

SCIENCE NOTES.

Chemical Industries in India.—One of the main foundations of successful chemical industries is a cheap supply of sulphuric acid. India lacks any indigenous source of sulphur of commercial size and up to the present no use has been made of the sulphide ores occurring at Bawdwin in the N. Shan States or at the copper mines in Bihar. Schemes have, from time to time, been formulated for the purpose, but have never been brought to fruition. India is therefore dependent upon imported sulphur for its supplies of this most important acid. Imports of sulphur in 1935-36, amounted to 26,000 tons and of sulphuric acid to 284 tons. The output of the acid plants in the country is a little over 31,000 tons of 100 per cent. acid. The manufacture is widely distributed, and is a healthy sign of growing activity in the chemical industries. The objects of manufacture are varied. In Bihar, the acid is largely used for the preparation of ammonium sulphate from the coke by-product recovery plants and in the tin plate works; in Burma, for refining oil products and in the Nilgiris for cordite. The output of ammonium sulphate amounted to 15,400 tons in 1935. Fairly large quantities of aluminous sulphates and alum are produced by treating the indigenous bauxite with sulphuric acid.

Salt-petre is produced in Bihar, the United Provinces and the Punjab by the laxiviation of nitrate bearing efflorescence formed near village sites after treatment with wood ashes. The crude product requires refining before use. The production amounted to over 12,600 tons in 1935. Although some is utilised as a manure and for gunpowder, the greater part is exported, the exports in 1935 being a little over 8,600 tons.

Magnesium chloride is produced from the natural bitterns of the Rann of Cutch and the Gulf of Cambay. The material is of high grade and has almost completely ousted the imported German product. There is also a small export trade.

Throughout India, use is made of the saline efflorescence occurring for the production of impure varieties of soda and similarly from the alkaline lakes in Sind. Some ten years ago a large soda factory was built in the Indian State of Dhorangadhra on the little Rann of Cutch. The Shri Shakti Alkali Works were intended to produce annually the equivalent of 22,000 tons of sodium carbonate by the ammonia soda process. Attempts to commence production in 1928 and subsequently, proved abortive. The Magadi Soda Works which had a plant near Calcutta for producing caustic soda from carbonate imported from the Magadi Lake in Kenya went into liquidation about 12 years ago. There is hope that various soda products will shortly be made in India by the Imperial Chemical Industries, Ltd. Imports of soda salts amount to 69,000 tons per annum. (*The Chemical Age*, 36, No. 932, 410.)

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I. C. I. Chemicals in India.—Imperial Chemical Industries (India), Ltd., which has for many years played a large part in the import of industrial chemicals for the Indian market,

announces its intention to float an Indian company for the local manufacture of products essential to Indian industrial development.

Factories will be erected in the Punjab for the manufacture of soda ash and in Bengal for the manufacture of chlorine and caustic soda, and further plans will be developed later. The company will have the full technical support of Imperial Chemical Industries, Ltd., London, in these developments.

It is intended that a large proportion of the capital shall be offered for subscription by the Indian public. Indian labour will be employed, and Indian Staff will be trained to share in technical management.

At the General Meeting of Imperial Chemical Industries, Ltd., held in London, in April last, Lord McGowan stated that Mr. H. O. Smith, one of the Directors, had been to India, where the company had considerable interests, in alkali, dyes, explosives, general chemicals, and metals, and that the continued progress of that country and the development which was to be expected under the new scheme of self-government, fully justified a fresh general survey of the possibilities.—(*Chemical Age*, 1937, 37, No. 947.)

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Herman von Helmholtz.—*The Bausch & Lomb Magazine* for August 1937, contains a brief sketch of the life of Helmholtz, pioneer in Physiological Optics, by Everett White Melson. In the history of Physiological Optics, Helmholtz, discoverer of the Ophthalmoscope, stands out as the most outstanding figure. "He investigated the optical contents of the eye, measured the radii of curvature of the crystalline lens for near and far vision; explained the mechanism of accommodation and discussed the mechanism of colour vision applying his theory to the explanation of colour blindness." He was born at Potsdam, Germany, on August 31, 1821, and graduated in medicine in 1842 from Friedrich Wilhelm Institute. He became famous as a teacher and lectured on Physiology, Pathology and Anatomy at Königsburg, Bonn and Heidelberg. In 1871, he became Director of the Physical Institute at Berlin, and in 1877, the Director of the Physico-Technical Institute. His researches were not confined to Physiological Optics alone; in the field of Physiological Acoustics, he published "His Sensations of Acoustics", explaining the mechanism of the bones of the ear and the action of the cochlea on the principles of sympathetic vibrations. He propounded the doctrine of the conservation of energy, and his theory of the atomic nature of electricity had far-reaching consequences. He inspired the experimental work of Hertz which proved the existence of Maxwell's electromagnetic waves, thus opening the way to wireless telegraphy.

In 1831, Helmholtz attended the World's Fair at Chicago. During his return trip to Bremen he fell down the companionway of his ship, sustaining injuries which led to his death in 1894.

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Nutrition in Relation to Health, Agriculture and Economic Policy.—The League of Nations has just issued an authoritative and comprehensive report on Nutrition, as a result of two years' work by an International Committee of agricultural, economic and health experts working under the auspices of the League. The report is concerned mainly with the economic aspects of nutrition policy and with its relation to agriculture. A chapter on the physiological aspects of the problem is also included. The report is divided into 3 parts; the first part gives a general survey of the problem and of the work already carried out. The second part is exclusively devoted to the health aspect of nutrition and the third part to a detailed examination of the economic and agricultural considerations connected with nutrition policy. The report concludes with a collection of evidence relating to the present state of nutrition in various parts of the world. "The malnutrition which exists in all countries is at once a challenge and an opportunity; a challenge to men's consciences and an opportunity to eradicate a social evil by methods which will increase economic prosperity." The report contains 327 pages, and is priced 7s. 6d.

Broadcasting in India.—An outline of the Broadcasting policy and plan for India, has been published in *The Indian Listener* (July 1937). The Government of India has authorised an expenditure of Rs. 40 lakhs and this sum has already been allocated for expenditure on different projects. At the outset it may be mentioned that the "All India Radio" has set itself the task of providing a satisfactory broadcasting service to the whole country. To achieve this end, over the vast area, the basic principle adopted is to provide a short-wave service to the whole country and to support this by a continual expansion of the area served by medium-wave stations as funds become available.

4 short-wave key stations (10 k.w.) will be located at Delhi, Bombay, Calcutta and Madras. A second short-wave transmitter (5 k.w.) will also be provided at Delhi for special purposes. The development programme does not envisage any future increase in the number of short-wave stations. These short-wave stations will provide a "second grade service" to the whole of India. Five medium-wave stations will be located at Lahore, Lucknow, Trichinopoly, Decca (each 5 k.w.) and Madras (250 watts) with these stations and the existing medium-wave stations at Delhi, Bombay, Calcutta and Peshawar, the "All India Radio" will have in operation, 5 short-wave stations and 9 medium-wave stations. Two stations, *viz.*, the 10 k.w. short-wave station at Delhi, and the 5 k.w. medium-wave station at Lahore, are expected to be in operation by the end of the year.

Considerable attention is paid to the development of the receivers, the present position of the broadcast receivers being considered generally unsatisfactory owing to the high cost. The Research Department of the "All India Radio" has developed receivers for use in Indian villages for community reception. "The receivers are mounted in metal cases and

padlocked. No controls appear outside the box. The receiver is left tuned to the local station. A clockwork time switch mounted in the box turns the receiver on and off at the correct time for the 'village hour', the only attention required by these receivers, is a visit once in every 3 weeks when the car accumulator batteries which operates the receiver are changed and the clock rewound."

Marketing in India.—At the joint Conference of the Central Marketing Staff and Senior Marketing Officers of Provinces and States, held at Simla on the 7th and 8th September, Mr. Livingstone, Chief Marketing Officer, Government of India, reviewed the progress so far made by the Marketing Staff. Since the issue of the report on wheat in April last, the Central Staff had been busy in issuing reports on rice, linseed, tobacco, grapes, cattle, eggs and milk. Twelve experimental grading and marketing stations covering eight different commodities have been started all over India.

It was decided that new marketing surveys of fish and cashew-nuts should be taken in addition to the work that would fall on the Provincial and State Marketing Staff in connection with the survey of jute, lac and cotton.

Surveying the Himalayas.—Remarkable work has been carried out by the Government of India Survey Department in surveying the extensive Gangotri system in the fascinating regions of the Himalayas. The area under survey includes the Utrakhund of the Hindu legend covering the five holy shrines of Jannotri, Gangotri, Kedarnath, Tunganath and Badrinath and also the peaks of Nanda Devi (25,645 ft.), Trisul (23,360 ft.), Kamet (25,447 ft.), and the Chaukamba massif (23,420 ft.). Between September 1935 and June 1936, an area 3,250 square miles were surveyed by the gallant officers of the survey (says a press note). "The Nanda Devi with its famous inner sanctuary was in the area surveyed. The Nanda Devi basin has a glaciated floor of 14,000 ft. above sea-level and is surrounded by a vast wall from 20,000 to 24,000 ft. in height, broken only at the western end of the gorge of Rishiganga. The peak of Nanda Devi rises as a vast pyramid just within the eastern rim of the basin. No human feet ever treaded the basin till Messrs. Tilman and Shipton forced their way through the gorge of the Rishiganga in 1934." A plain table survey was made of the western portion of the basin. The highest station occupied was one at 19,400 ft. Photographs were taken with a special survey camera to get the material from which an accurate survey could be made at leisure in the recess headquarters, Dehra Dun. A small area of the region still remains unsurveyed and 3 surveyers left Mussorie at the end of August to complete the work.

Indian Central Cotton Committee.—The Indian Central Cotton Committee has just published a Statistical Bulletin entitled "Supply and Distribution of the Various Types of Indian Cotton during the Season of 1935-36". The *Bulletin* deals with such important statistics as of distribution, stocks, exports, mill receipts,

etc., of Indian cotton which are classified by varieties apertaining to the season 1935-36.

There are seven appendices containing relevant statistics for past season as compared with those for 1935-36.

The statistics contained in this *Bulletin* would be of great value not only to those engaged in cotton trade and mill industry in India but also to the student of Commerce and Economics; as also to the general public to study the trend of the Indian cotton trade.

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Report of the Building Research Board for the year 1936. (His Majesty's Stationery Office, Price 4s. Post Free 4s. 4d.).—An important feature of the Report of the Building Research Board for the year 1936 is a retrospect in which the Director of Building Research surveys the progress that has been made at the Building Research Station during the last ten years or so in the development of the applied science of building. As usual, the report contains a general review of the activities of the Board during the year and a detailed account of the numerous investigations carried out at the Building Research Station. A complete list of the publications of the Station—over 350 documents—is given in an appendix.

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Dr. Sir K. P. Puttanna Chetty has made a donation of Rs. 20,000 to the Mysore University to form a nucleus of a fund for "bridging the gap between the University and the masses which is now too great". Those in the rural tracts feel accordingly "no pride or interest in the existence and maintenance of a University, which, rightly or wrongly they are prone to think, is interested to serve only the intellectual classes by training them in Arts and Sciences and conferring on them all the hall-marks of University Degrees. It seems that it is necessary to correct this erroneous impression and to make people in the bulk take a direct personal interest in the University, the benefits of whose work should be made to filter down to them in a manner susceptible of their easy absorption."

Dr. Sir K. P. Puttanna Chetty is a prominent citizen of Bangalore whose benefactions for improving the moral and material welfare of the people of the Mysore State are too well known.

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Science reports that the Royal Society of Edinburgh has awarded the Gunning Victoria Jubilee Prize for the period 1932-36 to Prof. C. G. Darwin, Master of Christ's College, Cambridge, formerly Tait Professor of Natural Philosophy in the University of Edinburgh, for his distinguished contributions to Mathematical Physics.

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Prof. H. C. Urey, who in collaboration with Dr. G. M. Murphy and Dr. F. G. Brickwedde discovered the heavy hydrogen, has succeeded in isolating Heavy Nitrogen. Chemists throughout the world will extend hearty congratulation to Prof. Urey for his great achievement.

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The Coate's Medal for the year 1936, has been awarded to Dr. S. K. Mukherjee for his contribution to Ophthalmology.

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Calcutta Review announces that the Société de Géographie Commerciale et d'Études Coloniales, Paris, has awarded the Gaudy Medal this year to Dr. S. P. Chatterjee, M.Sc., T.D., Ph.D., F.G.S., Lecturer-in-charge of Geography Teachers' Training Department of the University of Calcutta, for his work on "Le Plateau de Meghalaya". He has been invited to attend the Congrès International des Sociétés de Géographie Économique, to receive the medal.

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The Premchand Roychand Studentship for 1936, has been equally divided between Messrs. Dineshchandra Sen, M.Sc., and Ramprasad Mitra, M.Sc. Messrs. H. K. Nandy, M.Sc., and Harishchandra Roy, M.Sc., have been granted special scholarships.

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Mr. J. F. Blackiston, Director-General of Archæology, has retired with effect from 21st September.

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The Dust Counter.—We have just received a leaflet of Messrs. Bausch & Lomb, Rochester, New York, describing their Dust Counter which in one compact unit contains both the sampling and counting apparatus. "More inclusive and liberal legislation with reference to occupational diseases makes the matter of dust hazards, of paramount importance. Not only is it necessary for the employer to institute protective measures but also in order to protect himself against unjust claims, he should have accurate records of actual working conditions." The Air sampling mechanism consists of a moistening chamber through which air is drawn by means of an accurate calibrated hand pump of 1/1,000 c.ft. capacity and an impinging device which deposits the dust particles suspended in the air on a circular glass plate within the instrument, in the form of a ribbon. Twelve samples may be collected on one slide. These samples may be viewed and counted at once, without removing the slide by means of a built-in compound microscope of 200 × magnification with a special dark field illuminating system. The microscope is fitted with a special hyperplane eye-piece in which there is a micrometer disc ruled in 30 micron squares. These square areas are used for dust counting. An extra line is ruled along the side squares to permit approximate measurement of particles for classification according to sizes. Further details regarding the instrument can be had from Messrs. Martin & Harris, Ltd., Calcutta, who are the sole agents in India for the products of Messrs. Bausch & Lomb.

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The Holden Expedition of the American Museum of Natural History.—An expedition led by Dr. William Ball Holden, left New York on August 21, to carry on scientific exploration in the Amazonian Jungles of South America. The main object of the expedition which is expected to take about 6 months, will be to carry out an intensive study of the diseases and drugs of the Indian Tribes which live along the northern tributaries of the Amazon River. At the same time the other members of the party will collect reptiles, amphibians, small mammals and insects, as well as botanical specimens. The

section to be explored is the little known Sierra Akarai range of mountains in the southernmost portion of British Guiana along and within the Brazilian border (*Science*, 1937, 86, 215).

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Announcements.

Indian Central Cotton Committee.—*Facilities for Training at the Technological Laboratory, Matunga.*—As in the past, the Technological Laboratory will admit this year two students for training in the elements of spinning and the routine methods of testing cotton fibre and yarn. The selected candidates will be expected to join on the 3rd January 1938 and will conform to the Laboratory regulations regarding hours of work, etc. The course will normally last for a period of six months and a fee of Rs. 50 only, which is not refundable, will be charged for the full course.

Candidates desirous of admission should submit written applications to the Director, Technological Laboratory, Matunga, Bombay, so as to reach him not later than 10th November 1937.

The Eighth Annual Meeting of the Central Board of Irrigation will be held at Delhi from October 30 to November 4. The following subjects will be considered :

(1) Summarized reports on Irrigation research work done in India during the year 1936-37,
(2) Subjects brought forward from last year and
(3) The role of reservoirs in river flood control. The subjects to be investigated during the ensuing year will also be considered at the Meeting.

The Centenary of the Invention of Pitman's Shorthand comes off on Saturday, 20th November 1937, which will be celebrated all over the world in a suitable manner. The invention of Phonography due to the genius of Sir Isaac Pitman has been a great boon rendering speedy transaction of modern business possible.

The Thirtieth All-India Educational Conference will be held at Calcutta during Christmas holidays. The Conference will be held under the auspices of the All-India Federation of Educational Associations. Mr. S. K. Roy Choudhury, M.A., B.L., Mayor of Calcutta, is the Chairman of the Reception Committee and K. P. Chattopadhyay, B.Sc., M.A., the General Secretary.

Inter-University Board.—The Annual Meeting of the Inter-University Board of India will be held at Allahabad from 13th-15th December 1937. Among the themes for discussion at the meeting, are (1) closer co-ordination between the Indian Military Academy, Dehra Dun, and the Indian Universities in which Training Corps have been organised, (2) mutual recognition of the corresponding examinations of different universities for

purposes of eligibility of admission from one university to any other and (3) collaboration between the Government and the Universities in investigations relating to agricultural and industrial problems.

We acknowledge with thanks, receipt of the following :—

"Journal of Agricultural Research," Vol. 55, Nos. 2 and 3.

"Monthly Bulletin of Agricultural Science and Practice," Vol. 28, No. 9.

"Agricultural Gazette of New South Wales," Vol. 48, No. 9.

"Agriculture and Live-Stock in India," Vol. 7, Part 5.

"The Philippine Agriculturist," Vol. 26, No. 4.

"Allahabad Farmer," Vol. 11, No. 5.

"Journal of the Royal Society of Arts," Nos. 4423-26.

"Biochemical Journal," Vol. 31, No. 8.

"Journal of the Institute of Brewing," Vol. 43, No. 9.

"Chemical Age," Vol. 38, Nos. 948-51.

"Journal of Chemical Physics," Vol. 5, No. 9.

"Journal of The Indian Chemical Society," Vol. 14, Nos. 7-8.

"Berichte der Deutschen Chemischen Gesellschaft," Vol. 70, No. 9.

"Experiment Station Record," Vol. 77, Nos. 2 and 3.

"Transactions of the Faraday Society," Vol. 33, No. 197.

"Indian Forester," Vol. 63, No. 10.

"Forschungen und Fortschritte," Vol. 13, Nos. 25-27.

"Journal of the Indian Mathematical Society," Vol. 2, No. 7.

"Marriage Hygiene," Vol. 4, No. 1.

"Medico Surgical Suggestions," Vol. 6, No. 9.

"Calcutta Medical Journal," Vol. 32, No. 10.

"Journal of the American Museum of Natural History," Vol. 40, No. 2.

"Journal of the Bombay Natural History Society," Vol. 39, No. 3.

"Nature," Vol. 140, Nos. 3539-542.

"Journal of Nutrition," Vol. 14, No. 3.

"Indian Journal of Physics," Vol. 11, No. 4.

"Research and Progress," Vol. 3, No. 5.

"Canadian Journal of Research," Vol. 15, No. 8.

"Science and Culture," Vol. 3, No. 3.

"The Sky," Vol. 1, No. 11.

"Indian Trade Journal," Vol. 126, Nos. 1629-33.

"Indian Journal of Veterinary Science and Animal Husbandry," Vol. 7, No. 3.

CATALOGUE.

Cambridge University Press : "Autumn Books".