

PROCEEDINGS OF THE INTERNATIONAL MINERALOGICAL ASSOCIATION

Third General Business Meeting of Delegates

Washington, D. C., April 18 and 20, 1962

JOSÉ L. AMORÓS, *Secretary*

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FIRST SESSION

OPENING

The first session of the III General Business Meeting of Delegates of the 22 Member Societies of the International Mineralogical Association was held in the Auditorium of the Natural History Building of the U. S. National Museum of the Smithsonian Institution in Washington, D. C. on April 18, 1962. Of the possible 43 voting delegates, 37 were present, representing Mineralogical Societies of Austria, Belgium, Canada, Denmark, Egypt, Finland, France, Germany, India, Italy, Japan, Netherlands, New Zealand, Spain, Sweden, Switzerland, United Kingdom, U.S.A., and U.S.S.R. The member Societies of Bulgaria, Czechoslovakia, and Norway were not represented. In addition there were registrants from Australia, Chile, Ghana and Kenya.

After the welcome of the Delegates by President D. Jerome Fisher, by Dr. Leonard Carmichael, Secretary of the Smithsonian Institution, and by Dr. Thomas B. Nolan, Director of the U. S. Geological Survey, the session continued according to the agenda (Constitution 4Aa). The Proceedings of the previous meeting at Copenhagen in August 1960 were approved as already published in the *Cursillos y Conferencias, Instituto Lucas Mallada, C.S.I.C. (España)*, Fasc. III, pp. 169-182, 1961, with the addition of the minor change that they neglected to call attention to the I.M.A. dinner held on August 25, 1960 in the beautiful Sopavillon.

REPORTS OF OFFICERS

PRESIDENT'S REPORT

The current affairs of the Association seem to be running along well; however, there are two items which should be stressed; both of these were mentioned in President Parker's report given at Copenhagen.

1. More activity is needed on the part of some of our Repre-

sentatives. Now the Representative is the liaison officer functioning between the Executive Committee of the I.M.A. and the individual National Society or similar organization (see Constitution, Art. 3b). It is his duty to publicize the I.M.A. to the individual members of the Society, and to transmit from these to the Secretary of the I.M.A. any suggestions or recommendations. Not less than once a year the Representative should report on the doings of the I.M.A. to his Society assembled at its meeting, and the gist of these remarks should be published in the Society's journal. Or if his group is a small informal one that holds no regular meetings, then at least once a year he should circularize it with a written (duplicated) notice that covers this same ground. Representatives are asked to send a copy to the Secretary of the I.M.A., or to send him a reference to where this appears in the Society's journal. It must be stressed that nothing is accomplished unless some *individual* does some thinking and work, and makes these known to others in the I.M.A.

2. Careful thought should be given to the election of a new Council and new Commission officers to become effective at the Madras meeting in December, 1964. It is particularly important that the Executive committee (President, Secretary, Treasurer) of the I.M.A. and the officers (Chairman, Secretary) of the various Commissions be people with zeal and ideas who can afford to expend the time that must necessarily be devoted to the affairs of the Association if it is to be successful. Of course it is desirable that these be as well distributed among the various Societies as is possible (see Constitution 4B α and 12b), but it is far more important that these people be willing to put in the necessary effort to see that the Association continues to progress. The rules for electing a new Council appear in Article 11; the present Executive Committee asks that anyone who knows the name of a person who would make a good officer and who would presumably be willing to serve, transmit this to the secretary before June, 1964.

PROCEEDINGS

REPORT OF THE TREASURER
Covering July 1, 1960 to March 31, 1962

Receipts

Cash on hand July 1, 1960.....	\$1,269.44	
Dues for July 1, 1960 to June 30, 1961		
Mineralogical Societies of Austria (15), Belgium (30), Bulgaria (30), Canada (60), Egypt (14.25), France (90), Japan (60), Netherlands (15), New Zealand (15), Sweden (57.80), United Kingdom (90), U.S.S.R. (130+20).....	\$ 627.05	
Dues for July 1, 1961 to Dec. 31, 1962		
Mineralogical Societies of Austria (15), Belgium (30), Czechoslovakia (30), Denmark (30), Egypt (30.40), France (90), Germany (120), India (30), Italy (90), Japan (60), Netherlands (15), New Zealand (15), Switzerland (60), United Kingdom (90), U.S.A. (150), U.S.S.R. (150) ..	1,005.40	
Dues for 1963		
Mineralogical Society of Austria (15).....	15.00	
Total receipts July 1, 1960—March 31, 1962.....	\$1,647.45	1,647.45
Grand total.....	\$2,916.89	\$2,916.89

Disbursements

President's office		
Stationery—5000 letterheads.....	\$ 73.32	
R. L. Parker—badges, postage.....	32.27	
D. J. Fisher—postage and telephone.....	100.32	
	\$ 205.91	\$ 205.91
Secretary's office		
Author's reprints, Zürich meeting.....	16.43	
	\$ 16.43	16.43
Treasurer's office		
Rubber stamp.....	2.25	
Receipt book & envelopes.....	1.95	
Stamps.....	25.80	
	\$ 30.00	30.00
Publication of World Directory		
Advance to M. Font-Altaba.....	200.00	
	\$ 200.00	200.00
Total Disbursements.....	\$ 452.34	
Bank balance March 31, 1962.....	2,293.64	
Extra check to M. Font-Altaba (to be collected).....	200.00	
Check not yet credited at bank (Egypt).....	30.40	
	\$2,524.04	
Check for postage not cashed at bank.....	59.49	
	\$2,464.55	2,464.55
Grand Total.....	\$2,916.89	\$2,916.89

Note: the dues from Egypt were paid by UNESCO coupons which are subject to 5% clearance fees. Thus the first payment realized only \$14.25, the deficit was made up by a larger payment (\$30.40) the following year.

The dues for Sweden were paid by Postal Order payable in Canadian Dollars. The amount shown is the U. S. dollar equivalent allowed by the Chicago bank.

Supplementary Treasurer's Report
April 1 to June 30, 1962

Receipts

Bank balance April 1, 1962		
Dues July 1, 1961 to December 31, 1962	\$2,293.64	
Canada (60), Spain (30)		
Dues 1963	90.00	
Netherlands (15)	15.00	
Dues for Egypt received in March credited at bank in April	30.40	
Credit for lost check	200.00	
Total receipt April 1, to June 30	\$ 335.40	335.40
Total	\$2,629.04	\$2,629.04

Disbursements

Secretary's Office		
Postage, duplicating, typing	240.00	
Publication of World Directory	680.00	
Check written in March, debited at bank in April	59.49	
Total disbursements April 1 to June 30		
Bank balance June 30, 1962	\$ 979.49	
Check not yet credited at bank	\$1,619.55	
	30.00	
Total	\$1,649.55	1,649.55
	\$2,629.04	\$2,629.04

Respectfully submitted, L. G. BERRY

REPORTS OF COMMITTEE CHAIRMEN

After the Delegates had approved the appointment of Professors W. F. von Engelhardt and M. Font-Altaba as auditors and scrutineers for this meeting of the Association, the following Committee reports were presented.

LIASON COMMITTEE TO THE I.U.G.S. COMMITTEE ON METEORITES

In the absence of the chairman, Professor D. P. Grigoriev of Leningrad, the following report prepared by him was presented by Dr. E. P. Henderson.

A. *Members of the Committee*

Prof. D. P. Grigoriev, Chairman, Mineralogical Society of USSR. Prof. F. Heide, Deutsche Mineralogische Gesellschaft, Dr. E. P. Henderson, Mineralogical Society of America, Prof. M. N. Viswanathiah, Mineralogical Society of India.

B. *Object of the Committee*

The Committee according to the decision at the Copenhagen meeting of the I.M.A. has the problem to decide in detail what should be the objectives of an I.M.A. Commission on Meteorites (if one is set up), and to find out what the I.U.G.S. Commission is doing in the matter. Moreover, if the latter has objectives substantially the same as those that an I.M.A. Commission on Meteorites should have, it is suggested that the Committee explore ways and means in which the two groups can possibly work together effectively.

C. *Contacts with the Commission on Meteorites of the I.U.G.S.*

The Committee has carried out the necessary discussion with the Commission of the I.U.G.S. and became acquainted with the plan of its work. As a result the rationality of the establishment of the Commission in the I.M.A. that shall organize the international work on meteoritic mineralogy was established. The opinion of the Commission of the I.U.G.S. on this problem is expressed in the letter of Dr. E. L. Krinov, President, Sept. 18, 1961: "In addition to the preliminary discussion concerning the problem of the establishment of a Meteoritic Commission of the I.M.A. I think it is appropriate to convey the following: The modern progress of science which has shown the importance of meteorites especially in our days in relation to the direct study of the Cosmos requires a considerable extension of our knowledge of meteorites from all possible points of view, and the importance of international collaboration in this aspect is obvious. For this purpose in 1948 the Permanent Commission of the International Geological Congress was organized and in 1955 a Subcommission (NO. 22-a-) on Meteorites of the International Astronomical Union was formed. The development of these organizations on Meteorites ensures international collaboration as regards conditions of meteorite fall and their substantial composition. But if the existence of the first organization entirely secures this object, the same could not be said about the second because of the large scope of the problems concerning meteoritic composition. Accordingly, I consider that it is very timely for the establishment of

a Meteoritic Commission in the International Mineralogical Association. The object of this Commission should be the organization of international collaboration on meteoritic mineralogy and the coordination of programs for both Commissions."

D. Recommendation of the Liaison Committee on Meteorites to the I.M.A. Congress, Washington, 1962

The Committee favors the establishment not of a Commission on Meteorites but of a Commission on Cosmic Mineralogy with a wider scope of problems the fulfillment of which will become necessary in the near future.

1. *Preamble*

For the advancement of science it is necessary to recognize a new branch in mineralogy—cosmic mineralogy. Up to now we have had the opportunity to get the information about cosmic minerals from meteorites alone. But the time approaches when investigators will have to deal directly with cosmic minerals collected from other planets. Considering the foundation of this branch of science as an important step for the future and making attempts to intensify the study of the mineralogy of meteorites already at hand, it is recommended that the I.M.A. establishes the new Commission which will have for its object the development of international collaboration in cosmic mineralogy.

2. *Name*

The Commission on Cosmic Mineralogy, I.M.A.

3. *Members*

The members of the Commission shall be specialists in cosmic minerals and in meteorite minerals in particular or specialists in methods of mineralogical study who are nominated by the Member-Societies of the I.M.A.

4. *Objects*

Increase of knowledge regarding cosmic minerals: at first—meteorite minerals and then—minerals collected on the other planets. This includes chemical composition (both elements and isotopes); crystal structure or amorphous nature; chemical and physical properties; morphology; genetic history including crystallization processes, chemical reactions of formation, and physico-chemical equilibrium conditions; processes of chemical and physical alterations; absolute age of minerals; distribution and possible practical importance of cosmic minerals.

5. *Methods*

The Commission may arrange for international symposia; for exhibitions of cosmic minerals; and for programs of international cooperation in their study; it will assist in the realization of these programs; it may propagandize in scientific and popular publications the achievements of cosmic mineralogy; it will collaborate with other international organizations studying the cosmos.

Dr. Henderson then recommended the formation of a new Commission of the I.M.A. on Cosmic Mineralogy. This was moved and seconded and then opened for discussion. Dr. B. Mason stressed that the new Commission should be distinct from the already existing Commission on Meteorites of the International Union of Geological Sciences, although the two had somewhat similar goals. Prof. Fisher summarized the feeling of the Council, which agreed in general with the desirability of establishing the new Commission, and read a letter from Dr. E. L. Krinov to

Prof. Grigoriev. E. P. Henderson stressed the name of Cosmic Mineralogy and E. Ingerson pointed out the need for the new Commission. The President postponed the voting on the possible creation of the Commission to the second session of the Business Meeting, but in order to avoid legal trouble in voting for its officers, suggested that candidates be nominated for Chairman and Secretary of the Commission, to be voted on in case the creation of such a Commission was approved. Dr. E. P. Henderson proposed Prof. D. P. Grigoriev as Chairman; and Professor J. L. Amorós proposed E. P. Henderson as Secretary.

OTHER COMMITTEES

Dr. E. Wm. Heinrich reported on the work done by the Liaison Committee to the Geochemical Society:

1. The Geochemical Society does not have a commission on teaching; however, it does have an education committee. Its chairman for 1961 is Kurt E. Lowe. The chairman for 1962 has not yet been appointed.

2. The Geochemical Society has a book translation program under way. These books are selected from Russian publications which are translated into English and are either published or in the process of being published. The following books will be of interest to the mineralogists:

- a. *Beryllium* by A. A. Beus (1956 ed.). To be published by Freeman and Company, San Francisco. (Ed. Note: Published, August, 1962).
- b. *Geochemistry of Beryllium* by A. A. Beus (1960 ed.)
- c. *Types of Dolomite Rocks and their Genesis*, edited by M. N. Strakhov. To be published by the Ronald Press Company.
- d. A book by N. P. Ermakov dealing with liquid inclusions and ore forming solutions.
- e. "Deposits, Mineralogy, and Geochemistry of Selenium and Tellurium" by Sindeeva.
- f. "Dikes and Mineralization" by Abdulaev.
- g. *The Geochemistry of Thallium*. A short publication.
- h. *The Geochemistry of Gallium*. Also a short publication.
- i. *Rare and Dispersed Elements in Soils* by A. P. Vinogradov, available from Consultants Bureau, New York.
- j. *Physical-Chemical Principles of Mineral Paragenesis* by Korzhinsky, also published by the Consultants Bureau.

3. The Standards Committee, under the chairmanship of A. A. Van Valkenburg, has been doing an outstanding job on the selection and preparation of mineral and rock standards. Its reports have been published from time to time in *The Geochemical News*: see, for example, the October 1960 number, the June 1961 number, and the forthcoming February 1962 number.

4. Since there seems to be no further need for the existence of this Committee, I request it be abolished.

As there was no opposition from the Delegates, the President declared the Committee discharged, with thanks to Dr. Heinrich.

Dr. L. G. Berry reported for the Liaison Committee to the International Union of Geological Sciences noting that friendly contact had been established.

The President pointed out that through the efforts of Professor Fritz Laves, Chairman of the Liaison Committee to the International Union of Crystallography, and himself, arrangements were being made for a joint session with the latter during its Rome meeting September 9–14, 1963 on Topic 17(2) Crystal Morphology in its relation to Crystal Structure with Professor J. D. H. Donnay as Convenor.

No report was presented by Chairman Conrad Burri of the Liaison Committee to the I.U.G.S. Committee on Petrographic Nomenclature. However, Professor Burri wrote the President July 28, 1962 stating that he had no success in trying to effect the desired liaison between the two committees, and requesting that his resignation as chairman be accepted.

Since several Commissions were holding meetings the next day, the President suggested delaying the reports of the Chairmen of the Commissions until the second session of the Business Meeting.

OTHER MATTERS

CHANGES IN THE CONSTITUTION

The following changes in the Constitution were moved and seconded and then adopted by the delegates:

Add to 3b); One of his (the Representative's) major tasks is to make sure that the members of his Society are informed about current I.M.A. affairs; this may be done through notices in his *Mineralogical Journal*, through distribution of mimeographed material to the individual members of his Society, and by announcements at the meetings of his Society.

Add to 4 Aa): vi New Business

Art. 5b): In last line replace *or by and*

Art. 5c): change June 30 to read Dec. 31

Art. 5d): Change July 1 to read Jan. 1

Art. 12f): change the last half of the second sentence to read: not over four weeks after the Business Meeting. Change the final eight words to read: along with the minutes of the Business Meeting.

Art 12g): delete this.

Time Table at the end: alter this so it agrees with the above changes.

NOTE: The Constitution as adopted at the first general meeting of the I.M.A. in Zürich, September 1959, is printed with the report of that meeting on pages 104–106 of *Cursillos y Conferencias Instituto Lucas Mallada, C.S.I.C. (España), Fasc. VII, 1960*. Minor changes were also effected at the Copenhagen meeting (*ibid.*, Fasc. VIII, p. 173, 1960).

NEW COMMISSION

The desirability of having a Commission on Ore Microscopy was stressed by Professor E. N. Cameron. He stated that the objectives of such a Commission would be:

1. To discuss methods of standardizing quantitative techniques of ore microscopy, especially measurements of microhardness, reflectivity, and rotation properties of ore minerals.
2. To provide for the accumulation and distribution of standard data on the above and other properties of ore minerals.

His proposal for creating the new Commission was moved and seconded. In the following discussion R. M. Thompson pointed out the convenience of having a symposium on the subject rather than a new Commission. C. Guillemin expressed the thought of the French Mineralogical Society that there was no need for such a Commission as much of the work to be done is already included in the existing Commission on Mineral Data. Dr. H. Strunz, Chairman of the latter Commission was not of the same opinion. It was voted to create the new Commission (three negative votes were cast).

E. N. Cameron and W. Uytendogaardt were proposed for Chairman of the Commission and S. H. U. Bowie as Secretary. However, Dr. E. N. Cameron refused to be a candidate.

NEXT MEETING

The President told the Assembly that an invitation had been received from the Indian Mineralogical Society to hold the next meeting in Madras in 1964 in connection with the International Union of Geological Sciences. He asked Prof. P. R. J. Naidu to explain the situation. The latter described in some detail the preliminary plans for the proposed meeting to be held the first half of December 1964 in Madras; these include a six day field trip in South India. The invitation was accepted by acclamation. Professor C. E. Tilley was appointed Program Chairman for this meeting.

MISCELLANEOUS

There was a brief discussion of a possible field trip before the Rome meeting of the International Union of Crystallography, September 1963. President H. Winkler of the German Mineralogical Society called attention to the fact that its meeting is scheduled for Vienna in September 1963 and stated that this would be a fine opportunity for a gathering of mineralogists in advance of the Rome meeting.

The President reported on his informal canvas of mineralogists as to the possible desirability of establishing a new journal, the *International Mineralogist*. While there was much divergence of opinion, in general it was favored by the smaller member Societies which lacked their own journal, and was opposed by the others. While a majority of the Societies in the I.M.A. might favor the founding of such a journal, it seems clear that the opposition is strong enough so that the present time is not ripe for such a project.

Attention was called to the available publications of the I.M.A. as follows:

First meeting (Zürich)—Symposia on Twinning and on Alpine Fissure Minerals

Second Meeting (Copenhagen)—Feldspar Symposium

Third Meeting (Washington)—Three guidebooks are available. Also the World Directory of Mineralogists. See the advertisement on p. viii of the May-June 1962 number of *The American Mineralogist* (vol. 47) and on p. 325 of this volume.

SECOND SESSION

The second session of the Business Meeting of the Delegates was held on April 20th at 4:00 p.m. at the same place. The President opened the Session by calling the roll of Delegates, after which business proceeded according to the agenda.

REPORT BY THE AUDITORS

The auditors stated that they had examined the bank statements of the International Mineralogical Association for the period July 1, 1960 to March 30, 1962 and found them to be in agreement with the financial statement presented by the treasurer. Therefore they moved the acceptance of the Treasurer's Report as presented. The motion was seconded and accepted unanimously.

NEW COMMISSIONS

E. P. Henderson recommended a favorable vote on the motion to establish a Commission on Cosmic Mineralogy in accordance with the report of the Liaison Committee on Meteorites of the I.M.A. as written by Prof. Grigoriev. He also recommended that the I.M.A. instruct Prof. Grigoriev to explore the possibility of holding an International Symposium on meteorites within the

immediate future. The purpose of this symposium would be to bring together representatives of all the various scientific disciplines interested in research on meteorites.

Both recommendations were moved, seconded and carried, and the Commission on Cosmic Mineralogy was established. As there were no new candidates for officers of the Commission, Prof. D. P. Grigoriev and Dr. E. P. Henderson were automatically elected as Chairman and Secretary, respectively.

Then the election of the officers of the Commission on Ore Microscopy was held. Besides W. Uytenbogaardt, Prof. P. Ramdohr was also proposed as Chairman of the new Commission. Before the voting, Prof. Ramdohr refused to be a candidate, and therefore W. Uytenbogaardt and S. H. U. Bowie were automatically elected as Chairman and Secretary respectively of the Commission on Ore Microscopy.

COMMISSION REPORTS

The Chairmen of the five Commissions reported on the work done by their Commissions. All the reports were followed by discussion and accepted (See Reports).

NEW BUSINESS

E. F. Osborn moved a vote of thanks to the local Committee; this was approved by acclamation.

Having no more business to transact the third Business Meeting of the Association was adjourned.

Note that a general account of the meeting including pictures of about 70 of the over 300 participants appeared in *GeoTimes* (American Geological Institute) July-August, 1962.

REPORTS OF THE COMMISSIONS

COMMISSION ON ABSTRACTS

PROF. M. FORNASERI, *Chairman*

The work of this commission up to the time of the Copenhagen meeting (August 1960) is described in the report on that meeting; this includes a Draft Plan worked out by a sub-committee of the Commission.

The Abstracts Commission held a meeting on August 20, 1960 at Copenhagen where the organization of an International Abstracting Journal as well as the Draft Plan proposed by the Sub-committee were again examined. After discussion the members present voted eight in favor and one against acceptance of the Draft Plan. The result of this voting was rather embarrassing since the lack of unanimity makes any further development of the Draft Plan very difficult if not impossible.

At the following general meeting of the I.M.A. on Aug. 24, 1960 new officers of the Abstracts Commission were elected and a second meeting of all available members of the Commission was held. After a careful re-examination of the Draft Plan it was decided that it would serve for the future organization of Abstracts on an International basis but that it would probably be too difficult, particularly for financial reasons, to start with it in the immediate future.

Furthermore, although the Chairman of the earlier Commission Prof. E. Onorato, clearly stated that the new project must be careful not to destroy any good established organization, the delegates felt there was no such danger. In the following discussion the Commission was informed unofficially that several Na-

tional Societies are taking steps to start direct cooperation with the publication, *Mineralogical Abstracts*. In this situation it appeared that the best way to overcome all present difficulties would be just to follow this procedure and to stimulate direct contacts between the National Societies and the Anglo-American organization. Therefore all present members agreed that, after approval of their own councils the British and American Societies will circulate to all National Societies a formal invitation to cooperate with *Mineralogical Abstracts*. Should the procedure be successful, the existing *Mineralogical Abstracts* would gradually evolve into an international journal without any change of structure and ownership at first. On the other hand the whole operation might eventually be taken over by the International Mineralogical Association after enough National Societies become part-owners through private arrangements.

Following the suggestion formulated at the meeting of Aug. 24th the Councils of the Mineralogical Society of America and of the Mineralogical Society of Great Britain approved the following statement:

"During the Copenhagen meeting of the International Mineralogical Association the new Commission on Abstracts discussed the organization of a comprehensive journal of mineralogical abstracts.

"The most promising plan envisages the extension of *Mineralogical Abstracts*, at present owned jointly by the Mineralogical Society of Great Britain and the Mineralogical Society of America. With the approval of the Councils of both these Societies, the Commission is sending this letter to all known national mineralogical societies in an effort to obtain their cooperation.

"I. *Mineralogical Abstracts* could be readily enlarged if more abstracts covering different countries were available. Regional or national societies can secure for all their members a 50% reduction in the cost of *Mineralogical Abstracts* by agreeing to contribute free of charge English abstracts comprising a comprehensive coverage of papers appearing in their region; they need undertake no other responsibility. Members of such societies would pay \$4.50 (U.S.) for a personal annual subscription. National mineralogical societies in Canada, Japan, Norway, and Switzerland are already partaking in this scheme.

"II. The question of a wider ownership of *Mineralogical Abstracts* is being considered, but the British and American Societies feel that it would be premature to extend ownership prior to 1963. They feel that more experience with the present financial arrangement would be essential to devise an equitable scheme. Both the British and American Societies put up appreciable capital sums in order to start *Mineralogical Abstracts* (as from vol. 14); moreover they have agreed to stand losses that *Mineralogical Abstracts* might incur. Members of the British Society pay an annual subscription of the equivalent of \$3.00 for *Mineralogical Abstracts* and this is included in their subscription on the *Mineralogical Magazine*, i.e., they cannot contract out of buying *Mineralogical Abstracts*. Members of the American Society can purchase *Mineralogical Abstracts* for \$3.00 which may be included in their dues at their discretion. The subscription appropriate to wider ownership would depend considerably on the number of participating countries."

The above statement has to be interpreted as a formal invitation to all Mineralogical Societies to contribute to the *Mineralogical Abstracts*. This document has been circulated by the Abstracts Commission to all members of the Commission and all

National Delegates in order to be submitted for discussion to the Councils of each National Society.

The Commission on Abstracts held meetings in Washington on April 17, 18, and 19, 1962 and noticed with satisfaction that following the invitation of the British and American Mineralogical Societies, the Mineralogical Societies of Austria, Bulgaria, Germany, and Italy decided to cooperate with Mineralogical Abstracts. The same is likely to be true for the Netherlands, Belgium, Canada, Denmark, Finland, New Zealand, Norway, Spain and Switzerland confirmed their cooperation and Australia, Czechoslovakia, Egypt, India, Israel, Japan, Pakistan, South Africa and Sweden are already listed as contributors to the "Mineralogical Abstracts." More recently mineralogists in Mexico, Brazil and Argentina have agreed to assist by abstracting literature published in their countries.

As the result of the work of the Commission on Abstracts during the Washington meeting, the Commission submitted to the General Assembly of the I.M.A. the following proposal.

"There is a definite feeling among the members of the Commission that in the years to come an International Abstracting Journal should be established and that *Mineralogical Abstracts* might well become the nucleus of such an International Journal. At present the Commission proposes to the Council of I.M.A. to request *Mineralogical Abstracts* to print the names of all the National Mineralogical Societies that cooperate in Abstracting. This, we feel, would indicate the international scope of Abstracting."

This proposal was accepted by the delegates of all the countries present at the meeting of the Commission on Abstracts, with the exception of France and the U.S.S.R.

COMMISSION ON MINERAL DATA

DR. H. STRUNZ, *Chairman*

Mineralogy is the Science of Crystals-minerals-rocks. In this widespread field the Mineral Data Commission first had to approve and recommend on an internationally acceptable basis a Crystallographic Nomenclature and a Mineralogical Classification. Furthermore it was necessary to find a way to present the known mineral data either in the form of a book or a punch card file or a Wyckoff loose leaf system, etc. Finally, every two years, we will try to classify the new minerals and collect their data, as

far as these minerals are accepted by the Commission on New Minerals and Mineral Names.

CRYSTALLOGRAPHIC NOMENCLATURE

(Full publication in *Cursillos y Conferencias*, "Lucas Mallada," Madrid. VIII, 176-181, 1961.)

Cell dimensions a_0, b_0, c_0 (in metric Å; 1 Å = 1 kX:1.002; "Internationale Tabellen zur Kristallstrukturbestimmung" (1936) give kX, and all up to about 1945 published "Å"-values are to be multiplied by 1.002); $a_0:b_0:c_0$, axial ratio derived from cell dimensions; $a:b:c$, derived from morphological measurements; α, β, γ , interaxial angles.

Orientation 1) *Triclinic*: reduced cell (shortest three translations) with $c_0 < a_0 < b_0$; with α and β obtuse (stumpf), γ cannot be chosen obtuse or acute at will, its character follows from the preceding conditions (see exceptions below); *Monoclinic*: shortest two translations in plane (010), $c_0 < a_0$ (see exceptions), β obtuse (stumpf); *Orthorhombic*: axes along symmetry directions, with $c_0 < a_0 < b_0$ (see exceptions); *Tetragonal*: smallest cell; *Hexagonal-P*: smallest hexagonal cell; *Hexagonal-R*: smallest hexagonal cell with extra nodes at $\frac{1}{3}\frac{2}{3}\frac{1}{3}$ and $\frac{2}{3}\frac{1}{3}\frac{2}{3}$; *Cubic*: no recommendations necessary.—2) *Exceptions*: For one-face-centered translation lattices a C-face centered orientation is to be preferred (C2/m, not A2/m, not I2/m; Cmmm, not Ammm, not Bmmm; etc.).—3) *Further Exceptions* from these rules shall be allowed: (1) in such well established families as the mica family, (2) in order to show the close relationship of a given mineral to other minerals, and (3) for species with a higher pseudosymmetry.

Symmetry. To avoid confusion of "rhombisch" and "rhomboedrisch" the first one is named "orthorhombisch" (orthorhombic), so we have the orthorhombic system with the classes "rhombic-disphenoidal," "rhombic-pyramidal" and "rhombic-dipyramidal." The cubic classes are named: "tetartoidal" (tetartoidisch), "gyroidal" (gyroidisch), "disdodecahedral" (disdodekaedrisch), "hextetrahedral" (hex'tetraedrisch) and "hexoctahedral" (hex'-oktaedrisch).

In "Internationale Tabellen zur Kristallstrukturbestimmung" (1936) and "International Tables for X-ray Crystallography" (1952) the meaning of the old morphological symbol Δ unfortunately was changed; since it now has two meanings, it should be dropped; IMA recommends Figs. 1 and 2 to the IUC.

	Morpholog.	Intern. Tab.	Recommended
$\bar{3} \equiv 3 + i$			
$\bar{6} \equiv 3/m$			

FIG. 1

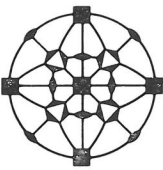
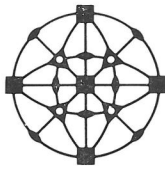
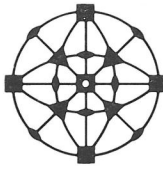
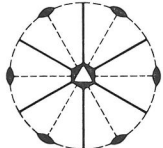
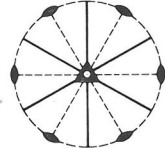
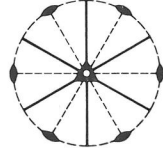
	<i>Morpholog.</i>	<i>Intern. Tab.</i>	<i>Recommended</i>
<i>m3m</i>			
<i>3m</i>			

FIG. 2

Chemical formulae. As in malachite $\text{Cu}_2[(\text{OH})_2|\text{CO}_3]$, dolerophanite $\text{Cu}_2[\text{O}|\text{SO}_4]$, apatite $\text{Ca}_5[(\text{OH}, \text{F}, \text{Cl})|(\text{PO}_4)_3]$, titanite $\text{CaTi}[\text{O}|\text{SiO}_4]$ etc. the oxygen of the complex groups is partially bound to C, S, P, Si and partially to the cations Cu, Ca etc., where the adjacent O, OH, F, Cl are only bound to the cations, the latter O, OH etc. should be written *before* the complexes, as done above. For vacant sites a square, \square , should be used, for instance for coffinite $\text{U}[(\text{SiO}_4)_{1-x}, (\square(\text{OH})_4)_x]$. Concerning H, OH, H_2O in the formulae, sepiolite $(\text{Mg}, \text{Fe})_3\text{Mg}[(\text{OH})_2|\text{Si}_6\text{O}_{18}]\cdot 2\text{H}_2\text{O} + 4\text{H}_2\text{O}$ may be chosen as the prototype, where OH means hydroxyl water (800°C.), $\cdot 2\text{H}_2\text{O}$ means coordination water (450°C.) and $+4\text{H}_2\text{O}$ means zeolitic water (250°C.); in opal $\text{SiO}_2 + n \text{ aq.}$ we have absorption water.—Sequence of cations according to decreasing ionic radii; in diadochic substitution according to abundance.

MINERALOGICAL CLASSIFICATION

(Open for further discussion). There are nine classes, I. Elements (A. Metals, B. Semimetals and Nonmetals), II. Sulfides, III. Halogenides, IV. Oxides etc. (the oxides come after the halogenides, so leading over to the complex oxides). II, III and IV are divided by decreasing formulae factor and subdivided by increasing radii of the cations or increasing coordination number. Class V contains all the complex oxides with planar complexes NO_3 , CO_3 , BO_3 , where the borates already show partial tetrahedral BO_4 -complexes and condensed $(\text{BO}_3)_n$, $(\text{BO}_4)_n$ complexessimilar to the silicates. VI. Sulfates (selenates, tellurates, chromates, molybdates, wolframates), VII. Phosphates (arsenates, vanadates) and VIII. Silicates have tetrahedral complexes RO_4 . V, VI, VII have the Divisions A. Simple compounds, B. With mixed anions, C. Simple compounds with water, D. With mixed anions and water; the nitrates and borates are excluded as V.A' and V.E, F, G. The silicates have the known Divisions VIII.A. Nesosilicates, VIII.B. Sorosilicates, VIII.C. Cyclosilicates etc.—IX.A. contains the salts of organic acids, IX.B. the Hydrocarbons, IX.C. the Resins and other organic compounds (Table 1.)

MINERAL DATA

The suggestion of the Mineral Data Commission (made in Washington 1962) was to consider the form of a possible publication of "Mineral Data"—either a book or a punch card file or the Wyckoff loose leaf system etc.—; this should be discussed by the members and representatives of the national societies with their

colleagues in their countries and recommendations should be made at the meeting in Madras, India, in 1964.

CLASSIFICATION OF NEW MINERALS

The Mineral Data Commission collected new mineral data from 1957 till 1961. This was reduced to a brief form, and published in a 29 page mimeographed manuscript, and distributed to the members and representatives of the national societies at the meeting in Washington 1962. Absent members got their copies by mail. The chairman of the Commission on New Minerals and Mineral Names was consulted. The members and representatives were requested to send in comments to these data, with corrections and additions, before July 31, 1962. In the future a publication every two years is intended, the next at the Madras Meeting 1964.

MUSEUMS COMMISSION

The chairman of this commission, Professor C. Frondel, submitted no written report, but it is known that plans for publishing a list of museums are being matured. The compilation of a list of type specimens is also being actively pushed.

COMMISSION ON NEW MINERALS AND MINERAL NAMES

DR. MICHAEL FLEISCHER, *Chairman*

The aim of the Commission is to act as a central group to co-ordinate the study of problems of mineralogical nomenclature, to call attention to problems whose resolution would aid the science, and to initiate discussions leading to as much uniformity in nomenclature as possible.

The discussions held at Copenhagen in 1960 have been published in *Bull. Soc. Franc. Mineral. Crist.*, **84**, 96–105, 1961, in particular a report by F. Permingeat (p. 98–104) on what should be given in the description of a new mineral. It is to be hoped that this will be read and re-read by mineralogists the world over.

Specific actions taken by the Commission include the following:

REVIEW OF PROPOSED CHANGES IN NOMENCLATURE BEFORE PUBLICATION

The Commission has undertaken to distribute to its members summaries of data on which new names or changes in old ones are based. The members are allowed 45 days to record their votes.

TABLE 1. MINERALOGICAL CLASSIFICATION

Classes I-IX		Divisions A, B, C etc.									
I. Elements		A. Metals Cu, Ag, Au . . .		B. Semimetals and Nonmetals As, Sb, Bi; C, S							
		M:N ≥ 2	<2>1	1	<1>½	½	<½	With H ₂ O, OH	Complex Compounds		
II. Sulfides (Selenides, Arsenides . . .)		A. Ni ₃ Pb ₂ S ₂ , Cu ₂ S, Ag ₂ S	B. Ni ₃ S ₂ , Cu ₃ Se ₂	C. ZnS, PbS	D. Co ₃ S ₄ , Sb ₂ S ₃	E. FeS ₂ , FeAsS	F. CoAs ₃ , VS ₄	—	G. 5Ag ₂ S·Sb ₂ S ₃ , 5PbS·2Sb ₂ S ₃		
		—	—	A. NaCl, KCl	—	B. MgF ₂ , CaF ₂	C. FeCl ₃	D. MgCl ₂ ·6H ₂ O AlF ₃ ·H ₂ O	E. Na ₃ [AlF ₆], K ₃ Na[FeCl ₆]	F. Oxihalo- genides —	
III. Halogenides		—	—	—	—	—	—	—	—		
IV. Oxides		A. Cu ₂ O	—	B. BeO, MgO	C. Fe ₃ O ₄ , Fe ₂ O ₃	D. SiO ₂ , TiO ₂	E. V ₂ O ₅ , MoO ₃	F. Mg(OH) ₂ , FeOOH, Al(OH) ₃	G. Arsenites, Selenites, Iodates (and V-VIII)		
		A'	A. Simple Compounds	B. With mixed anions	C. Simple Compounds with H ₂ O			D. With mixed anions and H ₂ O		E. F. G.	
V. Carbonates (Nitrates, Borates)		Nitrates	MgCO ₃	Cu ₃ [OH CO ₃] ₂	MgCO ₃ ·3H ₂ O			Mg ₃ [(OH) ₂ CO ₃]·3H ₂ O		Borates	
VI. Sulfates (Selenates, Tellurates, Chromates, Molybdates, Wolframates)		—	CuSO ₄	Cu ₂ [O SO ₄]	CuSO ₄ ·5H ₂ O			Cu ₄ [(OH) ₆] SO ₄]·H ₂ O		—	
VII. Phosphates (Arsenates, Vanadates)		—	LiFePO ₄	Mn ₂ [OH PO ₄]	Fe ₃ [PO ₄] ₂ ·8H ₂ O			Cu ₂ [OH PO ₄]·H ₂ O		—	
VIII. Silicates		A. Neosilicates A'. Neso-Subsilicates	B. Sorosilicates	C. Cyclosilicates	D. Inosilicates			E. Phyllosilicates		F. Tectosilicates	
IX. Organic Compounds		A. Salts of organic acids			B. Hydrocarbons			C. Resins and other organic compounds			

New names or changes approved will carry the designation, "Name approved by the Commission on New Minerals and Mineral Names, I.M.A." The first such name, roquesite, was approved in June, 1962. The Mineralogical Society of Great Britain has voted that all such proposals will be submitted to the Commission in the future.

ANNUAL REVIEW OF NEW NAMES AND CHANGES IN NOMENCLATURE

The Commission voted in 1960 to prepare annually a summary of new names and changes in nomenclature and to vote approval or disapproval. Lists for 1959 and 1960 have been voted on and the results sent to the members; it is hoped that these will be published in the journals of the member societies and will have the effect of discouraging the proposal of names based on inadequate data.

In these two years 97 new names were considered; 53 were accepted by more than 60% of those voting (29 unanimously), 36 were rejected by more than 60% of those voting (13 unanimously), and opinion was sharply divided on 8. Some of these were rejected because of inadequate data; these will be reconsidered when more data are published.

UNIFORMITY IN MINERAL NAMES

The use of different names for the same mineral causes confusion and difficulty in indexing. The Commission has tried to bring about some measure of agreement and, with considerable tolerance and good will displayed, has been able to reach agreement on some. The following have been unanimously agreed to:

Analcime, not analcite
Anatase, not octahedrite
Bornite, not erubescite
Devilline, not devillite or herregrundite
Digenite, not neodigenite
Feldspar or Feldspath, not felspar
Grossular, not grossularite
Hematite, not oligiste
Hemimorphite, not calamine
Magnesite, not giobertite
Nontronite, not chloropal
Piemontite, not piedmontite
Rutherfordine, not rutherdordite
Spessartine, not spessartite
Spodumene, not triphane
Tenorite, not melaconite
Tetrahedrite, not fahlerz, fahlore, or panabase
Torbernite, not chalcotite
Valentinite, not exitele
Wernerite for the species, Scapolite to be a group name.

The Commission recommends by large majorities:

Arsenopyrite, rather than mispickel
Bromargyrite rather than bromyrite
Chlorargyrite rather than cerargyrite
Gibbsite rather than hydrargillite
Iodargyrite rather than iodyrite
Natron rather than soda
Orthoclase rather than orthose
Rhodochrosite rather than dialogite
Siderite rather than chalybite or siderose
Sphalerite rather than blende
Sphercobaltite rather than cobaltocalcite
Stilbite rather than desmine
Szaibelyite rather than ascharite

It is hoped that mineralogists will abide by these recommendations.

The names wollastonite (low-temperature form) and pseudowollastonite (high-temperature form) were agreed upon, and it was recommended that parawollastonite be dropped. The use of suffixes (-Tc, -2M, etc.) was recommended to distinguish stacking polymorphs of CaSiO_3 .

No agreement could be reached for many pairs of names, including allanite-orthite, idocrase-vesuvian-vesuvianite, kyanite-cyanite-disthene, sphene-titanite, stibnite-stibine-antimonite, and others. Discussion of these will be continued in the future.

In addition, the Commission has discussed, *What is a Mineral?*, with no clear agreement evident on any definition. It has also tried to encourage attempts at systematizing the nomenclature of the clay minerals and the feldspars, both now badly confused, and hopes that the future will bring some improvement. A proposal for rationalizing the nomenclature of rare-earth minerals is now under consideration.

It is evident that much remains to be done and that we need the good will and help of all mineralogists. We hope that they will continue to make suggestions and comments on our work.

COMMISSION ON TEACHING

Neither the Chairman, Professor J. Orcel, nor the Secretary, Professor H. J. deWij, was able to attend the Washington meeting of this commission which was newly formed in Copenhagen in August, 1960. When the group of ten commission members gathered at Washington on April 17 were informed by Professor Hocart that the officers would not be present, and that no agenda had been prepared, Professor C. S. Hurlbut, Jr. was requested to serve as acting chairman and Professor D. H. Gorman as acting secretary. After some discussion those present agreed to limit their remarks to the questions dealing with the teaching of the beginning mineralogy course, but later they also discussed the domain of modern mineralogy. The commission members were urged to develop these ideas further before the Madras meeting; also to give particular attention to the question of desirable teaching aids.

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AVAILABLE PUBLICATIONS OF THE
INTERNATIONAL MINERALOGICAL
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1959	First General Meeting, Zürich Symposia on Twinning and Alpine Fissure Minerals.....	\$2.00
1960	Second General Meeting, Copenhagen Symposium on Feldspars.....	2.00
1962	Third General Meeting, Washington Northern Field Trip Guidebook.....	1.00
	Southern Field Trip Guidebook.....	1.00
	Visitor's Guide to the Geology of the National Capital Area.....	0.75
1962	World Directory of Mineralogists.....	1.50
1963	Third General Meeting, Papers and Proceedings, Mineral. Soc. Am. Spec. Paper 1 (this volume)....	

The *World Directory of Mineralogists*, compiled by Prof. M. Font-Altaba, Mineralogy Department, University of Barcelona, is a 156-page octavo volume prepared from typewritten copy with paper covers. It lists more than 4000 individuals specializing in the mineralogical sciences from over 50 countries. It supplies much useful information, such as year of birth, title, highest degree (with field of specialization), conferring institution and date, present position, address, telephone number (including extension), and a listing of areas of major scientific interest. Mineralogists are urged to order a copy for their individual use. **Such support is necessary if the I.M.A. is to publish a revised directory every few years.**

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