *Studies in Disease Resistance. I.—Cotton Wilt and Environmental Conditions.*—An account of three years' work on the physiology of the cotton plant in relation to wilt. Field observations showed that the progress of wilting in the field may be modified by soil differences, irrespective of its inhibition intensity. Root activity in the upper soil zones was found to be significantly less in diseased plants than in healthy ones. An excessive supply of nitrogen, alone or with phosphate, increased susceptibility. Farmyard manure had no influence.

I. MADHUSUDAN RAO AND YESHAVANT D. WAD: *Studies in Disease Resistance, II.—Leaf-Roll and Red-Leaf in American Cottons.*—Physico-chemical studies of the saps of healthy and affected wilt plants have been made. The pH was greater and the osmotic pressure lower in healthy leaves than in the diseased ones. Studies on soil profiles and the root systems of healthy and affected plants have been carried out in detail. There is generally no visible difference in the soil profiles, under healthy and diseased plants. The root-studies indicate that the high death-rate (as compared with that in normal plants) in the active roots in the upper zone (1 foot) reduce the activity in the roots of lower zone in diseased plants. The disease was produced whenever the surface soil was deflocculated after long continued wetting.

SPIKE-DISEASE OF SANDAL.

M. SREENIVASAYA: *Spike Disease and Resistance in Sandal* (Santalum album *Linn.*) *with Special Reference to its Control.*—The control of this disease presents special problems since the disease affects an extensive crop which takes several years to reach a stage of exploitable maturity. The plant demands during this long period a considerable amount of care and attention by way of tending, host conservation and fire protection. The selection of suitable host plants has proved useful in imparting immunity to sandals effecting rogueing by defoliation has proved useful to detect masking plants. While enforcing methods of plant sanitation has proved helpful in controlling this infectious disease, success has not yet attended the attempts to evolve resistant strains.

B. N. SASTRI: *Physiology of the Spike Disease of Sandal.*—The factors responsible for the accumulation of starch, mannitol and succinic acid in spike tissues have been discussed.

PIRICULARIA ORIZÆ.

K. RAMIAH AND K. RAMASWAMI: *Breeding for* Piricularia *Resistance in Rice* (Oryza sativa).—Breeding work has resulted in obtaining two strains which are not only resistant to the disease but also give a bigger yield than the suscepti-

ble variety. The inheritance studies in this cross would make it appear that resistance to *Piricularia* is a simple recessive.

DISEASES OF SUGARCANE.

C. S. KRISHNASWAMY: *Studies in Disease Resistance in Crop Plants in the Madras Presidency. II.—Estimation of Disease Resistance in Sugarcane Mosaic.*—150 varieties of cane have been tested since 1926 for their resistance to mosaic. The percentage of incidence of mosaic in a variety when interspersed with the diseased cane Co 213, which is taken as standard, gives a measure of the relative resistance of the variety under trial. The studies have shown that immune varieties are rare as even highly resistant varieties are capable of taking up infection under special conditions. An analysis of the factor of disease resistance on morphological and histological characters has been made.

N. L. DUTT, SYED ABBAS HUSSAIN AND M. K. KRISHNASWAMI: *A Note on the Breeding of Sugarcane Varieties Resistant to Mosaic.* As a result of the extensive inter-varietal, inter-specific and inter-genetic crosses, a large number of seedlings are available representing all gradations of resistance to mosaic, from susceptible to immune. Seedlings which contain the blood of *Saccharum spontaneum* have proved highly resistant or immune, while on the other hand those that do not contain *spontaneum* blood show a high percentage of mosaic infection. With regard to the mosaic resistant varieties, cases have been recorded where the resistance is found to vary geographically. This is perhaps due to the existence of physiologic races of the causal agent.

K. L. KHANNA: *Some Aspects of Disease Resistance in Sugarcane. I.* Plant Vitality, Tentative 'Susceptibility' and 'Resistance' ranges to incidence of pests (shoot borers) and diseases (top rot and red stripe), at different stages of growth, in different seasons and from different treatments such as manures, irrigation and soil types, have been measured and by injecting oxidising agents and certain chemicals and also exposure to component rays of white light, it is possible to raise the vitality of the plants to resist diseases and pests. *II. Morphological and Physiological.*—Some of the characters responsible for differences in varietal predisposition and resistance have been noted. *III. General.*—The relative position of 'major' and 'minor' diseases has been discussed in relation to the rapidly changing varieties as a result of breeding improved types of sugarcane.

SHOOT ROT OF COCONUT.

J. S. PATEL AND A. P. BALAKRISHNA NAYAR: *Natural and Induced Resistance to Shoot Rot* (Gleosporium sp.) *in the Coconut.*—From observations made on large varieties of coconut collected from different parts of the world, and grown at the Government Agricultural Research Station, Pilicode, it is seen that a variety from Philippines showed the lowest percentage of infection (37 per cent.) and a variety from Mysore showed the highest (87 per cent.). The disease occurred in palms 3–9 years of age and thereafter the trees are generally less susceptible. The susceptibility is more pronounced in trees planted on the surface than in the trees planted at a depth of 3 feet. The incidence of disease is considerably reduced when potassium sulphate is applied to the soil.

The Academy of Sciences, U. P.

September 1935. *Special Meeting of the Academy.*—It was resolved (1) to change the name of the Academy to "The National Academy of Sciences, India" and (2) to raise the number of Fellows from 30 to 100.

September 18th, 1935. *Ordinary Meeting of the Academy of Sciences, U.P.*—The following papers were read and discussed:

RADHA RAMAN AGARWAL AND SHIKHIBHUSAN DUTT: *The Chemical Examination of Punarnava or* Boerhaavia diffusa *Linn. Part II.—The Isolation of an Alkaloid Punarnavine.* B. P. PANDE: *On Amphistomes with Central Pouch from India.* HRISHIKESHA TRIVEDI: *The Absorption Spectrum of Hydrogenchloride Molecule and its Upper Unstable State.*—By the help of a theory developed by the author previously it is possible to calculate the form of the potential energy of the unstable state of hydrogen chloride from the measurements of its absorption coefficient. The form has been known only qualitatively up till now. HAR DAYAL SRIVASTAVA: *New Hemiurids (Trematoda) from Indian Marine Fishes. Part I.—New Parasites of the Sub-Family* Prosorchinae *Yamaguti*, 1934. HAR DAYAL SRIVASTAVA: *New Allocreadids (Trematoda) from Indian Marine Fishes. Part I.—New Parasites of the Genus* Halicometrina *Linton*, 1910. HAR DAYAL SRIVASTAVA: *New Allocreadids (Trematoda) from Indian Marine Fishes. Part II.—New Parasites of the Genus* Decemtestis *Yamaguti*, 1934.

The Indian Physical Society:

September 21st, 1935. An ordinary monthly meeting of the Indian Physical Society was held at 3 P.M. in the Applied Physics Seminar, University College of Science, Calcutta, with Principal B. M. Sen, M.A., I.E.S., in the Chair. The following papers were read and discussed:

(1) N. K. SAHA (Lahore): *Pressure Coefficient of Electrical Resistance of Metals.* (2) P. LAL AND K. LAL (Lahore): *On the Statistical Theory of Neutral Atoms.* (3) D. V. GOGATE (Baroda) AND D. S. KOTHARI (Delhi): *On the Measurement of the Quantity of Light by the Photoelectric Cell.* (4) K. PRASAD AND B. N. GHOSH (Patna): *Studies on Water Jets.* (5) P. SYAM (Calcutta): *On the Absorbing D-Layer of the Ionosphere.* (6) P. C. MAHANTI (Calcutta): *Fine Structure Analysis of Red Bands of Magnesium Oxide and Isotopic Effect.* (7) P. C. MAHANTI (Calcutta): *Potential Energy Curves and the Structure of the Alkaline Earth Oxides.* (8) S. DATTA AND M. DEB (Calcutta): *Investigations on the Ultraviolet Absorption Spectrum of Ce+++ion.* (9) H. P. DE (Calcutta): *State of Polarisation of Continuous X-Rays from a Thin Aluminium Anticathode.* (10) H. P. DE (Calcutta): *On the Emission of Positrons from Bismuth.*

The Indian Chemical Society:

August 1935. H. R. DUNNICLIFF AND BRAHM PRAKASH: *Action of Hydrogen Sulphide on Insoluble Chromates. Part I. Lead Chromate and Silver Chromate.* S. S. BHATNAGAR, P. L. KAPUR AND N. R. VERMA: *Magneto-Optical Rotation of Uranyl Salts.* R. PADMANABHAN AND S. K. KULKARNI JATKAR: *The Anomalous Rotatory Dispersion of l-β-Pinene Part I.* B. B. DEY AND T. K. SRINIVASAN: *Studies in the Colarmine*

Series. Part IV.—5-Bromonarcotine, 5-Bromocotarnine, 5-Bromohydrocotarnine and 5-Bromonarceine and their Derivatives. DUKHAHARAN CHAKRAVARTI: *Synthesis of Coumarins from Phenols and β-Ketonic Esters. Part III.—Use of Various Condensing Agents.* PHULDEO SAHAY VARMA AND K. S. VENKAT RAMAN: *Nitration. Part V.—Nitration of Monohalogen Derivatives of Xylenes.* PULIN BEHARI SARKAR: *The Chemistry of Jute-Lignin. Part VIII.—Methylation of Lignin.* PULIN BEHARI SARKAR: *The Chemistry of Jute-Lignin. Part IX.—Acetylation of Lignin.* S. M. MEHTA AND (MISS) OLIVE JOSEPH: *The Viscosity of Titanium Dioxide Sol in Presence of Electrolytes.* R. PADMANABHAN: *A Modified Photographic Method for Substances of Small Rotatory Dispersion.*

September 1935. K. VENKATA GIRI: *Studies in Salt Activation. Part II.—Influence of Salts on the Stability of Amylase.* M. M. RAM MOHAN RAO AND S. K. KULKARNI JATKAR: *The Heats of Transition of Triglycerides.* MAHADEO PRASAD GUPTA AND SIKHIBHUSHAN DUTT: *Dyes Derived from Acridic Acid.* SACHINDRA NATH ROY: *A New Volumetric Method for the Estimation of Lead.* RADHA RAMAN AGARWAL AND SIKHIBHUSHAN DUTT: *Chemical Examination of* Cuscuta reflexa, *Roxb. Part II.—The Constitution of Cuscutalin.* NRIPENDRA NATH CHATTERJEE: *Studies in Diphenyl Series. Part III.—A New Route to Phenanthrene.* M. A. HAMID GURCHARAN SINGH AND H. B. DUNNICLIFF: *The Action of Hydrogen Sulphide on the Chromates of Hydrogen, Ammonium, Sodium and Potassium.* RANAJIT GHOSH: *Synthesis of Hexahydro-α-Coumaranone.* B. B. DEY AND (MISS) P. LAKSHMI KANTAM: *Studies in the Cotarnine Series. Part V.—Condensation of Cotarnine with Aromatic Nitro-Aldehydes.* HARISH CHANDRA GOSWAMI AND PULIN BEHARI SARKAR: *On the Triple Nitrites of the Rare Earths and a New Micro-Test for Cæsium.* K. N. KAUL AND G. S. AHLUWALIA: *Action of Cotarnine and o-Nitrobenzaldehyde.* U. S. KRISHNA RAO AND B. L. MANJUNATH: *On the Supposed Occurrence of Acids with Uneven Number of Carbon Atoms in Vegetable Oils and Fats. Part II.—The Acid Fraction of Mean M.W.* 354 *from the Seeds of* Butea frondosa, *Roxb.* JAGRAJ BEHARI LAL: *Metallic Uranium in Organic Synthesis—Part II.* PRIYADA RANJAN RAY AND HARIBOLA SAHA: *A Short Note on the Chromium Biguanide Complexes.* DUKHAHARAN CHAKRAVARTI AND BAIDYANATH GHOSH: *Synthesis of Coumarins from Phenols and β-Ketonic Esters. Part IV.—Coumarins from 4-Chloro and 2-Nitroresorcins.* HIRENDRA NATH DASGUPTA: *Heterocyclic Compounds containing Arsenic in the Ring—A Preliminary Note.*

The Indian Botanical Society:

September 1935. T. ERAMBARAM AND I. M. RAO: *Studies in Absorption and Respiration—II.* R. E. COOPER AND S. A. PASHA: *The Osmotic Pressure and the H-Ion Concentration of Sea-Weeds in Relation to those of Sea-Water.* S. C. DIXIT: *The Charophytes of the Bombay Presidency.* J. F. R. D'ALMEIDA: *On the Occurrence of* Gymnogramme calomelanos *Kaulf. in India.*

October 1935. R. H. DASTUR AND M. R. RAUT: *Carbohydrate Nitrogen Ratio of the Shoots of Some Tropical Trees.* P. ABRAHAM: *Occurrence of Extracapellary Ovules on the Floral Axis in Cotton.* A. B. SARAN: *The Effect of Wounding on Respiration in the Starving Leaves of* Aralia guilfuylei. D. B. MUKHERJEE: *Notes on a Collection of Plants from Mahendragiri.* T. C. N. SINGH: *Notes on the Teratology of Certain Indian Plants—VIII.* P. MISRA: *On the Peg of the Seedlings of* Cucurbita maxima *Duchesne.* B. N. SARKAR: *Note on the Movements of* Basella cordifolia *Lamk.* M. B. RAIZADA: *Recently introduced or otherwise imperfectly known plants from the Upper Gangetic Plain.* A. C. JOSHI: *Number of Chromosomes in* Suæda fruticosa *Forsk.*

Industrial Outlook.

Fermentation of Molasses: Use of Pure Yeast Acclimatised to Antiseptic.

THE fermentation process with pure yeast is different from that with ordinary yeast because one knows when it commences and when it ends. It is a logical operation—almost mathematical.

For each vat of fermentation the leaven is changed so that the operation is always commenced with vigorous pure yeast. It is easy to understand that in this condition, the bacteria which are in the molasses are entirely subordinate to the yeast. This factor is more marked because pure yeast can tolerate large doses of antiseptics in the special apparatus, whereas the bacteria are completely paralysed by the antiseptics in the apparatus and in the large vats of fermentation. Similarly, if any mistakes occur during the operation of the yeast-apparatus or during its sterilisation, these are negligible owing to the action of the antiseptics.

Yeast which is continually changed enters the fermentation room with the maximum of strength and of diastatic power. The inversion of saccharose is effected in a short period and the transformation of the glucose into alcohol is complete.

The apparatus is so arranged that it is possible to clean it thoroughly twice a day without interruption of the process. This is not possible with the ordinary method of pure yeast culture.

A recent process developed by a French firm adapts laboratory methods of pure yeast culture for industrial purposes, and prevents the "negative phenomena" which up to now have paralysed its development.