

PHOTOGRAPHIC NOTES, No. V.

LOCAL INTENSIFICATION AND REDUCTION, SPOTTING AND BLOCKING OUT, ASSEMBLING OF NEGATIVES.

It maybe necessary to strengthen one part of a negative without affecting the rest; such intensification is termed "local". This process calls for brushes and the ordinary intensifying solutions mentioned before. Brushes for local intensification, reduction, spotting and blocking out need not be the first class expensive ones required for slide coloring. Ordinary camel hair will answer very well; but have nothing to do with quill handles; buy wood-handled brushes, no.1 for small work, no.4 or no.6 for rougher touches. To intensify locally, have a small amount of the bichloride of mercury solution in a shallow cup, the dry negative lying face up on a sheet of glass, 11" x 14", double thickness, supported almost horizontally, about 8 inches above a white reflecting surface. At the proper distance above the negative and parallel to it, set a 3 inch reading glass (2 mag.) in a ring-stand clamp; this will help the eye to guide the brush. Dip the small brush in the bichloride solution and begin the painting with the edge of the area to be treated, pressing the brush on the film gently and with a small circular motion. Be sure not to work the brush too long in one place, especially if the weather is hot and damp, for the brush point may cut through the film and ruin the negative. The bichloride solution will whiten the silver deposit and when all the parts to be locally intensified are painted with the mercury salt, hold the plate under a strong quick stream of water for a minute or so, to wash off the excess bichloride and prevent it from overrunning its place. Then leave the plate in a tray of running water, for about 10 minutes, and change to a tray of the regular ammonia solution. The whitened parts become a strong black, the other parts are not affected by the ammonia. Then remove the plate, wash for 5 minutes and set aside to dry.

LOCAL REDUCTION. We have already spoken of the reduction of the strong parts of a negative, in preference to the weak, by a general application of an ammonium persulphate solution. By "local reduction" here, we mean the complete elimination of silver deposit, strong or weak, from selected parts of the plate. Use the same horizontal support, magnifying glass and brushes as before; make a small amount of potassium ferricyanide solution (about $\frac{1}{2}$ oz), strong enough to have the color of light near-beer; to this add $\frac{1}{4}$ oz. of fresh plain hypo solution (negative strength). With this mixture paint, over and over again, on the dry negative, the parts of the silver deposit to be "cut out", and try to do the work without waste of time, or the ferricyanide may produce undesirable stains. When the required disappearance of silver has been effected, hold the plate for a minute under a strong water stream, immerse for a few minutes in the plate hypo, wash for 10 minutes and set aside to dry.

SPOTTING AND BLOCKING OUT. To carry out these operations properly, one should have a "retouching stand", which will be used later on for a coloring stand also. This consists of a horizontal wooden base, about 11" x 14", covered

with white cardboard; a frame, same size, hinged to the base and raised to an angle of 45 degrees, carries an 11 x 14 piece of heavy glass. The negative to be treated is placed on the glass plate, with the ring-stand magnifying glass ready if needed. The negative may have pinholes, larger defects, text or other diagrams not wanted on the slide; these must be all blocked out. The most convenient blocking medium in Gihon's opaque, to be applied mainly to the film side of the negative. Uncover the opaque cake, wet its surface with water and "work it up" with a brush until the mixture is thick enough to leave an opaque mark over a scratch on the film. Don't make the "paint" too thick, for it may "craze" on drying and besides it might prevent good contact between the negative and the positive plate in the actual slide printing. Cover all the defects, unnecessary text, etc., with a thin smooth layer of opaque and when the work has dried, examine it for drying cracks and retouch. If the blocking out runs very close to any line, regular or irregular, it is difficult to make a neat or accurate "fit" with a thick material like opaque. In this case use a concentrated solution of Methyl Orange or Tropaeolin Orange in water, with a few drops of grain alcohol added to help the solvent power. With the aid of the magnifying glass, and using a nicely pointed, well-filled brush, one can, with a little practice, lay the color exactly in contact with any line, straight or curved. Once the "fitting" has been made with the orange dye, opaque may be used for the rest of the job.

ASSEMBLING NEGATIVES. Sometimes it may be convenient or necessary to put on one slide 3 or 4 diagrams from different parts of the same book; the book should not be spoiled by cutting out the pages and making one "copy", so the proper method is to take separate negatives and group them for camera reduction or contact printing. Usually the grouping of more than two negative will be easier for reduction by camera. Having made the negatives and before spotting or retouching, place them all face down on the glass plate of the retouching stand. Examine them to see how much superfluous glass may be cut away in order to bring the diagrams close together. The nearer they are, the less waste space there is on the slide and the larger will each part be on the screen. Then with a diamond or steel wheel glass-cutter, trim the negatives; set the pieces face down on the retouching stand, and square them up with regard to each other in a group whose vertical diameter should not, if possible, exceed its horizontal. This squaring up will be helped by inserting between the cut parts, very small bits of wood (match sticks). Then take pieces of lantern slide binding strips and paste them over the cuts on the upturned glass side, fasten the parts together; cover all the separating cuts with this gummed paper. Carefully turn over the unified group and stiffen it by pasting strips over the cuts on the gelatine side; touch out any defects with opaque and the assembled negative is ready for camera reduction. It may happen that the members of the group vary in intensity; this may easily be cared for by varying the exposure, to be described later on. If the group is small enough for contact printing, do not paste any strips on the gelatine side, (this would produce parallax in the contact printing). Be sure, when the assembled group is lying face down on the glass support that the backs of all the parts lie in the same plane parallel to the gelatine face. The different parts may have different thicknesses; so build up the thin ones to the proper level by superposed strips of binding paper on the glass side, so that when the group is put in the printing frame, pressure on the gelatine side will affect all parts equally. We are now approaching the actual making of the slide.

Fr. J. Brosnan,
Weston, Mass.

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ADVANTAGES OF THE FAHRENHEIT THERMOMETER.

The advantages of the Centigrade thermometer are so obvious that one wonders why its use is not adopted in the United States. A short article in the Monthly Weather Review (April 1916, p.205) gives some reasons why the Fahrenheit thermometer is retained, and, as this thermometer is still in use, these reasons

have prevailed. The article in question is an excerpt from the report of the annual meeting of the National Academy of Sciences, held in Washington April 17 to 19, 1916. (Cf. Proc., Nat'l Acad. Sci., May, 1916, v.2, No.5, p.304). The excerpt starts thus: "A report of the committee of the National Academy of Sciences on bill H.R.528, discontinuing the use of the Fahrenheit thermometer scale in Government publications, etc." Then part of the text is given, from which I copy the following:

"It must be recognized that considerable initial expense must be incurred by the United States Weather Bureau in changing its apparatus to conform to the proposed act. Furthermore, on account of the more open scale of the centigrade system that bureau will be subject to a continued increased cost of publication, owing to the necessity of printing the first decimal place in order to maintain the present accuracy. The use of negative temperatures and minus signs entails greater liability to errors and more clerical labor would be required in checking the accuracy of the reports of cooperative observers of the Weather Bureau and in computing monthly and other mean temperatures. Notwithstanding the foregoing, the academy is in favor of legislation to make the centigrade scale of temperatures the standard in publications of the United States Government, etc."

If only one glance be given to the "Climatological Data" published by the Weather Bureau, the validity of these objections to the change will be easily appreciated. The fact that, in spite of the recommendation of the committee, the measure was not passed, goes to show the strength of argument from dollars and cents.

Mr. B. Doucette,
Manila, P.I.

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THE OBSERVATION OF EARTH CURRENTS AT THE OBSERVATORY OF THE EBRO.

Fr. Ignatius Puig, Assistant Director of the Observatory of the Ebro, Tortose, Spain, has two articles on Earth Currents in "Iberica" for March 27 and April 3. He discusses very interestingly the nature and registration of these currents and gives some idea of what is being done at Tortose in this line.

The Observatory of the Ebro has the distinction of having the longest and most complete record of Earth Currents of any observatory in the world. Since its foundation in 1905 until the present day it has made daily observations which are preserved in some 7000 photographic records. This far outdistances anything done elsewhere, for the work next in importance is that done by Weinstein in Berlin from 1884-1887. Only lately has the Carnegie Institution set up stations at Huancayo, Peru and Watheroo, Australia.

The credit for the work done at Tortose is due in large part to Fr. Juan Garcia Molla, at present Editor of Iberica, who for many years was director of the Electrical section of the Observatory and whose Memorial "La Seccion Electrica" (1909) merited the following words of praise from Dr. Matthias in his work, "Traite d'electricite atmospherique et tellurique" (1924): "This publication is a model of clearness, of conscientiousness and of scientific probity". The same authority speaking of the French translation of the Fr. Molla's work says: "It is the first publication in French on terrestrial electricity at a time when this field was completely in the hands of Germans".

The success of the Ebro Observatory in this field is also due to its fine location and equipment. As to the former it is situated apart from any high-voltage electric lines which are the greatest impediment to the observation of Earth Currents. Regarding the latter, Fr. Puig gives a full description of the plant both exterior and interior, as he divides it. The first consists on two lines, N-S and E-W, 1415 and 1280 meters respectively in length. An interesting feature of the lines is a home-made lightning arrester so necessary for the safe operation of the apparatus. The interior installation consists of two Despretz-D'Arsonval galvanometers which record photographically.

In conclusion it might be well to cite a few testimonies of notes scientists regarding the Observatory of the Ebro and its work. Bosler, director of the

Marseilles Observatory says (1924): "The Observatory of the Ebro is the station from which we have the most recent and most trustworthy data". Stenquist (1925): "Since the beginning of the year 1910 the Observatory of the Ebro, belonging to the Jesuits, has been publishing a series of observations on earth currents of great value". Dr. Louis A. Bauer, head of the Magnetic Department of the Carnegie Institution, in an article in "Terrestrial Magnetism and Atmospheric Electricity" (1922) writes: There is only one observatory where in recent years systematic observations on earth currents have been carried on, namely, the Observatory of the Ebro, Tortosa, Spain. Here a very valuable collection of records for the years 1910-1920 has been obtained".

Mr. P. Yancey,
Woodstock, Md.

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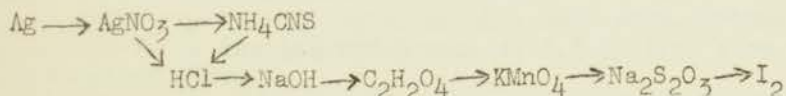
CHEMICAL NOTES.

1. Volumetric Standards. Standardization of Volumetric solutions, as is known, varies with the reference material against which the given solution is to be checked. Such reference material, usually called the "Standard" has been agreed on more or less universally only in recent years. Some prefer a different standard for each solution to be standardized, e.g. Fe for $KMnO_4$, I_2 for $Na_2S_2O_3$, etc. But besides being inconvenient, it would be an almost hopeless task to establish the required purity of each one of these standards. Analysts have therefore settled on certain few "Primary Standards" and against these, check their other "Secondary Standards".

Here in the U.S. we have three Standards which are available in a high state of purity. First, pure metallic Silver, from the U.S. Mint at Philadelphia. Second, Benzoic Acid (for acidimetry and alkalimetry). Third, Sodium Oxalate, for Oxidimetry. Both the latter, of "Certified Purity" are furnished by the Bureau of Standards, Washington, D.C. And all three are obtainable at a very reasonable price.

Representative samples for practically all types of Quantitative analytical work can also be obtained from the Bureau of Standards. These samples bear the analysis of one of the Bureau's Chemists, and are really the last word in this work.

2. Silver as a single primary standard has been proposed by certain Analysts as the ultimate reference material for practically all volumetric work according to the following scheme:



However not everyone is in agreement on such a system.

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Most of the following books are well known, but using them more or less frequently as recognized texts or reference books, I thought it might be profitable to collect them all in one group, for the benefit of those who might not enjoy large library facilities. They may take up a good deal of space, but I think they will make "good threads for the loom".

Quantitative Analysis:

For both theory and practice, Inorganic Quantitative Analysis, by Fales, The Century Co., N.Y., 1925.

For modern theory, Theory of Quantitative Analysis, by Henry Basset, Published by George Routledge and Sons, London, 1925.

Physical Chemistry:

Texts: Millard, Getman, Washburn, Eucken. The latter bears the title: Fundamentals of Physical Chemistry, Eucken, trans. by Jette and La Mer, McGraw Hill, 1925. It is an extremely comprehensive text, but rather mathematical.

Reference: W. McLeewis, A System of Physical Chemistry, 2 Vols. (applying the Quantum Theory to Physical Chemistry) Longmans Green and Co.
Taylor, Hugh S. Treatise of Physical Chemistry 2 Vols. D. Van Nostrand. Dr. Taylor is a Catholic and Professor of Physical Chemistry at Princeton. This treatise is praised very highly. It is a compilation for which the best chemists of the day have written.

Physical Chemistry Laboratory Manuals; and Special Topics:

Thermodynamics, Theory, Lewis and Randall, McGraw Hill.

Thermodynamics, Problems. Some few are given in the above. The best collection (well graded) is given in Partington, Chemical Thermodynamics and Applications, Constable and Co., London, 1924.

Also Noyes and Sherrill, Chemical Principles, Macmillan, 1925. This book supposes a good teacher, as it affords few "crutches".

H-Ion Determination; by Clarke, publ. by Williaks and Wilkins, Baltimore.

Atomic Structure; Foote and Mohler, The Origin of Spectra. Also

Andrade, Structure of the Atom, G. Bell and Sons, London, 1924

Bohr, The Theory of Spectra and Atomic Constitution, Cambridge University Press, (about 1921).

Sommerfield, Atomic Structure and Spectral Lines, Methuen, London.

This has been called the masterpiece on the subject.

See also: Eucken, (above) last chapter; and Taylor (above), vol. 1, chap. 1, and Vol. 2, c. 16.

Isotopes, Aston, publ. by Edward Arnold, London.

Phase Rule, Findlay.

Colloids, Freundlich. (I do not know whether this has been translated from the German). Original title, Kapillarchemie.

Kinetics, cf. Article in Taylor, Homogeneous Equilibria in Solution, by F. O. Rice, a Catholic, trained by the Jesuits in Liverpool, and now Professor at John Hopkins.

Problems in Physical Chemistry:

Noyes and Sherrill, (see above).

Physico-Chemical Calculations, John Knox, Methuen, London, 1911.

Chemical Statics and Dynamics, J.W. Mellor, also an old book, 1904.

Laboratory Manuals:

Sherrill, Laboratory Experiments in Physical Chemistry, Macmillan.

Findlay, Practical Physical Chemistry, Longmans.

Nennst, (whose translator and publisher I do not recall).

N.B.--The above are thought very well of and used daily at Hopkins. The list is not comprehensive, at all, but may be useful to some.

Fr. J. Sullivan,

John Hopkins University,
Baltimore, Md.

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MEETING OF THE NEW ENGLAND ASSOCIATION OF CHEMISTRY TEACHERS AT BOSTON COLLEGE.

A year ago we chronicled the very successful meeting of the New England Association of Physics Teachers which took place at Boston College on March 28, 1925. All were delighted with the hospitality extended to them by the college and by the excellent facilities provided by the magnificent new Science Building on University Heights. It is not surprising therefore that the New England Association of Chemistry Teachers also chose Boston College as the scene of its 100th meeting on May 1, 1926. Fr. A. Hohman, professor of Chemistry was a member of the committee in charge and also made the necessary arrangements at the college.

General Comments

The first of the three papers, by Dr. J. H. ...
 The second paper, by Dr. ...
 The third paper, by Dr. ...

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The business meeting began at 9:30 with Mr. Leslie O. Johnson presiding. This was followed by an address of welcome by Fr. James H. Dolan, the president of the College. The principal morning lecture was by Fr. J. Brosnan of Weston on "Methods and Results of Natural Color Photography with Hints for Color Slides in Science Teaching". Other papers presented were "The Contribution of Chemistry to Medicine" by Dr. C. E. Bolser of Dartmouth College and "Organic Chemistry and its Relation to Industry" by Dr. C.H.Herty of New York, President of the National Organic Chemical Manufacturers' Association. Professor H.F. Davidson of Brown University who was to have read a paper on a "New Lecture Table Demonstration" died quite suddenly three days before the meeting. A committee under the leadership of Dr. L. Newell of Boston University prepared resolutions of sympathy which were adopted by the Association. About 75 attended the meeting including Fr. G. Strohaber and some of the staff of the Department of Chemistry of Holy Cross College.

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MEETING OF THE AMERICAN GEOPHYSICAL UNION.

The annual meeting of the American Geophysical Union was held at the National Academy of Sciences, Washington, D.C., on Friday, April 30. The general meeting was held at 2:30 P.M., the sections of Geodesy, Seismology, Meteorology, Terrestrial Magnetism and Electricity, Oceanography and Volcanology meetings in the morning. There were three of members of the Society present, Frs. Macelwane and Repetti of St. Louis and Fr. Tondorf of Georgetown. Fr. Macelwane read a paper on his new seismological tables and Fr. Tondorf took part in several of the discussions. Fr. Macelwane was elected a member of the Union, which now has two Jesuits as members, Fr. Tondorf Having been elected two years ago. The membership of the Union is limited.

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FIRST MEETING OF THE EASTERN SECTION OF THE SEISMOLOGICAL SOCIETY OF AMERICA.

In our last number we mentioned the formation of an Eastern Section of the Seismological Society of America of which Fr. Macelwane of St. Louis was the first chairman. The first meeting was held in Washington on May 1, 1926. There was a symposium on "The Present Status of Seismology in the United States" in which Fr. Macelwane took part, his subject being "The Jesuit Stations in the United States---a Retrospect". According to Science for May 14, Fr. Macelwane was elected chairman of the Eastern Section, with E. A. Hodgson vice-chairman and Commander Heck, secretary-treasurer.

A recent letter of the secretary Commander Heck states that "the purpose of the Section is to arouse interest in earthquake study from every viewpoint:- from that of the business man, architect and engineer and those who benefit by their work, the insurance companies and the insured, those studying the earthquake danger in large cities as well as those interested in the study of earthquakes as geologists and seismologists". The present wide-spread interest in earthquakes not only on the part of men of science but also on the part of business men, insurance men and the general public is a remarkable phenomenon. It is a proof of the timeliness of the recent organization of the Jesuit Seismological Association. Our opportunities in this developing world science are unique. We have every incentive to labor for results of scientific value.

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SYMPOSIUM ON EARTHQUAKES AT THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

Another proof of the interest shown in earthquake phenomena is the recent symposium on earthquakes held at the 933d meeting of the Philosophical Society of Washington on March 6, 1926. Fr. Tondorf of Georgetown took a prominent part. His subject was "Seismology-a Retrospect". Other papers were "Outstanding Problems in Seismology" by Commander Heck, "Earthquakes from the Isostatic Viewpoint" by Dr. W. Bowie and "Difficulties in the Study of Local Earth Movements" by Dr. A. Day. The papers were published in the Journal of the Washington Academy of Sciences for May 4, 1926.

On May 8, Fr. Tondorf also addressed the University Club of Washington on "Earthquakes and Their Results". The other speaker was Dr. Bailey Willis, the President of the Seismological Society of America.

NOTE ON FATHER ALGUE.

We have already mentioned the recent resignation of Fr. Algue as Director of the Weather Bureau of the Philippine Islands after many years of distinguished service for the Church and its missions, for science and navigation. Fr. Tondorf calls our attention to the following note which appeared in the Monthly Weather Review for December 1925. It is worthy of a place in the BULLETIN as the Review is in reality the official organ of the United States Weather Bureau. The note follows:

"Resignation of Father Algue from the Philippine Weather Bureau.

We have received the following note from Sr. Miguel Selga, Acting Director, under date of December 7, 1925:

I regret to announce the resignation of Rev. Jose Algue, as Director of the Weather Bureau of the Philippine Islands, effective December 31, 1925. Father Algue left Manila for Spain on September 14, 1924; poor health and failing eyesight prompted his resignation.

"The above note indicates the withdrawal from active service of a distinguished meteorologist. Father Algue went to the Manila Observatory some 30 years ago from Habana, and subsequently became its director. In this capacity in 1900 he reorganized the weather service of the Philippines, inaugurating the use of methods and apparatus in accordance with the practice of the U. S. Weather Bureau. From that time, the record of the Philippine Weather Bureau under his guidance has been one of increasingly important service, particularly in the study and forecasting of tropical hurricanes in that part of the world. Father Algue's great contribution to the literature of tropical storms is his well-known "Cyclones of the Far East" published in Manila in 1904."

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GRADUATE FELLOWSHIPS IN CHEMISTRY AT HOLY CROSS COLLEGE, WORCESTER.

"The Tomahawk", the Holy Cross Weekly on May 11, 1926 announced the recent establishment of six graduate fellowships in Chemistry open to properly qualified graduates of colleges and technical schools. Appointment to the position of fellow is for the period of ten months beginning on August 15, 1926. Fellows are required to become candidates for the degree of Master of Science. In addition to study and research they will devote a maximum of twelve hours a week to instruction in the Department of Chemistry.

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COURSE IN SUGAR CHEMISTRY AT THE ATENEO, MANILA

A neat booklet entitled "Sugar Chemistry or Sugar Factory Control" has been published by Fr. R. B. Schmitt, professor of Chemistry at the Ateneo, Manila. It describes the new course in Sugar Chemistry inaugurated at the Ateneo. It is stated that the object of the course is to give the student an understanding of the various chemical processes and methods employed in Sugar Centrals to extract the sugar grain from the cane. The chemical technology of sugar extraction will be investigated from the time the cane enters the factory until the sugar grain is stored in the warehouse. The laboratory work will include the study of the methods employed for the quantitative analysis of the products used and obtained in sugar manufacture. This would seem to be a very timely course for our Manila students on account of the importance of the sugar industry in the Islands and we congratulate Fr. Schmitt on its inception.

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ANOTHER NOTE ON THE WESTON STANDARD CELL.

We recently received a letter from Fr. Vittrant of the Province of Paris, Professor of Physics at the Universite L'Aurore at Shanghai, China. It will be remembered that he contributed an article in Vol. 2, no. 4 on the unification of the units of measurement in the United States, the British Empire and China. He says that he was interested in the note in our last number on the constancy of the Weston Standard Cell and gives some of his own experiences. "I have not yet purchased any Weston Cells as I feared the effect of the long voyage on them. However, in May 1921 I made up two cells at intervals of ten days. They are of the saturated type, there being an excess of cadmium sulphate crystals. Their design is such that they have a large internal resistance, over 1000 ohms. I always compare them before and after any experiment in which they are used. I have never found a difference of more than 0.00014 volts between them. In fact this difference is exceptional. In general the difference does not exceed 0.00007 volts. In January 1925 I compared them with a Standard cell imported from France for another laboratory. The one with the larger electromotive force exceeded this by 0.00015 volts, the other by only 0.00007 volts. I am therefore in no hurry to purchase other standards". This observation is interesting as it shows how reliable and constant the Weston cell is, even when it is made up in the laboratory.

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 NEW SEISMOLOGICAL STATION AT THE CENTRAL STATION OF THE JESUIT SEISMOLOGICAL ASSOCIATION.

"Science" for June 4, announces that Major M.J. Connolly of Washington D.C. has given \$15,000 to St. Louis University to build and equip a first seismographic station for the study of both local and distant earthquake shocks. The Missouri Physics Bulletin for June 1926 states that the station will be built, not in the city of St. Louis, but at Florissant some distance from the buildings at St. Stanislaus. "The equipment will consist of two short period Wood-Anderson torsion Seismometers for the measurement of the horizontal components of motion in near earthquakes, one short period vertical component torsion seismometer of the same type, two long period torsion seismometers for distant earthquakes and, if possible, a Gallitzin long period vertical for distant earthquakes, all to have recording drums driven by an oscillator, synchronous-motor system of the highest precision and using only photographic registration. The \$15,000 will pay only for the cost of construction and equipment and will furnish nothing for the upkeep".

Those who are interested in the Wood-Anderson instruments mentioned above, will find a description and discussion of the theory in the "Journal of Optical Society of America" June 1924, and in the Bulletin of the Seismological Society of America" March 1925.

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 GRANT TO FATHER LEJAY.

"Science" for May 28 states that Father Lejay of the Zi-ka-wei Observatory Shanghai, China, has received a grant of 4000 francs from the French Academy of Sciences to enable him to complete his investigations of atmospheric electricity.

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 FRENCH JESUIT PRESIDENT OF THE FRENCH GEOLOGICAL SOCIETY.

We read in the London Tablet for May 29 that Father Teilhard de Chardin of the Province of Lyons who is professor of Geology at the Institut Catholique of Paris is now president of the French Geological Society. It states also that he has gone to Tibet and Mongolia in company with Fathers Lejay and Licent on a scientific expedition under the auspices of the French Government. The BULLETIN was indebted to Father Teilhard de Chardin for the list of French instrument makers which appeared in Vol. 2, no. 5. We congratulate him on the high honor which has come to him.

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 NEW REFERENCE WORK ON PHYSICS.

Our professors of Physics will be interested in a new and quite elaborate

Handbuch der Experimental Physik which has recently been announced. It is edited by Dr. Wien of Munich and Dr. Harms of Wurzburg, and published by the Akademische Verlagsgesellschaft of Leipzig. It will consist of a large number of volumes,--we don't know just how many--prepared by German physicists of standing and, being encyclopedic in its nature, should prove very valuable as a book of reference.

It will doubtless replace the well known work of Winkelmann. It is claimed that it will be the most complete and most important handbook which has ever been published on experimental physics. One volume of about 350 pages neatly printed has already appeared. It is "The Mechanics of a material particle and of rigid bodies" by Professor Haas of the University of Vienna. The work may be ordered from the Buchhandlung Gustav Fock, Schlossgasse 7-9, Leipzig, Germany.

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SUMMER MEETING OF THE EASTERN SECTION OF THE AMERICAN ASSOCIATION OF JESUIT SCIENTISTS.

The annual meeting of our Association under the presidency of Fr. G. Strhaver of Holy Cross College will take place next August at Georgetown University, Washington, D.C., after the Science Summer School. The latter will have its sessions at Holy Cross College. The advantages of the national capital for a meeting of this kind are so well known that they need not be enumerated. Many of the most important scientific institutions of the United States Government are located there. Our oldest Catholic University with the many associations connected with the early days of the restored Society in this country is famed for its hospitality and has ample facilities for entertaining members and for providing lecture rooms and equipment for papers and demonstrations. Its proximity to Woodstock will make it possible, we understand, for many of the Theologians to attend. The vice-presidents of the sections have sent out notices urging attendance and the preparation of papers. Exact dates and other necessary details will be announced later. It is to be hoped that all who possibly can will arrange to be present, and take an active part in the sessions. Let each one be assured that the success of the meeting will depend in due measure upon his cooperation. Mark your Ordo or Calendar now and let nothing stand in the way. We have the cordial approval of the Superiors of both Maryland-New York and of New England.

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CORRECTION. Fr. W. Repetti calls our attention to a slight error which crept into Mr. Doucette's article on the Equipment of the Manila Observatory in our last number. It is stated that there is a Secchi Universal Meteorograph similar to the one at Manila in our College in Cincinnati. The instrument is in Father Odenbach's Observatory at John Carroll University in Cleveland.

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ORDINATIONS AT WOODSTOCK.

The BULLETIN extends hearty congratulations to the members of the Association who were raised to the dignity of the priesthood at Woodstock this month. They are Fathers Butler, Kelly, McWilliams, Reith, Shiple, Brown and Higgins. Father Lynch will be ordained at Valkenburg. The BULLETIN is especially indebted to Father Shiple for his zeal and devotedness in taking care of all printing for the past three years. He has made many of the stencil sheets himself and he has enlisted the enthusiastic cooperation of others in this laborious work and in the printing and mailing.

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In closing this year's volume the BULLETIN wishes to thank all who have helped to make it a success. It appreciates deeply the interest shown by those who have contributed articles and notes and also the good work done in printing the different numbers by the theologians of Woodstock.

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NOTICE OF CHANGE OF ADDRESS. Subscribers to the BULLETIN are again requested to notify the editor, Fr. H. Brock, Weston, Mass., of any change of address the summer may bring them. We wish to keep our mailing list up to date.

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The Experimental Physics which has recently been announced. It is edited by Dr. Victor of Munich and Dr. Harnack of Göttingen, and published by the Verlagsgesellschaft of Leipzig. It will consist of a large number of volumes, and will contain just now many papers prepared by German physicists of standing and fame. It is a valuable addition to the literature of physics. It is claimed that it will be the most complete and most important handbook which has ever been published on experimental physics. One volume of about 300 pages nearly printed and already appeared. It is the handbook of a central particle and of other matters by Professor Harnack of the University of Vienna. The work may be ordered from the publishing house, Leipzig, Leipzig, Leipzig.

THE MEETING OF THE EASTERN BRANCH OF THE PHYSICAL ASSOCIATION OF GREAT BRITAIN

The meeting of the Eastern Branch of the Physical Association of Great Britain at the University of Cambridge will take place next week at the University of Cambridge, Cambridge, England. The meeting will have the character of a meeting of the Eastern Branch of the Physical Association of Great Britain. The advantages of the meeting are many. It is held in a beautiful spot, and the accommodation is excellent. The Eastern Branch of the Physical Association of Great Britain is the only branch of the Association which is held in this country. It is held in a beautiful spot, and the accommodation is excellent. The Eastern Branch of the Physical Association of Great Britain is the only branch of the Association which is held in this country. It is held in a beautiful spot, and the accommodation is excellent.

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NOTIFICATION AT GÖTTINGEN

The Bulletin extends hearty congratulations to the members of the Association who have taken the liberty of the Bulletin at Göttingen. The Bulletin is published by the Verlagsgesellschaft of Leipzig. The Bulletin is published by the Verlagsgesellschaft of Leipzig. The Bulletin is published by the Verlagsgesellschaft of Leipzig.

In closing this year's volume the Bulletin wishes to thank all who have supported it. It appreciates deeply the interest shown by those who have contributed articles and notes and also the good work done in printing the Bulletin by the Verlagsgesellschaft of Leipzig.

THE CHANCE OF A CHANGE: Subscribers to the Bulletin are again requested to send their orders to the Verlagsgesellschaft of Leipzig. The Bulletin is published by the Verlagsgesellschaft of Leipzig. The Bulletin is published by the Verlagsgesellschaft of Leipzig.