

sections of the corresponding regions, with that of the Roach. An attempt has been made in the second part to correlate the structure of the hind brain with the feeding habits of different *Gadidæ*.

The author lays considerable stress on the existence of true facial lobes in *Gadidæ* since their presence in these forms has been denied by previous workers. It has been stated that, while identifying the various lobes of the brain, important consideration has to be given to their histological structure in addition to the nerve trunks and their associated tracts. The somatic sensory area or the 5th lobe is very prominently developed in the predacious members of the *Gadidæ*, while the facial lobes are well developed in the forms which feed on crustaceans, molluscs and worms. The dentition is also modified according to the nature of the diet.

Basic Xenoliths and their Grain-size.

DURING recent years a large volume of literature has developed dealing with the various aspects of the basic xenoliths, but few people have attached any importance to the apparent relationship between the

grain-size of the xenolith and that of the host rock. This problem has been lately studied by Miss Joplin of Cambridge (*Geological Magazine*, No. 851, May 1935). She has made a detailed study of the xenoliths and their grain-size, and depending upon the work of such well-known petrographers as Nockolds, Tilley and Campbell Smith, she has come to the conclusion that in most cases xenoliths are more fine-grained than the host rock. This discrepancy is brought about by recrystallisation and hybridisation in rocks. Under the influence of thermal metamorphism, large mineral individuals are broken up into smaller granular units, thus bringing about a reduction in grain-size. Similar effects are produced in metamorphic rocks where poikilitic structure is so common. Discussing the case of hornblende in this connection, she has suggested that when criss cross flakes of biotite are developed it leads to a finer texture. Further it is interesting to note that at a late stage in the hybridisation of rocks, hornblende becomes so highly poikilitic that disruption is imminent, and a slight movement of the magma is sufficient to produce a fine-grained aggregate.

Science Notes.

Paraffin Films in the Study of Infra-red Absorption Spectra.—Drs. N. R. Tawde, Y. G. Naik and D. D. Desai, of the Royal Institute of Bombay observe:—"Great difficulty generally presents itself in the preparation of paraffin windows for absorption chambers in the infra-red work. Essential factors in preparing a proper film are (i) the homogeneity of the film, and (ii) the thickness of the film.

"While studying the experimental technique of infra-red absorption measurements, we tried various methods of preparing such films. The process of preparing a film on the water surface was rather easy, but it had the following defects: (a) The film was not of uniform thickness, (b) it cannot be made very thin, for in doing so, it gets perforated, and (c) it is not homogeneous throughout, for there is every chance of water vapour remaining embedded within the film, thereby increasing the absorption of the infra-red radiation. After enclosing the HCl gas for about 24 hours in a chamber closed with this film, minute acid drops were formed on both sides of this film, showing that it was permeable to HCl gas for the thickness desired. It was therefore best if the films were quite free from any traces of moisture.

"M. Czerny (*Zeit. f. Physik*, 1927, 44, 235) and L. Kellner (*Zeit. f. Physik*, 1929, 56, 215) have described a method of preparing this film by pouring paraffin on a plate of glass which was previously heated, and on which, a thin membrane

of celluloid was spread. The film was taken out by removing and breaking off the celluloid membrane. The thickness of the film thus obtained was rather high, i.e., 1.2 to 1.5 mms. or even more.

"During our experiments, we thought of preparing the film by spreading paraffin on a clean surface of mercury which was kept at a suitable temperature. The advantages of using this method are found to be the following: (a) no trace of water will interfere; (b) the film is of uniform thickness throughout; (c) the film of any desired thickness can be formed; and (d) the film is not permeable to HCl gas or air. There is not the slightest trace of moisture on the outside surface.

"In order to test the homogeneity and uniformity of the thickness of such films, we have examined the absorption for heat rays, of the films prepared both on water and mercury surfaces. These were obtained with thickness within the desired range and examined for absorption at various sections of their area under identical conditions. The mean value of percentage absorption was determined in each case. The deviation of various readings from the mean showed that for the thickness desired for the purpose of these experiments, the paraffin films prepared on mercury surface give, on the whole, better results than those prepared on water surface. This can be verified from the following which is typical of the different sets of readings taken."

| Film prepared on surface of | Thickness of the film | Mean % absorption | Deviation from the mean | |
|-----------------------------|-----------------------|-------------------|-------------------------|--------|
| | | | Max. % | Min. % |
| Mercury .. | mm. 0.375 | 73.402 | 0.1771 | 0.1635 |
| Water .. | 0.55 | 76.88 | 0.43 | 0.26 |

* * *

Notes on "A study in the mode of pollination, in *Portulaca quadrifida* Linn."—Mr. S. Ghose, St. Xavier's College, Calcutta, writes:—"While making a study of the physiological causes of the movement of the petals and leaves of *Portulaca quadrifida* L., I observed that the pollination of the flowers of the plants under observation showed a very interesting change in their mode of pollination. The pollination of the flowers of *Portulaca grandifolia* Lindl. and *P. oleracea* Linn., was studied by De Bonis (*Riv. fis. mat. Sc. nat.*, Pavia, 1893) and Kerner (*Nat. Hist. Pl. Eng. ed.* 1, 11, 395) respectively and they found the flowers of these plants to be either partially or wholly cleistogamous.

"The flowers of *Portulaca quadrifida* L., however, show a very interesting change in their mode of pollination. The terminal portion of the axis on which the flowers grow is cup-shaped, inside which the flowers remain concealed, surrounded by four terminal opposite leaves. In continuous deep shade or in darkness the flowers do not open, but remain enclosed in the fold of the leaves, thus ensuring cleistogamy.

"But in course of this study, I found the following facts which distinctly indicate chasmogamy or cross-pollination. (1) Flowers always terminate a vertical branch. (2) Flowers though very small are made conspicuous by their large numbers, bright yellow colour of the petals, and all blooming at a time. (3) As the day advances the flowers emerge out of the cup-shaped axis and the folds of the leaves and place themselves quite exposed. (4) An average of about two hundred readings shows that light and water supply being sufficient the flowers all open between 10-45 A.M. and 11 A.M. and remain open for about 2 hours and 25 minutes. (5) The style is longer than the filaments of the stamens. (6) Serial sections of some freshly opened flowers showed no sign of pollination. (7) Ants, flies and sparrows are found to visit the plants when the flowers remain open.

"Study of the above facts show that the pollination in *Portulaca quadrifida* L., is dependent on external conditions, such as light, temperature and humidity.

"A complete paper will be communicated elsewhere."

* * *

A Note on Microspore-formation in *Melosira varians* Ag.—Mr. M. Abdul Majeed, Botany Department, Government College, Lahore, writes:—"Microspore-formation has been studied in *Melosira varians* Ag. at its natural habitats in Lahore and its vicinity and experiments have also been performed to produce it culturally in the Laboratory.

"Although the Knop's solution did not give much satisfactory results with this Diatom, the writer, however, was successful in cultivating it on the solid media of Agar Agar. (Method employed by Richter-Rein Kulturen von Diatomeen, 1906).

"The long filaments within a period of 8-10 days broke up into single individual frustules, and the inner contents of the protoplast by numerous successive divisions formed 8-16 or more protoplasmic bodies (microspores), each 4-6 μ in diameter. These naked cells later on emerged out of the frustules after about a fortnight or so and then developed new siliceous walls."

Birthday Honours :—

Knighthood.—Dr. L. L. Fermor, O.B.E., D.Sc., F.G.S., F.R.S., Director, Geological Survey of India. C.I.E.—Lt.-Col. R. Knowles, I.M.S., Professor of Protozoology and Secretary of the Calcutta School of Tropical Medicine. Dewan Bahadur.—Rao Bahadur L. K. Ananthakrishna Ayyar, B.A., L.T. Rao Bahadur.—Mr. M. Vaidyanathan, M.A., L.T., F.S.S., Statistician, Imperial Council of Agricultural Research. Rao Sahib.—Dr. T. V. Ramakrishna Ayyar, Entomologist, Agricultural Research Station, Coimbatore.

* * *

Wind Data for Wind Mills. By V. Doraiswamy Iyer, B.A., *Scientific Notes*, India Meteorological Department, 6, No. 63. Pp. 57-85.—Monthly normals of wind velocity for 205 observatories in India and a few stations in the neighbouring countries are given and the distribution of wind velocities in the different seasons is illustrated by charts. Curves of the diurnal variation of wind velocity at 22 stations for the four seasons are given. Tables giving the frequencies of occurrence of winds of different speed ranges, and of days with different total duration of wind-speeds exceeding 6 miles per hour which is considered the minimum for working a wind mill for agricultural purposes, have also been prepared for fifteen stations. The data presented are briefly discussed.

* * *

Chromium Steels.—[His Majesty's Stationery Office, Price, (Post Free) 8s.]. This book presents a comprehensive review of published information on the plain chromium steels, and gives a detailed account of their history, constitution, mechanical and physical properties. The uses of plain chromium steels (structural steels, case hardening steels, steel castings, gauges and dies, ball bearings, rails, valves, etc.) are also dealt with and some hitherto unpublished work carried out at the Research Department, Woolwich, is described. The treatment of the subject will make the work of interest and value to metallurgists and engineers.

* * *

The Cadak Festival.—In a paper presented before the Asiatic Society of Bengal, at an ordinary meeting held on the 3rd June, Mr. K. P. Chattopadhyaya described a festival observed in Bengal, called the Cadak festival, which is associated with the vernal equinox. The ceremony begins a week before the end of the month of Caitra (March-April) and culminates on the last day of that month, which also marks the close of the year in Bengal. This date is known

as the day of the passing of the sun into Aries (Mahāviṣuva samkrānti). Actually it comes after the day of the vernal equinox by about three weeks. The name, however, indicates clearly the association with the equinoctial day which once did coincide with this date. The end of the year in Bengal appears in course of time to have lagged behind to this extent. The traditional origin of the festival is that on this date king Vāna in order to please Mahādeva, drew blood from his body as an offering and propitiated him by dances (along with friends) which are favoured by him.

* * *

Gold Deposits in Trichy.—It is understood that Mr. Naraindas Girdharidas has taken prospecting mines' lease for exploiting auriferous quartz, carrying pyrites and gold, with horn blende and mica schist. The mines have been tapped in a village in Kulitalai Taluk, Trichy District. The veins running across cover an area of 3 square miles.

* * *

Glass Manufacture in Hyderabad.—The Department of Commerce and Industries has recently given a fillip to the work of reviving old industries by starting a glass factory in the suburbs of the Hyderabad City. The factory has been equipped with up-to-date plant and is located close to a range of hills rich in quartz.

The manufacture of paints and varnishes has also been started, and it is hoped that very soon the State will be able to supply her local needs. It may be mentioned that, at present, the total imports exceed ten lakhs of rupees.

* * *

Fruit Cultivation in Hyderabad.—The Imperial Council of Agricultural Research has recently given a grant to the Agricultural Department for carrying on research work on grapes and custard apple. The activities of the Agricultural Department in the development of fruit cultivation have recently been intensified with the result that keen interest has been aroused in the farmers. An extensive survey of the fruit growing industry has already been made and in the Aurangabad District, which is reputed to be the best fruit growing area in the State, experimental gardens have been established at Himayatnagar, Sangareddi, Parbhani, Warangal and Raichur. Training classes have been started in the experimental farms where students receive instruction in the scientific methods of fruit culture.

* * *

In the course of an address on the future of sugar industry in India delivered before the Royal Society of Arts, London, Mr. B. C. Burt, Agricultural Adviser, Imperial Council of Agricultural Research, said that the season 1935-36 will see about 145 modern factories in operation with an estimated combined capacity of 810,000 tons of sugar annually. For further expansion in Northern India there is little room. The development in the south will be gradual. There is great scope for factory sugar, and this can be seen from the fact that for the quinquennium ending 1931, the average consumption was 961,000 tons. The sugarcane crop which is an all-times crop has given the Indian cultivator a relatively large income for his labour and employment throughout the year; by closer co-operation between the factories and growers, the

future of the Indian Sugar Industry will be assured.

* * *

Preparation of Sugar Syrup from Cashew Apple.—The Department of Industries, Madras Government, have during recent years taken keen interest in the development of cottage industries. Recently they organised a demonstration at Mangalore on the preparation of sugar syrup from cashew apple, a fruit which is now being exploited mainly for the cashew nuts. The juice that can be extracted from the pulp contains about 10 per cent. invert sugar. But the tannins, phenols and other unknown constituents of the fruit juice render it unsuitable for use. Besides, the juice perishes very quickly. To preserve and make available the sugar of this apple, it is necessary, therefore, to remove the undesirable constituents and prepare a concentrated syrup. This is done by treating the juice with slaked lime, filtering off the precipitate formed through cloth, adding a little acid and concentrating the filtrate in an open pan over a fire, to about a sixth of the original volume of the juice. Thus a thick syrup is obtained, golden yellow in colour and almost odourless. About an ounce of syrup could be prepared from five fruits at little cost.

The syrup, containing as it does only invert sugar, is easily assimilable and therefore makes an important article of food. Its greater use, however, would be in preserves and confectionery.

* * *

At the time of the tenth anniversary celebration of the Establishment of the Indian Cotton Committee and the Technological Laboratory, on 29th May, certain extensions to the field of activities envisaged by the laboratory were made.

The laboratory was originally intended for helping cotton breeders to evolve new varieties of cotton which would be an improvement over existing varieties, in point of yield, hardihood, ginning percentage, spinning quality, etc. The work of the laboratory was next extended so as to undertake the tests on samples submitted either by the East India Cotton Association or the Mill Owners Association of Bombay and Ahmedabad. A certain amount of work was also done to determine the susceptibility of cotton to certain insect pests. Researches on the properties of cotton fibre, as well as on the effect of the different processes on the quality of yarn spun from a cotton was also being carried out.

It is now proposed to extend the scope of the laboratory, so as to afford facilities for investigations on bleaching, dyeing, mercerising, and finishing operations. The laboratory will also embark on a scheme of propaganda for disseminating scientific and technical information available to the indigenous industry.

In this connection, it may be pertinent to refer to the recent statement of Mr. H. C. Shroff, who recently visited India, before the Lancashire Indian Cotton Committee, in which he mentioned that while in India he was shown several strains of cotton which compared very favourably with some of the cotton now being imported by Great Britain from foreign countries. It would take some time before these cottons could be produced in India in large quantities, but in a few years India would be able to supply England cottons, fully equal to what they were purchasing elsewhere at present.

Pulp and Paper Conference.—A conference of pulp and paper interests in India met at Calcutta on March 13th and 14th, and as a result of the discussions it was proposed to request the paper pulp section of the Forest Research Institute at Dehra Dun to investigate, (1) The mechanical treatment of bamboo prior to digestion, (2) Manufacture of mechanical pulp from bamboos, (3) Treatment of mixed species of bamboos, (4) Examination of Sabai grass (*Ischoemum angustifolium*) from different areas with regard to percentage yield of pulp and bleach consumption, and (5) Investigation of the various causes responsible for the discolouration of pulps and papers made in the mills.

According to an Editorial note published in the *Indian Forester*, the work will be taken in hand by the Forest Research Institute and carried out as quickly as staff and funds permit.

* * *

Under the auspices of the Indian Society, London, an exhibition was organised at the Alpine Club Hall: the collections of Mr. J. P. Baker, one of the world's foremost textile printers, consisting of beautiful specimens of hand painted cotton of the eighteenth century are on view. These exhibits, which have been grouped under three classes, pure Indian, Chinese influence, and Western influence, cannot fail to impress the glorious art that was India's.

* * *

A scientific expedition under the leadership of Professor Mark of Vienna University, has discovered that glacier ice on the Jungfrau (Switzerland) contains heavy water in 1:2,500 concentration which is double that present in normal ice. (*Chem. Age*, 1935, 32, 405.)

* * *

What is considered to be the world's rarest liquid, "heavy oxygen water" is now being produced at the University of Manchester by means of a recently constructed diffusion apparatus. Professor M. Polanyi and J. B. M. Herbert recently demonstrated the production of heavy oxygen water by the newly designed apparatus which is capable of yielding only 2/5 of a drop per day. One atom out of every 100 of oxygen has an atomic weight of 18, and the concentration of heavy oxygen is considered to be an achievement, since the difficulties are much greater than in separating the three kinds of hydrogen recently discovered.

* * *

Professor William C. Rose of the University of Illinois recently announced the results of his experiments on the isolation of α -amino- β -hydroxy butyric acid, an amino acid which is claimed to be absolutely essential to growth and life. This essential amino acid has also been prepared synthetically. About five years ago, Dr. Rose and his associates fed animals with a mixture of foods free from protein but containing a mixture of all the 21 amino acids then known. The animals receiving such a food declined rapidly in weight and eventually died. This was interpreted to indicate the presence, in proteins, of a hitherto unknown component which was essential to life. Further research resulted in the isolation of the new amino acid, which when added to a protein-free diet containing the 21 previously known amino acids produced normal growth.

An Electrolytic Process for extracting casein and lactose from skimmed milk, described by J. Kato (*J. Soc. Chem. Ind. Japan*, 1934, No. 4), utilises a three-compartment dialyser. The two end compartments are filled with water and contain respectively a carbon anode and a brass cathode. Adjoining the anode is a chromated gelatine-impregnated silk membrane while the membrane at the cathode is made of similarly impregnated canvas. These membranes oppose passage of lactose towards the central chamber. Strict control is kept of the acidity in the central compartment. During electrolysis (100 volts, 1 amp.), a gradual reduction in hydrogen-ion concentration is recorded as the various metallic ions (calcium, magnesium, potassium, etc.) migrate to the cathode compartment while the acidic ions pass into the anode compartment. On approaching the iso-electric point, casein begins to coagulate and is separated in a very pure form by filtration while the filtrate is a lactose solution likewise free from all but traces of mineral salts. Chemically pure lactose is isolated by evaporating in a vacuum, and centrifuging. (*Chem. Age*, 1935, 32, 405.)

* * *

According to a note appearing in *Science* (1935, 81, Science News, page 8) Dr. F. A. Gibbs, H. Davis and E. L. Garceau of the Harvard Medical School, reported to the American Physiological Society that an electrical hook up to the brain producing wavy lines traced on paper, gives a new clue to what goes wrong in epilepsy. They find by this means that epilepsy is probably a neurological storm which results in great piling up of electrical discharges.

* * *

According to a note appearing in *Science* (1935, 81, 340) the cause of the synchronous flashing of fireflies is really to be sought in the mating habits of these insects. Professor John Bonner Buck of the Zoological Laboratory, The Johns Hopkins University, has shown that in *Photinus pyralis*, the male flies emit single flashes about every 5.7 seconds. The female remains in the grass, and responds to some near male by flashing shortly (2.1 seconds) after each of his flashes. This exchange of signals continues until the male reaches the female. The essential factor involved is that the female who flashes only in response to the flash of the male invariably maintains the period of about 2.1 seconds at which she replies to the flash of the male. A striking feature of this "attraction" is that whereas the exchange of signals is initiated by a single pair, other males within a range of about 10 feet often join in also, so that as many as 5 flies may fly towards one female. The same response may be induced by selecting a male and in proper imitation of the female, flashing a torch light about 2.1 seconds after each of his flashes.

* * *

Marketing Officers for Travancore.—At the joint meeting of the Assembly and the Council of Travancore presided over by Sir Muhammad Habibulla, a sum of Rs. 3,440 was set apart for the appointment of marketing officers.

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Professor S. C. Dhar, D.Sc., of the Nagpur University has just returned after a brief sojourn from Europe. During his stay in Europe, he spent some time with Professor Whittaker, and

made some valuable contributions on Relativity and Autographic Functions. He also spent some time with Professor Hadamard of Paris and his dissertation on Mathieu Functions is regarded as a standard work on the subject.

* * *

The Council of the Royal Society, London, has awarded Dr. M. N. Saha, a sum of £150 for research on the theory of the Thermal Ionisation of Gases. Dr. Saha has also been awarded the Carnegie Research Scholarship for the year 1935-36 by the American Carnegie Authorities for the above purpose. Dr. Saha is leaving for America in September next. He will undertake a world tour before returning to India.

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Dr. J. J. Rudra, at present Lecturer in Electrical Technology, Indian Institute of Science, Bangalore, has been appointed to the Chair of Electrical Engineering, College of Engineering, Madras. He is leaving Bangalore very shortly to take up his new post.

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Mr. D. Ananda Rao, Principal, Agricultural College, Coimbatore, has been appointed Director of Agriculture in succession to Mr. S. V. Ramamurthi, I.C.S.

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Mr. V. Ramakrishna, I.C.S., Director of Industries, Madras, has been appointed Deputy Secretary to the Government of Madras, Labour and Industries Department. Mr. L. B. Green has been appointed Director of Industries, Madras in succession to Mr. V. Ramakrishna, I.C.S.

* * *

The Mathematics Student (Vol. II, No. 4, December 1934).—(1) Pandit Hemraj gives alternative proofs of a certain extension of Wilson's Theorem in the theory of prime numbers, originally stated and proved by Gauss. (2) T. R. Raghava Sastri proves the following theorem: If ABCD and A'B'C'D' are two homographic tetrads of points on a conic S, the six meets of pairs of corresponding joins like AB, A'B' together with the six meets of pairs of non-corresponding joins like AC, B'D' lie on a conic passing through the pole with respect to S of the homographic axis of the two tetrads. Several corollaries and special cases are discussed. (3) A. Narasinga Rao discusses and interprets in terms of mechanics the proper and improper solutions of the following problem: Given any number of points, A_1, A_2, \dots, A_n , not necessarily coplanar and a function $f(r)$ which is single-valued, continuous, positive and monotonic increasing to infinity with r , it is required to determine the position of a point P such that

$$\phi(P) = a_1 f(r_1) + a_2 f(r_2) + \dots + a_n f(r_n)$$

shall be a minimum, the a 's being positive constants, and r_1, r_2, \dots the distances PA_1, PA_2, \dots . (4) K. Rangaswami discusses some properties of ortho-lines and "orthopoints" with reference to conics passing through A, B, C and P, and conics having ABC as a self-polar triangle.

* * *

We have recently received from Messrs. Activated Sludge Limited, London, a pamphlet on the activated sludge plants in India by Dr. Gilbert J. Fowler, D.Sc., F.I.C., F.R.San.I. The pamphlet gives brief summaries of the studies made and the results obtained from the eleven installations, which have been kept under scientific supervision, at any rate, during the

earlier periods of their operation; and consequently they are all virtually scientific experimental solutions by means of which the very varying conditions such as are met with in India, have received careful study. Nine of the eleven plants are in actual operation to-day; two others which have been in satisfactory operation, were closed down at the end of their experimental periods.

* * *

Deming Pumps.—We have recently received a catalogue (No. 30) of the Deming Pumps, of Messrs. The Deming Company, Salem, Ohio, U.S.A., which, we believe, will prove to be of great interest to all those interested in pumping equipments—distributor and dealer, architect and engineer, and industrial executive. The Firm which enjoys a world-wide reputation, was established fifty-four years ago, and has specialised in pumps construction, a feature which is responsible for the progressive spirit and traditional quality associated with the Deming name. The catalogue draws attention to a very wide range of equipment—centrifugal and rotary pumps and cylinders, spray pumps, etc.—which will meet every requirement.

* * *

Announcement:—

Congress of the F.E.A.T.M.—Dr. Rosedale writes:—At the next Congress of the Far Eastern Association of Tropical Medicine it is proposed to hold a round-table discussion on nutrition.

Papers are invited upon Nutrition from the widest point of view under any of the sub-headings below.

If suitable support is forthcoming, it may be possible to combine the papers received and the discussions in a volume, which would constitute an up-to-date account of Nutrition as concerns the East.

It is hoped that some indication of the support which may be expected may be received during 1935, though it will not be necessary for titles of papers to be sent in until a later date which will be notified in due course. Such co-operation will enable the Council to know how much time should be allotted for the discussion.

It has been proposed to divide papers under three headings as follows: I. *Economics*—to include such aspects as Agriculture in relation to human nutrition, e.g., improvement of yield and quality of food crops; horticulture; fruit-growing; stock raising; dairy problems; institutional feeding; food surveys; storage; cooking, &c. &c. II. *Chemical and Physiological*—to include food analyses in the widest sense; vitamin, mineral, fat, protein studies, etc.; metabolism, basal metabolism, energy requirements, specific dynamic action. III. *Clinical*—Studies of diseases in relation to food and diet, the feeding of infants during the first year with special reference to development (height and weight); children's diseases in relation to food; nutritional oedema, atypical beriberi; the course of infectious diseases under the influence of food; liver cirrhosis; anemias; skin diseases in relation to food and vitamins; ulcers of the leg; leprosy in relation to food; constitutional diseases, diabetes, obesity, gallstones, gastric ulcer, etc.; clinical value of certain foods, etc.

It should be understood that the above provisional programme is intended to be as wide as

possible, and that additional suggestions from those able to make them will be welcomed. It is hoped that the subject of nutrition will receive emphasis from the general and normal point of view as well as from the point of view of disease.

All correspondence should be addressed to The Director of Public Health, Parapattan, 10, Batavia--C. Tara, Netherlands, Indies.

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We acknowledge with thanks the receipt of the following:—

"Journal of Agricultural Research," Vol. 49, No. 12; Vol. 50, Nos. 1-3.

"The Journal of the Royal Society of Arts," Vol. 83, Nos. 4301-4304.

"Indian Journal of Agricultural Science," Vol. 5, Part I, February 1935.

"Contributions from Boyce Thomson Institute," Vol. 7, No. 1, Jan.-March 1935.

"The Biochemical Journal," Vol. 29, No. 4, April 1935.

"American Journal of Botany," Vol. 22, No. 4, April 1935.

"Canadian Journal of Research," Vol. 12, No. 4.

"The Chemical Age," Vol. 32, Nos. 826-829.

"Berichte der Deutsche Chemischen Gesellschaft," Vol. 68, No. 5.

"Experimental Station Record," Vol. 72, Nos. 3 and 4.

"Electrotechnics," No. 8, April 1935.

"Forschungen und Fortschritte," Vol. 11, Nos. 13 and 14.

"Indian Forest Records," Vol. 20, Part 16, (Silviculture Series).

"Transactions of the Mining and Geological Institute of India," Vol. 30, Part I, May 1935.

"Indian Meteorological Department: Scientific Notes," Vol. VI, No. 63. Wind Data for Wind Mills.

"Bulletin of the U. P. Academy of Sciences," Vol. III, 1933-34, No. 5; Vol. IV, Part II.

"Proceedings of the Academy of Sciences (United Provinces of Agra and Oudh, India)," Session 1934-35, Vol. IV, Part III.

"Industrial Possibilities of some Research Work done in India," by Dr. G. J. Fowler.

"Advance Proceedings and Notices of the Asiatic Society of Bengal," Vol. II, April-May 1935, No. 2.

"Nature," Vol. 137, Nos. 3417-3419.

"Natural History," May 1935.

A Report on the Prospects of Paper Manufacture in Hyderabad State, H. E. H. The Nizam's Government: Commerce and Industries Department. Bulletin No. 4 (New Series).

"Survey of India. Geodetic Report," 1934.

"The Journal of Chemical Physics," Vol. 3, No. 5.

"Journal de Chemie Physique," Vol. 32, No. 4.

"The Indian Trade Journal," Vol. 118, Nos. 1509-1511.

Catalogues.

"Deming Pumps," Cat. No. 30, from the Deming Co., Salem, Ohio.

"The Cambridge Bulletin," No. 76, May 1935.

"Mitteilungen über Neuerscheinungen und Fortsetzungen," 1935. No. 3 (May). Verlag. von Gustav Fischer in Jena.

Academies.

Academy of Sciences (United Provinces of Agra and Oudh, India):

February 1935. S. M. SHAH: *On a Formula for $\pi r(x)$* . SHAH MUHAMMAD SULAIMAN: *The Mathematical Theory of a New Relativity. Chapters III, IV and V*.—The first two chapters dealt with the Law of Gravitation. In chapter III the existing theories of the Universe have been very briefly criticised, and it is shown that extraordinary assumptions are made in these and that they are also wholly inadequate. In chapter IV a natural assumption has been made that emanations from particles of matter are not confined to our present range of observation, but that corpuscles called gravitons, finer than light corpuscles, are also emitted, though they are beyond our vision. But even this assumption is not necessary. As shown in Section V, one may start simply with the known fact that light radiations, i.e., swarms of light corpuscles or radions, emanate from every part of an outer shell of a luminous body. In chapter V the assumption in Special Relativity that light from one moving body to another moving body takes the same time as light from the second body to the first, no matter how different their velocities may be, as well as the definition of common time between two bodies determined by a single journey of light are not accepted. With the help of certain generalised laws, Galileo's and Newton's Mechanics, with proper corrections for moving bodies, is completely restored: and although Einstein's Theory of Relativity is not

accepted, all its practical results are deduced in full. IRISHIKESHA TRIVEDI: *The Absorption Spectra of the Vapours of Sulphur Monochloride and Thionyl chloride and their Constitutions*. HAR DAYAL SRIVASTAVA: *Studies on the Family Heterophyidae Odhner, 1914. Part I—On a New Distome from the Indian Fishing Eagle—Halæetus leucoryphus—with Remarks on the Genera Ascocotyle Looss, 1899, and Phagicola Faust, 1920*.—The paper is the first record of the occurrence of a member of the family Heterophyidae. S. K. DUTTA: *Notes on a Case of Unilateral Atrophy of Testis in the Common Wall Gecko (Hemidactylus flaviviridis, Ruppel)*. HAR DAYAL SRIVASTAVA: *On a New Species of Catatropis Odhner, 1905, from an Indian Fowl—Gallus Bankiva Murghi*.—A large number of monostomes referable to *Catatropis Odhner* were obtained from the rectal cæca of the domestic fowl, which had died after a prolonged sickness. CROMWELL OSBORN DAS & SIKHISHUSHAN DUTT: *A Study of Some Organic Reactions at Low Temperatures*. RADHA RAMAN AGARWAL AND SIKHISHUSHAN DUTT: *Chemical Examination of the Roots of Citrullus colocynthis Schrader*.—A hydrocarbon hentriacontane $C_{31}H_{64}$, α -elaterin $C_{28}H_{38}O_7$ and amorphous saponin have been isolated.

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May 1935. SECTION A.—B. V. RAGHAVENDRA RAO: *The Doppler Effect in Light Scattered by Liquids*.—The influence of temperature on the nature of Doppler Effect in light scattered by carbon tetrachloride has been studied. Whereas