The Geochemical News

NUMBER 33 SEPTEMBER 1962

CURRENT GEOCHEMICAL RESEARCH IN AUSTRALIA AND NEW ZEALAND

J. F. Lovering*, Regional Vice-President
The Geochemical Society

Over the last decade the impetus of geochemical research in both Australia and New Zealand has increased remarkably and now virtually all universities in both countries (together with a number of government institutions) have active geochemical research programs.

The generous response to an appeal for news on current geochemical projects has enabled me to compile the following list of titles of current geochemical research programs, which should be of great interest to both our own and overseas geochemists. The names of those concerned with the projects are normally listed after the title of the project.

I. AUSTRALIA

1. University of Queensland, St. Lucia, Queensland

Department of Geology and Mineralogy:

a) Geochemistry of high-grade metamorphic rocks (Prof. A. F. Wilson)

b) Petrology and geochemistry of dolerites from the Weddell Sea sector of Antarctica (Dr. P. J. Stephenson)

c) Theoretical analysis of exchange equilibria with reference to Mg, Fe and Mn in orthopyroxene-clinopyroxene assemblages (Dr. R. Kretz)

d) Geochemical study of pegmatites in relation to enclosing rocks (Dr. R. Kretz)

2. University of New England, Armidale, N.S.W.

Department of Geology:

a) Geochemistry of alkali rock series (Dr. J. F. G. Wilkinson) and calc-alkaline batholithic complexes (S. E. Shaw)

b) Chemical and isotopic abundance studies of stratiform and related lead-bearing sulphide ores (Dr. R. L. Stanton)

*Department of Geophysics, The Australian National University, Canberra, A.C.T. Australia

2. University of New England, Armidale, N.S.W.--Continued

c) Geochemical evolution of the Mount Isa lead-zinc ores and associated sediments (N. J. W. Croxford)

d) Geochemical evolution of garnet-bearing and associated rocks occurring with the Broken Hill lead-zinc orebody (S. M. Richards)

3. University of Sydney, Sydney, N.S.W.

Department of Geology and Geophysics:

a) Geochemistry of spilitic rocks (Dr. T. G. Vallance)

b) Chemical evolution of retrogressively metamorphosed rocks near Broken Hill (R. H. Vernon)

c) K-Ar ages of rocks (Dr. C. V. G. Phipps)

d) Studies of glaucophane- and lawsonite-bearing rocks associated with serpentinites (Miss F. M. Quodling)

e) Petrological and geochemical evolution of rocks in the Barrier Ranges (D. Anderson); Tumbarumba-Geehi District (B. Guy); Lower Hunter Valley (J. D. G. Hamilton) and Yetholme area (Miss R. MacKay)

4. University of New South Wales, Kensington, N.S.W.

Department of Geology:

a) Geochemical principles of weathering (Dr. F. C. Loughnan, D. Craig)

b) Phase equilibria in the Pb-Sb-As-S system (Dr. N. L. Markham)

5. The Australian National University, Canberra, A.C.T.

Department of Geophysics:

a) Rb-Sr age determinations on igneous rocks and shales (R. T. Pidgeon, V. M. Bofinger, Dr. W. Compston)

b) Genesis of igneous rocks and possible upper mantle materials using radiogenic Sr as a natural tracer (Dr. W. Compston, Dr. J. F. Lovering)

c) Study of the absolute accuracy of the Rb-Sr method including a "geological" determination of the Rb^{87} half-life (Dr. W. Compston, M. J. Vernon, I. A. Martin)

d) Isotopic abundance of lead in Australian ore deposits (Dr. J. R. Richards)

e) K-Ar dating of Australian rocks (Dr. I. McDougall Dr. J. R. Richards)

f) High-pressure synthesis of minerals and studies of the evolution of meteorites (Dr. E. A. Ringwood)

g) Trace element studies on tektites and Darwin glass and distribution of alkali elements and rare earths in basalts and ultrabasic rocks (Dr. S. R. Taylor)

5. The Australian National University, Canberra, A.C.T.--Continued

h) Geochemical studies of granites (Dr. S. R. Taylor, P. Kolbe) and pegmatites (Dr. S. R. Taylor, I. A. Martin)

i) Neutron activation studies of trace-elements in possible upper mantle materials and in meteorites (Dr. J. F. Lovering, J. W. Morgan)

j) Geochemistry of rhenium and osmium by neutron activation methods (J. W. Morgan, Dr. J. F. Lovering)

k) Chemical studies of tektites (Dr. J. F. Lovering, L. P. Greenland)

l) Chemical evolution of the upper mantle (Dr. J. F. Lovering)

m) Methods of analysis of meteorites and silicate materials (A. J. Easton, Dr. J. F. Lovering)

6. The Australian National University, Canberra, A.C.T.

Department of Geology:

a) Major and trace elements in the sediments, granites, and migmatites in the Palmer area, South Australia (Dr. A. J. R. White)

b) Geochemistry of a series of 5 intrusions at the southern end of the New England Batholith, N.S.W. (B. W. Chappell)

7. Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T.

Trace-element (Cu, Cr, Co, Ni, V, Sr, Ba) geochemistry of the differentiated Palisades Intrusion, New Jersey (Dr. K. R. Walker)

8. University of Melbourne, Melbourne, Victoria

Department of Geology:

a) Major and minor element variations in granitic rocks and their associated xenoliths, in Tertiary sediments and about ore bodies and in pegmatitic veins (Dr. R. J. McLaughlin)

b) Hydrothermal synthesis in fluorine systems (Dr. R. J. McLaughlin)

9. University of Tasmania, Hobart, Tasmania

R. J. Ford is studying rhenium concentrations in Tasmanian molybdenites and the geochemistry of feldspars from the Point Cygnet alkaline complex.

10. University of Adelaide, Adelaide, South Australia

Department of Geology:

a) Chemical sedimentation of carbonates in the Coorong and associated lagoons in South Australia (Prof. A. R. Alderman, C. C. von der Borch, J. Biddle)

10. University of Adelaide, Adelaide, South Australia--Continued

b) Petrochemistry of several areas of metamorphic and associated igneous rocks in South Australia (Dr. A. W. Kleeman and students)

c) Chemistry of feldspars in South Australian granites (Dr. J. B. Jones, Dr. A. W. Kleeman, M. McBriar)

d) Problems of analysis of silicate rocks and minerals (Dr. R. L. Oliver, Dr. A. W. Kleeman)

11. Commonwealth Scientific and Industrial Research Organization, Division of Soils, Adelaide, South Australia

a) Geochemistry of chlorides in soils (Dr. J. T. Hutton)

b) Sorption of trace metals on mineral surfaces (Dr. K. G. Tiller)

12. University of Western Australia, Nedlands, Western Australia

Department of Geology:

Petrochemistry of Precambrian rocks and Recent sediments (Prof. R. T. Prider)

II. NEW ZEALAND

1. University of Auckland, Auckland, New Zealand

Department of Geology:

Petrochemistry of New Zealand basalts and other rocks (Dr. R. N. Brothers)

2. Victoria University of Wellington, Wellington, New Zealand

Department of Geology:

a) Geochemical studies of serpentines (Prof. R. H. Clark)

b) Petrochemistry of the Dun Mountain dunite and the more acid rocks of Pepin Island, northwest Nelson (W. R. Lauder)

c) Chemistry of saline lakes in Antarctica (Dr. Wellman and Dr. Wilson)

3. Department of Scientific and Industrial Research

i) Geological Survey:

a) Geochemistry of ignimbrites (A. Steiner)

b) Chemistry of rhyolitic ash showers in the Taupo region (Dr. A. Ewart)

c) High pressure and temperature studies of coal metamorphism and melting of greywackes and argillites (Dr. J. Rogers)

3. Department of Scientific and Industrial Research--Continued

i) Geological Survey--Continued:

d) Chemistry of tectonic inclusions (rodingites, altered argillites, etc.) in serpentine (Dr. Coleman)

e) Geochemical studies of schists and greywackes (Dr. J. J. Reed)

ii) Dominion Laboratory:

a) Chemistry of liquid water solutions above 100°, solubilities of gases and minerals in salt solutions, interaction studies with the system rhyolite pumice-water. Geochemistry of natural hydrothermal areas (Dr. A. J. Ellis)

b) Distribution of Rb, Cs, Cl, B, F, NH_3 in rocks of the central North Island quarternary volcanic area (J. A. Ritchie, W. Kitt, M. G. Rundle)

c) Chemistry of water and steam from hydrothermal areas (W. A. J. Mahon, Dr. R. B. Glover)

iii) Institute of Nuclear Sciences:

a) Isotopic tracer-studies of hot water systems in hydrothermal areas, S^{22}/S^{34} ratios in nature (particularly volcanic areas), C^{14} age determination of pumice showers (T. A. Rafter, J. R. Hulston, W. J. McCabe)

b) Chemical and isotopic studies in hydrothermal areas (S. M. Watson)

4. University of Otago, Dunedin, New Zealand

Department of Geology:

Geochemical and petrological studies of very low-grade metamorphic rocks and the chemistry of the New Zealand geosyncline (Prof. D. S. Coombs and others)

THE GEOCHEMICAL SOCIETY COUNCIL MEETING

Washington, D.C., April 24, 1962

The Council met at 8:30 P.M. at the home of the Secretary.

Present: F. R. Boyd, C. W. Burnham, R. M. Garrels, E. Ingerson, T. G. Sahama, B. Skinner, D. B. Stewart, H. C. Urey

The Council met informally and the matters discussed are listed below in the order in which they were brought up. Since a majority of the Council was not present, the minutes were circulated to absent members. A majority has approved the proposals described herein.

Articles of Incorporation

The Geochemical Society was incorporated in the District of Columbia in 1959 and its application to be accepted as a tax exempt organization has been

under consideration by the Internal Revenue Service since that time. Recently the Internal Revenue Service has expressed dissatisfaction with the wording of some sections of the Society's articles of incorporation. However, it is not entirely clear from correspondence with IRS how to rephrase the articles in a satisfactory manner. The Council agreed that legal advice was needed. Marshall Hornblower, lawyer for the Carnegie Institution of Washington, has agreed to help the Society deal with this problem, and all pertinent documents and correspondence have been turned over to him. It is anticipated that the matter can be satisfactorily settled in three to four months.

Geochemistry (Translation of Geokhimiya)

The Society has translated and published volumes 1956-1960 of this USSR journal with funds supplied on an annual basis by the National Science Foundation. A grant for $28,000 has been made for the 1961 volume and this volume is currently being translated. The translation of Geokhimiya was initiated through the interest and efforts of Earl Ingerson, Translations Editor, and he has continued to supply much of the work required to keep the journal going. In the past few years the program has grown to the point where it has been necessary to contract the editing and other jobs to firms and individuals outside his office.

Various problems have been encountered. The subscription for the 1959 volume of Geochemistry was 300, which compares favorably with that of other translated geological journals. However, the subscription has dropped to a current value of about 150 for the 1961 volume, due largely to the fact that the Society has not had a plan for regularly publicizing the journal. Coordination of the efforts of the various individuals and firms involved has not been easy. Administration of the program has been carried out by the Translations Editor in Austin whereas translation and publication have been contracted to the firm of Royer and Roger in Washington. For the past year the journal has been edited by David B. Stewart, U.S. Geological Survey, in the capacity of a consultant to Royer and Roger.

A majority of the Council felt that the job of publishing Geochemistry had grown too large to be administered as a part of an extensive translations program. It would be better to concentrate responsibility for all matters pertaining to the journal in the hands of an Editor for Geochemistry. The Translations Editor will continue to administer all aspects of the book translations program together with any new translations efforts which the Council may decide to undertake. Nine books have already been translated in this program and work is underway on a number of others.

The following recommendations were adopted with respect to the post of Editor of Geochemistry:

1. He should be appointed by the Council for a term of three years and empowered to act for the Society in all matters pertaining to the translation of Geokhimiya subject only to Council approval. Reappointment for additional terms is possible.

2. He should prepare applications for National Science Foundation grants for this program and should submit these to NSF when they have been approved and signed by the President and the Secretary as well as by himself.

3. He shall make an annual report to the Council.

4. He shall be paid a fee out of the NSF grants which he administers and this fee shall be listed as an expense in the grant applications.

5. Financial administration of all future National Science Foundation grants to the Society shall be the responsibility of the Treasurer and the Treasurer shall detail all expenditures made from these grants in his report.

David B. Stewart, who has been editing Geochemistry as a consultant to Royer and Roger for the past year, has agreed to take on the added responsibilities outlined above.

A publicity program to increase the subscription is underway. This program will include direct mailings to libraries, geological surveys, and university departments together with advertising through AGI outlets. Arrangements have been made with Pergamon Press for reciprocal advertising of Geochemistry and Geochimica et Cosmochimica Acta at no cost to the Society. Acta will carry a full-page ad in each issue, detailing the table of contents of the forthcoming issue of Geochemistry, and vice versa.

Geochimica et Cosmochimica Acta

Recommendations of the Executive Committee with respect to editorial reorganization of Acta have been cleared with the Council by mail. The Constitution and Bylaws Committee has drawn up the necessary changes in the Constitution and Bylaws. These, along with other matters, are described in the attached report of the committee.

The Council did not agree with the opinion expressed by the Constitution and Bylaws Committee that the Translations Editor, Editor of The Geochemical News, and Editor of Geochemistry should be subordinate to the Executive Editor and appointed by him. These four editorial jobs have little in common and it does not seem wise to try and link their operations. The Executive Editor is to be an elected member of the Council. The three other editors are appointed by the Council and responsible directly to it. Accordingly the wording of the proposed section in the Bylaws which describes the duties of the Executive Editor is changed from that recommended by the Constitution and Bylaws Committee as follows:

> "The Executive Editor shall have full responsibility for the official journal of the Society. He can appoint, with Council approval, an appropriate number of associate editors, representing areas of active geochemical and cosmochemical research and interest. Terms of the associate editors expire with the term of the Executive Editor or with his resignation and they may, with Council approval, be reappointed for additional terms."

Earl Ingerson and the Secretary discussed the editorial reorganization by telephone with Capt. I. R. Maxwell of Pergamon Press prior to the meeting. Maxwell agreed that the change would benefit Acta and pledged his support to whomever the Society elects to the position of Executive Editor. Continuing efforts are being made by Pergamon Press to reduce publication time. Maxwell informed the Secretary that the subscription to Acta is now ever 2,000, including about 500 libraries; about 75 per cent of the members of the Society subscribe to Acta.

The Council also discussed the question of whether funds should be made available to the Executive Editor for secretarial and travel expenses. These expenses will be substantially greater than for any other Society officer. An experienced secretary working part time could greatly reduce the routine load on the editor and it would be desirable for the editor to occasionally visit the offices of Pergamon Press in Oxford. Pergamon Press has pledged $1,250 per year for an expense fund for the editor and expressed the hope that the Society would contribute a matching amount, to make a total of $2,500. If the membership approves the increase in dues recommended by the

Council, the Society will be able to afford $1,250 per year for the Executive Editor.

Other Changes in the Constitution and Bylaws

The Constitution and Bylaws Committee has reviewed the minute book of the Society to bring the Constitution and Bylaws up to date and to note any instances where established Society practice conflicts with its Constitution. The recommendations of the Committee are set forth in the attached report. The Council is appreciative of the valuable and thorough job this Committee has done.

The Council approved the recommendations made by the Committee with the exception of the paragraph relating to the duties of the Executive Editor described above, and with the exception of the last sentence of the proposed revision of Article III, 2, of the Bylaws.

The Council felt that the last sentence in the proposed amendment placed an unnecessary restriction on the actions of the emergency executive committee and changed this sentence to read as follows:

> "Such an 'emergency executive committee' can be empowered by the Executive Council to act on behalf of the Executive Council in all matters."

F. R. Boyd, Secretary

EXECUTIVE COMMITTEE MEETING

Washington, D.C., April 25, 1962

Present: Robert M. Garrels, President; F. R. Boyd, Secretary; C. Wayne Burnham, Treasurer

These minutes have been circulated to the Council by mail, and the recommendations made have been approved.

American Geological Institute

There was no time for discussion of whether the Society should join the reorganized AGI at the Council meeting, but the matter was reviewed by the Executive Committee on the following day. The Society has previously supported AGI with a token contribution of $100 per year. Under the new AGI constitution, member societies will pay $1.00 per member or 20 per cent of the dues of "stipulated" members. If the Society were to take the latter option, it would mean paying AGI about $800 per year. An increase in The Geochemical Society dues would thus be required. However, as is reviewed in the following section, a raise in the dues is recommended in any event.

Benefits of membership in AGI will be greater for North American members than for those in other parts of the world. However, many members in countries other than the United States and Canada would probably be interested in paying an additional 20 per cent dues in order to receive GeoTimes. Hence, an optional arrangement for non-North American members seems desirable.

The feeling of the Executive Committee is that AGI fills a number of useful functions and that the Society should join in its support. It is recommended that all North American members be stipulated as AGI members, but

that all other members be given the annual option of joining AGI or not, as they wish. Robert Stephenson, Secretary of AGI, has informed the Secretary that this arrangement would be satisfactory to the Board of Directors of AGI.

Dues

The cost of operatiog The Geochemical Society has increased in recent years in a manner which is not in proportion to increased dues from increased membership. Last year the expenses incurred in conducting the business of Society were $3,666.46 whereas the income from dues was $3,487.91. For the previous year the costs were $4,389.10 with an income from dues of $3,600.98. Hence, costs have exceeded dues in the past two years. The difference was greater two years ago because a directory was published that year and because only four issues of The Geochemical News were published last year, rather than the usual six.

Estimated approximate expenses for this year are as follows:

Printing, including stationery, ballots, and bills	$ 400
The Geochemical News	1,200
Secretarial Service	600
Directory	1,200
GSA Program	800
American Geological Institute	100
Postage and Stamps	250
Other Costs	200
Total	$4,750
Estimated Income from Dues	$3,600

The general increase in costs is reflected, for example, in the $800 which the Society paid to send copies of the program of the GSA meeting in Cincinnati to members of The Geochemical Society who are not also members of the GSA. Last year the charge for this was $500.

The deficit last year was made up from overhead charged on National Science Foundation grants. The expected income from overhead this year is $2,000, which will be more than sufficient to cover the expected deficit.

Nevertheless, the Executive Committee feels that it is undesirable for the Society to rely too heavily on overhead from NSF grants. The National Science Foundation is most unlikely to withdraw its support from the Geokhimiya translation, but allowable overhead is a matter of policy that is subject to change. Moreover, it is probable that the Society will wish to join with Pergamon Press in providing an expense allowance for the proposed Executive Editor of Geochimica et Cosmochimica Acta, as outlined in the minutes of the April 24th Council meeting. This would mean an additional expense of $1,250 per year. For these reasons the Executive Committee recommends that the dues be increased. The suggested increase is from $2.00 to $3.00 for North American members, with $0.60 of the $3.00 going to AGI and $2.40 to the Society. For other members the increase would be to $3.00 if they wish to join AGI, $2.50 if they do not.

Prague Symposium

There will be a symposium on "Problems of the Origin of Postmagmatic Ore Deposition (with special reference to the geochemistry of ore veins)" in Prague in September 1963. The symposium will be held by the Geological Survey of Czechoslovakia and the Faculty of Natural Sciences, Charles University. The Geochemical Society has been asked to sponsor this symposium. Correspondence with Dr. Jan Kutina, Chairman of the Organizing Committee, has indicated that in sponsoring the symposium the Society would not be committing itself

financially or otherwise. It seems worth-while to give increased recognition to this symposium, and the Executive Committee recommends that the Council instruct the editor of The Geochemical News to publish a notice that the Society is sponsoring the symposium.

Office of Critical Tables

Dr. Edwin W. Roedder has been reappointed to represent The Geochemical Society on the Advisory Board of the Office of Critical Tables for the period July 1, 1962, to June 30, 1965.

F. R. Boyd, Secretary

REPORT OF THE CONSTITUTION AND BYLAWS COMMITTEE

It is our considered opinion that several clauses in the Constitution and Bylaws are either redundant or insufficiently rigorous. To overcome these objections, we suggest that the statement covering terms of councillors elected at the first election be removed from the Constitution as no longer having any meaningful purpose. Thus, Article III, 2, of the Constitution, which now reads:

> "There shall be an Executive Council, to be composed of the above officers, the retiring president, and six other members of the Society, who shall be elected for terms of three years each, excepting that at the first election two shall be elected for one-year terms, two for two-year terms, and two for three-year terms."

be amended to read:

> "There shall be an Executive Council, to be composed of the above officers, the retiring president, and six other members of the Society, who shall be elected for terms of three years each."

Because there are now over 1800 members in the Society and it seems unlikely that membership will drop below 500 as long as the Society remains reasonably virile, and, further, to bring proposals for Constitutional amendments into line with Bylaw amendments, we propose that the 5 per cent membership provision be dropped to further simplify the Constitution. Thus, Article V of the Constitution, which now reads:

> "Amendments to the Constitution may be proposed to the Council by 5 per cent of the membership, or by any 25 members, whichever is less. The Council shall indicate whether it approves or disapproves, but in either case they shall be submitted to the members for mail ballot.
>
> "The amendment is accepted if approved by two-thirds of those voting on it."

be amended to read:

> "Amendments to the Constitution may be proposed to the Council by any 25 members. The Council shall indicate whether it approves or disapproves, but in either case they shall be submitted to the members for mail ballot.
>
> "The amendment is accepted if approved by two-thirds of those voting on it."

A suggestion made by the Membership Committee for 1957, and accepted with minor modifications by the Council, has not been voted on by the members. We propose that members be asked to vote on the following change:

> Article IV, 2, of the Constitution, which now reads, "Any person who is qualified to advance the objectives of the Society shall be eligible to membership. Minimum experience requirements alone will not necessarily qualify a candidate for membership."

be amended to read:

> "Any person of good character and unchallenged basic scientific integrity and honesty, regardless of sex, nationality, residence, employment, prominence or proficiency, may become a member providing only that he or she
>
> a) will subscribe to the declared purposes of the Society, and
>
> b) can evidence a general understanding of the field of endeavor by at least a Bachelor's Degree in one of the following fields: physical science, biological science, mathematics, or engineering; or by three years or more of activity in any of these disciplines (including teaching, research, application, bibliographic and editorial service)."

It should be made clear to members that the proposed amendment serves to define more suitably the now ambiguous and somewhat negative membership statement, and does not jeopardize the status of any person who is now a member. It is desirable, also, that the matter be considered at once so that the Membership Committee may have definite guideposts in its task of approving applications.

The Constitution Committee feels that the nature of official application forms and the method of scrutiny and appraisal of applicants are not a matter for them and no statements concerning these matters need appear in the Constitution and Bylaws. The matters are best implemented by Council through the responsible sub-committee.

The Council has requested that the Committee appropriately word the necessary phrases to be inserted in the Constitution and Bylaws to cover election of an Executive Editor. The Committee feels that the proposed Executive Editor's position should be consistent with the responsibilities he will assume, and agrees he should be a member of the Executive Council. We believe the required changes can be best accomplished by the following changes:

> Article III, 1, of the Constitution, which now reads, "The officers of the Society shall be a President, a Vice-President, a Secretary, and a Treasurer. The President and the Vice-President are to be elected annually by a majority of those voting. The Secretary and the Treasurer are to be elected by a majority of those voting to serve terms of three years; they shall be eligible for election to not more than one consecutive additional term of three years."

should be amended to read:

> The officers of the Society shall be a President, a Vice-President, a Secretary, a Treasurer, and an Executive Editor. The President and the Vice-President are to be elected annually by a majority of those voting. The Secretary, the Treasurer, and the Executive Editor are to be elected by a majority of those voting to serve terms of three years; the Secretary and the Treasurer

shall be eligible for election to not more than one consecutive term of three years. The Executive Editor shall be eligible for election to more than one consecutive additional term."

The duties of the Executive Editor are such that an Annual Report will be required, and accordingly,

Article III, 1, of the Bylaws, which now reads, "The duties of the officers shall be usual ones performed by such officers.

"The president, secretary, and treasurer shall make annual reports to the Society."

be amended to read:

"The duties of the officers shall be usual ones performed by such officers.

"The president, secretary, treasurer and executive editor shall make annual reports to the Society."

Duties of the Executive Editor should be outlined under Section III of the Bylaws. An additional article, to be labeled Article III, 5, of the Bylaws, should read:

"The Executive Editor shall have full responsibility for the publications of the Society. He can appoint, with Council approval, six associate editors, representing areas of active geochemical and cosmochemical research and interest. Terms of the associate editors will be for three years and they may, with Council approval, be reappointed for additional terms."

It is the opinion of the Committee that duties of associate editors should not be specifically prescribed in the Bylaws. This would then allow all the editorial activities of the Society to be under the Executive Editor, but at the Council's discretion allow associate editors to be designated for specific roles not connected with Geochimica et Cosmochimica Acta. The action of the Council, as reported on page 55 of the minutes, in which an office of editor responsible for Russian translations was passed, and the editor made a Council member ex officio, is inconsistent with the Constitution. Council cannot appoint members to its ranks. Council members must be voted on by the members at large. This difficulty could be overcome either by making Translations Editor a post open for vote or by making him an associate editor. The status of such posts as editor of Geochemical News and Managing Editor of Geokhimiya, which are not now specified by Council action, should be reviewed by Council in view of the creation of an official editorial post at Council level.

It is the Committee's considered opinion that Article III, 2, of the Bylaws, covering Executive Council, and the formation of an Emergency Executive Committee, is unnecessarily weak. In line with the expanding activities and membership of the Society the article should be amended to allow formation of an emergency executive committee under circumstances where the President cannot round up either the Secretary or the Treasurer or both. It is further desirable that fiscal responsibility for the Society be specifically designated so that the Articles are legally sound, and we recommend that the usual indication of direction of expenditures by the Council be made. Accordingly, we recommend that Article III, 2, of the Bylaws, which now reads:

"The Executive Council shall direct all affairs and activities of the Society, except that the president, treasurer, and secretary may act as an emergency executive committee."

be amended to read:

"The Executive Council shall direct all affairs and activities of the Society, including the expenditure of its funds. In the event that executive action must be taken in the absence of a quorum of the Executive Council, the President may convene a committee of three officers as an 'emergency executive committee' shall be the President, the Treasurer, and Secretary; if one of these is not available to attend, the President may appoint some other member of the Executive Council to act in his stead. Such an 'emergency executive committee' shall have the power to act on behalf of the Executive Council in all matters, but each of its actions is subject to ratification by the Executive Council at its next meeting following such action."

Respectfully submitted,

Brian J. Skinner, Chairman
David B. Stewart
Walter S. White

ANNOUNCEMENT OF ANNUAL MEETING

The Annual Meetings of The Geochemical Society will be held in Houston, Texas, November 12-14, 1962 in connection with the meetings of The Geological Society of America at the Shamrock Hotel:

Council meeting	Monday, Nov. 12, 8:30 A.M.
Business meeting	Monday, Nov. 12, 4:00 P.M.
Organic Section business meeting	Tuesday, P.M. Nov. 13

There will be no presidential address.

The scientific sessions are scheduled as follows:

Inorganic Geochemistry I	Monday, Nov. 12, 8:30 A.M.
Inorganic Geochemistry II	Wednesday, Nov. 14, 8:30 A.M.
Organic Geochemistry I Symposium:	
Biogeochemistry of organic matter	Monday, Nov. 12, 8:30 A.M.
Organic Geochemistry II	Monday, Nov. 12, 2:00 P.M.
Coal geology	Tuesday, Nov. 13, 2:00 P.M.
Petroleum geochemistry in the USSR	Tuesday, P.M., Rice University

R. M. Denning, Chairman
Program Committee

BOOK REVIEWS

THE GEOLOGY OF SALIFEROUS SEDIMENTS OF THE U.S.S.R., by A. A. Ivanov and Yu. F. Levitsky. 422 pages. Geological Institute, new series, Vol. 35, Moscow, 1960. (Although publication date is 1960, manuscript is 1957, and bibliography only to beginning of 1957).

This is a compendium of many studies of individual occurrences of evaporites in U.S.S.R., and is arranged according to the age assigned to each evaporite succession: Cambrian, Ordovician-Silurian, Devonian, Carboniferous, Permian, Jurassic, Cretaceous, and Paleogene-Neogene.

The appendix (bibliography) shows how many of the data are from results within the last two decades, and particularly in European Russia, from the "strat" test to basement. Areas are discussed, both where sediments are now essentially horizontal and those in the diapir structures, for example, near the western boundary in the forelands of the Carpathians.

Many sequences are the classic ones of basal dolomite, main anhydrite, and halite above. In some areas the anhydrite zone has been shallow enough to consist entirely of gypsum, with circulating water effects: solution sinks, brecciation, etc.

Despite the size (422 pages) the book will disappoint the geochemist. For example, as to the great deposit containing potash salt being mined at Solikamsk (Lower Permian in age), there is no explanation as to the relations of carnallite, sylvite, and other minerals, and their genesis and local zonation.

Perhaps this omission is deliberate because of the size of the book. It is, however, surprising because the senior author is a long-time student of brines, etc.

In brief, this volume belongs to the class of case histories; as such, it is valuable for its coverage. As a reference for the details of physical and chemical environment of precipitation and of circulation leading to diagenesis, it lacks documentation; also the minor element occurrence is not discussed.

It is probable that much of its coverage will also be accessible in volume 2 of Lötze, reported already in press.

Paul Weaver
Houston, Texas

VOLCANOES IN HISTORY, IN THEORY, IN ERUPTION, by Fred M. Bullard. xvi + 441 pages, 37 plates, 71 figures. Univer. of Texas Press, Austin 12, Texas, 1962. $7.50.

Although this book might well have been entitled "Volcanoes and vulcanology for the intelligent layman," it also contains a great deal of information that will be of interest and value to the professional geologist. It is divided into three parts: Part I, "Facts and fiction about volcanoes" is intended to supply a background, both historical and scientific, for vulcanology; Part II, "Types of volcanic eruptions" describes the Peléan, Vulcanian, Strombolian, Hawaiian, and Icelandic types; in Part III, theory, cycles, and utilization of volcanoes are treated as well as their distribution, their relationships to crustal structures, and theories on their origin. The book concludes with 1) an appendix, the geological time scale, 2) a glossary, 3) a bibliography, and 4) the index. For the geologist the several chronological descriptions of the activity of many of the world's major volcanoes will serve as a valuable source work.

ewh

ON THE EXTERNAL CHARACTERS OF MINERALS, by A. G. Werner, translated by Albert V. Carozzi. xi + 118 pages. Univ. of Ill. Press, Urbana, Ill., 1962. $4.50.

Professor Carozzi has performed a service to all mineralogists in presenting this scholarly and annotated edition of the first textbook of descriptive mineralogy, A. G. Werner's VON DEN ÄUSSERLICHEN KENNZEICHEN DER FOSSILIEN. The translation is based on Werner's personally corrected and expanded copy of the original edition; thus, it represents a translation of what might have become a second edition of the book. Werner's personal copy, which is now held by the University of Illinois library, reveals many pen-inscribed revisions and additions. All of these are incorporated in this translation. The work is more than a mere translation, for it also contains numerous and lengthy footnotes, detailed and erudite, which represent the translator's critique and also discuss changes between the first and "second" editions. The work concludes with a glossary of ancient names of minerals. All mineralogists interested in the history of the development of their science will wish to provide themselves with a copy of Professor Carozzi's translation.

ewh

MANUAL OF FIELD GEOLOGY, by Robert R. Compton. 378 pages. John Wiley and Sons, Inc., New York, 1962. $7.50.

This rather compact manual serves both as a thorough introduction to geological fieldwork for the beginner and as a concise summary of the information critical to structural, stratigraphical, and petrological fieldwork for the more experienced geologist. It is, of course, true that the author of such a book as this must make decisions as to what to include and what to exclude and that nearly each geologist reading the book could find one or more omissions he felt were relatively important; to this reviewer all of the major things are included and well covered, while an amazing mass of less important material is treated concisely.

It seems to this reviewer that the last four chapters, dealing with petrology, are particularly well done. The many things to be kept in mind by the field geologist as he does his work in various terrains are stressed in these chapters. There are, as well, well-written sections briefly summarizing the mode of formation of both primary and secondary structures. It is helpful to have the formation of primary sedimentary flow structures adequately covered in such a book and to have as well a more than adequate discussion of inclusions and related structures found in igneous rocks.

All in all, it is rather refreshing to see something besides the same old stand-bys that have filled this textbook niche for so many years. The reviewer is curious whether the misspelling of "similar" in note 8 in figure 1--2 on page 11 is truly a mistake or whether it was done with tongue-in-cheek by one who had read student notebooks full of many misspelled words and of barely decipherable comments during his years of instructing beginning geologists in field camp.

Donald F. Eschman

PUBLICATIONS RECEIVED

ALESHIN, EUGENE and RUSTUM ROY. Crystal Chemistry of Pyrochlore. Jour. Amer. Ceram. Soc., 45, (1), 18-25, 1962.

ANDERS, EDWARD. On the Origin of Carbonaceous Chondrites. Enrico Fermi Inst. for Nuclear Stud., Univ. Chicago, 1962.

BAIRD, ALEXANDER K. Superposed Deformations in the Central Sierra Nevada Foothills East of the Mother Lode. Univ. Cal. Pub. Geol. Sci., 42, (1), 1962.

BETECHTIN, A. G. Mikroskopische Untersuchungen an Platinerzen aus dem Ural. N. Jb. Miner., Abh., 97, (1), 1-34, 1961.

CROWLEY, FRANK A. Directory of Known Mining Enterprises, 1961. Montana Bur. Mines and Geol., 25, 71 p., 1962.

DALE, V. B. Tungsten Deposits of Gila, Yavapai, and Mohave Counties, Ariz. U. S. Dept. Interior, Bur. Mines Inf. Circ. 8078, 1961.

DARE, W. L. Uranium Mining Methods and Costs at Several Mines on the Colorado Plateau. U. S. Dept. Interior, Bur. Mines Inf. Circ. 8015, 1961.

DAVIDSON, C. F. On the Cobalt: Nickel Ratio in Ore Deposits. Min. Mag., 106, 78-85, 1962.

_____ On Uraniferous Fish-Bone Beds. Min. Mag., 106, 201-203, 1962.

_____ An Occurrence of Brannerite in Russia. Min. Mag., 106, 92-93, 1962.

_____ Geology in the Service of Mankind. Extract, "The Impact of Science on Society," UNESCO, xii, 83-101, 1962.

DEAN, K. C. and I. L. NICHOLS. Concentration of Pollucite Ores. U. S. Dept. Interior, Bur. Mines, Rept. 5940, 10 p., 1962.

DRYSDALL, A. R. and C. J. STILLMAN. A Classification of Non-Feldspathoidal, Basic and Ultrabasic Plutonic Rocks. Proc. First Fed. Sci. Cong., 3-12, 1962.

DuFRESNE, E. R. and EDWARD ANDERS. On the Retention of Primordial Noble Gases in the Pesyanoe Meteorite. Geochimica et Cosmochimica Acta, 26, 251-262, 1962.

ESPENSHADE, G. H. Pyrophyllite, and Kyanite and Related Minerals in the United States. U. S. Dept. Interior, U. S. Geol. Surv., Min. Inv. Res. Map MR-18, 1962.

FITCH, FRANK W. and EDWARD ANDERS. Observations on the Nature of the "Organized Elements" in Carbonaceous Chondrites. Enrico Fermi Inst. for Nuclear Stud., Univ. Chicago, 1962.

_____, HENRY P. SCHWARCZ and EDWARD ANDERS. 'Organized Elements' in Carbonaceous Chondrites. Nature, 193, (4821), 1123-1125, 1962.

FRIEDRICH, KUNIBERT, ROBERT KUHN and HUGO STRUNZ. Identität von Wathlingenit mit Kieserit. Kali und Steinsalz, Essen: Verlag Glückauf, Heft 7, 221-227, 1961.

HIETANEN, ANNA. Metamorphic Facies and Style of Folding in the Belt Series Northwest of the Idaho Batholith. Comptes Rendus Soc. geol. Finlande N:o XXXIII, 73-103, 1961.

KAPP, RONALD O. and WILLIAM A. KNELLER. A Buried Biotic Assemblage from an Old Saline River Terrace at Milan, Michigan. Mich. Acad. Sci., Arts, and Letters, XLVII, 135-145, 1962.

KLINEFELTER, T. A. and JAMES D. COOPER. Kyanite: A Material Survey. U. S. Dept. Interior, Bur. Mines Inf. Circ. 8040, 1961.

LEVINSON, A. A. and R. A. BORUP. Doverite from Cotopaxi, Colorado. Amer. Mineral., 47, 337-343, 1962.

McCONNELL, DUNCAN. The Crystal Structure of Bone. Clin. Orthopaedics, 23, 253-268, 1962.

MIYASHIRO, AKIHO. Evolution of Metamorphic Belts. Jour. Petrology, 2, (3), 277-311, 1961.

NICKEL, E. Die Mineralparagenese des Lengenbachs im Binnental. Bull. Soc. Fribourgeoise Sci. nat., 50, 7-10, 1960.

_____ and I. SCHALLER. Die Mineralparagenese des Lengenbachs im Binnental. Bull Soc. Fribourgeoise Sci. nat., 50, 11-16, 1960.

NORTH, A. A. and R. A. WELLS. Analytical Methods for Geochemical Prospecting. Symp. Expl. Geoquimica, 2, 347-362, 1959.

PEDRON, L. O. and A. C. FLORES. Preliminary Beneficiation of Philippine Black Sands. Philippines Bur. Mines, Rept. Invest. 34, 1962.

PIERUCCINI, RENZO. Autoleucesi en-sintropica e genesi del protogino. Ist. Mineral. Univ. Messina (Italia), 35 p., 1962.

RABBITS, F. T. The Mines Branch Library. Canad. Min. Metal. Bull., 2-4, 1962.

SAVIĆ, P. and R. KAŠANIN. The Behaviour of the Materials under High Pressures. Serb. Acad. Sci. Arts Monografhs, CCCLI, Nat. Sci. and Math., 29, 32 p., 1962.

SCHRECK, ALBERT E. Lithium: A Materials Survey. U. S. Dept. Interior, Bur. Mines Inf. Circ. 8053, 1961.

SCHULLER, ARNO. Metallisation und Genese des Kupferschiefers von Mansfeld. Akad. Verlag, 6, 1959.

_____ Zur Kenntnis des Betechtinit, $(Cu, Fe)_{10}PbS_{>6}$. N. Jb. Miner., Mh., 6, 121-131, 1960.

_____ Shichangit, ein Epi-Metaleukophyr-Pyroxenite (Plagioklas-Hornblende-Jadeitit) als Randfazies ehemaliger leukophyrischer Gänge in Serpentin und Gabbro. Bull. Geol. Inst. Univ. Uppsala, XL, 429-453, 1961.

_____ Die Druck-, Temperatur- und Energiefelder der Metamorphose. N. Jb. Miner., Abh., 96, 250-290, 1961.

SWANSON, HOWARD E., M. C. MORRIS, ROGER P. STINCHFIELD and ELOISE H. EVANS. Standard X-ray Diffraction Powder Patterns. U. S. Dept. Com., Nat. Bur. Stand. Monograph 25, Sec. 1, 56 p., 1962.

TAYLOR, S. R. Meteoritic and Terrestrial Rare Earth Abundance Patterns. Geochimica et Cosmochimica Acta, 26, 81-88, 1962.

_____ and M. SACHS. Abundance and Distribution of Alkali Elements in Victorian Australites. Geochimica et Cosmochimica Acta, 25, 223-228, 1961.

TONGIORGI, E., E. PICCIOTTO, W. DE BREUCK, T. NORLING, J. GIOT and F. PANTANETTI. Deep Drilling at Base Roi Baudouin, Dronning Maud Land, Antarctica. Jour. Glac., 4, (31), 101-110, 1962.

TOBEAU, G. Nouvelles méthodes optiques de mesure de la biabsorbance dans les milieux cristallins transparents. Bull. Classe Sci., Ser. 5, XLVIII, 99-126, 1962.

VOLBORTH, A. Allanite Pegmatites, Red Rock, Nevada Compared with Allanite Pegmatites in Southern Nevada and California. Econ. Geol. 57, (2), 209-216, 1962.

VON ECKERMANN, HARRY. The Decomposition of Alnö Alkaline Dikes by Percolating Water. Comptes Rendus Soc. geol. Finlande N:o XXXIII, 243-254, 1961.

WALENTA, KURT. Die vulkanische Tuffbreccie von Scharnhausen bei Stuttgart. Jber. u. Mitt. oberrh. geol. Ver., 42, 23-53, 1960.

WARSHAW, CHARLOTTE M. and RUSTUM ROY. Classification and a Scheme for the Identification of Layer Silicates. Geol. Soc. Amer. Bull., 72, 1455-1492, 1961.

WARSHAW, I. and RUSTOM ROY. Polymorphism of the Rare Earth Sesquioxides. Jour. Phys. Chem., 65, 2048-2051, 1961.

WRIGHT, HAROLD D., CHESTER M. SMITH and JOSEF J. JUTTA. Role of Trace Amounts of Uranium in some Base Metal Sulfides from Vein Deposits. Rept. Internat. Geol. Cong., XXI Ses., XVI, 248-260, 1960.

WYLLIE, P. J. and O. F. TUTTLE. Hydrothermal Melting of Shales. Geol. Mag., XCVIII, (1), 56-66, 1961.

CALENDAR

Sept.	
9-14	Amer. Chem. Soc., 142nd Ann., Atlantic City, N.J.
10-12	Inst. of Physics and the Physical Soc., Conf. on low energy nuclear physics, Atomic Energy Research Establishment, Harwell, Eng.
10-14	Amer. Meteorological Soc., 4th Conf. on applied meteorology, Old Point Comfort, Va.
24-27	Amer. Mining Cong., San Francisco, Calif.
Sept. 30-Oct. 5	Amer. Soc. for Testing and Materials, Symposium on properties of surfaces, at 4th Pacific area national meeting, Los Angeles, Calif. Write: T. A. Marshall, Jr., ASTM, 1916 Race St., Philadelphia 3, Pa.
Oct. 31-Nov. 3	Amer. Vacuum Soc., 9th Ann. Symposium. Write: G. H. Bancroft, Consolidated Vacuum Corp., 1775 Mt. Read Blvd., Rochester 3, N.Y.
Nov.	
12-14	Geol. Soc. Amer., Ann., Houston, Texas.
13-21	Internatl. Soil Conf., Palmerston North, New Zealand. Write: Sec'y Gen., P. O. Box 8001, Wellington, New Zealand.

Technical scientific sessions will be held in Budapest from October 8--13, 1962 on the occasion of the 25th anniversary of Hungarian petroleum production. Two conferences will be held simultaneously. One series of meetings

will be devoted to the 25th anniversary conference and will be concerned with a review of Hungarian oil production and the problems of applying various fields of science to petroleum production. This conference is being organized under the auspices of the Hungarian Academy of Sciences, the National Hungarian Mining and Metallurgical Society, the Hungarian Society of Geology, and the Society of Hungarian Geophysicists.

A second series of meetings will be organized as an international scientific conference on geochemical, microbiological, and applied chemical problems in petroleum research and production. This international conference is being organized by the oil research institutes of Czechoslovakia, Poland, and Hungary and is an outgrowth of previous conferences held at Brno in 1957 and Krakow in 1959.

The Organizing Committee of the technical sessions is under the direction of Dr. L. Gráf and Dr. L. Bencze, Országos Köolaj-es Gásipari Tröszt, Szt. Istvan Krt. 11, Budapest V, Hungary.

Paul A. Witherspoon, Chairman
Organic Geochemistry Group

ION EXCHANGE COLUMN

In the very near future, members of The Geochemical Society will receive a ballot by mail on which they may indicate their preferences in regard to continued association of the Society with the American Geological Institute. Information relevant to the ballot carried in this issue of the News may be helpful at that time and it is suggested that your copy be retained until the vote is cast.

Translation Available

Translation of the book by Kh. M. Abdalaev DIKES AND ORE MINERALIZATION has been sponsored by the National Science Foundation and arranged by the Geochemical Society. Positive microfilm copies of the typed translation are available at $11.00 each from the American Geological Institute, 2101 Constitution Ave., N.W., Washington 25, D.C.

The original volume of 232 pages was published in 1957 by the State Scientific-Technical Publishing Organization of Literature for Geology and the Conservation of Natural Resources, Moscow. Only three of its ten chapters deal specifically with the relations between dikes and mineralization. The others deal with more general subjects such as the role of dikes in the tectonic-magmatic history of geosynclines, the role of structure in the distribution of dikes, causes of the petrographic diversity of dikes, dikes of complex structure, genetic classification of dikes, etc.

Earl Ingerson, Chairman
Translations Committee

Dr. Gordon Hodgson, head of Petroleum Research at the Research Council of Alberta, has been invited to present a series of lectures on organic geochemistry at Tohoku University, Sendai, Japan.

An English translation of the 1960 edition of THE ORE MINERALS AND THEIR INTERGROWTHS by Professor Paul Ramdohr will be distributed by the Pergamon Press within a few months. The translation, in which some thirty specialists have cooperated, was edited by G. C. Amstutz in close cooperation with Dr. Ramdohr.

Under the direction of Herbert S. Peiser of the NBS Analytical and Inorganic Chemistry Division, a new Crystal Chemistry Section of the National Bureau of Standards will study methods of crystal structure determination to help increase knowledge of chemical bonding. This unit will investigate correlation of known crystal structures, formation and transformation mechanisms of crystalline order, and disorder phenomena such as chemical impurities in crystals.

SEE YOU IN HOUSTON!

E. Wm. Heinrich
Editor

William C. Kelly
Co-editor

Department of Geology and Mineralogy
The University of Michigan
Ann Arbor, Michigan

GEOCHEMISTRY

A Translation of

ГЕОХИМИЯ

CONTENTS OF FORTHCOMING ISSUE

No. 10, 1961

Published by

The Geochemical Society

TRANSLATED AND PRODUCED BY *scripta technica, inc.*

1200 PAGES IN 1961 VOLUME

VOLUMES FOR 1956–1961 ARE AVAILABLE