THE
MATHEMATICAL ASSOCIATION
OF AMERICA
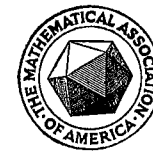
INFORMATION BOOKLET

Services available

to

Universities
Colleges
Junior Colleges

Spring 1966

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OF AMERICA

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CONTENTS

Introduction

This booklet is for the information of college and university presidents, deans, department chairmen, and all others concerned with the teaching of mathematics at the collegiate level. It describes some of the services and materials available through the Mathematical Association of America (MAA) for the improvement of mathematics and the teaching of mathematics.

These services and materials may be grouped under these headings:

1. *Publications*: Some books and journals which should be in every college and university library are listed on pages 4-8. The Basic Library List (page 8) prepared by the Committee on the Undergraduate Program in Mathematics will be helpful in appraising your present library holdings.

2. *Lecturers and Consultants*: Mathematicians from the larger universities are available to talk to your students and faculty on mathematical topics and to advise them about graduate work (page 12). Consultants are available to visit your institution and make recommendations for the improvement of your program in mathematics (page 14).

3. *Summer Institutes*: Your faculty may be interested in applying for membership in one of the cooperative Summer Institutes sponsored by MAA (page 19).

4. *Films*: Films produced by MAA may be rented or purchased for showing to student groups or for regular class use (pages 15-17).

5. *Employment Register*: This may be of help in obtaining new members of your staff and for obtaining positions for your students (page 11).

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6. *Meetings of the Association*: Attendance at national and local MAA meetings will be beneficial to members of your faculty and to your advanced students (page 9).

An address for further information is given for each category in this booklet. MAA will also provide assistance; write to:

HARRY M. GEHMAN, Executive Director
Mathematical Association of America
SUNY at Buffalo (University of Buffalo)
Buffalo, New York 14214.

Hereafter this address is referred to as *"the Buffalo office."*

The Mathematical Association of America

THE MATHEMATICAL ASSOCIATION OF AMERICA is an organization of persons interested in mathematics at the collegiate level. It was organized at Columbus, Ohio, in December 1915 with 1045 individual charter members and was incorporated in the state of Illinois on September 8, 1920. Its present membership is over 17,000 individuals, including more than 700 members residing in foreign countries, together with more than 225 academic and corporate members.

The object of MAA as stated in its by-laws is "to assist in promoting the interests of mathematics in America, especially in the collegiate field, by holding meetings in any part of the United States or Canada for the presentation and discussion of mathematical papers, by the publication of mathematical articles, journals, books, monographs, and reports, by conducting investigations for the purpose of improving the teaching of mathematics, and by co-operating with other organizations whenever this may be desirable for attaining these or other similar objects."

Individuals who wish to become members of MAA should write to the Buffalo office for information. Any person interested in the field of mathematics is eligible for membership. Annual dues are $6.00 and there is an initiation fee of $2.00, which is waived for undergraduates and for members of NCTM.

Academic institutions are eligible for institutional membership in MAA. Dues are $25 per year which includes two subscriptions to the AMERICAN MATHEMATICAL MONTHLY, or one subscription and a membership in the Association for a member of the faculty or student body. Each academic member also receives annually a copy of the Combined Membership List. Write to the Buffalo office for further information.

MAA representatives have recently been appointed at most universities and colleges, including junior colleges, in the United States and Canada. Their primary responsibility is to provide members and prospective members with current information on the activities of the Association and to secure new MAA members from both faculty and students. Every effort will be made by the Buffalo office and the Section officers to provide the MAA representatives with information of interest to them.

Journals Published by MAA

THE AMERICAN MATHEMATICAL MONTHLY

The Association publishes the AMERICAN MATHEMATICAL MONTHLY, which is devoted to collegiate and early graduate mathematics. It appears monthly, with the June-July and August-September issues combined. Occasionally (once each in 1965 and 1966) a special issue will appear.

Volume 72 (1965), with over 1300 pages of text, contained 72 Main Articles, 86 Mathematical Notes, 50 Classroom Notes, 31 Mathematical Education Notes, about 200 Problems and at least that many Solutions to Problems, and reviews of over 115 books, along with News and Notices, and the Official Reports and Announcements of the Association.

Among the contributors were T. M. Apostol, P. T. Bateman, R. P. Boas, R. C. Buck, W. L. Duren, B. Friedman and H. H. Goldstine, M. Golomb, M. Hall, R. W. Hamming, B. W. Jones, P. D. Lax, D. H. Lehmer, N. Levinson, S. MacLane, E. E. Moise, A. Newell and H. A. Simon, J. F. Randolph, R. D. Richtmyer, H. Steinhaus and W. T. Tutte.

Members of the Association receive the MONTHLY free as a privilege of membership. Over 22,000 copies of current issues are printed. The MONTHLY may be found in many schools and most college libraries.

Nonmembers may subscribe to the MONTHLY for $10.00 per year either directly with the Buffalo office or with an agency. A sample copy will be sent on request.

MATHEMATICS MAGAZINE

The Association also publishes MATHEMATICS MAGAZINE which appears five times each year, bimonthly except for July and August. About 350 pages of text are published each year. The volume for 1966 is Volume 39.

Most articles in MATHEMATICS MAGAZINE can be read with profit my anyone with a basic undergraduate course in the subject matter of the article. In addition to general articles, each issue contains sections on Book Reviews and Problems and Solutions.

Reviews are confined to books of interest to students and teachers of the first two years of college mathematics. Contents of the issue for January-February 1966 are:

Eight other articles, Book Reviews, Problems and Solutions.

Subscription rates are $3.00 for one year, $5.75 for two years, $13.00 for five years. Subscriptions may be placed with the Buffalo office or with a subscription agency. Sample copies are available on request.

Books Published by MAA

THE CARUS MATHEMATICAL MONOGRAPHS

The Monographs are a series of expository books intended to make topics in pure and applied mathematics accessible to teachers and students of mathematics and also to nonspecialists and scientific workers in other fields.

Monographs 1-4, 6-8 are priced at $4.00 each and are available only from the Open Court Publishing Company, LaSalle, Illinois 61301.

Monographs 9-14 are available at $4.00 each from John Wiley and Sons, 605 Third Avenue, New York, New York 10016.

These numbers are currently available:

No. 1. *Calculus of Variations*, by G. A. Bliss.

No. 2. *Analytic Functions of a Complex Variable*, by D. R. Curtiss.

No. 3. *Mathematical Statistics*, by H. L. Rietz.

No. 4. *Projective Geometry*, by J. W. Young.

No. 6. *Fourier Series and Orthogonal Polynomials*, by Dunham Jackson.

No. 7. *Vectors and Matrices*, by C. C. MacDuffee.

No. 8. *Rings and Ideals*, by N. H. McCoy.

No. 9. *The Theory of Algebraic Numbers*, by Harry Pollard.

No. 10. *The Arithmetic Theory of Quadratic Forms*, by B. W. Jones.

No. 11. *Irrational Numbers*, by Ivan Niven.

No. 12. *Statistical Independence in Probability, Analysis and Number Theory*, by Mark Kac.

No. 13. *A Primer of Real Functions*, by Ralph P. Boas, Jr.

No. 14. *Combinatorial Mathematics*, by H. J. Ryser.

MAA STUDIES IN MATHEMATICS

This series is intended to bring to the mathematical community expository articles at the collegiate and graduate level on recent developments in mathematics.

Copies may be purchased at $4.00 from Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07631.

Volume 1: *Studies in Modern Analysis*. R. C. Buck, editor. Papers by E. J. McShane, M. H. Stone, E. R. Lorch, and Casper Goffman.

Volume 2: *Studies in Modern Algebra*. A. A. Albert, editor. Papers by Saunders MacLane, R. H. Bruck, C. W. Curtis, Erwin Kleinfeld, L. J. Paige.

Volume 3: *Studies in Real and Complex Analysis*. I. I. Hirschman, Jr., editor. Papers by H. J. Bremermann, L. M. Graves, Einar Hille, I. I. Hirschman, Jr. and D. V. Widder, H. H. Schaefer, Guido Weiss, and Harold Widom.

THE SLAUGHT MEMORIAL PAPERS

The Herbert Ellsworth Slaught Memorial Papers are brief expository pamphlets published as supplements to the MONTHLY. When they are issued, copies are sent free of charge to all members of the Association and subscribers to the MONTHLY. Additional copies may be purchased from the Buffalo office at $1.50 each. The following numbers are available:

Number 3. *Proceedings of the Symposium on Special Topics in Applied Mathematics.*

Number 4. *Contributions to Geometry.*

Number 5. *The Conjugate Coordinate System for Plane Euclidean Geometry*, by W. B. Carver.

Number 6. *To Lester R. Ford on His Seventieth Birthday*, a collection of fourteen articles.

Number 7. *Introduction to Arithmetic Factorization and Congruences from the Standpoint of Abstract Algebra*, by H. S. Vandiver and M. W. Weaver.

Number 8. *Elementary Point Set Topology*, by R. H. Bing.

Number 9. *A Contemporary Approach to Classical Geometry*, by Walter Prenowitz.

Number 10. *Computers and Computing*, a collection of twenty-one articles.

MISCELLANEOUS PUBLICATIONS

Theory of Limits, by E. J. McShane.

This film manual contains the script of the corresponding film (see page 16), supplementary material, and problems. Copies may be purchased for $1.00 each, postpaid, or for $.50 per copy for orders of ten or more.

A Combined Membership List is issued each year jointly with the American Mathematical Society and the Society for Industrial and Applied Mathematics. Copies of the current list may be purchased for $10.00.

Guidebook to Departments in the Mathematical Sciences in the United States and Canada, 1965. $.50 per copy.

Professional Opportunities in Mathematics is the report of a Committee of the Association. Sixth edition, 1964. 25 cents for single copies; 20 cents each for orders of five or more.

The Otto Dunkel Memorial Problem Book, a collection of problems from the MONTHLY, may be purchased for $1.50.

Any of these publications may be purchased from the Buffalo office.

THE BASIC LIBRARY LIST

The Association's Committee on the Undergraduate Program in Mathematics (see page 14) has published a *Basic Library List* of books and periodicals in mathematics that should be in every college library. For a copy of the list write: CUPM Office, P. O Box 1024, Berkeley, California 94701.

Meetings of the Association

For many years the Association has held its Annual Meeting during the last week in January and a Summer Meeting during the last week in August. These meetings have been held in conjunction with meetings of the American Mathematical Society, the National Council of Teachers of Mathematics, the Society for Industrial and Applied Mathematics, the Association for Symbolic Logic, and other national organizations.

At these meetings invited addresses are delivered by prominent mathematicians. Some are expositions of recent researches in mathematics; other addresses are concerned with problems involved in the teaching of college mathematics.

A feature of the summer meetings of the Association is the delivery of the EARLE RAYMOND HEDRICK LECTURES, a series of three expository lectures on a topic of current interest in mathematics.

At the winter meeting, the Association's Award for Distinguished Service to Mathematics and the Chauvenet Prize are conferred. At the summer meeting, the L. R. Ford Awards for expository writing are conferred.

Attendance at meetings gives members an opportunity to meet others with a common interest in mathematics and to discuss with them common problems of mathematics and of mathematics teaching.

Programs of national meetings and a schedule of future meetings may be obtained from the Buffalo office. Among those scheduled for the immediate future are:

Forty-seventh Summer Meeting, Rutgers, The State University, New Brunswick, New Jersey, August 29-31, 1966.

Fiftieth Annual Meeting, Houston, Texas, January 26-28, 1967.

The Sections of the Association

The Association has established twenty-seven Sections, each comprising the members of the Association living in a certain geographical area. Each Section has its own officers, including a member of the Board of Governors of the Association. Each Section holds one-day or two-day meetings annually, usually in the spring. Some Sections meet twice a year, in the fall and in the spring. The programs presented at these meetings are similar to those of the national meetings.

Many Sections conduct projects which bring the objectives of the Association directly to college students and to prospective college students. These projects include conducting mathematical competitions, advising state departments of education on teacher certification in mathematics, advising high schools and colleges on course content and curricula, and providing lectures. The Sections of the Association are:

Allegheny Mountain	New Jersey
Illinois	Northeastern
Indiana	Northern California
Iowa	Ohio
Kansas	Oklahoma-Arkansas
Kentucky	Pacific Northwest
Louisiana-Mississippi	Philadelphia
Maryland-District of	Rocky Mountain
Columbia-Virginia	Southeastern
Metropolitan New York	Southern California
Michigan	Southwestern
Minnesota	Texas
Missouri	Upper New York State
Nebraska	Wisconsin

Programs of Section Meetings may be obtained from the Section Secretaries, whose names and addresses may be obtained from the Buffalo office. Each issue of the MONTHLY contains a schedule of future Section Meetings.

Mathematical Sciences Employment Register

The MAA, in cooperation with the American Mathematical Society and the Society for Industrial and Applied Mathematics, has established an Employment Register to assist both employers and applicants for positions in teaching, industry, and government.

The Register publishes in January, May, and August of each year a list of *Positions Available* and a list of *Applicants for Positions*. There is no charge for registration either to employers or to applicants, except for a late registration fee and for job applicants who desire anonymous listings.

Both employers and job applicants who wish to be listed should write either to the MAA office, or to the Mathematical Sciences Employment Register, P. O. Box 6248, Providence, Rhode Island 02904 for the appropriate forms. The forms should be returned by the 15th of the month preceding the date of the list.

At the national meetings in January and August, the Employment Register maintains an office at which the two lists may be examined. Applicants and prospective employers have an opportunity for personal conferences at these meetings.

The *List of Positions* may be purchased for $3.00 per copy. The price of the *List of Applicants* is $7.50 per copy or $15.00 for a yearly subscription to the three lists. Copies may be ordered from the office of the Employment Register.

In addition to the above, the Employment Register distributes each spring, free of charge, a *List of Retired Mathematicians* who are available for employment during the coming year, and a *Summer Employment List* for mathematicians and college mathematics students. Copies of these two lists may be obtained from the Buffalo office or from the office of the Employment Register.

Program of Visiting Lecturers

With the financial assistance of the National Science Foundation, a program of Visiting Lecturers to colleges and junior colleges is being conducted during 1965-66 and is expected to be continued during 1966-67.

The Visiting Lectureship Program has as its general aims to strengthen and stimulate mathematics programs of colleges, to provide the mathematics staff and students in small colleges with an opportunity for personal contacts with productive and creative mathematicians, to aid in motivating able college students to consider careers in mathematics and the teaching of mathematics, and to create and strengthen ties between undergraduate colleges and graduate schools.

With these ends in view, the lecturers will be prepared not only to give formal lectures, but also to confer with students and faculty, singly and in groups. They will be glad to advise students on future opportunities in study and employment, to discuss teaching problems and curricular matters with members of the staff, and to throw what light they can on practices in comparable institutions. In short, the lecturers will cooperate with the departments in all ways possible to further the aims of the program. Very frequently the influence of the lecturer may be felt beyond the mathematics department.

Lecturers may be sent only to U. S. institutions which do not grant the doctorate in mathematics.

It is required that the host institution assume the expense of the lecturer for board and room during his stay.

Brochures and application blanks are mailed to all eligible institutions annually in September by the MAA Buffalo office. Further information on the program may be obtained from the Chairman of the Committee on Visiting Lecturers, Professor R. E. Gaskell, Oregon State University, Corvallis, Oregon 97331.

The Committee
on the Undergraduate Program in Mathematics

CUPM is a committee of MAA charged with studying and recommending improvements in undergraduate mathematics curricula, thereby reflecting the basic concern of the Association for improving the content and teaching of college mathematics. With financial support from the National Science Foundation, CUPM is devoting its energies to reasonable efforts toward the realization of its recommendations.

The major portion of the work of CUPM is carried on by its panels, which are:

Panel on Mathematics for the Biological, Management and Social Sciences

Panel on Pre-graduate Training

Panel on Teacher Training

Panel on Physical Sciences and Engineering

Panel on College Teacher Preparation

Advisory Group on Communications.

Consultants Bureau

The CUPM Consultants Bureau is intended to provide colleges with a consulting service to aid them in planning needed changes in mathematics curricula. It functions with the cooperation of thirty mathematicians chosen for their professional specialities, experience, educational interests, and geographical location.

Consultants are available for two-day visits to institutions requesting the service. During his visit the consultant is prepared to review and suggest revisions in curricula for prospective mathematics teachers and elementary teachers, for the pregraduate training of mathematics majors, and for the mathematical preparation of majors in the physical sciences and engineering and in

the biological, management and social sciences. He is prepared to speak with administrators, to confer with staff members and students, and to help the mathematics department in any way possible.

Booklets describing the Consultants Bureau and application blanks may be obtained by writing: CUPM Office, P. O. Box 1024, Berkeley, California 94701.

Some of the publications issued by CUPM and its Panels are:

A General Curriculum in Mathematics for Colleges

Recommendations for the Training of Teachers of Mathematics
(A summary)

Course Guides for the Training of Teachers of Junior High and
High School Mathematics

Course Guides for the Training of Teachers of Elementary School
Mathematics (Preliminary Report)

Mathematics Text Materials for the Undergraduate Preparation of
Elementary School Teachers

Recommendations on the Undergraduate Mathematics Program
for Engineers and Physicists

Recommendations on the Undergraduate Mathematics Program
for Work in Computing

Pregraduate Preparation of Research Mathematicians

Preparation for Graduate Study in Mathematics

Tentative Recommendations for the Undergraduate Mathematics
Program of Students in the Biological, Management, and
Social Sciences

CUPM Basic Library List

These publications may be obtained free of charge by writing to: CUPM Office, P. O. Box 1024, Berkeley, California 94701.

Mathematical Films and Related Materials

The Association has fostered the production and use of mathematical films for a number of years. The MAA COMMITTEE ON PRODUCTION OF FILMS has produced the following 16mm sound motion pictures:

> *The Theory of Limits* by Professor E. J. McShane
>
> *Mathematical Induction* by Professor Leon Henkin
>
> *What Is An Integral?* by Professor Edwin Hewitt
>
> *The Kakeya Problem* by Professor A. S. Besicovitch

These films may be used as a substitute for classroom instruction or may be shown to groups of students outside the regular classroom. Each of these films is about an hour long; the Henkin and Besicovitch films are in color and the others are in black and white. A film manual supplementing the script of the film is available for the McShane film (see page 8), and the script of the Besicovitch film was published in the AMERICAN MATHEMATICAL MONTHLY for August-September 1963 (Vol. 70, No. 7, pp. 697-706). Information about rental or purchase of the motion pictures is given below.

The MAA COMMITTEE ON EDUCATIONAL MEDIA has continued this program of films devoted to distinguished mathematicians and mathematical educators. A film series containing the following films (and others) of special interest to mathematics clubs and similar organizations is expected to be distributed in the spring of 1966.

> *Predicting at Random:* A Lecture by David Blackwell
>
> *Challenging Conjectures:* A Lecture by R. H. Bing
>
> *Göttingen & New York* — Reflections on a Life in
> Mathematics — Richard Courant
>
> *The Classical Groups As A Source of Algebraic Problems:*
> A Lecture by C. W. Curtis
>
> *Applications of Group Theory In Particle Physics:*
> A Lecture by Freeman J. Dyson

Can You Hear the Shape of A Drum? A Lecture by Marc Kac

Fixed Points: A Lecture by Solomon Lefschetz

Differential Topology: Three Lectures by John Milnor

Pits, Peaks, and Passes: Two Lectures on Critical Point Theory by Marston Morse

Challenge in the Classroom: The Methods of R. L. Moore

Let Us Teach Guessing: A Demonstration with George Polya

Other films produced by CEM are expected to be included in this series, as well as films produced by other organizations, including *The Search for Solid Ground* (a panel discussion on modern logic with Professors M. Kac, J. G. Kemeny, H. Rogers, Jr., and R. M. Smullyan), *What Is Mathematics and How Do We Teach It?* (a panel discussion with Professors Lipman Bers, Samuel Eilenberg, A. M. Gleason, Leo Zippin, and H. O. Pollak), *Topology* (with Professors Marston Morse and R. H. Bott), etc.

The McShane, Henkin, Hewitt and Besicovitch films are currently receiving distribution by *Modern Learning Aids*. For information about rental or purchase of *any* of the films listed above, write to: MLA, 1212 Avenue of the Americas, New York, New York 10036.

The film *Mathematics for Tomorrow* was produced by a joint committee of the MAA and the National Council of Teachers of Mathematics. It is designed to acquaint parents, teachers, and the general public with the "new math" being taught in the schools today. A 29-minute, 16mm color sound film, it is available on a rental or purchase basis from NEA Audiovisual Sound Studio, 1201 Sixteenth Street, N. W., Washington, D. C. 20036.

The Committee on Educational Media is continuing a program for the Association of production, use, and evaluation of new media (films, televison, programed learning, etc.) in mathematical instruction in higher education. With financial support from the National Science Foundation, the Committee, in addition to the individual films described above, is investigating: (1) films for a first-year course in calculus, (2) films for a course on number

systems for the preservice training of elementary teachers, and (3) a study of programed instruction, with production of programed materials to accompany the filmed courses. Other textual material will also accompany these courses.

A CEM Study "Programed Learning and Mathematical Education" by Professor Kenneth O. May (24 pages) has been published and is available at the address below.

For further information write to: Professor Philip E. Miles, Executive Director, Committee on Educational Media, P. O. Box 2310, San Francisco, California 94126.

Putnam Competition

The William Lowell Putnam Mathematical Competition is conducted annually under the sponsorship of the MAA. The competition is designed to stimulate a healthy rivalry in the undergraduate work of mathematics departments in colleges and universities of the United States and Canada. Students compete as individuals or members of a three-man team representing their institution.

Prizes are awarded to the school and members of the first five teams and to the ten highest ranking individuals. One of the first five individuals receives the Putnam Scholarship to Harvard University paying a stipend of $2500 plus tuition.

Announcements and registration materials are mailed to department chairmen in October. The examination is usually held in November or December.

For additional information see the reports which are published in the AMERICAN MATHEMATICAL MONTHLY or write to the director of the Competition, Professor James H. McKay, Oakland University, Rochester, Michigan 48063. (During the academic year 1966-67: Department of Mathematics, University of California, Berkeley, California 94720.)

Mathematics Contest for High School Students

An annual mathematics examination for high school students has been sponsored jointly since 1958 by the MAA, the Society of Actuaries, and by Mu Alpha Theta. Special arrangements are made for visually handicapped students. Questions contained in the examinations for 1950-1960 have been printed in "The Contest Problem Book," Volume 5 of the *New Mathematical Library*, published by Random House and L. W. Singer for the School Mathematics Study Group.

A descriptive brochure may be obtained from the Executive Director of the Contest, Professor W. H. Fagerstrom, Pan American College, Edinburg, Texas 78539.

Cooperative Summer Seminars

In 1964 and again in 1965 the Association conducted an eight week Summer Seminar for approximately 30 mathematics teachers from colleges which do not offer a Ph.D. degree in mathematics. The 1964 Seminar was held on the campus of Cornell University with a program of lectures in probability and geometry given by Professors Mark Kac and Ernst Snapper. The 1965 Seminar was conducted at Bowdoin College with Professors I. N. Herstein and Lynn Loomis lecturing on ring theory and harmonic analysis. Financial support for the 1964 Seminar was furnished by the International Business Machines Corporation. The 1965 Seminar was financed jointly by IBM, the Research Corporation, and the Alfred P. Sloan Foundation.

A third Seminar will be conducted during the summer of 1966 at Bowdoin College with Professors George F. Carrier and Edward J. McShane lecturing on topics in applied mathematics and analysis. Grants for support of this Seminar have been received from the Alfred P. Sloan Foundation and the National Science Foundation.

The purpose of the Seminars is to improve mathematics instruction in colleges and universities which do not have strong graduate departments. A distinctive feature is the arrangement whereby the home institution of each participant agrees to give him a reduced teaching load during the term following the summer so that he can conduct a seminar for his colleagues. This cooperative feature of the Seminars will, it is hoped, extend their benefits many-fold.

The Cooperative Summer Seminars are planned and conducted under the supervision of the MAA Committee on Institutes, Dr. Donald L. Thomsen, Chairman, IBM, Armonk, New York 10504.

Mu Alpha Theta

The high school and junior college mathematics club, Mu Alpha Theta, which is sponsored by the MAA has enjoyed a phenomenal growth since its beginning in 1957. As of January 1966, there are 1070 chapters of Mu Alpha Theta located in all fifty states and several foreign countries. Its objective is to "engender a keener interest in mathematics, to develop sound scholarship in the subject and to promote enjoyment of mathematics," among high school and junior college students. For further information write to: Professor Harold V. Huneke, Secretary-Treasurer, Mu Alpha Theta, Box 1155, University of Oklahoma, Norman, Oklahoma 73069.