case with articles plated with other metals. It is essential that the articles be polished, burnished and finished to the highest order before plating, as the final lustre depends much on this preliminary operation. In the case of iron and steel preliminary plating with copper or nickel or both, is given before being chromed.

Among the several applications, the increasing use for domestic and other articles exposed to air, is well known. Its special use, for taking advantage of the wear-resisting properties, is found in the chromium-plating of fine measuring gauges and in the printing industry. The life of certain textile machinery and equipment has been surprisingly lengthened by this means particularly as regards copper printing rolls and Schreiner rolls.

Science Notes.

Inhibitive Power of Agar.—Dr. B. N. Desai and his collaborators of the Wilson College, Bombay, in a communication on this subject, write: "It has been shown (Desai and Naik, *J. Bombay University*, 1933, 2, Part 2, 90) that the power of gelatine to prevent precipitation (inhibitive power) depends upon its pH besides its concentration and that the inhibitive power is different with reference to different salts which are precipitated in the gel. Thus it has been found that the inhibitive power of gelatine is minimum for gelatine of pH 5·75 with reference to precipitation of Ag_2CrO_4, maximum for gelatine of pH 5·00 with reference to precipitation of PbI_2 and continuously decreases with a decrease of pH of gelatine with reference to precipitation of AgI. In another paper (Naik, Desai and Desai, *J. Ind. Chem. Soc.*, 1934, **11**, 45) it has been pointed out that the term "Inhibition" should be used to indicate power to prevent precipitation generally whether it may be due to production of super-saturated solution or of colloidal solution or of particles in a very highly dispersed condition.

"We have been doing similar work with agar and the purpose of this note is to give a summary of the results obtained so far. The following cases of precipitation in agar have been studied: (1) PbI_2 from solutions of $Pb(NO_3)_2$ and KI, (2) $PbCrO_4$ from solutions of $Pb(NO_3)_2$ and K_2CrO_4, (3) AgI from solutions of $AgNO_3$ and KI, and (4) Ag_2CrO_4 from solutions of $AgNO_3$ and K_2CrO_4. pH of agar was determined colorimetrically and samples of different pH were prepared by adding suitable amounts of acetic acid and sodium acetate. The inhibitive power was found out by determining the amount of salt (PbI_2 or $PbCrO_4$ or AgI or Ag_2CrO_4) that can be kept in the mixture for one minute without producing any precipitate, the amount of agar and the total volume of the mixture being kept the same throughout. The pH range tried in these experiments is 2·40 to 9·02, the pH of original sample of agar being 5.94. It is observed that the inhibitive power of agar with reference to different salts varies with an increase of its pH in the following manner:—

(1) PbI_2—The inhibitive power increases upto pH 5·94, decreases thereafter upto pH 6·78 and again increases with an increase of pH.

(2) $PbCrO_4$—The inhibitive power is minimum for pH 5·94, being greater for higher or lower values of pH.

(3) AgI—The inhibitive power increases upto pH 5·94, decreases thereafter upto pH 7·00 and again increases with an increase of pH.

(4) Ag_2CrO_4—The inhibitive power is minimum for pH 7·00, being greater for higher or lower values of pH.

"It would appear that the iodides of both the metals behave in one fashion and the chromates in another fashion. The condition of these substances with special reference to the nature of their Liesegang rings in agar is being investigated. Details will be published elsewhere in due course.

* * *

A Purely Vegetable Medium for the Cultivation of Micro-Organisms (Dal Medium).—Mr. A. C. Roy, of the School of Tropical Medicine, Calcutta, in the course of a paper read before the Biochemical Society, Calcutta, described the method of preparation of the *Dal* broth previously reported by Acton, Pasricha, Roy and Das Gupta (*Ind. Med. Gaz.*, 1932, **67**, 463). "According to the older technique, 500 grams of powdered *Mung-dal* (*Phaseolus mungo*) and 5 grams of papain, mixed with 5000 c c. of water, were digested at 60°–65° C. for four hours. The digestion of the *dal* for four hours at that temperature had the effect of splitting the *dal* proteins largely into amino acids. But since this *dal* broth was sought to be used as a substitute for the much more expensive peptone water, the time of digestion was reduced to one hour, when maximum peptone and very little amino acid formation took place. Various liquid and solid media such as *dal*-agar slopes, 0·5% bile-salt *dal*-agar plates (made on the same lines as MacConkey's bile-salt neutral-red lactose-agar plates) were prepared from this *dal* broth, which when diluted to contain 0·5% oxidisable matter was used as a substitute for 1% peptone solution.

"Some of the common intestinal organisms which one has to deal with in a bacteriological laboratory in India, *viz.*, Cholera and cholera-like vibrios, *Bact. typhosum*, *Bact. paratyphosum* A and B, *Bact. shigæ* (shiga), *Bact. flexneri* and *Bact. coli* were planted on the media prepared from this *dal* broth (by the modified method), using others in which peptone was employed as controls. With the *dal* media, the growth of these organisms was quite satisfactory and in most cases quicker and more vigorous than in the controls. Previously in the isolation of non-lactose fermenting organisms, there used to be many cases of failures with the *dal* the plates compared to the original MacConkey's plates. As a result of this modification the cases of failures have been considerably reduced. But even now it cannot be said that it gives as consistent results as the original MacConkey's plates.

"Attempts are being made to improve it still further so that it might be used as an efficient substitute for peptone water and in view of its extremely low cost of production (¼ to ½ anna per litre as against 6 to 10 annas per litre of

1% peptone solution) its economic significance is obvious."

* * *

The Institute of Chemistry.—A Joint Meeting of Members of the Indian Chemical Society (Bombay Section) and of the Institute of Chemistry was held on Wednesday, 5th September 1934 at 6-0 P.M. in the Chemistry Lecture Room of the Royal Institute of Science, Bombay, when Dr. R. C. Shah presided. There was an excellent attendance of members of both the Chemical Society and the Institute.

Dr. A. M. Patel read a paper on "Absorption of Dyes by Cellulose". The lecturer described how conclusions derived from results obtained in the last century were often erroneous due to impurities in the dyes and he explained present methods adopted to ensure purity.

The action of electrolytes in connection with absorption was mentioned and pointed out that the quantity of dye absorbed was directly proportional to the coagulating power of the electrolyte.

Absorption was rather a case of diffusion and varied with the thickness of the material and the salts used.

Methods for dyeing union fabrics, *viz.*, viscose and cotton, were described and it was pointed out that these have different affinities for dyes and that it was essential that they should be brought to the same degree which could be done by increasing the affinity or decreasing that of cotton or viscose. In attempting the former by mercerising, viscose is affected and therefore the affinity of viscose was decreased by steaming. The need for trained chemists to be in charge of dyehouse was particularly stressed.

A discussion took place mainly on practical points arising out of the lecture. The meeting concluded with the President thanking the lecturer for his most interesting lecture.

* * *

Association of Economic Biologists, Coimbatore.—A meeting of the Association was held on Thursday, the 23rd August, when the following papers were taken up for discussion.—(1) "*Soil Inoculation and Fungus Diseases.*" by P. D. Karunakar, dealing with the possibility of inoculating soils with saprophytic fungus, *Aspergillus* Sp., which may prevent or at least limit to a great extent the growth and activity of the parasite, *Fusarium monoliforme*. There are indications from the work done so far that this is possible. (2) "*Some Acarina of Economic Importance,*" by M. C. Cherian, deals with the *acarina* (mites and ticks) belonging to a group of lower animals of economic importance to the agriculturist. Some of these are parasitic on domestic animals sometimes acting as vectors of diseases. Some others by themselves cause skin diseases known as *Acariases*. Lastly, some are pests of cultivated plants. The part played by mites and ticks as pests of domestic animals has been studied to some extent in India but their relation to plants has not received adequate attention. The paper gives an account of the work done by the author on some South Indian Acarina with special reference to those forms found in Ganja, Sorghum, Sugarcane, Cotton, Castor, Rose, Figs, Grape-vine, Tomato, Brinjal, etc.

At a meeting of the Association held on the 26th September Mr. Abraham gave an interesting paper on the "*Preliminary Studies in the Anatomy of the Gynœcium of Cotton with special reference to Boll Dehiscence*". It has been observed in the indigenous cottons of Madras that the bursting of the bolls is rather bad in karunganni (*G. indicum*) as compared to uppam (*G. herbaceum*) and roseum (*G. N. roseum*).

An examination of the gynœcium in these varieties reveals certain anatomical features which appear to have a bearing on boll opening. Each carpel has three vascular bundles, a median and two lateral (placental). The folding of the carpels brings the margins along with the two placenta bundles close together and the margins get separated again during the dehiscence of the boll. In all cottons, the placental bundles of each carpel first arise separately from the receptacular stele, fuse together immediately and branch out again when they run through the placenta. It is observed that in dehiscence the cleavage of the carpel stops just above the region of fusion, the amount of dehiscence thus depending on the level at which this fusion takes place. In varieties belonging to species *G. indicum*, this region of fusion is situated at a much higher level than in other varieties with the result that the bursting of the boll is poor.

The inheritance of this anatomical feature has been under study in the progenies of crosses between *G. indicum* and *G.N. roseum* and between *G. indicum* and *G. sanguenium*, and there are indications that the character, bad opening, is a simple recessive.

* * *

Society of Biological Chemists, India.—During the month of September 1934 three meetings were held under the auspices of the Society when the following papers were presented:—(1) "The Control of Plant Diseases with special reference to Sandal Spike" by Mr. A. V. Varadaraja Iyengar, M.Sc., A.I.C., A.I.I.Sc., (2) "The Production of Mucus during the degradation of plant material" by Dr. J. G. Shrikhande, M.Sc., Ph.D., A.I.C., (3) "Influence of æration on the diastatic activity of the barley during germination" by Mr. R. H. Ramachandra Rao, M.Sc.

* * *

Progress of Anthropology in European Universities.—Under the auspices of the South Indian Science Association, Rao Bahadur L. K. Anantha-krishna Ayyar delivered an interesting address on the "Progress of Anthropology in European Countries". The lecturer in his recent tour in Europe had the opportunity of visiting more than twenty famous Universities and of lecturing in a dozen of them. He gave an interesting account of the departments of Anthropology, the laboratories and equipments in these Universities as also of the teaching staff and facilities given to students for the study of the subject. The museums attached to the Universities contain a very large collection of specimens from all parts of the world and photographs to illustrate the racial types and cultural traits. In the Universities of Naples, Rome, Paris, Vienna, Berlin and others there are separate departments and museums to facilitate the study of Physical Anthropology, Ethnology and Ethnography. The museums in England are equally grand. The papers and books published by the professors of these Universities are abundant. The study of Indian Ethnology in these Universities leaves much to be desired.

Mr. Ayyar gave in contrast the study of the subject in India and emphasised the necessity for much more encouragement and the introduction of the subject in the under-graduate and post-graduate studies of Indian Universities. At present it is only the Calcutta University that has a fully developed department of these subjects.

* * *

Royal Institute of Science.—Principal Dr. T. S. Wheeler has been elected as Dean of the Faculty of Science and a member of the Syndicate of the Bombay University.

Dr. Ludwig Wulf, Prof. of Textile Chemistry in the Andhra University, visited this Institute on 19th September, 1934, and saw the equipment and work in the Chemistry Department.

Mr. G. V. Jadhav, M.Sc., of the Chemistry Department has been awarded the Sir Mangaldas Nathubhoy Foreign Scholarship.

* * *

Dr. G. C. Chakravarti, D.Sc., Lecturer in the Department of Organic Chemistry, Indian Institute of Science, Bangalore, has resigned his appointment for reasons of ill-health. The staff and students of the department met under the presidentship of Dr. P. C. Guha, D.Sc., on Saturday, the 15th September 1934, and passed a number of resolutions placing on record their appreciation of the valuable services rendered by him.

Dr. Chakravarti's contributions relate chiefly to the chemistry of the dye-stuffs. Just prior to his retirement he had begun an investigation on the natural colouring matters of "*Alkanet*" and suggested a tentative constitution for "Alkanin". It is rather unfortunate that he could not complete this interesting enquiry.

* * *

University of Lucknow.—Dr. S. N. Das Gupta has been appointed to the post of Reader in Botany at Lucknow University, vacated by the death of Dr. S. K. Mukerji, F.L.S. Dr. Das Gupta is a Ph.D. of London University, with special qualifications in mycology, a field of research to which he has made important contributions, published in the *Annals of Botany* and in the *Philosophical Transactions of the Royal Society*. Special mention may be made of his discovery of a remarkable relationship between the two strains of *Diaporthe perniciosa* DH_C and DH_F, in which the slow-growing strain DH_C cultivated in contact with the fast growing DH_F dominates the latter, and is able to convert it into its own type.

* * *

Indian Coriander.—According to a press communique issued by the Secretary, Imperial Council of Agricultural Research, Simla, published in a recent issue of the *Indian Trade Journal*, a detailed examination of the samples of Russian, Moroccan, Tuticorin and Rangoon corianders, as also a typical trade sample from the Udumalpet (Coimbatore District) market, revealed that the Indian Produce which is of intrinsically good quality, is losing ground mainly by reason of adulteration of the clumsiest character. The Tuticorin sample contained, 0·3 per cent. stalk, 0·3 per cent. extraneous seeds and other grains, and 20·0 per cent. dirt. The Moroccan produce contained about 0·3 per cent. stalk, about 0·3 per cent. extraneous seeds and other grains, and less than 1 per cent. dirt. The essential oil content which may be said to determine the pungency and efficacy of coriander, was about the same in both Indian and Moroccan samples, and perhaps the former showed a rather higher trend. These data clearly indicate that with "even reasonable attention to cleanliness Indian coriander can easily hold its own and it is important that steps to this end should be taken, for India cannot afford to lose any of its markets for these minor agricultural products which in the aggregate mean so much to the cultivator and market gardener."

* * *

Lorentz Collected Papers.—Martinus Nijhoff, publisher of "Lorentz Collected Papers" writes: "I have resolved to go on with the publication and the 8th volume (the 2nd of the set of 9 volumes) is already in the press. Vol. VII, the 1st of the set, appeared a few months ago.

"I beg to draw once more your attention to the fact that immediately after the publication of this volume—about November 1934—the work will be no longer available at subscription price.

"Subscribers to the 9 volumes may have the set for 75 *guilders*, or bound for 90 *guilders* (payment after the publication of each volume, Gld. 8.35 or Gld. 10). Afterwards the price will be 90 guilders, or bound 108 guilders."

* * *

The Prague International Samples Fair, 1935.—The Spring session of the above fair will be held at Prague from 3rd to the 10th March 1935. *Firms wishing to participate in this fair* may obtain full particulars from the Consul for Czechoslovakia, 34, Park Street, Calcutta.

* * *

Increased World Activity in Chemical Research.—The Editor of *Chemical Abstracts*, Prof. E. T. Crane of the Ohio State University, draws attention to the increased output of chemical papers in 1934. Digests of papers appearing in 2,000 scientific and technical journals number 18,664 in the first six months of 1934 as against 17,648 in a corresponding period of 1933. "This increase is heartening from an economic standpoint because of chemistry's basic association with practically all of the industries. It indicates that thousands of chemists throughout the world are turning out a steady stream of new information vital to industrial and social progress."

* * *

"*Element* 91."—For the first time, a powerful radio-active substance similar to radium and, it is said, equally useful in the treatment of cancer, has been isolated. Dr. Aristid von Grosse of Chicago University, who has isolated this element, called protactinium, says that while a gram of radium costs £20,000 to £25,000, a similar quantity of protactinium will cost only £600. The American Chemical Society meeting at Cleveland has been shown the element, plainly visible under a magnifying glass as tiny silvery beads. It is the rarest metal in nature, for out of 10,000,000 parts of pitch-blende only one part of protactinium can be extracted. Even more important than the isolation of this element is the fact that Element 91 naturally disintegrates into actinium, which is 140 times more active than radium. Until her death the late Mme. Curie worked unsuccessfully on the isolation of

actinium, which Dr. von Grosse says will in a year or two be available to science and medicine.

(*Chemical Age.*)

* * *

According to a report in *Hindu* the Allahabad University Teachers have been allowed to seek elections to the Legislative Assembly and other Councils under certain conditions. Thus a teacher seeking election should obtain permission from the Executive Council, after satisfying them that his absence in connection with his electioneering work or work connected with the legislatures would not interfere with his University duties.

* * *

The Hilger Vitameter A.—Adam Hilger, Ltd., 98, King's Road, Camden Road, London, N.W. 1, England. (Hilger Publication No. 151/5. Post free on request.) This booklet (the fifth edition) describes the latest model of the Hilger Vitameter A for determining the Vitamin A content of cod and other fish liver oils and concentrates.

This model is of all-metal construction and embodies optical and mechanical improvements.

It may be remembered that the instrument is based on the now accepted spectrophotometric method of test. Measurements are made visually by comparing the intensity of two fluorescent areas and rendering them equal by a photometric device whose scale gives readings that are a direct measure of the Vitamin A content.

The makers claim that the instrument, which is extremely simple to use, gives accurate results even in the hands of unskilled operators.

* * *

Indian Research Fund Association.—Applications are invited from experts on Nutrition to undertake independent charge of Nutritional Research under the Indian Research Fund Association at Coonoor, a hill station (6,000 ft. above sea-level) in the Madras Presidency of India. Pay in the scale of Rs. 1,250–100–1,750 with usual departmental travelling and halting allowances. In addition, an overseas pay of Rs. 500 per mensem will be given to a person of non-Asiatic domicile if appointed. The commencing pay of the selected candidate may be fixed at a higher rate than the minimum of the scale of Rs. 1,250–100–1,750 if the experience and qualifications of the candidate selected justify this. All applications must be made on the prescribed form copies of which can be had from the *Secretary, Indian Research Fund Association, Civil Secretariat, Simla* (upto 19th October and thereafter, New Delhi). Final date for receipt of completed forms of application is 30th November 1934.

* * *

Novel pH Meter, "Pehavi".—Announcing new type Hartmann and Braun Instruments placed in the market their Agents for India, Messrs. Adair, Dutt & Co., Ltd., have drawn our attention to several instruments in which compactness, accuracy and simplicity in manipulation have been combined in a very efficient manner. Of these great interest is being received for the new pH measuring potentiometer "*Pehavi*" which is most suitable for the Sugar Laboratories, the Clinical and Pathological Laboratories and the Chemists. This has both a pH scale—in two ranges—and a Millivoltmeter scale. Thus either a Platinum Hydrogen or a Quinhydron Electrode or any other type of Electrode can be used and for each the scale is brought into view by a rotating switch avoiding any possibility of confusion. No Standard Cell is necessary at all as the instrument is calibrated for any dry battery as is used for pocket lamps. Equally important are the two types of Universal Voltmeters "*Multavi-I*" and "*Multavi-II*" having multiple ranges in volts, amperes and milliamperes for both D.C. and A. C. and are also available for measuring resistance with the help of any dry battery or the L.T. and H.T. batteries as are used in Radio work. The "*Pentavi*" is a compact resistance bridge capable of measuring from 0·05 to 50,000 ohms and contains an enclosed dry cell and a built-in sensitive pointer Galvanometer. We are sure these new instruments would arouse keen interest amongst the general Scientists, Radio Amateurs and Technical people.

* * *

We acknowledge with thanks the receipt of the following :—

"The Journal of Agricultural Research," Vol. 48, Nos. 11 and 12 : Vol. 49, Nos. 1, 2 and 3.

"List of Publications on Indian Entomology," 1931, 1932. Miscellaneous Bulletin, Nos. 2 and 3. (Imperial Council of Agricultural Research).

"Journal of the Indian Botanical Society," Vol. 13, No. 1.

"Chemical Age," Vol. 31, Nos. 791-794.

"Berichte der Deutschen Chemischen Gesellschaft," Vol. 67, No. 9.

"Journal of the Indian Chemical Society," Vol. XI, Nos. 7 and 8.

"Experimental Station Record," Vol. 71, No. 2, August 1931.

"Educational India," Vol. I, No. 3.

"Forschungen und Fortschritte," Jahrgang 10, Nos. 25 and 27.

"Indian Forest Records," Vol. 20, No. 10.

"Monthly Statistics of the Production of Certain Selected Industries of India," July 1934, Government of India Publication No. 4 of 1934-35.

"Forest Bulletin" No. 86 (1934) Sylvicultural Series—Cold Weather Planting in Northern India.

"Agricultural Statistics of India" (1931-32), Vol. I.

"Administrative Report" (1108 M.E.), Archæological Department, Government of Travancore.

"Mathematics Student," Vol. II, No. 2.

"Medico-Surgical Suggestions," Vol. 3, No. 9.

"Memoirs of the Indian Meteorological Department," No. M/2 Meteorological conditions affecting aviation over the North-West Frontier.

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

"Nagpur Agricultural College Magazine," Vol. 9, No. 1.

"Nature," Vol. 134, Nos. 3382-3385.

"Natural History," September 1934.

"Journal of Chemical Physics," Vol. 2, Nos. 8 and 9.

"Review of the Scientific Instruments," Vol. 5, No. 8.

"The Indian Trade Journal," Vol. CXIV, Nos. 1473—1479.