PROCEEDINGS OF THE TENTH ANNUAL MEETING OF THE MINERALOGICAL SOCIETY OF AMERICA AT WASHINGTON, D. C.

FRANK R. VAN HORN, *Secretary.*

The Mineralogical Society of America held its tenth annual meeting on December 26 and 27, 1929, in conjunction with the Geological Society of America at the Wardman Park Hotel, Washington, D. C. On Thursday, December 26, at 2:00 P. M., President A. L. Parsons called the regular annual meeting to order. On motion of the Secretary the reading of the minutes of the last annual meeting was dispensed with, in view of the fact that they had been printed on pages 95–107 of Volume **14** (Number 3) of *The American Mineralogist.*

ELECTION OF OFFICERS AND FELLOWS FOR 1930

The Secretary announced that 171 ballots had been cast unanimously for the officers as nominated by the Council. For fellows there was a unanimous vote of 73 ballots in the affirmative. All officers and fellows were declared elected.

The officers elected for 1930 are the following:

President: Herbert E. Merwin, Geophysical Laboratory, Washington, D. C.

Vice-President: John E. Wolff, Pasadena, California.

Secretary: Frank R. Van Horn, Case School of Applied Science, Cleveland, Ohio.

Treasurer: Albert B. Peck, University of Michigan, Ann Arbor, Michigan.

Editor: Walter F. Hunt, University of Michigan, Ann Arbor, Michigan.

Councilor, 1930–1933: Paul F. Kerr, Columbia University, New York City.

The fellows elected follow:

Dr. Gregori Aminoff, Director of the Mineralogical Department of the State Museum of Natural History, Stockholm, Sweden.

Dr. Clifton S. Corbett, Geologist, The Gulf Oil Company, 21 State St., New York City.

Mr. Edward P. Henderson, Assistant curator of Applied Geology in the U. S. National Museum and Lecturer in Mineralogy, Georgetown University, Washington, D. C.

Dr. John T. Lonsdale, Professor of Geology, Texas Agricultural and Mechanical College, College Station, Texas.

Dr. J. F. Schairer, Physical Chemist, Carnegie Institution of Washington, Geophysical Laboratory, Washington, D. C.

Dr. Stephen Richarz, Professor of Geology, St. Mary's College, Techny, Illinois.

Prof. Hyrum Schneider, Associate Professor of Geology, University of Utah, Salt Lake City, Utah.

Dr. Max N. Short, Assistant Geologist, United States Geological Survey, Washington, D. C.

Dr. Harry von Eckerman, Lecturer in Mineralogy and Petrology at the University of Stockholm, Sparreholm, Sweden.

REPORT OF THE SECRETARY FOR 1929

To the Council, Fellows and Members of the Mineralogical Society of America: The Secretary herewith begs to report that the roll of the Society now comprises 114 fellows and 274 members in good standing. One fellow and 27 members have been dropped from the mailing list for non-payment of dues, so that there is a gain of 8 fellows and 39 members for the year. No deaths have been reported during the year. In addition to the 388 fellows and members, there are 199 subscribers, a gain of 14 for the year. A total of 587 paid copies of the Journal are mailed monthly, an increase of 61 over last year and the largest annual gain in the history of the Society. Actually, during the past year 9 fellows, 80 members and 18 subscribers or a total of 108 were added, but 1 fellow, 27 members and 10 subscribers or a total of 38 were dropped from the mailing list. The general status of the Society is very gratifying.

Respectfully submitted,
FRANK R. VAN HORN, *Secretary.*

REPORT OF THE TREASURER FOR 1929

The Treasurer read his report, and on motion made and seconded, it was accepted and ordered filed. On motion an auditing committee composed of non-members of the Council was appointed by the President. This committee consisting of P. F. Kerr and M. W. Senstius later reported to the Secretary that they found the books of the Treasurer correct. The Treasurer's report follows:

To the Council of The Mineralogical Society of America: Your treasurer herewith submits his annual report for the year ending November 30, 1929:

RECEIPTS

Cash on hand December 1, 1928	$2,424.42
Dues and subscriptions	1,893.05
Advertisements	213.00
Sale of back numbers	260.92
Interest on Endowment and bank deposits	2,481.14
Miscellaneous	2.50
	$7,275.03

DISBURSEMENTS

Printing and distribution of the Journal	$2,825.96
To the Editor, Secretary, and Treasurer	700.00
Printing of separates	139.59
Miscellaneous	35.78
2 $1000 Bonds, Trenton Mort. & Title Guar. Co. (5½%, due 1938)	2,016.66
	$5,717.99

BALANCE in Princeton Bank and Trust Co., Nov. 30, 1929	$1,559.72		
Check #86 to W. L. Lemcke not returned to bank	2.68	1,557.04	
			$7,275.03

The Endowment consists of 45 one thousand dollar bonds of the City and County of Honolulu	$45,000.00
4 Liberty Bonds of $100 each, 4th 4¼%	400.00
3 $100 bonds of the Great Northern R. R. 5½ Gold	300.00
2 $1000 bonds, Trenton Mort. & Title Guar. Co., 5½%, due 1937	2,000.00
2 $1000 bonds, Trenton Mort. & Title Guar. Co., 5½%, due 1938	2,000.00
	$49,700.00

Respectfully submitted,
ALEXANDER H. PHILLIPS, *Treasurer*

REPORT OF THE EDITOR FOR 1929

The report was read by the Editor, and on motion it was accepted and ordered filed.

To the Council of the Mineralogical Society of America: This year is one of more than usual interest as it marks the tenth anniversary of the founding of the *Mineralogical Society of America*. It will be recalled that the *American Mineralogist*, sponsored largely by the Philadelphia Mineralogical Society, the New York Mineralogical Club and the Mineral Collectors' Association, made its first appearance in July 1916. With the organization of the Mineralogical Society of America in 1920 the *American Mineralogist* became the official publication of that body.

It is not my purpose to trace the development and expansion of the Journal during this ten year period as another speaker will cover this phase in presenting a general survey of the outstanding events that have transpired since the eventful organization meeting at Harvard University a decade ago. However, it might not be out of place to emphasize here the single point that although the Journal still fails, in some respects, to measure up to the ideals that are held for it by those in charge of its welfare, nevertheless substantial progress has been made, and from a periodical of approximately 200 pages in 1920 there has evolved a publication that under normal conditions should fill a volume of about two and a half times that size.

In this connection it is interesting to recall a statement made by the first President of the Society in his address "On the future of mineralogy." In referring to the Journal the speaker said: "It is hoped that as a result of the general readjustment of prices the issuing of monthly numbers of from 24 to 32 pages each may soon become possible." At that time and under the then existing circumstances this was believed a worthy goal considering the high printing costs and the meagre income of the Society. This goal has been reached and passed due largely to a generous endowment in 1926 by the late Col. Washington A. Roebling, and instead of issues of from 24 to 32 pages, numbers of from 45 to 50 pages each are now not uncommon.

Turning to an analysis of volume 14 we find that while the publications of the Journal for the current year have failed to establish new records for either total

size or for the number of articles published, still the performance for 1929 might be considered as satisfactory. Last year, due to favorable circumstances which permitted the issuance of one very large number of 170 pages, volume 13 was somewhat larger. Although no opportunity for a special number was presented during the present year, nevertheless volume 14 contains approximately 500 pages and represents the largest volume in the history of the Society with the single exception noted above.

During the past year 37 individuals have contributed one or more of the 74 leading articles that have appeared in the current volume. Forty-five of these articles came from contributors within the States while two were received from Canada. The contributions have not been restricted to a few institutions but have come from 22 different universities, research bureaus and technical laboratories. Of the 47 leading articles, 3 recorded for the first time descriptions of new mineral species; 4 described famous mineral localities; 20 called attention to new data on established species and 20 consisted of addresses and articles of a miscellaneous character including a number on crystal structure.

The 47 leading articles occupied 396 pages or 81% of the total space, while 19 book reviews, 24 reports of proceedings of societies, 38 abstracted accounts of new mineral names and 63 other items of general interest, including numerous short articles, filled 93 or 19% of the space of the Journal.

The Editor wishes to take this opportunity to state that suggestions for improving the Journal are always welcome. During the past year a number have been received that were of material assistance in producing a better balanced and more serviceable magazine. More attention has been given to book reviews with the result that the number published (19) represents a fair increase over other years. Also the annual index has been enlarged by including references to all minerals containing new physical, chemical or optical data. In many instances these descriptions are deeply buried in the text proper and their presence would not be suspected from the title of the article containing them. These are some of the minor refinements which may pass unnoticed by the casual reader but which should be of considerable assistance to the serious minded student.

During the latter part of the year there has been a regrettable delay on the part of the publishers in printing and distributing authors' reprints. Every effort is now being made to insist upon delivery within a period of 30 days from date of publication. A letter recently received from the publishing company states that a new press has been installed that will be devoted almost exclusively to their reprint business. This should speed up the filling of reprint orders and I feel quite confident that in the future there will be a marked improvement in this direction.

In conclusion it should be noted that the reports of both the secretary and treasurer indicate that during the year there has been a gratifying increase in the number of members added to our mailing list and also in the receipts from dues and subscriptions. Indications at present seem very bright for 1930. It is hoped that a year hence the Editor will be able to announce a volume of at least 600 pages, but whether this goal is to be realized or not depends largely upon the number and size of suitable manuscripts received from the members and friends of the Society.

The concluding table of contents summarizes the distribution of subject matter in volume 14.

DISTRIBUTION OF SUBJECT MATTER IN VOLUME 14

Subjects		Articles	Pages	Per cent of Total
Leading articles				
New mineral species	3			
Mineral locality articles	4			
New data on established species	20			
Addresses and miscellaneous articles	20			
		47	396	81
Proceedings of societies		24	36½	
Notes and news		63	31½	19
Book reviews		19	13	
Abstracted accounts of new mineral names		38	12	
Total of text		191	489	100
Illustrations		145		
Covers, advertisements, index			103	
Total			592	

Respectfully submitted,
WALTER F. HUNT, *Editor.*

REPORT OF SPECIAL COMMITTEE REVIEWING THE REPORTS OF THE COMMITTEE ON NOMENCLATURE AND CLASSIFICATION OF MINERALS

W. T. Schaller, Chairman, read the report of the Committee which follows:

This committee was formed largely on the initiative of its Chairman. Its object was to consider the several reports presented in past years by the Committee on Nomenclature and Classification, select the more important features thereof and again present them to the Members of the Society in an effort to have them adopted, perhaps aiding this effort by giving to the Editor certain powers with reference to the carrying out of such selected features in the Journal of our Society.

With this end in view, the Chairman preliminarily read and reread the various reports of the previous Committee, trying to attain the desired end, as just outlined to you. He felt that whether or not the report of his Committee be adopted, such a report, making specific recommendations based on the earlier reports of the previous Committee, would in all probability be the last report on such a subject. He therefore considered the subject a grave and important one, requiring careful thought. He is glad to say that the other two members of this Committee fully agree in his characterization of the subject.

In reviewing the various reports of the previous Committee, it is noted that there was not always uniformity of decision of the entire committee; several of the items were favored "by the majority of the Committee, though not by all." It seems therefore as if further consideration can still be given, with profit, to certain of the several topics considered.

Moreover, there have recently been two new developments which bear directly on this matter:

The first is that a new edition of Dana (the 7th) is well under way. The authors of the volume (or volumes?) will have to consider all the points brought out in the Committee's reports and come to a decision on all of them. Could not cooperation between the authors of the new Dana and the resurrected Committee make further progress?

The second is that the next International Geological Congress, in 1932, will be held here, probably in Washington. Can not we then have a real meeting of a mineralogical and petrographical section and discuss international questions in mineralogy, such as nomenclature and classification?

The Chairman of the previous Committee, Dr. H. S. Washington, in his letter of October 12, 1924, to fellow committeemen, said:

"Spencer (that is L. J. Spencer of the British Museum) strongly advocated the formation of a joint committee or some sort of close working and understanding between English and Americans, and then to consult and work with the French, etc." Such an international committee would carry out the idea of Prof. Kraus expressed at the Ithaca meeting in 1924 when his motion was carried "that a Subcommittee of our Committee on Nomenclature be appointed by its Chairman to cooperate with a similar British Committee."

It has therefore seemed to the present Committee that this is not an opportune time to present again the items covered in the earlier reports of the previous Committee but that it would be much better to continue the work of the previous Committee, with special consideration of the preparation of the new edition of Dana and the coming International Geological Congress in 1932.

This Committee therefore recommends the appointment of a new Committee on Nomenclature and Classification whose duties shall be similar to those of the previous Committee but who shall, in addition, offer to cooperate with the authors of the new edition of Dana and shall also offer to cooperate on germane subjects with the other mineralogical societies of the world, starting with the Mineralogical Society of Great Britain, and shall present a report, either final or preliminary, at the next International Geological Congress in Washington in 1932.

W. T. SCHALLER, *Chairman*
CLARENCE S. ROSS
EDGAR T. WHERRY

It was moved and carried to adopt the recommendation of the Committee. The President appointed the following: W. T. Schaller, W. F. Foshag, E. S. Larsen, T. L. Walker, E. T. Wherry and A. N. Winchell.

REPORT OF REPRESENTATIVE ON THE NATIONAL RESEARCH COUNCIL

The representative of the Society, W. T. Schaller, gave a brief summary of the work of the National Research Council and some of its committees during the year.

REPORT OF THE DELEGATES TO THE XV INTERNATIONAL GEOLOGICAL CONGRESS

T. L. Walker, Chairman, read the following report:

The Fifteenth Congress was opened on the 16th of July 1929, in Cape Town where the members were welcomed by the Mayor in the City Hall. After two days spent on excursions in the Cape peninsula most of the members left Cape Town on excursions to study the geology on the way to Pretoria where the sessions lasting from July 28th to August 7th were held. During the sessions numerous short excursions were held in the vicinity of Pretoria, to be followed by longer excursions to North and South Rhodesia, the Bushveld Complex, Zululand and to the Vredefort granite dome. About 350 of the total of 500 members were in attendance from about 50 countries and colonies. The excellent arrangements made by the General committee for the advantage and comfort of the visitors were highly appreciated by the members. The delegates from the Mineralogical Society of America—E. P. Henderson, A. H. Phillips, Frank R. Van Horn and T. L. Walker—thank you for the privilege of representing our society at this great gathering which included many of the leaders in our field.

T. L. WALKER, *Chairman*

NEW BUSINESS

It was moved and carried that the congratulations and best wishes of the Society be extended to our Honorary President, Professor Edward S. Dana, New Haven, Connecticut, on having attained his 80th birthday, November 16, 1929.

It was also moved and carried that the Society show its appreciation to its retiring Treasurer, Alexander H. Phillips, by a rising vote of thanks.

PRESENTATION OF PAPERS

At 2:55 P. M., there being no further business, the Society proceeded to the reading of scientific papers. The papers presented with short abstracts follow:

E. H. KRAUS, Past President: *The First Ten Years of the Mineralogical Society of America.* This very interesting and instructive summary of the history of the Society is published in this number of the Journal.

C. B. SLAWSON: *A Biological Application of Petrographic Methods.* In studying the therapeutic effects of phenolphthalein and its derivatives the Pharmacology and Pharmacy departments of the University of Michigan could devise no satisfactory chemical test for the detection of dihydroxy-benzophenone in urinary precipitates. By identifying the crystals with the petrographic microscope it was found possible not only to identify the crystals but to make a quantitative estimation of the amount eliminated.

R. H. LOMBARD and H. E. MERWIN: *Minerals of the System Cu-Fe-S.* (Presented by H. E. Merwin.) Mixtures of copper and iron sulphides have been heated in sulphur vapor at various temperatures and pressures. The relations of the compounds and solid solutions found have been studied for the range 460°–950° in detail. For the range 50°–460° the study is less complete because of polymorphic changes, slowness of reaction, and the "unmixing" of solid solutions.

K. K. LANDES: *Rapid Specific Gravity Determinations with Clerici Solution.* Clerici solution, a thallium malonate-formate, has the double advantage over other heavy liquids in its complete miscibility with water and in its unusually high specific gravity (4.4 plus). A series of 25 test tubes were mounted in a block and liquids with gravities ranging from 2.0 to 4.4, in steps of .1, were put inside. The mineral fragment to be tested is placed on a concave and porous disk which is soldered to a vertical rod. The rod is lowered into the tube and the relative density of the mineral secured. The specific gravity of a mineral can be determined to an accuracy within .03 inside of 30 seconds. If kept tightly stoppered and covered with a black cloth when not in use the variation of the liquids after a lapse of one year will not exceed .01.

D. J. FISHER: *Hübnerite from Kendall, Montana.* Hübnerite from the North Moccasin Mountains shows three new prism forms, *J* (320), *P* (140), and *T* (150), as well as the rare form *j* (610). The physical and chemical properties of the material are described, along with the data from an X-ray spectrograph of the powder. This paper is printed in full in this issue.

During the latter part of the afternoon session in the absence of the President, Vice President Edward Wigglesworth presided.

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At 3:55 P. M. the Society adjourned to the Theater of the Hotel to attend a joint session with the Geological Society of America at 4 P. M. before which the presidential address of Professor Arthur L. Parsons on "*Iridescent Color in Peristerite*" was given. This paper is published in full in this number. Following this address with A. L. Parsons presiding, papers of the Geological Society of a mineralogical and petrographical nature were presented. The joint session adjourned at 6 P. M.

On Friday, December 27, at 9:20 A. M., President Parsons called the second session of the Society to order, and the reading of papers proceeded according to program.

C. E. MILLER: *Separation of Mica from Kaolin Clay Sand Residues by Rosenbusch's "Cardboard Method."* The paper describes apparatus designed to hold the material, upon which the mica is quantitatively separated from the sand, at a definite angle of slope. The apparatus permitted the use of various materials. Glass, glazed and unglazed, bristol board, sheet mica, and bond paper were used.

The best separation was obtained by using glazed bristol board, while glass was not quite as satisfactory. Quantitative separations of mica, 80 mesh or coarser, are possible by this method and require less time and skill than other methods of separation. It is suggested that micas finer than 80 mesh be separated by means of a glazed porcelain funnel or dish.

C. E. MILLER and B. C. GETCHELL: *Data Concerning Decrepitating Minerals.* Believing that occulded water and gas were not the sole causes of decrepitation, a survey of the mineralogical literature, American, English, and German was made. Thirty-two mineralogical references and textbooks out of 75 examined used the term "decrepitation" in describing the pyrognostic properties of minerals. Four Industrial publications mentioned decrepitation as a means of separating economic minerals from their gangue minerals. Three papers dealing with causes of decrepitation were found. Two hundred and eleven minerals were described as decrepitating.

A list giving the frequency, system and authorities is given. No one reference contained more than 55.6% of the decrepitating minerals.

Analysis of the data shows (1) that from their origin decrepitating minerals may well contain occulded water but this is offset by the large number of minerals containing occulded water that do not decrepitate, (2) that crystal system and water of composition cannot be the sole causes of decrepitation, (3) that available data for the decrepitating minerals show them to be brittle.

The results of the analysis lead to the suggestion that anyone of three combinations or sets of conditions may be responsible for decrepitation.

J. E. WOLFF: *Lantern Slides in Natural Colors for Demonstrating Geology and Microscopical Petrography.* Lantern slides made by the author on natural color plates were projected, illustrating Southern California geology, both in the San Gabriel Mts. above Pasadena, the Mohave Desert, Death Valley, etc., and similarly of thin sections of rocks under the microscope, either with crossed nicols, polarizer only, or both successively. These were made for easy demonstration to elementary classes or lay audiences to illustrate structural or textural features.

SYMPOSIUM ON CLAYS

At 10:10 A.M. the regular program of the Mineralogical Society was interrupted, and those present listened to a joint program on clays consisting of papers taken from the programs of both the Mineralogical and Geological Societies. This symposium was presided over by President A. L. Parsons and Vice-President Edward Wigglesworth of the Mineralogical Society.

Geological Society Paper: C. S. ROSS AND P. F. KERR: *Review of our Present Knowledge of the Clay Minerals.*

Geological Society Paper: S. B. HENDRICKS AND W. H. FRY: *The Result of X-Ray and Microscopic Examination of Soil Colloids.*

Mineralogical Society Paper: H. E. MERWIN: *Staining as an Aid in the Determination of Clay Minerals.* Several stains make clay minerals conspicuous. The state of aggregation of the clay rather than its crystal structure affects the rate and depth of staining, and also the rate and amount of penetration of liquids.

Mineralogical Society Paper: P. F. KERR: *Kaolinite from a Brooklyn Subway Tunnel.* A white clay discovered in a subway tunnel excavation near Newtown Creek, L. I., was found to be kaolinite. It occurs beneath glacial till, as a weathering product of the Ravenswood granodiorite. It is associated with greenish less altered areas of weathered granodiorite containing vermiculite. The decay of the rock and the later formation of kaolinite were probably both produced by pre-glacial weathering.

The occurrence provides a description of a typical residual kaolin composed essentially of the mineral kaolinite as strictly defined. Emphasis is placed upon the necessity of careful identification in the case of kaolinite in order to distinguish the mineral from closely related species.

Geological Society Paper: L. G. WESTGATE: *The White Clays of Southern Ohio.* It is shown that the white clays, which are usually less than two feet in thickness, grade down into the underlying mantle rock, whether that is Illinoian or Wisconsin till or residual material from the decay of either limestone or sandstone; contain no

fragments that cannot be found in the underlying mantle rock; occur on upland flats at all elevations up to the tops of the highest cuesta flats and knob outliers of the region; and that they have been produced by the surface weathering of any kind of clayey mantle rock occurring on level tracts of poor drainage.

Mineralogical Society Paper: J. L. STUCKEY: *The Mineralogy of Some Deposits of Kaolinized Volcanic Ash from the Slate Belt of North Carolina.* The rocks of the Carolina Slate Belt consist essentially of acid volcanic flows, tuff, breccia and ash, all strongly metamorphosed. Associated with the areas of ash are irregular lenses of a light colored clay-like material commonly called kaolin. Microscopic study of this material shows it to be an impure, residual clay composed largely of quartz, kaolin, and sericite with small amounts of other minerals and some partly altered rock fragments were present.

Mineralogical Society Paper: F. R. VAN HORN: *China Clay Deposits at St. Austell, Cornwall, England.* Lantern slides were projected which showed the great extent of the deposits, and the methods of purification of these large masses of kaolinite which are among the most important in the world.

Geological Society Paper: V. T. ALLEN: *Petrography of the Weathered Zones of Glacial Deposits.* In the upper part of the profile clay minerals are formed at the expense of the feldspars and the ferromagnesian minerals and these belong to the isomorphous series, recognized by Larsen and others, with beidellite $Al_2O_3.SiO_2.nH_2O$ and nontronite $Fe_2O_3.3SiO_2.nH_2O$ as end members. The optical properties and the chemical analyses of carefully prepared samples of gumbotil from Fairfield, Iowa and Salem, Illinois are similar to those of beidellite from the type locality, Beidell, Colorado. Under better drainage conditions beidellite-nontronite is moved downward probably as colloid solutions which are deposited in cracks and cavities. The cleavage plates are orientated parallel to the sides of the deposits and the optical properties suggest that the composition of the different layers varies between that of nearly pure beidellite and that in which the proportion of Al_2O_3 to Fe_2O_3 is about 1:1 molecularly.

At 12:22 P. M., after finishing all clay papers of both Societies, the regular program of the Mineralogical Society was resumed.

R. C. EMMONS: *The Double Variation Method of Mineral Determination.* In the identification of crystalline substances by means of their optical constants the determination of their refractive indices is probably of paramount importance. The ease and increasing accuracy of these determinations lends this method certain distinct advantages over chemical analyses. The methods outlined in this paper are intended to contribute to the speed and accuracy of such procedures.

In making a determination of refractive index on the petrographic microscope by immersion methods the combined variation of temperature and wavelength of light used affords not merely a greater index range of a given liquid but it yields data on the dispersion of the crystal being studied. Also it makes it unnecessary to determine the index for $589\mu\mu$ as this can be read by interpolation from the resulting curve of dispersion. By using the universal stage in addition to these other controls the crystal grain may be oriented in successive positions such that all critical indices may be read on it alone unless the birefringence is high.

J. E. WOLFF: *The Fedorow Universal Stage for Determining the Optical Properties of Minerals, especially in Sections of Rocks.* A short description was given of the Universal stage and of some of the methods (elaborated by Berek) for determining the optical characters of minerals in thin section, which are largely graphic or require but the simplest calculations.

At 12:58 P. M., the Society adjourned for lunch, and at 2:12 P. M., resumed the reading of papers according to program.

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L. S. RAMSDELL: *The Crystal Structure of Tetradymite.* An X-ray study has been made of the sulfides, selenides and tellurides of arsenic, antimony and bismuth, with the general formula A_2B_3. Of the nine compounds studied, Bi_2Te_3, Bi_2Se_3, Sb_2Te_3 and As_2Se_3 are isomorphous and have a structure which closely approximates a simple rhombohedral arrangement. This simple rhombohedron has the form of a cube, slightly elongated along a trigonal axis. All of the structural positions are equivalent, and are occupied by A and B atoms, in the proportion of 2:3, with a random distribution. The unit cell contains 1 atom, which has an atomic weight of $A_2B_3/5$.

E. C. PALMER: *Flints and Jaspers Found in the District of Columbia in 1929.* The paper described the discovery of flints, chalcedonies and jaspers on the shore of the Potomac River near the famous Key bridge on the District of Columbia side, while inspecting two old British bronze cannons that had been found at the bottom of a hole dug for the purpose of placing foundation piers for a wharf and building. Nine trips were made to the spot during April and May, 1929, and 248 lbs. were brought away covering all sizes up to 137 ounces.

Many of the specimens are covered with a white coating which, with their unique shape, make them resemble closely the flint nodules taken from the chalk cliffs of England.

J. E. WOLFF: *Dumortierite from Imperial County, California.* Specimens of a quartz-dumortierite rock have been repeatedly found on the plains of the Colorado Desert, N. to N. E. of Ogilby, Imperial Co., California, and therefore N.E. of the Colorado river at Yuma, Arizona, but outcrops have so far never been located. This specimen was found in a shallow wash, descending from a mountain range to the N.E. A general account of the locality is given, a description of the specimen, and the optical characters of the dumortierite.

E. T. WHERRY: *A Tabulation of the Aluminum Silicate Minerals.* The tabulation of the aluminum silicate minerals published in the *American Mineralogist* in June, 1925, needs revision in the light of recent discoveries. A new diagram, constructed on the same basis as the old one, is presented. The most striking changes consist in the recognition of the variability in alumina to silica ratio with individual species.

E. H. KRAUS, WILLIS SEAMAN, and C. B. SLAWSON: *Two New Minerals from the Lake Superior Iron District.* These two hydrated boro-phosphates were found in the Chicagoan mine. The manganese boro-phosphate crystallizes in excellent orthorhombic crystals with a pale wine yellow color. The second mineral is apparently an alteration product of the first, magnesium replacing the manganese. It is a white asbestos-like mineral which occurs in felted masses or rodlike aggregates.

F. R. VAN HORN: *Replacement of Wolframite by Scheelite in a Cornish Tin Vein.* In September 1929, while on a rather hurried visit to some of the tin mines of Cornwall, England, Captain M. T. Taylor of the East Pool Mine, near Camborne, gave the writer a specimen which was very interesting. It consisted of the following minerals in their probable order of importance: quartz, wolframite, scheelite, arsenopyrite, pyrrhotite, chalcopyrite, fluorite, chlorite and cassiterite. The wolframite is partially or wholly altered or replaced by a pinkish mineral which seems to consist, at least in part, of scheelite.

W. F. FOSHAG: *Origin of Boron Deposits of the Western United States.* The boron deposits of the western United States are accumulations of borates and other minerals in the playas of closed basins. The original mineral is often ulexite. In some of the Tertiary deposits this mineral is an important one but in others it is changed entirely, or in part, to colemanite. In a previous paper the writer suggested that this colemanite is derived from the ulexite after the uplift and tilting of the beds by percolating saline solutions. It is now believed that the colemanite was derived from the ulexite while the beds were still in the playa stage, the splitting of the ulexite into the soluble borax and the insoluble colemanite being brought about by the separation of the soluble from the insoluble constituents as the playa passed, in its history, from the wet to the dry stage. This process explains more fully the physical and chemical features of these boron deposits.

M. N. SHORT: *Some Discredited and Doubtful Ore Minerals.* Owing to the absence of the author, this paper was read by title.

E. K. GEDNEY: *Notes on the Mineralogy of the New England Pegmatites.* A description of various mineralogical features of interest observed during a four months' study of the pegmatites of New England. Special consideration is given to certain larger mines and to the very large occurrences of blue albite and golden beryl at the Allan Mine, Alstead, New Hampshire.

E. K. GEDNEY: *Beryllium Ores in New England.* A discussion of beryllium and its uses, its geologic occurrence and the probable amount of the metal to be found in New England. Special descriptions of the larger deposits are given. The huge 18 foot crystals of beryl at Albany, Me., the quarry at Georgetown, Me., and Beryl Mountain, N. H., are described in detail. Evidence is presented indicating that the beryls of Albany and other localities are of two generations: one a late, hydrothermal type characteristic of pocket deposits, and the other apparently the first mineral in the pegmatite to crystallize.

A. F. ROGERS: *Distribution of Crystals Among the 32 Symmetry Classes.* (Read by P. F. Kerr.) Of the 7200 odd crystalline substances (both minerals and prepared compounds of the laboratory) described in Groth's *Chemische Krystallographie*, (5 vols. 1906–1919), 5588 have been assigned to a particular crystal class, most of them with a reasonable degree of certainty.

A statistical study of these 5588 crystalline substances reveals a number of interesting facts. In the order of number of representatives, the crystal classes are arranged as follows: Monoclinic prismatic, rhombic bipyramidal, triclinic pinakoidal, rhombic bisphenoidal, monoclinic sphenoidal, hexagonal scalenohedral, rhombic pyramidal, ditetragonal bipyramidal, asymmetric, monoclinic domatic, etc. Each of these has more than 20 known representatives; the other classes have fewer than 20 each.

The monoclinic prismatic class has 2786 representatives, or 49% of the total. The first five classes named have together nearly 92% of the total number. It is surprising to learn that the asymmetric class (triclinic pediad) is ninth in the list. In other words, there are 22 crystal classes, each with fewer representatives than the asymmetric class.

E. T. WHERRY: *A Plea for the Improvement of the Names of the Crystal Forms.* The names of the crystal forms in common use lack uniformity and in some cases are unnecessarily complicated, ambiguous, or even incorrect. A series of names is accordingly proposed, to arouse discussion, in which these objections are partly avoided. Some of the guiding principles are: Closed forms in the Cubic System should be named on the basis of number rather than shape of faces. The expressions 1st, 2nd, and 3rd order for forms in Tetragonal and Hexagonal systems are without real significance and should be replaced by descriptive terms. The same root name should be used for all interchangeable forms, all the forms in the Triclinic holosymmetric, for example, being really pinacoids; the positions in which they are oriented should be expressed by adjectives or prefixes applied to the fundamental term.

J. T. LONSDALE: *Euhedral Magnesite Crystals from Winkler County, Texas.* This paper describes the physical and chemical properties of small crystals of magnesite recovered from well cores of dolomitic limestone from Winkler County, Texas. The occurrence is believed to constitute the second find in the United States of euhedral crystals of magnesite.

A. C. HAWKINS: *Crystallized Minerals in a Meteorite.* In the siderolite from Estherville, Iowa, the nickel-iron is crystallized in octahedrons. Also there is a dark fused crust on the outside of the stony portion, and cavities within. Lining the cavities are crystals of olivine, magnetite, hematite, topaz, and corundum, all showing a number of familiar faces and in the case of the topaz a very large number of additional forms. Cracks caused by the explosion of the meteorite are evidently later than the period of crystallization.

J. L. GILLSON: *Genesis of the Peekskill Emery Deposits.* The emery deposits near Peekskill, N. Y., have long attracted scientific attention because of the complexity of the rock types and the variety of the mineralogy there found. In recent years these emery deposits have been cited by Bowen as an outstanding example of the result of a reaction between a basic magma and an aluminous sediment. The present study indicates that the striking mineralogy was rather caused by common contact metamorphic processes. Volatile or liquid emanations from a lower part of the magma chamber passed through the solidified, igneous rock and out through the walls, causing changes in the mineralogy of both rock types. A sequence of mineral formation is established which proves the nature of the geologic process and dates the time of the ore and gangue formation. A number of minerals were identified, not previously known to occur in the district.

CHARLES PALACHE and L. H. BAUER: *The Occurrence of Beryllium in the Zinc Deposits of Franklin, New Jersey.* This paper was read by Harry Berman and was published in full in the January 1930 issue of the *American Mineralogist.*

L. S. BROWN: *Types, Occurrence and Probable Origin of Texas Celestite.* Celestite has long been known from Texas. It has a wide distribution, but geologic formations are not mentioned in any reported occurrences of the mineral. It has

been our observation that this mineral is restricted to the Glen Rose limestone (Lower Cretaceous). Evidence of syngenetic deposition is seen in a large nodule, which shows unfractured bending of soft strata both above and below, evidently caused by crystal growth.

The two crystal forms seem regularly distributed. A peculiar domatic type appears in the lower strata of the Glen Rose, whereas typical pinacoidal (basal) and prismatic crystals are common in the upper strata. It is suggested that the new type is due to recrystallization under pressure of accumulating sediments.

L. S. BROWN: *New Report on the Barringer Hill District of Texas.* The Barringer Hill pegmatite has had the distinction of producing several rare-earth minerals, some unique for the locality. Descriptions of minerals and the locality have been quite numerous, and have appeared many years ago.

The paper does not present new material. Its purpose is to recall attention to the locality in view of the fact that recently contemplated power projects are expected to submerge the "hill." Rare earth minerals are still to be obtained, though specimens are becoming very scarce.

L. H. BAUER and H. BERMAN: *New Data on Some Franklin, New Jersey, Minerals.* Results of recent analyses and investigations on the following minerals were given: zinc-manganese cummingtonite, apophyllite, celestite, clinozoisite, datolite, ferroschallerite, svabite and barysilite.

S. RICHARZ: *A Peculiar Blue-Green Amphibole from the Metamorphic Iron Formation of the Eastern Mesabi Range, Minnesota.* In the absence of the author, this paper was read by title.

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The last paper was finished at 6:15 P.M., after which it was moved that the thanks of the Society be extended to the Local Committee and to the authorities of the United States National Museum for their kindness and hospitality. This was unanimously adopted. The Society then adjourned.

During the sessions of the Society, a total of 35 scientific papers were presented. 51 fellows, 34 members and 20 guests registered at the meetings, making a total of 105. The following registered at the meetings:

J. L. Adler, W. M. Agar, V. T. Allen, E. T. Apfel, Miss Florence Bascom, W. B. Bayley, H. Berman, A. Bevan, M. Billings, H. R. Blank, I. C. Brown, L. S. Brown, E. L. Bruce, A. F. Buddington, W. H. Callahan, I. Campbell, Mrs. W. L. Capps, Miss G. M. Carhart, R. W. Clark, R. J. Colony, C. S. Corbett, L. W. Currier, H. T. Davis, Miss R. Doggett, A. H. Emery, R. C. Emmons, G. L. English, G. T. Faust, C. R. Fettke, D. J. Fisher, L. W. Fisher, W. F. Foshag, R. E. Fuller, S. L. Galpin, E. K. Gedney, J. L. Gillson, J. Gilluly, E. F. Goldston, F. A. Gonyer, W. A. P. Graham, O. R. Grawe, J. W. Greig, C. S. Gwynne, E. T. Hancock, A. C. Hawkins, E. P. Henderson, F. L. Hess, D. F. Hewett, A. P. Honess, W. F. Hunt, H. Insley, E. C. Jacobs, P. F. Kerr, E. H. Kraus, J. D. Kraus, G. F. Kunz, A. C. Lane, E. S. Larsen, H. Leighton, J. H. C. Martens, E. B. Mathews, H. E. Merwin, B. L. Miller, C. E. Miller, W. J. Miller, E. S. Moore, J. F. Morton, W. H. Newhouse, T. B. Nolan, E. C. Palmer, A. L. Parsons, A. B. Peck, E. H. Perkins, A. H. Phillips, R. S. Poor, L. S. Ramsdell, R. Heinrich, C. H. Richardson, C. S. Ross, E. Sampson, J. F. Schairer, W. T. Schaller, F. C. Schrader, M. W. Senstius, M. N. Short, C. B. Slawson, M. H. Stow, J. L. Stuckey, J. H. Swartz, M. R. Thompson, E. Thomson, D. W. Trainer, Jr., F. R. Van Horn, T. L. Walker, H. S. Washington, R. C. Wells,

L. G. Westgate, E. P. Wheeler, 2nd, E. T. Wherry, W. Wigglesworth, A. N. Winchell, J. E. Wolff, J. F. Wright, G. Zuloaga.

LIST OF FORMER OFFICERS AND MEETINGS, WITH DATES

By recommendation of the Council, a complete list of past officers is printed in the proceedings of the annual meeting of the Society.

Honorary President for Life.....Edward S. Dana, 1925.

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1923 Edgar T. Wherry
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1925 Arthur S. Eakle
1926 Waldemar T. Schaller
1927 Austin F. Rogers
1928 Esper S. Larsen
1929 Arthur L. Parsons

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1925 Herbert P. Whitlock
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1927 George L. English
1928 Lazard Cahn
1929 Edward Wigglesworth

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1923 Frank R. Van Horn

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1924-1929 Alexander H. Phillips

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1922—— Walter F. Hunt

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1925 Thomas L. Watson, Esper S. Larsen, Arthur L. Parsons, William F. Foshag.
1926 Esper S. Larsen, Arthur L. Parsons, William F. Foshag, William A. Tarr.
1927 Arthur L. Parsons, William F. Foshag, William A. Tarr, Alexander N. Winchell.
1928 William F. Foshag, William A. Tarr, Alexander N. Winchell, Ellis Thomson.
1929 William A. Tarr, Alexander N. Winchell, Ellis Thomson, Clarence S. Ross.

ANNUAL MEETING PLACES

1920 Chicago, Illinois
1921 Amherst, Massachusetts
1922 Ann Arbor, Michigan
1923 Washington, D. C.
1924 Ithaca, New York
1925 New Haven, Connecticut
1926 Madison, Wisconsin
1927 Cleveland, Ohio