It Figures

The following editorial appeared in the Los Angeles Times just after the Joint Mathematics Meetings in Anaheim. The author, Lee Dembart, is an editorial writer for the Times who frequently writes on topics in mathematics and science.

The nation's mathematicians gathered in Anaheim last week for their annual meeting, which like most academic confabulations, was a mixture of business and pleasure, an opportunity to hear new work and see old friends.

These are heady times for mathematics. In the last five years the pace of discovery has been phenomenal. Many important problems that had stumped the best minds for years have been solved. "When I was a student," one mathematician was saying, "no one expected that important unsolved problems would ever be solved. Now half a dozen of them have fallen in the last few years. What is going to be left for us to do?"

No one knows why things have proceeded so quickly. Some people guess that the large increase in mathematics funding in the 1960's, and the consequent increase in the number of mathematicians, had a lot to do with it. They worry

Old Main, the oldest structure on the campus of the University of Wyoming, was built during Wyoming's territorial days. The University of Wyoming is the site of the Summer 1985 Joint Mathematics Meetings.

that cutbacks now will have the opposite effect in the future. A report by the National Research Council last year warned that mathematics research had suffered a "staggering" loss of financial support and that the number of Ph.D.s awarded in the field had dropped by more than 50% from 1968 to 1982.

For weeks before the meeting rumors had swept the mathematics community that Louis de Branges, who made a stunning mathematical proof last year (the Bieberbach Conjecture—Editor), would announce a proof of the Riemann hypothesis, widely regarded as the richest and most important outstanding problem in mathematics today. (Suffice to say that the Riemann hypothesis, proposed by Bernhard Riemann in 1859, asserts that the non-trivial zeros of the Riemann zeta function all have the real part $\frac{1}{2}$. The truth of

Summer Meeting Information Inside

The center section of this issue contains the preliminary program and housing and preregistration forms for the August 1985 Joint Mathematics Meetings at the University of Wyoming in Laramie. *Note: These are the only forms for this meeting which will be mailed to MAA members. The complete timetable for MAA sessions will appear in the May-June issue of FOCUS.*

The meetings include the **65th Summer Meeting of the Mathematical Association of America, the 89th Summer Meeting of the American Mathematical Society (AMS)**, and the 1985 annual meetings of **Pi Mu Epsilon** and the **Association for Women in Mathematics.**

The MAA meeting will feature the Earle Raymond Lectures given by Arthur M. Jaffee of Harvard University. There will also be seven fifty-minute invited addresses, four hour speakers jointly sponsored by the MAA and the AMS, five MAA minicourses, an AMS short course, four contributed paper sessions, and various other events of interest to those who enjoy collegiate mathematics.

The deadlines for preregistration and housing forms and for the MAA Minicourses are both June 14. The deadline for MAA Contributed Papers is May 28. See the center section for further information.

It Figures *(continued from page 1)*
this statement, we are told, has enormous consequences in number theory.)

Everyone wondered what de Branges would say. There was also animated discussion about an assertion that a Japanese mathematician, Hideya Matsumoto, has announced a proof of the Riemann hypothesis in Paris. There were daily reports of transatlantic telephone conservations with experts there. So far no one has found a flaw, but no one is prepared to say that the hypothesis is verified.

In this atmosphere hundreds of people flocked to De Branges' invited address. De Branges described his method of attack and said he thought that it was very promising and that he hoped to have a proof within a year. This occasioned more buzz-buzz-buzzing from the crowd.

Most of the talks were fairly arcane, needless to say, but not all were inaccessible. Persi Diaconis of Stanford, the holder of one of those MacArthur Foundation genius awards, spoke on the "The search for randomness." He asserted, and displayed statistics to prove, that shuffling a deck of cards by hand at a friendly bridge game will probably not randomize it; there will be too many 4-3-3-3 suit distributions.

As a group the mathematicians are among the most fascinating people we know. They have a quirky turn of mind that makes them interested in mathematics and at the same time makes them interested in unusual things that you'd otherwise never hear of. Herbert Taylor of the University of Southern California, for example, gave many demonstrations of a small oddly shaped object that he had in his pocket that spins on a table in one direction, stops, then inexplicably spins in the other.

Besides being delightful, mathematics is also crucial to progress in science and technology. It is one of the most productive ways in which public money can be spent. The government is derelict and shortsighted if it does not wholeheartedly support this field.

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NRC Approves Education Board

At its February 7 meeting, the Governing Board of the National Research Council (NRC) approved the establishment at NRC of a Board on Mathematical Sciences Education, subject to the availability of funding.

The concerns of the Board will include all aspects of mathematical education, kindergarten through college. It is expected to provide:

- Leadership of the continuing efforts to improve mathematical sciences education nationally.
- Coordination among on-going educational projects.
- Information to enhance public understanding of the mathematical sciences.
- Recommendations on how to strengthen weak parts of the infrastructure of mathematics education.
- Service to localities and states, through assistance in setting their criteria for excellence in curricula, materials, teacher training and teacher certification.
- Advice to the National Science Foundation and the Department of Education on long-range goals and needs in mathematical sciences education.

The Board will be comprised of classroom teachers, college and research faculty, school administrators and supervisors, plus representatives of school boards and agencies, business, and industry.

The specific recommendation to establish a Board, the description of its basic functions, and the preliminary planning for its activities came from a committee of the Conference Board of the Mathematical Sciences (CBMS), which included Lynn Arthur Steen, MAA President, and F. Joe Crosswhite, President of the National Council of Teachers of Mathematics. The Committee was chaired by Paul Sally of the University of Chicago.

In all its efforts, the Board will utilize existing strengths and organizations, and promote the development of working partnerships between the many constituencies vitally interested in mathematical sciences education.

NRC hopes to obtain initial funding for the Board quickly, and have the Board well underway by the summer. Additional information about the Board and its planned activities will appear in the May-June issue of *FOCUS*.

Awards Presented in Anaheim

At the annual Business Meeting of the MAA, held January 12, 1985, in Anaheim, California, three individuals received special recognition.

Award for Distinguished Service to Mathematics

Everett Pitcher, Professor Emeritus of Lehigh University, was presented with the Award for Distinguished Service to Mathematics in honor of his long, devoted, and outstanding service to the American Mathematical Society and the larger mathematics community.

The citation, written by David P. Roselle of Virginia Polytechnic Institute and State University, was read at the Business Meeting by Alfred B. Willcox, MAA Executive Director. It states, in part:

Everett has been enormously active in the professional activities of our community. He was Associate Secretary of the AMS (1959–66), a founder of SIAM and a member of its Board of Trustees (1961–63). He has served as Secretary of the American Mathematical Society since 1967.

Everett Pitcher has served the mathematics community exceptionally well. His service to the Society for Industrial and Applied Mathematics, the Mathematical Association of America, and to Lehigh University have been noteworthy. I feel profoundly grateful to Everett Pitcher for his exceptional service to the American Mathematical Society.

The complete citation appears in the March 1985 *American Mathematical Monthly*. Pitcher received a check for $500 from the MAA.

MAA Book Prize

Charles Robert Hadlock, of Arthur D. Little, Inc., was awarded the MAA Book Prize for his 1978 Carus Monograph (No. 19), *Field Theory and its Classical Problems*. A citation was provided by the committee on the MAA Book Prize (Paul Halmos, J. A. Seebach, Doris Schattschneider):

In the Preface the author writes about his work as follows: "I wanted to piece together carefully my own path through Galois theory, a subject whose mathematical centrality and beauty I had often glimpsed. . . . I approach this project as an inquirer rather than as an expert, and I hope to share some of the sense of discovery and excitement I experienced."

The book provides a guide for a fascinating journey, avoiding both the sometimes narrow technical special cases of the 19th century and homological generalities of the 20th. It gives us the theorems and the examples, the Greek problems and the field extensions, the transcendence of π and the solvability of equations. In the opinion of the committee the author succeeded admirably in writing a scholarly and accurate but enjoyable and rewarding exposition.

This is the first time that the MAA Book Prize has been awarded. The Prize was established by the Board of Governors in August 1982, for distinguished, innovative books published by the MAA. Winners receive a check from the MAA for $500.

Chauvenet Prize

Carl Pomerance, University of Georgia, was presented with the Chauvenet Prize and a check for $500 for his paper "Recent Developments in Primality Testing," which appeared in the *Mathematical Intelligencer*, 3 (1981) 97–105. The Committee on the Chauvenet Prize (Gilbert Strang, Peter Hilton, and Larry Zalcman) describe the paper as follows:

It is a beautiful exposition of the basic number theory that has led to fast algorithms for deciding whether a number is prime. Professor Pomerance is himself a major contributor to the algorithms—probably he will know the longest prime! The problem has found important applications in cryptography, and it remains at the same time one of the central and classical problems in mathematics—to which Pomerance and Adleman and Rumely and Lenstra and others are adding something important to the work of Fermat and Jacobi and Gauss.

Suggestions Sought for 1988 ICME

The Sixth International Congress on Mathematical Education will be held July 27 to August 3, 1988, in Budapest, Hungary. Suggestions are now being sought by the International Commission on Mathematical Instruction for the arrangement of the sections and the constitution of the section panels.

For additional information and forms, contact Professor Donald Hill, Mathematics Department, Florida A&M University, Tallahassee, FL 32307.

Lynn Arthur Steen, St. Olaf College

A "Minds-on" World

Mathematics today is a tale of two cultures. It is the best of times, and the worst of times. Mathematics enrollments are at all time highs, yet the number of undergraduate majors are near record lows. Applications of mathematics permeate science and society, yet students are generally unable to apply mathematics to complex problems. Demand for mathematics teachers exceeds supply, yet salaries remain uncompetitive. It is an age of wisdom and an age of foolishness.

The unprecedented public interest in both mathematics research and mathematics education presents unique opportunities for the Mathematical Association of America. Our members and our work bridge the gap between precollege general education and post-graduate research, scholarship, and production. I am honored by the opportunity provided by members of the MAA to serve the Association as President during these exciting and challenging years.

Despite its importance in teaching, industry, and research, mathematics remains an invisible culture. True, it is arcane. But so is much of modern physics, chemistry and biology. The educated public knows that the sciences are alive with current research, yet they view mathematics as a completed subject, as a ripe vine whose fruits are waiting to be plucked for society's benefit. Only rarely does the media reflect the vitality of contemporary mathematics. Lee Dembart's recent editorial in the *Los Angeles Times*, which is reprinted on page 1 of this issue of *FOCUS*, is a refreshing, albeit brief, exception. If mathematics is to thrive, we must convince those who make public policy that mathematics is a living subject continually created in response to questions from science and society.

It is in collegiate mathematics, in the transition from general education to specialized research, that this case must be made. Our students must be brought to see the realities of a "minds-on" world of mathematical modeling and computer simulation. We must show our students both the logic, and the beauty of algebra and geometry and the power of algebraic geometry. New mathematics and new applications are all around us: simple groups, linear programming, fractals, robotics, prime numbers, manifolds, . . . , all in just the last few years. These are the mathematician's DNA and quasars, the evidence of active research and the promise of productive careers.

The time is ripe for a new vision of undergraduate mathematics. Collegiate mathematics must be a builder of bridges, from the abstract to the concrete, from the theoretical to the pragmatic. Association members must ask and answer many important questions: What is still fundamental to college mathematics, and what is not? What mathematics should educated laymen know? What constitutes the core of an undergraduate mathematics major? What differences are there, if any, between preparation for graduate work and preparation for industrial work?

This is not an easy agenda, but it is one that we must engage. The tale of our two cultures will be told in our response.

Lynn Arthur Steen became the 41st President of the MAA at the close of the Winter Meetings in Anaheim. He will serve a two-year term as President, and then a one-year term as Past-President. This is the first in a series of columns by President Steen.

Highlights of the Board of Governors' Anaheim Meeting

Davis Elected as Second Vice President

Ronald M. Davis of Northern Virginia Community College was elected by the Board as Second Vice President. He will serve a two-year term.

Kaufman-Buhler and Kilpatrick Elected as Governors-at-Large

Walter Kaufman-Buhler of Springer-Verlag, New York, was elected as a Governor-at-Large to represent the constituency, Non-Academically Employed Mathematicians. **Jeremy Kilpatrick** of the University of Georgia was elected to represent the constituency, Mathematicians Involved in Teacher Training.

Recipients of Certificate of Meritorious Service Announced

The Board voted unanimously to award Certificates of Meritorious Service to these individuals for their outstanding contributions to the work of the MAA Sections:

Allegheny Section Earle Myers, University of Pittsburgh (Professor Emeritus)

New Jersey Section Emory Starke, Rutgers University (Professor Emeritus)

Maryland-DC-Virginia Section Dorothy Bernstein, Brown University (retired)

Intermountain Section C. Edmund Burgess, University of Utah

Oklahoma-Arkansas Section John Jobe, Oklahoma State University.

The awards will be presented at the MAA Business Meeting at the Summer Joint Mathematics Meetings.

Grants Approved

The Board gratefully accepted the following grants.

● For support of the Women and Mathematics (WAM) program:

   —$12,500 from the IBM Corporation

   —$4000 from the George I. Alden Trust

   —$2000 from the Tektronix Foundation

   —$1000 from the John Hancock Mutual Life Insurance Company.

● For support of the Blacks and Mathematics (BAM) program:

   —$137,265 from MISIP (Minority Institutions Science Improvement Program) of the Department of Education

   —$3000 from Connecticut Mutual Life Insurance Company.

Mathematical Association of America
65th SUMMER MEETING

August 12-15, 1985 ● Laramie, Wyoming

The August 1985 Joint Mathematics Meetings, including the 65th Summer Meeting of the Mathematical Association of America, the 89th Summer Meeting of the American Mathematical Society, the 1985 Summer Meeting of the Association for Women in Mathematics, and the 1985 Annual Meeting of Pi Mu Epsilon, will be held August 12–15, 1985 (Monday–Thursday), at the University of Wyoming, Laramie. Sessions will take place on the campus of the University of Wyoming, Laramie.

Hedrick Lectures

The 34th Earle Raymond Hedrick Lectures will be given by Arthur M. Jaffe of Harvard University. These lectures will be given at 11:00 a.m. on Tuesday, Wednesday, and Thursday, August 13–15.

Invited Addresses

There will be invited fifty-minute addresses. A partial list of speakers and their affiliations follow:

Reuben Hersh, University of New Mexico;

Frank C. Hoppensteadt, University of Utah;

Jeanne LaDuke, DePaul University;

Henry P. Miranda, Colorado State University;

Hugh L. Montgomery, University of Michigan;

Michael Sachs, Bell Communications Research.

Minicourses

Five Minicourses are being offered by MAA. The names and affiliations of the organizers and the topics follow:

Minicourse #1: *Geometry for college teachers* is being organized by Branko Grünbaum, University of Washington;

Minicourse #2: *Applied mathematics via classroom experiments* is being organized by Herbert R. Bailey, Rose-Hulman Institute of Technology;

Minicourse #3: *Teaching experiential applied mathematics,* (TEAM) is being organized by James R. Choike, Oklahoma State University;

Minicourse #4: *Computing in undergraduate linear algebra* is being organized by Eugene A. Herman, Grinnell College;

Minicourse #5: *Microcomputer software in mathematics instruction* is being organized by Roy E. Myers, Pennsylvania State University, Kensington.

Please note the new procedure for registering for Minicourses. Participants interested in attending any of the Minicourses should complete the Minicourse Preregistration Form located at the back of this issue **and**

send it directly to the MAA Office at the address given on the form so as arrive prior to the June 14 deadline. DO NOT SEND THIS FORM TO PROVIDENCE.

Please note that prepayment is now required. Payment can be made by check payable to MAA (Canadian checks must be marked "in U.S. funds") or Visa or MasterCard credit cards.

The Minicourses are open only to persons who have registered for the Joint Mathematics Meetings and paid the Joint Meetings registration fee.

If the only reason for registering for the Joint Meetings is to gain admission to a Minicourse, this should be indicated by checking the appropriate box on the Minicourse Preregistration Form. Then, if the Minicourse is fully subscribed, full refund can be made of the Joint Mathematics Meetings preregistration fee(s). Otherwise, the Joint Meetings preregistration will be processed, and then be subject to the 50 percent refund rule.

The registration fee for Minicourses #1, #2, and #3 is $25 each. The registration fee for Minicourses #4 and #5 is $35 each. This fee entitles the registrant to attend all sessions of the Minicourse for which he/she has registered. Participants are limited to two Minicourses each. It is advised that alternate choices be given in the event the first and/or second choice Minicourse(s) are full.

Contributed Papers

Papers are being accepted on four topics in collegiate mathematics for presentation in contributed paper sessions at the MAA Summer Meeting in Laramie. These sessions will be held on Monday morning and afternoon, and Tuesday and Wednesday mornings. The topics are:

- The role of the history of mathematics in the undergraduate curriculum (Duane D. Blumberg, University of Southwestern Louisiana)
- What's happening in college geometry courses? What should? (Lester H. Lange, San Jose State University)
- Experience with innovation in solving the discrete/continuous mathematics dilemma (Michael G. Murphy and Nancy T. Rich, University of Houston–Downtown)
- What's new in teaching statistics? (Ann E. Watkins, Los Angeles Pierce College)

Presentations are normally limited to ten minutes, although selected contributors may be given up to twenty minutes.

Individuals wishing to submit papers for any of these sessions in Laramie should send the following information to the MAA Washington office (1529 Eighteenth Street, NW, Washington, DC 20036) before May 28.

1. Title
2. Intended session
3. A one-paragraph abstract (for distribution at the meeting)
4. A one-page outline of the presentation
5. A list of special equipment required for the presentation (e.g., slide or film projector).

Late papers will not be accepted.

This information will be sent to session leaders who will arrange for refereeing. Selection of papers will be announced by June 15.

Other MAA Sessions

The MAA Film Program will take place on Monday, August 12 at 7:00 p.m.

Business Meeting

The Business Meeting of the MAA will take place at 4:35 p.m. on Tuesday, August 13 at which the 1985 Carl B. Allendoerfer, Lester R. Ford, and George Pólya Awards for expository writing will be presented. Awards of Certificates for Meritorious Service will be announced. This meeting is open to all members of the Association.

Board of Governors

The MAA Board of Governors' will meet at 9:00 a.m. on Sunday, August 11. This meeting is open to all members of the Association.

Section Officers

There will be a Section Officers' Meeting at 3:30 p.m. on Monday, August 12.

Banquet for 25-year Members

The MAA is planning its tenth annual banquet for individuals who have been members of the Association for twenty-five years or more. The banquet will take place at 6:15 p.m. on Wednesday evening, August 14. Dinner will be served at 7:00 p.m. The menu includes fresh fruit cup, Western cut of prime rib of beef, salad, vegetable, potato, rolls, dessert, coffee, tea, Sanka, iced tea. Dinner will be preceded by a cash bar reception.

Please note that all tickets for this banquet must be purchased through preregistration, since a guarantee must be given to the caterer. Tickets (which include gratuities) are $17.25 each. For those who are residing in the residence halls and are subject to the three-meal plan, the price of the banquet ticket is an additional $12.75 since a credit of $4.50 will be allowed. Interested participants should complete the appropriate section of the preregistration form. In the event of cancellations, a full refund of the amount paid for the ticket will be refunded if notification is received in Providence prior to July 25. After that date, only a 50 percent refund will be given.

89th Summer Meeting of the AMS
August 12–15, 1985

The **American Mathematical Society** (AMS) program will feature a series of four Colloquium Lectures presented by Karen K. Uhlenbeck. There will be eight one-hour invited addresses given by: Stuart S. Antman, Richard E. Block, Robert L. Bryant, David B. MacQueen, Dennis W. Stanton, Ronald J. Stern, Jerrold B. Tunnell, Lai Sang Young. The program also includes special sessions on *Special functions and combinatorics, Dynamical systems and ergodic theory, Commutative algebra and algebraic geometry, The geometry of configurations, Approximation theory and applications, Mechanics and bifurcation theory, Analysis of one complex variable,*

The AMS will also present a two day short course on *Actuarial Mathematics* on Saturday and Sunday, August 10 and 11. The program is being coordinated by Cecil J. Nesbitt, James C. Hickman, and Elias Shiu.

Joint AMS-MAA Sessions

By invitation of the AMS-MAA Joint Program Committee (Jeanne L. Agnew, George E. Andrews, Paul F. Baum, and William P. Ziemer), the following speakers will address the joint meeting of the AMS and MAA on the history and development of mathematics. The names of some of the speakers, their affiliations, and some of their titles are:

Richard A. Askey, University of Wisconsin, Madison, *The Bieberbach conjecture, now de Branges's theorem*;

Saunders Mac Lane, University of Chicago.

ACTIVITIES OF OTHER ORGANIZATIONS

Association for Women in Mathematics (AWM). The AWM will sponsor a panel discussion on Tuesday, August 13 at 8:30 a.m. The AWM Membership Meeting will follow at 9:30 a.m. The AWM Open Dessert Party will follow the picnic on Tuesday evening, August 13.

Pi Mu Epsilon (ΠΜΕ) will hold its annual meeting on Tuesday and Wednesday, August 13 and 14. The J. Sutherland Frame Lecture will take place at 8:30 p.m., on Wednesday, August 14. There will also be sessions for contributed papers on Tuesday afternoon and Wednesday morning.

OTHER EVENTS OF INTEREST

National Meeting of Department Heads

The Joint Policy Board for Mathematics (JPBM) has created a new committee, the Committee for Mathematics Department Heads. This committee is organizing a National Meeting of Department Heads on Monday, August 12, at 7:00 p.m. There will be two one-hour sessions. The first is titled *Preliminary report from the AMS-MAA-SIAM Joint Committee on the Status of the Profession.* The second one-hour session is titled *On management and leadership in the mathematics department.*

Book Sales

Books published by the AMS and MAA will be sold for cash prices somewhat below the usual prices when these same books are sold by mail. **These discounts will be available only to registered participants wearing the official meeting badge.** Visa and MasterCard credit cards will be accepted for book sale purchases at the meeting. The book sales will be open the same days and hours as the exhibits.

Exhibits

The book and educational media exhibits will be open from 1:00 to 5:00 p.m. on Monday, August 12 and from 8:30 a.m. to 4:30 p.m. on Tuesday and Wednesday, August 13 and 14. All participants are encouraged to visit the exhibits during the meeting.

MATHSCI

MathSci (formerly MATHFILE) will be demonstrated in the exhibit area during regular exhibit hours.

MathSci now contains three new components in addition to *Mathematical Reviews*: *Current Mathematical Publications* (CMP), *Current Index to Statistics* (CIS), and the *Tukey Index to Statistics and Probability*. The MR component of MathSci has also been increased with the addition of 200,000 author and title entries from MR 1959-72, bringing the size of MathSci to approximately 700,000 references.

CMP provides information on new articles and books within two months of their publication. The *Current Index to Statistics*, published jointly by the American Statistical Association and the Institute of Mathematical Statistics, brings to MathSci works which were not reviewed in MR. The *Tukey Index* covers the statistics literature from 1902 to 1968.

MathSci now makes it possible to search simultaneously four printed publications: MR (back to 1959), the current issues of CMP, CIS (back to 1975) and the *Tukey Index* (1902-1968).

Summer List of Applicants

At the direction of the AMS-MAA-SIAM Committee on Employment Opportunities, which is charged with operation of the Employment Register and with the publication of *Employment Information in the Mathematical Sciences*, the Society will publish a Summer List of mathematical scientists seeking employment for distribution at the Laramie meeting.

Copies of the 1985 summer list of applicants will be available at the Transparencies section of the registration desk for $2. Following the meeting, they may be purchased from the AMS office in Providence for $3. This list should prove useful to employers who have last-minute openings in the latter part of the summer or in the fall.

The deadline for receipt of applicant forms to appear in this summer list is June 14. The applicant preregistration résumé and instructions on its completion can be found in this issue.

Instead of an Employment Register at the Summer Meeting in Laramie, there will be an opportunity for posting of both applicant résumé forms and employers' announcements of open positions in or near the main meeting registration area. There will be no special room set aside for interviews. No provisions will be made by the Society for interviews: arrangements will be the responsibility of each employer and applicant. Messages may be left in the message box located in the registration area.

Special applicant and employer forms will be available at the Transparencies section of the registration desk both for applicants to post résumés and for employers to post forms announcing positions.

Applicants who submit an applicant form, but do not plan to attend the meeting, will appear on the printed list only. There is no provision made for posting résumés for participants who do not attend the meeting. No printed lists of employers or applicants who register at the meeting will be available after the meeting.

Accommodations

University Housing

Participants desiring confirmed reservations for on-campus housing **must preregister** and send payment in full for housing to the Mathematics Meetings Housing Bureau **prior to the June 14, 1985 deadline.** Participants in the Joint Mathematics Meetings may occupy residence hall rooms at the University of Wyoming during the period August 9 to August 16 only. **All must check out by**

August 16. A limited number of rooms on campus will be available for those participants who do not preregister but plan on attending the Laramie meeting and registering on site. All rooms on campus are offered only through a **Room/Board Package that provides three meals**.

Participants requesting housing on the University of Wyoming campus during the meetings will be assigned to the Washakie Complex residence halls. (Please refer to the section below titled Room and Board Rates.)

Families with children will be allowed to stay in the dormitories. Sleeping bags for children of any age will not be permitted; however, parents can bring portacribs for infants and small children. All children (other than those in portacribs) must occupy a bed in a room with a parent and pay the same rate as an adult. (See section on **Motel Accommodations** below for alternate housing for families.)

Dormitories at the University of Wyoming are not air-conditioned and windows do not have screens. There are elevators in each of the residence halls. Sleeping rooms are good sized, very well maintained, and contain two single beds, desks, chairs, closets (with a limited number of hangers), and overhead lights. There are no reading lamps; however, a few lamps are available on request at the check-in desk. Rooms will be prepared for occupancy in advance. In addition to bed linen, pillow and blanket, participants will receive one wash cloth, towel, hand towel, ashtray, soap and drinking glass. These may be replaced on request at the check-in desk. There is no daily maid service in the sleeping rooms.

There are two bathrooms with showers on each floor; one for each gender. Walls separate shower stalls and curtains screen the interiors. Hooks are placed on the outside of stall dividers where robes may be hung. A changing area is located several feet from the showers.

No pets are allowed in the residence halls. Alcoholic beverages are permitted provided the 21 year age limit is observed. There will be no telephone service in any of the university accommodations; however, there are pay telephones and campus phones in the public areas. Participants will be held responsible for any room damage incurred.

Smoking is permitted in dormitory rooms; however, there are areas where it is restricted. There are fire code approved doors in the residence halls which are unlocked until 2:00 a.m. The university is tied into the city alarm system in the event of fire.

Check-In Locations and Times

A check-in desk will be maintained in the lobby of each residence hall assigned for our use in the Washakie Center which is located on 15th Street and Grand Avenue. These desks will be staffed from 7:00 a.m. to 2:00 a.m. daily. The closest parking lot to Washakie Center is located across from the residence halls on 15th Street; another is adjacent to the Wyoming Union.

At the time of check-in, participants will be required to fill out a card for university records which will enable them to receive a room key. Spouses desiring a room key must follow this procedure also. **Please note that, although there is no deposit required for keys, a penalty of $20 will be imposed for each key lost or not returned.** It is the responsibility of the Mathematics Meetings Housing Bureau to collect this penalty. Therefore, it is requested that proper caution be exercised to avoid this charge. At checkout, all keys must be returned to the main desk in the lobby. Should the clerk not be present, please ensure that your name is left with the key.

A computerized meal card will be issued to each person who has paid the required room and board fee(s). This card will entitle holders to breakfast, lunch, and dinner each day in the Washakie Cafeteria. Meals start with breakfast on the day following receipt of meal card.

Room and Board Rates

The following rates apply for residence hall accommodations at the University of Wyoming. Please note that there is no room or food tax applicable to these rates.

Rates for adults and children (other than those occupying a portacrib); including three meals, are as follows:

	Singles	Doubles (two persons)
1 day	$ 25	$ 40
2 days	$ 50	$ 80
3 days	$ 75	$120
4 days	$ 90	$145
5 days	$104	$171
6 days	$117	$195
7 days	$130	$219

Food Services

All meals for those participants staying in the residence halls will be served in Washakie Cafeteria in Washakie Center. Dining hours are:

Breakfast	6:45 a.m. to 8:30 a.m.
Lunch	11:30 a.m. to 1:00 p.m.
Dinner	5:00 p.m. to 6:30 p.m.

Meals in the cafeteria are generous and well prepared. A typical breakfast would be fruit juices, fresh fruit, cold or hot cereals, eggs, sweet rolls, and assorted beverages. Lunch would be soup, a casserole, grilled sandwiches, salad bar with assorted dressings, desserts, fresh fruit and assorted beverages. Three entrees are offered for dinner together with vegetable, salad bar, fresh fruit, pies or cake, assorted rolls and beverages.

It will be possible for a limited number of participants not residing on campus to purchase a three-meal plan for $12.25 per day, if they wish. (This rate includes 3 percent tax.) These tickets may be purchased at the **Housing Desk at the Joint Meetings Registration Desk** in Washakie Center. In addition, tickets for individual meals in Washakie Cafeteria will be available for cash purchase at the Washakie Center Control Desk.

For those participants who wish to get their meals off-campus, please be advised that there are only a few restaurants within walking distance. Among these are a pizza parlor and a fast food place featuring hot dogs.

Motel Accommodations

Since most of the motels in Laramie are not within walking distance of the campus, it is recommended that participants planning to stay in a motel plan to provide their own transportation. There are fast food as well as other type restaurants in the motel areas.

The following is a partial list of motels and their approximate distance from the University of Wyoming

campus. A 3 percent tax applies to room rates. Rates quoted are firm.

WYO Motel–5 blocks
1720 Grand Avenue
Laramie, Wyoming 82070
Telephone: 307-742-6633

Single	$22.50–1 bed
Double	$25.20–1 bed
Double	$27.70–2 beds
Triple	$31.50–2 beds

Children 12 and under are free
Airconditioned, outdoor pool. AE, Visa and MC accepted

Circle S–12 blocks
2440 Grand Avenue
Laramie, Wyoming 82070
Telephone: 307-745-4811

Single	$23.50–1 bed
Double	$28–1 bed
Double	$32–2 beds
Triple	$36–2 beds

Children 12 and under are free
Airconditioned, outdoor pool. All major credit cards accepted.

TraveLodge–6 blocks
262 North Third Street
Laramie, Wyoming 82070
Telephone: 307-745-4853 or 800-255-3050

Single	$32–1 bed
Double	$37–1 bed
Double	$48–2 beds

Children 17 and under are free
Airconditioned, outdoor pool. AE, Visa, MC and Carte Blanche accepted.

Holiday Inn–2 miles
South Third Street
Laramie, Wyoming 82070
Telephone: 307-742-6611

Children 16 and under are free

Single	$38–(Double bed)
Double	$44–(Double bed)
Single	$42–(King bed)
Double	$46–(King bed)

Airconditioned, outdoor pool, restaurant, coffee shop, lounge. AE, Visa, MC, and Diner's Club accepted

Ramada–2 miles
421 Boswell
Laramie, Wyoming 82070
Telephone: 307-742-3721

Single	$36–1 bed
Double	$38–1 or 2 beds

Children 16 and under are free
Airconditioned, outdoor pool, coffee shop, dining room. AE, Visa, and MC accepted.

Registration Desk

Registration at the Meetings

Meeting preregistration and registration fees only partially cover expenses of holding meetings. All mathematicians who wish to attend sessions are expected to register, and should be prepared to show their meeting badge, if so requested. **Badges are required to obtain discounts at the** AMS **and** MAA **Book Sales, to cash a check with the meeting casher, and to attend sessions scheduled in Room 127 in the Arts and Sciences Building. (If a preregistrant should arrive too late in the day to pick up his/her badge, he/she may show the acknowledgment received from the Mathematics Meetings Housing Bureau as proof of registration.)** The fees for Joint Meetings registration at the meeting (listed below) are 30 percent more than the preregistration fees.

Joint Mathematics Meetings

Member of AMS, MAA, IIME	$ 72
Emeritus Member of AMS, MAA	$ 18
Nonmember	$109
Student/Unemployed	$ 18

AMS Short Course

Student/Unemployed	$ 10
All Other Participants	$ 30

MAA Minicourses
(if openings available)

Minicourses #1, #2, and #3	$ 25 each
Minicourses #4 and #5	$ 35 each

U.S. Treasury regulation §1.162-5 allows an income tax deduction for education expenses (registration fees, cost of travel, meals, and lodging) incurred to (i) maintain or improve skills in one's employment or other trade or business or (ii) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status, or rate of compensation. This is true even for education that leads to a degree.

Registration fees may be paid at the meetings in cash, by personal or traveler's checks, or by Visa or MasterCard credit card. Canadian checks must be marked for payment in U.S. funds.

There is no extra charge for members of the families of registered participants, except that all professional mathematicians who wish to attend sessions must register independently.

All **full-time** students currently working toward a degree or diploma qualify for the student registration fees, regardless of income.

The unemployed status refers to any person currently unemployed, actively seeking employment, and who is not a student. It is not intended to include any person who has voluntarily resigned or retired from his or her latest position.

Persons who qualify for emeritus membership in either the Society or the Association may register at the emeritus member rate. The emeritus status refers to any person who has been a member of the AMS or MAA for twenty years or more, and is retired on account of age from his or her latest position.

Nonmembers who register at the meetings and pay the $109 nonmember registration fee are entitled to a discount of the difference between the member registration fee of $72 and the nonmember registration fee of $109 as a $37 credit against dues in either the AMS or MAA or both, provided they apply for membership before September 15, 1985.

Nonmember students who register at the meetings and pay the $18 registration fee are entitled to a discount of the difference between the student preregistration fee of $14 and the registration fee of $18 as a $4 credit against dues in either the AMS or MAA or both, provided they apply for membership before September 15, 1985.

Nonmembers and nonmember students who thus qualify may apply for membership at the meetings, or by mail afterward up to the deadline.

Registration Dates, Locations, and Times

AMS Short Course

Outside Room 103, Classroom Building

Saturday, August 10   9:00 a.m. to 2:30 p.m.

Joint Mathematics Meetings

[and MAA Minicourses (until filled)]

Wyoming Room, Washakie Center

Sunday, August 11   4:00 p.m. to 8:00 p.m.

Monday, August 12   8:00 a.m. to 4:30 p.m.

Tuesday, August 13,

and   8:30 a.m. to 4:30 p.m.

Wednesday, August 14

Assistance and Information Desk

Outside Room 127, Arts & Sciences Building

Thursday, August 15   8:30 a.m. to 1:00 p.m.

Please note that the Joint Mathematics Meetings registration desk **will not be open on Thursday, August 15**, and that the telephone message center will not be in operation that day. Other services provided during the meeting at the registration desk will also no longer be available (see section below on **Registration Desk Services**). There will, however, be a small desk set up outside Room 127 in the Arts & Sciences Building, where local information will be available and where a staff member will provide limited assistance to participants. No registration or cash transactions will be possible at this desk.

Registration Desk Services

AMS/MAA Information

Information on the publications and activities of both organizations may be obtained at this section of the registration desk.

Assistance, Comments and Complaints

A log for registering participants' comments or complaints about the meeting is kept at the Transparencies section of the registration desk. All participants are encouraged to use this method of helping to improve future meetings. Comments on all phases of the meeting are welcome. If a written reply is desired, participants should furnish their name and address.

Participants with problems of an immediate nature requiring action at the meeting should see the meetings director, who will try to assist them.

Audio-Visual Assistance

A member of the AMS/MAA staff will be available to advise or consult with speakers on their audio-visual requirements.

Rooms where special sessions and contributed paper sessions will be held will be equipped with an overhead projector, screen, and blackboard.

Information Table

The information table at Joint Meetings of the AMS and MAA is set up in the registration area for the dissemination of information of a nonmathematical nature of possible interest to the members. The administration of the information table is in the hands of the AMS-MAA Joint Meetings Committee, as are all arrangements for such joint meetings. The following rules and procedures apply.

1. Announcements submitted by participants should ordinarily be limited to a single sheet no more than $8 \frac{1}{2}" \times 14"$.

2. A copy of any announcement proposed for the table is to be sent to: H. Hope Daly, American Mathematical Society, Post Office Box 6248, Providence, Rhode Island 02940 to arrive at least one week before the first day of the scientific sessions.

3. The judgment on the suitability of an announcement for display rests with the Joint Meetings Committee. It will make its judgements on a case by case basis to establish precedents.

4. Announcements of events competing in time or place with the scheduled scientific program will not be accepted.

5. Copies of an accepted announcement for the table are to be provided by the proponent. Announcements are not to be distributed in any other way at the meeting (for example, not by posting or personal distribution of handbills).

6. It may be necessary to limit the number of events or the quantity of announcements distributed at a meeting.

7. At the close of registration, the table will be swept clean. A proponent who wishes the return of extra copies should remove them.

Presenters of ten- or twenty-minute papers are strongly urged to use the overhead projector rather than the blackboard for their presentation in order to obtain maximum visibility by all members of the audience of the material being presented.

Baggage and Coat Check

Provision will be made for participants checking out of the residence halls or motels early to leave baggage in the meeting registration area while it is open.

Check Cashing

The meeting cashier will cash personal or travelers' checks up to $50, upon presentation of the official meeting registration badge, provided there is enough cash on hand. Due to the increased use of credit cards, cash availability may be lower than at other meetings. It is strongly advised that participants bring travelers' checks which are honored by banks and most restaurants. Canadian checks must be marked for payment in U.S. funds.

Local Information

This section of the desk will be staffed by members of the Local Arrangements Committee and other volunteers from the Laramie mathematical community.

Lost and Found

See the meeting cashier during the meeting. After the meeting, all lost articles not claimed will be turned over to the Department of Mathematics.

Mail

All mail and telegrams for persons attending the meetings should be addressed to the participant, c/o Joint Mathematics Meetings, Department of Mathematics, University of Wyoming, Laramie, Wyoming 82071. Mail and telegrams so addressed may be picked up at the mailbox in the registration area during the hours the registration desk is open. U.S. mail not picked up will be forwarded after the meeting to the mailing address given on the participant's registration record.

Personal Messages

Participants wishing to exchange messages during the meeting should use the mailbox mentioned above. Message pads and pencils are provided. It is regretted that such messages left in the box cannot be forwarded to participants after the meeting is over.

Telephone Messages

A telephone message center will be located in the registration area to receive incoming calls for participants. The center will be open from August 11 through 14 only, during the hours that the Joint Mathematics Meetings registration desk is open. Messages will be taken and the name of any individual for whom a message has been received will be posted until the message has been picked up at the message center. The telephone number of the message center will be announced later.

Transparencies

Speakers wishing to prepare transparencies in advance of their talk will find the necessary materials and copying machines at this section of the registration desk. A member of the staff will assist and advise speakers on the best procedures and methods for preparation of their material. There is a modest charge for these materials. **Please note that this service will be not be available on Thursday, August 15.**

Visual Index

An alphabetical list of registered participants, including local addresses, arrival and departure dates, is maintained in the registration area.

MISCELLANEOUS INFORMATION

Athletic Facilities

Half-Acre Gymnasium has lockers, weight-room, basketball courts, racquetball courts, and an indoor track. These will be open from 8:00 a.m. to 6:00 p.m. The university maintains quite a few tennis courts east of campus off of Willett Drive. Also east of campus are playing fields and a public golf course. Hours and access rules will be available before the meetings begin.

Participants and their families can use any of the athletic facilities provided they have a guest pass. This pass costs $2 per day or $10 per week, per person, including children. The pool will be open for public swimming from noon to 1:00 p.m. and from 4:00 p.m. to 6:00 p.m.

Book Store

The University of Wyoming Bookstore is located in the Wyoming Union. Business hours are Monday through Friday from 7:30 a.m. to 4:30 p.m. Other bookstores and novelty shops are located close to campus and downtown.

Camping and RV Facilities

K.O.A., Northwest of Laramie at Curtis and I-80 exit. 742-6553. Full hookups and other services available.

N & H Trailer Ranch, 1360 North Third Street, 742-3158.

Curt Gowdy State Park, approximately 25 miles east of Laramie off Happy Jack Road (take I-80 east from Laramie). There are several primitive campgrounds here, available for $2 per night on a first-come basis. For more information call the Wyoming Recreation Commission in Cheyenne. 307-777-7550.

U.S. Forest Camping Facilities, 7–8 miles east of Laramie off Happy Jack Road, Tie City, Pole Creek and Yellow Pines. All have drinking water and spaces for tents or small trailers. 71 spaces available. No reservations needed. There are also many campgrounds in the Medicine Bow National Forest roughly 30–40 miles west of Laramie. Maps and other information are available from the U.S. Forest Service, Skyline Drive, Laramie, WY 82070, 307-745-8971.

Child Care

There are several state-licensed day nurseries and child care facilities. Please make your own reservations by calling any of the following centers:

ABC, 620 E. Fremont, 742-7272

Basic Beginnings, 1474 North 19th, 745-5755

Creative Childcare, 710 Garfield, 742-7502

Kids Connection, 506 South 21st, 742-0127

Sonshine House, 416 Hancock, 745-7985

Crib Rental

Portacribs can usually be rented directly from Taylor Rental Center, 1015 South Second, 745-3889. Some motels have rollaways for customer use upon request. Please note that no cots or cribs other than portacribs are allowed in the university residence halls.

Handicapped

Most (not all) university facilities are accessible to the handicapped. People with special requirements for campus housing should make these clear when submitting preregistration forms. People with special questions regarding handicapped access should contact Myron B. Allen, Mathematics Department, University of Wyoming, at 307-766-4221.

Libraries

Science Library (including mathematics): Biological Sciences Building

University Library: Coe Library

Geology Library: Knight Geology Building

Albany County Public Library: 310 S. 8th

Local Information

Laramie, with a population of about 25,000, is the third largest city (after Casper and Cheyenne) in Wyoming. Laramie sits at an elevation of 7,200 feet on a high, rolling prairie separating two mountain ranges. About 8–10 miles east of town are the Sherman Mountains of the Laramie

Range, reaching 9,000 feet in elevation, and about 35 miles to the west rises the Snowy Range of the Medicine Bow Mountains, reaching 12,000 feet in elevation. The city began in 1868 when the first transcontinental railroad crossed the Laramie River, which afforded access to the railroad ties from forests in the Medicine Bow Mountains.

Because of its intermountain setting, Laramie is close to a wide range of outdoor activities. Within a 50-mile radius there is a remarkable variety of scenery: high, open plains; rocky, sage-covered foothills; densely forested mountains; alpine lakes, and many unusual geologic formations. The Happy Jack Road exit off I-80, about 10 miles east of Laramie, gives access to several hiking trails. Following Happy Jack Road about 12 miles leads to Curt Gowdy State Park, offering camping, hiking, and excellent fishing in Crystal and Granite Reservoirs. Further east along I-80, about 20 miles from Laramie, is the Vedawoo exit, giving access to Vedawoo Glen, a picnic area amidst huge, bizarre sub-rounded granite formations that challenge expert rock climbers. Across I-80 from Vedawoo is the Ames Monument, a stone pyramid commemorating the ghost town of Sherman, the highest point on the original transcontinental railroad.

West of Laramie, about 30 miles along Rte. 130, lies the small town of Centennial. Once a center for gold and platinum mining, Centennial today is largely a stopping place for hikers, fishermen, hunters, and skiers visiting the Medicine Bow Mountains. The hamlet boasts a small museum, several taverns, and a good restaurant (the Old Corral). Closer to Laramie along Rte. 130, near where it crosses the Little Laramie River, is the Vee-Bar Guest Ranch, offering horseback riding, ranch-style meals and accommodations. West of Centennial, Rte. 130 climbs into the Medicine Bow Mountains, giving access to several National Forest Service campgrounds, excellent hiking and fishing, and picnic grounds nestled among high mountain lakes beneath the sheer cliffs of the Snowy Range. Rte. 130 eventually leads to Saratoga, with its thermal springs.

North of Laramie, Route 287 leads about 40 miles to Como Bluffs, site of a large fossil bed that has yielded thousands of dinosaur bones. About 10 miles further along Rte. 287 is the town of Medicine Bow, setting for Owen Wister's novel, *The Virginian*. Today Medicine Bow is home of the Virginian Hotel, with its remarkable period furniture, and large wind turbines used to generate electricity. About 18 miles north of Laramie on Rte. 287 is the junction with Rte. 34, a cutoff leading northeast through Morton Pass and the rugged Sybille Canyon. About 40 miles from town is Wyoming's Game and Fish Experimental Station, where visitors can see elk, deer, moose, and bighorn sheep. Sharp navigators can find their way to Johnson Reservoir, north of Rte. 34 via dirt road, where there are campsites, fishing, and picnicking among the Laramie Hills.

To the south, about two-and-one-half hours' drive from Laramie, is Rocky Mountain National Park, some of whose peaks are visible from Laramie on clear days.

Within Laramie's city limits there are also many attractions. The block of Ivinson Avenue between First and Second Streets is a refurbished district with several specialty shops, a couple of restaurants, and a saloon. Further east on Ivinson Avenue is the Laramie Plains Museum, located in the home of one of Laramie's more prosperous early citizens. Upstairs in the museum is the Overland Trail Art Gallery. The university campus itself offers Geology, Anthropology, and Art Museums, along with the American Heritage Center, The Rocky Mountain Herbarium, containing over 300,000 plant specimens, and a planetarium.

Laramie has a public golf course, the Red Jacoby course on Willett at the eastern edge of town. There are 23 public tennis courts maintained by the university. There are several public parks, including Washington Park, three blocks south of campus off 15th; La Bonte Park, five blocks north of campus off of 9th; and Undine Park, 8 blocks southwest of campus off of 7th.

For further information about Laramie and environs, write to the Laramie Chamber of Commerce, 312 West Grand Avenue, Laramie, Wyoming 82070, or call 307-745-7339. For general information about Wyoming, write the Wyoming Travel Commission, I-25 at College Drive, Cheyenne, Wyoming 82002-0660, or call 307-777-7777. Further information on Laramie and surrounding areas will be available at the Local Information Section of the meeting registration desk.

Medical Services

Ivinson Memorial Hospital is located east of campus at 255 N. 30th; its telephone number is 742-2141.

Parking

The parking lot closest to Washakie Center is on 15th Street opposite the residence halls. There is additional parking adjacent to the Wyoming Union. Parking in these lots is free. No stickers are required.

Social Event

Plans are being made for a picnic on Tuesday evening, August 13. Further information will be available later.

Travel

In August, Laramie is on Mountain Daylight Saving Time.

The local airport, Brees Field, is four miles west of the campus. At the moment, only Centennial Airlines offers jet service connecting Laramie to Denver's Stapleton International Airport. (It is hoped that by the time of the meeting that another carrier will pick up the service recently eliminated when Frontier Airlines dropped their regularly scheduled flights.) There are, however, a very limited number of seats available on Centennial, and participants are urged to consider other means of transportation from Stapleton to Laramie, as outlined below.

If, however, one is fortunate enough to obtain a seat on Centennial, there is taxi service available at Brees Field. Also, Avis and National maintain car rental desks at the airport in Laramie.

There are several types of ground transportation available at Stapleton International Airport which will take one to Laramie, approximately 120 miles to the northwest. Participants should consider sharing a rental car. This is probably the most advantageous form of transportation since it will be available to the renters throughout the entire meeting period. (It is worth mentioning that many scenic attractions in the Laramie

area require travel by car.) Avis, National, and Dollar maintain desks at Stapleton. Current rates being quoted for compact cars range from $139 to $235/week. However, Alamo Rent A Car is making a special offer to participants at the Laramie meeting where they will provide an economy-sized car for $21/day or $89/week. This includes unlimited mileage; there is an additional charge of $7.95 for insurance. Since Alamo does not have an office in Laramie, you must return the car to the Denver office. There is a courtesy van which will take one to and from Alamo's Denver office and Stapleton. In order to take advantage of these special rates, participants must request Group Number 14651, and Plan Code G9 when making reservations. Reservations may be made by calling 800-732-3232, toll-free.

The shortest and most scenic route is I-25 north to Fort Collins, then Colorado 24 west to Route 287, which runs north alongside the Rockies into Laramie. Driving time is approximately two-and-one-half hours.

One can also take the Front Range Airporter (pickup in baggage area at airport) from Stapleton to Fort Collins, and connect with the Laramie Cab Corporation's limousine service from there to Laramie. Passengers can request to be dropped off at their accommodations, whether on campus or in a nearby motel. The total cost is $36 one way, and reservations **MUST** be made in advance. Reservations for the entire trip can be made by calling Laramie Cab Corporation at 307-745-4840. The trip takes about three hours, and service is available from Stapleton at 9:30 a.m., 3:30 p.m., and 7:30 p.m. daily. Return service from Laramie is at 6:00 a.m., 10:00 a.m., and 4:00 p.m. Laramie Cab will pick participants up at their accommodations early enough to be on the road to Fort Collins at 6:00 a.m. Again, reservations are a must.

Greyhound offers four buses daily. The trip takes about two-and-one-half hours, and the present fare is $24 one way or $45.60 round trip.

Weather

In August, Laramie's daytime highs average around 80°F; the average nighttime low is around 48°F. Laramie's altitude (7,200 feet above sea level) makes hot weather fairly rare. Humidity is generally quite low; however, afternoon thundershowers are common throughout the summer.

Summer List of Applicants

Instructions for Applicant Form on facing page

The form. Forms submitted by job applicants who attend the August meetings in Laramie will be posted. The first impression a prospective employer has of an applicant may be based on the appearance of this form.

The forms should be carefully typed using a fresh black ribbon. The best results are obtained with a carbon-coated polyethylene film ribbon, but satisfactory results may be obtained using a ribbon made of nylon or other woven fabric if suitable care is exercised. It is important that the keys be clean and make a sharp, clear impression. Use a correcting typewriter or correction tape or fluid if necessary. Submit the original typed version only. Hand lettered forms are acceptable if prepared carefully.

The summary strip. Information provided here will be used to prepare a printed list of applicants for distribution to employers. Please supply all information requested, and confine your characters to the boxes provided. Use the codes below. Circled letters identify corresponding items on the form and the strip.

Address forms to the Mathematics Meetings Housing Bureau, P. O. Box 6887, Providence, RI 02940. The deadline for receipt is June 14, 1985.

Ⓐ Specialties

AL = Algebra	AN = Analysis
BI = Biomathematics	BS = Biostatistics
CB = Combinatorics	CM = Communication
CN = Control	CS = Computer Science
CT = Circuits	DE = Differential Equations
EC = Economics	ED = Mathematical Education
FA = Functional Analysis	FI = Financial Mathematics
FL = Fluid Mechanics	GE = Geometry
HM = History of Math	LO = Logic
MB = Mathematical Biology	ME = Mechanics
MO = Modelling	MP = Mathematical Physics
MS = Management Science	NA = Numerical Analysis
NT = Number Theory	OR = Operations Research
PR = Probability	SA = Systems Analysis
ST = Statistics	TO = Topology

Ⓑ Career Objectives

AR = Academic Research	AT = Academic Teaching
NR = Nonacademic R&D	NC = Nonacad. Consulting
NS = Nonacademic Supervision	

Ⓗ Ⓘ Duties

T = Teaching	U = Undergraduate
G = Graduate	R = Research
C = Consulting	A = Administration
S = Supervision	IND = Industry
GOV = Government	DP = Data Processing

Location

E = East	S = South
C = Central	M = Mountain
W = West O = Outside U.S.	I = Indifferent

Ⓛ U.S. Citizenship Status

C = U.S. Citizen	P = Permanent Resident
T = Temporarily in U.S.	N = Non-U.S. Citizen

Summer List of Applicants

Mathematical Sciences Employment Register

August 1985   Laramie, Wyoming

(Please see instructions on facing page)

APPLICANT: Name_____

Mailing address (include zip code) _____

_____

(A) Specialties_____

(B) Career objectives and accomplishments

ACADEMIC: ☐ Research, ☐ Teaching

NON-ACADEMIC: ☐ Research and Development, ☐ Consulting, ☐ Supervision

Near-term career goals_____

Significant achievements or projects, including role_____

Honors and offices_____

Other (e.g., paper to be presented at THIS meeting)_____

Selected titles of papers, reports, books, patents_____

(C) Degree   Year   Institution

_____ _____ _____ (D) No. of abstracts, internal reports_____

_____ _____ _____ (E) No. of papers accepted_____

_____ _____ _____ (F) No. of books and patents_____

EMPLOYMENT HISTORY:

	Present	Previous	Previous
(G) Employer			
Position			
(H) Duties			
Years	_____to_____	_____to_____	_____to_____

DESIRED POSITION:_____

(I) Duties____

(J) Available mo.____ /yr.____ Location_____ Salary_____

(K) References   (Name and Institution)

_____

_____

(L) Citizenship _____

(M) **I plan to attend the Summer Meeting**   yes ☐   no ☐

Preregistration and Housing

Preregistration. Preregistration for these meetings **must be completed by June 14, 1985.** All those wishing to preregister must complete the form which appears in this issue and submit it along with the appropriate preregistration fee(s) to the Mathematics Meetings Housing Bureau in Providence by June 14.

Please provide your nickname if you wish this information to be printed on your badge.

Preregistration for the meeting and full payment of room/board charges is a requirement in order to obtain confirmed residence hall accommodations at Laramie through the Mathematics Meetings Housing Bureau.

Checks for preregistration fee(s), housing payments and fees for social events should be made payable to the AMS. Canadian checks must be marked for payment "in U.S. funds". Those who preregister for the AMS Short Course and/or Joint Mathematics Meetings pay fees which are 30 percent lower than those who register at the meetings. The preregistration fees are as follows:

AMS Short Course

Student/Unemployed	$ 5
All Others	$25

Joint Mathematics Meetings

Member of AMS, MAA, ΠME	$55
Emeritus Member of AMS, MAA	$14
Nonmember	$84
Student/Unemployed	$14

A $5 charge will be imposed for all invoices prepared when preregistration forms are submitted without accompanying check(s) for the preregistration fee(s) or are accompanied by an amount insufficient to cover the total payments due. Preregistration forms received well before the deadline of June 14 which are not accompanied by correct payment will be returned to the participant with a request for resubmission with full payment.

A 50 percent refund of the preregistration fee(s) will be made for all cancellations received in Providence no later than August 9, 1985. **No refunds will be granted for cancellations received after that date**, or to persons who do not attend the meetings.

The only exception to this rule is someone who preregisters for the Joint Mathematics Meetings only in order to attend an MAA Minicourse, and is too late to obtain a slot in the Minicourse. In this case, full refund will be made of the Joint Mathematics Meetings preregistration fee, **provided the preregistrant has checked the box** on the Minicourse Preregistration Form that this was his or her intent. Individuals who preregister for both the Joint Meetings and a Minicourse and who intend to attend the Joint Meetings, even if the Minicourse is not available, should, of course, **not** check the box on the Minicourse Preregistration Form. In this case, the Joint Meetings preregistration will be processed and will be subject to the 50 percent refund rule.

Full refunds will be made of MAA 25-Year Banquet tickets if notification of cancellation is received prior to July 25; after that date, a 50 percent refund will apply.

Housing. The use of the services offered by the Mathematics Meetings Housing Bureau requires preregistration for the meetings. Persons desiring confirmed residence hall accommodations should complete the preregistration/housing form, or a reasonable facsimile, and send it with payment in full to the Mathematics Meetings Housing Bureau, Post Office Box 6887, Providence, Rhode Island 02940-6887, **so that it will arrive no later than June 14, 1985.** (See Housing section of preregistration/housing form.)

Please read carefully the section on **University Housing** before completing the form. Forms sent to the wrong address and thus incurring delay in delivery to the Housing Bureau until after the deadline cannot be accepted. All residence halls reservations with **full prepayment** for room/board will be confirmed by the Housing Bureau. All reservation requests must be received in writing and be processed through the Housing Bureau in Providence. Please do not contact the university directly. Telephone requests will not be accepted.

Housing assignments are made on a first-come, first-served basis, so participants desiring specific types of accommodations are urged to get their housing requests in as early as possible. **Housing requests received after the deadline of June 14 most surely cannot be honored.**

Participants who are able to do so are urged to share a room whenever possible. This procedure can be economically beneficial. The housing form should be fully completed to ensure proper assignment of rooms. Participants planning to share accommodations should provide the name of the person with whom they plan to occupy a room. Each participant should, however, complete a separate preregistration/housing form. Parties planning to share rooms should send their forms together in the same envelope, if possible.

Changes/Cancellations

Please make all changes to or cancellations of residence hall reservations with the Housing Bureau in Providence **before July 25, 1985 in order to receive full refund of housing payment.** After that date, cancellations should be made with the Housing Bureau in Providence up until Friday, August 9, 1985, at which time a partial refund (amount paid minus one night's room/board) will be made and 50 percent of preregistration fee(s) will be allowed. No cancellations can be made between 5:00 p.m. on Friday, August 9, and 4:00 p.m. on Sunday, August 11, after which changes or cancellations may be called in to Mary Coccoli at the Telephone Message Center number in Laramie. Changes in reservations may be made at any time by notifying the Housing Bureau in Providence.

AMS Short Course   Joint Mathematics Meetings
August 10-11, 1985   August 12-15, 1985

MUST BE RECEIVED IN PROVIDENCE NO LATER THAN JUNE 14, 1985
Please complete this form and return it with your payment to
Mathematics Meetings Housing Bureau
P.O. Box 6887, Providence, Rhode Island 02940 - Telephone 401-272-9500, Ext. 239

DEADLINES: Preregistration: June 14, 1985 for preregistration fee(s)
             Residence Hall Room Payments: June 14, 1985
             Cancellations: Preregistration may be cancelled until August 9 by writing or calling the Mathematics Meetings Housing
             Bureau; see above. 50% of the preregistration fee(s) will be refunded if notification is received by this date. Confirmed
             residence hall reservations may be cancelled until July 25 and full payment will be refunded; however, after that date,
             only partial refunds will be allowed. Full refunds will be made of MAA 25-year Banquet tickets if notification is received
             prior to July 25; after that date, 50% refund applies.
             Changes: Changes in arrival and departure dates must be made with the Mathematics Meetings Housing Bureau by
             August 9. After that date, please call message center number at Laramie.

NOTE: All dues and meeting registration fees paid to AMS or MAA by professional mathematicians are tax deductible.

	REGISTRATION FEES	
	Preregistration (by mail prior to 6/14)	At Meeting
JOINT MATHEMATICS MEETINGS		
Member of AMS, MAA, IIME	$55	$72
* Student, Unemployed or Emeritus	$14	$18
Nonmember	$84	$109
AMS SHORT COURSE		
Member/Nonmember	$25	$30
* Student or Unemployed	$5	$10

* All full-time students currently working toward a degree or diploma qualify for the student registration fees, regardless of income.
The unemployed status refers to any person currently unemployed, actively seeking employment, and who is not a student. It is not
intended to include persons who have voluntarily resigned from their latest position. The emeritus status refers to any person who has
been a member of the AMS or MAA for twenty years or more and is retired on account of age from his or her latest position.
- -

PREREGISTRATION SECTION: Please check the function(s) for which you are preregistering:
Joint Meetings [   ]   AMS Short Course [   ]

1) _____Nickname for badge:_____
   (Please print)   Surname   First   Middle   (optional)

2) _____
   ADDRESS: Number and street   City   State   Zipcode

3) _____
   Address for confirmation of room reservation, if other than above

4) Employing institution_____ Emeritus member [   ]   Unemployed [   ]

5) I am a student at_____ 6) Name of spouse_____ 7) Number of children_____
                                                         (List only if accompanying to meeting)

8) Member of AMS [   ]   MAA [   ]   IIME [   ]   Nonmember [   ] (Member discount applies only to members of AMS, MAA, or
   IIME.) Member of other organizations: AWM [   ]   NAM [   ]

9) Joint Meetings fee $_____   10) AMS Short Course fee $_____

11) MAA 25-year Banquet ticket(s) _____@ $17.25_____(for those not on 3-meal plan)

12) MAA 25-year Banquet ticket(s) _____@ $12.75_____(for those on 3-meal plan)

13) FULL PAYMENT for residence hall accommodations enclosed $_____(Partial refund applies after July 25.)

14) TOTAL AMOUNT ENCLOSED FOR 9 through 13 $_____ (Make checks payable to AMS; Canadian checks must be marked
    "In U.S. Funds".) VISA or MasterCard credit cards may be submitted for payment.

    Credit card type: VISA [   ] or MasterCard [   ] Card number_____Expiration date_____

    _____
    Signature (name as it appears on credit card)

[   ] PLEASE CHECK HERE IF YOU WILL NOT REQUIRE A ROOM.

Please be sure to complete the section on next page if you will require housing.

For office use only:

Codes:	Options:	Dates:	Residence Hall:	Rm. Type
Special:			Amt. pd:	[ ]
			CC[ ] Check	

PREREGISTRATION AND HOUSING REQUEST FORM (continued)

(Please read sections on housing and room rates in meeting announcements.)

UNIVERSITY HOUSING SECTION: (Please complete Sections I through IV below.)

NOTE: Full prepayment for room and board is required as noted in Item 13 on the reverse. Please make checks payable to AMS. Canadian checks must be marked "In U.S. Funds". VISA and MasterCard credit cards will also be accepted.

I.   Please reserve the following residence hall accommodations and send confirmation to me at address below:

ADULTS AND CHILDREN (other than those occupying a portacrib)

Rates include breakfast, lunch, and dinner.

	Singles - one person	Doubles - two persons
One day	$ 25.00 _____	$ 40.00 _____
Two days	$ 50.00 _____	$ 80.00 _____
Three days	$ 75.00 _____	$120.00 _____
Four days	$ 90.00 _____	$145.00 _____
Five days	$104.00 _____	$171.00 _____
Six days	$117.00 _____	$195.00 _____
Seven days	$130.00 _____	$219.00 _____

II.   I will arrive on_____at_____a.m./p.m., and depart on_____at_____a.m./p.m.

I will share a double room with_____who will arrive on_____

at_____a.m./p.m., and depart on_____at_____a.m./p.m.

PLEASE LIST AGES OF ACCOMPANYING CHILDREN:_____

III. ADDRESS FOR CONFIRMATION OF ROOM RESERVATION:

_____

Telephone number:_____
                 (area code)

IV.   TRAVEL INFORMATION:

[   ] I plan to arrive by plane on_____scheduled to arrive at_____
                                    (airline flight and number)

airport on_____at_____a.m./p.m.
         (date)   (time)

[   ] I plan to drive to the meeting.

Note: This additional information is being requested in order to assist the university's housing office in planning for heavy arrival times.

MAA MINICOURSE PREREGISTRATION FORM, LARAMIE, WYOMING

August 12-15, 1985

MUST BE RECEIVED IN WASHINGTON, DC, NO LATER THAN JUNE 14, 1985

Please complete this form and return it with your payment to

Mathematical Association of America
1529 Eighteenth Street, NW, Washington, DC 20036
Telephone: 202-387-5200

DEADLINE: <u>Preregistration for Minicourse fee(s):</u> June 14, 1985

NOTE: All dues and meeting registration fees paid to AMS or MAA by professional mathematicians are tax deductible.

N.B.: [ ] I plan on preregistering for the Joint Meetings only in order to attend the MAA Minicourse(s) indicated below. It is my understanding that, should the course(s) of my choice be filled, full refund of the Joint Meetings preregistration fee will be made.

<u>MINICOURSE PREREGISTRATION</u>

1) _____
   (Please print)   Surname   First   Middle

2) _____
                    Mailing address for confirmation of Minicourse(s)

3) Employing institution_____

4) Please enroll me in the following Minicourse(s). Enclosed is my payment of $_____ (Make check payable to MAA. Canadian checks must be marked "In U.S. Funds".) Method of payment:

Check [ ]   VISA [ ]   MasterCard [ ]

Credit card number_____; expiration date_____

_____
Signature (name as it appears on the credit card)

First Choice	Alternate	Fee	Minicourses - Participants are limited to two Minicourses each.
[ ]	[ ]	$25	#1 - Geometry for college teachers (Branko Grünbaum, U of Washington)
[ ]	[ ]	$25	#2 - Applied mathematics via classroom experiments (Herbert R. Bailey, Rose-Hulman Institute of Technology)
[ ]	[ ]	$25	#3 - Teaching experiential applied mathematics, (TEAM) (James R. Choike, Oklahoma State U)
[ ]	[ ]	$35	#4 - Computing in undergraduate linear algebra (Eugene A. Herman, Grinnell College)
[ ]	[ ]	$35	#5 - Microcomputer software in mathematics instruction (Roy E. Myers, Pennsylvania State U, Kensington)
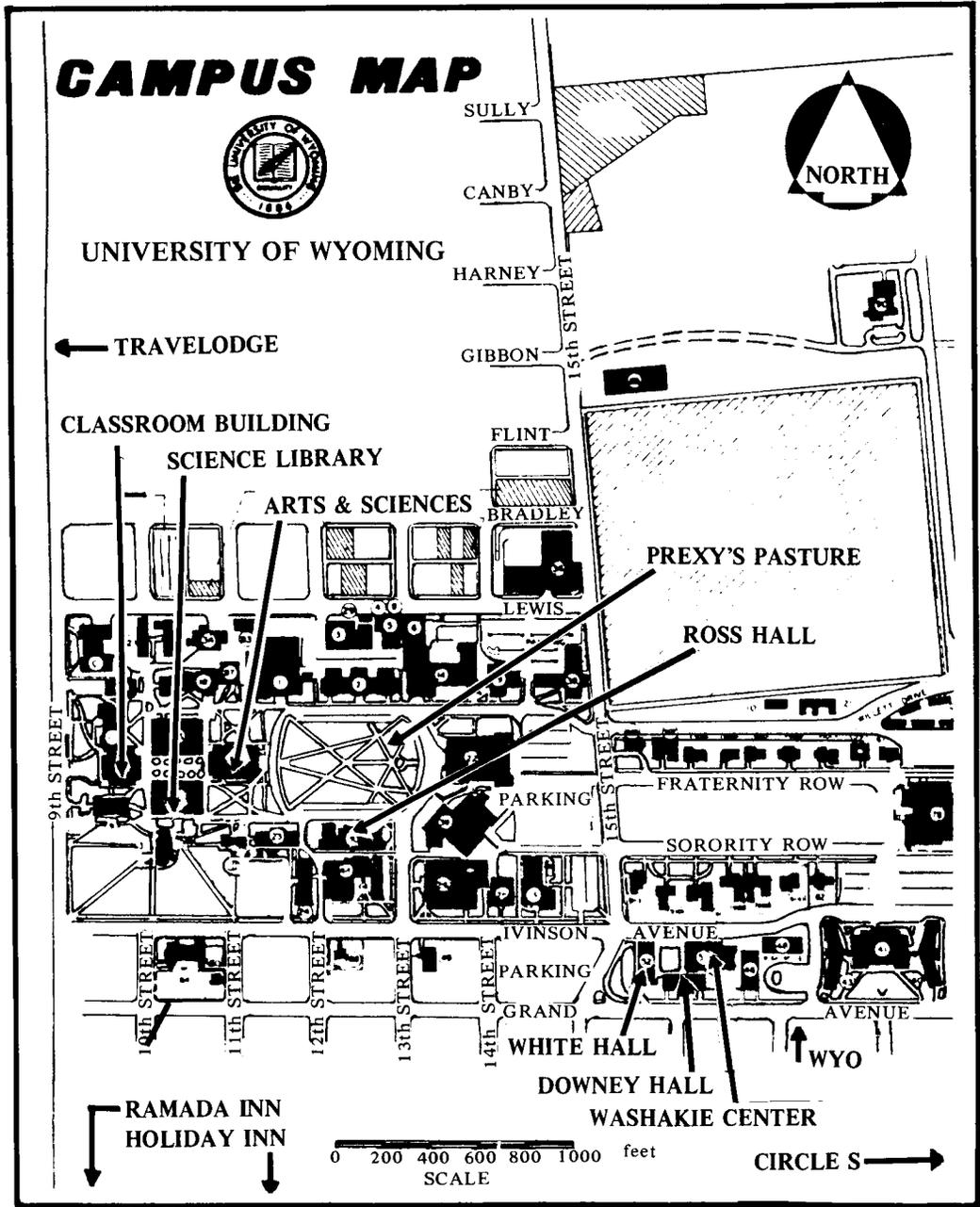
CAMPUS MAP

UNIVERSITY OF WYOMING

◄— TRAVELODGE

SULLY

CANBY

HARNEY

GIBBON

FLINT

NORTH

15th STREET

CLASSROOM BUILDING

SCIENCE LIBRARY

ARTS & SCIENCES

BRADLEY

PREXY'S PASTURE

ROSS HALL

LEWIS

9th STREET

PARKING

15th STREET

FRATERNITY ROW

SORORITY ROW

IVINSON AVENUE

PARKING

GRAND

10th STREET

11th STREET

12th STREET

13th STREET

14th STREET

WHITE HALL

DOWNEY HALL

WASHAKIE CENTER

AVENUE

WYO

RAMADA INN
HOLIDAY INN

0   200 400 600 800 1000   feet
SCALE

CIRCLE S ——►

Highlights *(continued from page 4)*

● For support of the second year of the Teaching Experiential Applied Mathematics (TEAM) project:

—$124,019 from the FIPSE (Fund for the Improvement of Postsecondary Education) of the Department of Education

● For support of the work of the Panel on Calculus Articulation of CUPM (Committee on the Undergraduate Program in Mathematics):

—$7000 from the Sloan Foundation.

Future Meeting Sites Approved

The Board approved the University of Wyoming, Laramie, August 12–15, for the 1985 Summer Meeting and Phoenix, Arizona, January 10–14, for the 1989 Annual Meeting. (The complete list of approved meeting sites and dates appears in the Calendar on page 8 of this issue.)

As previously announced, there will be no Summer Meeting in 1986 because the International Congress of Mathematicians is scheduled for Berkeley in August of that year. The Board, however, voted to meet in Berkeley at the time of the Congress so it can proceed with its regular business without undue disruption. The Board urges MAA members to consider attending the Congress, the first in the United States since 1950. Portions of the program of the Congress will be of special interest to many MAA members. *(Further information about the Congress will appear in forthcoming issues of FOCUS.)*

Changes in Election Procedures Discussed

The Board received a report from the ad hoc Committee to Review Election Procedures, and discussed at length the pros and cons of possible changes in the procedures for election of MAA officers, particularly the president. The Board instructed the Executive and Finance Committee to prepare a proposal which includes provisions for a contested run-off election for president. The Board will consider this proposal at its Summer Meeting.

MAA Adopts Statement on Retraining of Teachers

At its meeting in August 1984, the MAA Board of Governors approved a statement, prepared by the Committee on the Mathematical Education of Teachers, on retraining of elementary and high school teachers. Not entirely by coincidence, in light of the intense publicity given to the crisis in precollege science and mathematics education, the National Council of Teachers of Mathematics (NCTM) had only recently issued its own statement on this subject. Recognizing the compatibility of these two statements, the Boards of MAA and NCTM approved a joint mailing of the two statements to the State Superintendents of Instruction of the fifty states and the District of Columbia, and officials of the National Science Foundation and the Department of Education. MAA members who are interested in distributing the statement locally may request copies from the MAA Headquarters.

The MAA statement is published here in its entirety:

Students at all grade levels deserve to be taught by fully qualified teachers. Yet many students are currently being taught mathematics by teachers with insufficient preparation. To teach any subject successfully, teachers must not only know the subject well, but also like it to the point of enthusiasm. Because of the importance of mathematics to the futures of all students, the problem of inadequately prepared teachers is of great national importance. For this reason, the Mathematical Association of America has adopted the following principles regarding the preparation and retraining of mathematics teachers:

● Students at all levels should be taught mathematics by teachers who enjoy mathematics and whose training meets or exceeds professional standards. These standards are presented in two documents: *Recommendations on the Mathematical Preparation of Teachers* (1983), available from the Mathematical Association of America, 1529 Eighteenth Street, N.W., Washington, D.C. 20036; and *Guidelines for the Preparation of Teachers of Mathematics*, (1981) available from the National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091.

● Teachers who lack adequate preparation should be provided with sufficient inservice training to provide them with both competence and confidence. The mathematical maturity needed by teachers with little or no mathematical background can normally be achieved only after inservice programs involving several years of carefully designed sequential courses. Short courses and workshops designed to meet emergency shortages are at best temporary expedients; they can provide teachers with stimulation, perspective, and incentive for further training, but they alone do not provide adequate preparation for the teaching of mathematics.

● Institutions of higher education should work cooperatively with school districts and government agencies to address the mathematics teacher shortage. High quality training and retraining programs, consistent with the *Recommendations* and *Guidelines* cited above, must be established in all regions of the country. Funding for these programs must include appropriate financial incentives for teachers and teacher candidates.

● School districts, in concert with other agencies, should provide teachers at all grade levels with regular and substantial opportunities for continued growth. As professionals, teachers should work throughout their careers to keep abreast of the latest curricular, pedagogical, and technological advances.

Membership Tops 19,500

In August 1983 the MAA Board of Governors approved a vigorous campaign to increase the membership in the Association. New members join the MAA for a variety of reasons, but usually because they are invited. In order to grow, the Association must reach more prospective members more effectively, and this requires effort, careful planning, and good communication techniques.

In order to learn from experts, the Association entered into an agreement with a marketing consulting firm in Washington which has led many major organizations through successful membership campaigns. With the help of our consultants, we have been able to invite a much larger number of persons with advanced mathematical training to consider the advantages of MAA membership and, if they find the benefits attractive, to join.

The results of the first year of the campaign are encouraging. On January 1, 1985, the MAA had 19,606 individual members, an increase of almost 1,000 from the same date in 1984. The increase was the result of the election of over 2,600 new members in 1984. A hearty welcome to these new members!

All of our members, the new recruits, and the veterans, can help the MAA top 20,500 next year. **Every member invite a member!**

ASA Launches Quantitative Literacy Project

A new three-year project for teaching statistics and probability at the precollege level is being conducted by the American Statistical Association (ASA). The project, entitled "A Program to Improve Quantitative Literacy in the Schools," will develop and deliver a model program of continuing education for mathematics, and natural and social science teachers that will prepare them to teach statistics and probabilistic skills and concepts effectively. The project is funded in part by the National Science Foundation and is endorsed by the National Council of Teachers of Mathematics.

Initial efforts of the project concentrate on field-testing and subsequent revision of four new curriculum units that introduce basic skills of statistics and probability. Topics covered include: ways to collect, display, and interpret small sets of data; elementary probability; simulation to understand topics in probability and to solve probability problems that are too hard to do conveniently with mathematics; and the ideas of random sample and confidence interval to make inferences about a population. Basic data will come from industrial processes, demographic units, educational programs, and areas of everyday experiences.

Inservice training for teachers will be a major part of the project. Several two-day workshops for teachers will be presented, culminating in the production of videotapes for teacher training that can be used as an alternative to a formal workshop.

Additional information regarding the project may be obtained from: Dorothy H. Perreca, Coordinator, American Statistical Association, 806 15th Street, N.W., Suite 640, Washington, D.C. 20005 (202-393-3253).

Sections Announce Summer Workshops on Fractals and Discrete Mathematics

Maryland-DC-Virginia

The Maryland-DC-Virginia Section will offer a weekend summer workshop on fractals at Salisbury State College.

Title: Fractals and the Geometry of Nature

Dates: June 8–9, 1985

Lecturer: B. B. Mandelbrot, Harvard University

Cost: $45, including a dormitory room for Saturday night

An exciting and useful branch of geometry has emerged under the hand of this internationally-famous applied mathematician. Mandelbrot is as interested in teaching this new subject and its applications as he is in researching it.

The sessions will begin at 1:30 p.m. on Saturday with an expository lecture in which Mandelbrot will elaborate on selected topics in his book *The Fractal Geometry of Nature*. In the next session, beginning at 9:00 a.m. on Sunday, Mandelbrot will present an outline for an undergraduate course in geometry for which his book is a suitable text.

For more information, contact: Dr. B. A. Fusaro, Department of Mathematical Sciences, Salisbury State College, Salisbury, MD 21801 (301-543-6465).

North Central

The Fifth Biennial MAA Summer Seminar of the North Central Section will be held on the campus of St. Olaf College, Northfield, Minnesota.

Title: Applications of Discrete Mathematics

Dates: June 16–21, 1985

Lecturer: Edward Reingold, Department of Computer Science, University of Illinois

Cost: Tuition, $100; meals, about $75; room, $70 (single), $55 (double).

Reingold will present five one-and-one-half hour lectures on the applications of discrete mathematics to computer science. He will also be present at afternoon problem sessions.

In addition, two minicourses will be conducted by members from the St. Olaf and Carleton College Mathematics Departments. One will serve as an introduction to discrete mathematics and will feature some of the traditional applications, especially those that can be used in a sophomore-level course in discrete mathematics. A second minicourse will feature applications to discrete optimization (e.g., network flows, matching).

For more information, contact: Professor Loren Larsen, Department of Mathematics, St. Olaf College, Northfield, MN 55057 (507-663-3413).

For information about other summer workshops and short courses offered by MAA Sections, see the January-February 1985 issue of *FOCUS*. Dates, titles, and locations are also in the Calendar in this issue.

Greater MAA Fund Reaches New Heights

The generosity of 1097 donors who gave a grand total of $39,260 pushed the Greater MAA Fund to a record high. The names of all those who made contributions of $25 or more are listed below. An additional 540 members made gifts of smaller amounts.

The Greater MAA Fund is used to support a variety of MAA activities which are not self-supporting. These include start-up planning for new projects, the Fund for Sections, award and prize funds, the Visiting Lecturers and Consultants Program, and the USA Mathematical Olympiad. Monies from the Fund are used wherever the need is greatest.

The officers of the Association express their appreciation to everyone who helped make the 1984 Greater MAA Fund a success.

Grand Benefactors Malcolm K. Brachman, Charles D. Miller, Anon.

Grand Patrons Ivan Niven.

Patrons Herbert and Binnie Baruch, Barbara Beechler, Stewart Boden, James Bradford, Mary P. Dolciani Halloran Foundation, Bill Hassinger, Jr., Anna Henriques, Richard Johnson, Herbert Ryser.

Sponsors D. F. Abell, Jeanne Agnew, N. Hansen Ball, Raymond Barnett, Carole Bauer, Kenneth Bernstein, William Blundon, T. Hoy Booker, William Borgman, Mildred Brunschwig, Ronald Davis, J. L. Dorroh, Trevor Evans, Richard Gantos, M. Hamstrom, William Hartnett, Peter and Marie Louise Henrici, Robert Jackson, Jeffrey Johnson, Roy Johnson, D. B. Kirk, Donald Kreider, Henry Krieger, Margaret Lial, Andy Liu, Ralph Mansfield, John Mayor, Edward McLeod, Jr., Albert Meder, Jr., D. D. Miller, Chester Mills, Harlan Mills, John Neff, Mary Neff, Morris Newman, Eric Nummela, Nicholas Passell, David Penney, G. Baley Price, William Priestley, H. Randolph Pyle, Frank Rizzardi, Edward Robbins, Kenneth Ross, I. Schoenberg, John Smith, Robert Sorgenfrey, Stephen Spindler, Alan Tucker, Dirck Uptegrove, Allyn Washington, Wyman Williams, Kenneth Wooster, Yoiti Vosida, Marilyn Zweng, Anon. (3).

Contributing Members Michael Aissen, H. L. Alder, Billy Arendt, Winifred Asprey, Leon Bankoff, Gertrude Blanch, Albert Blank, George Bridgman, Melvin Bloom, Harold Bright, Robert Brown, Michael Brusin, R. Creighton Buck, Nathaniel Chafee, Pi-Cuhn Chuang, Alfred Clifford, A. B. Cunningham, Richard Cohn, Mary Ida Compton, Thomas Cootz, George Crane, James Crawford, Wilbur Deskins, Susan Devlin, George Dinolt, Sandra Donohue, Thomas Drucker in memory of Robert A. Smith, Peter Duren, Harry Ellis, Edward Esty, Ian Ferris, Ciprian Foias, Daniel Foley, J. Sutherland Frame, A. Galbraith, Gloria Gilmer, Milton Glass, Richard Goldberg, J. Graham, Vera Granlund, Paul Herwitz, Peter Hilton, Melvin Hochster, John Horvath, Joseph Hughes, Burrowes Hunt, Franklin Iha, Wilfred Kaplan, Dan Kennedy, Kenneth Kloss, Robert Knapp, Donald Knuth, Conrad Kopala, Stephen Kurtzman, Walter Lawson, John Lewis, Elliott Lieb, Richard Little, Mazie C. Lloyd in memory of Daniel Lloyd, James Longley, Leon Luey, W. R. Mann, Margaret Marchand, William Margulies, May Maria, Stephen Maurer, Mary McCarty, Mabel Montgomery, Peter Montgomery, Richard Moore, Paul Muhly, Weston Nathanson, Dale Nelson, Albert Nijenhuis, Barbara Osofsky, John Perry, John Petro, Joel Pitcairn, George Polya, Murray Projector, Kenneth Rebman, Sara Ripy, Julia Robinson, David Roselle, Isabelle Rucker, Walter Rudin, James Sansalone, Donald Sarason, Norma Schmid, Marshall Scott, John Schumaker, Stephen Sedory, C. H. W. and Rose Sedgewick, Norman Sexauer, Lois E. B. Smith, Marcia and Gilbert Sward, Janet Thomas, John Upton, John Van Alstyne, Wolmer Vasconcelos, Joe Wampler, Harold and Jennifer Ward, George Weekly, John E. Wetzel, Frederick Whitehart, Alfred Willcox, Stephen Willoughby, David Wilson, Richard Witter, Melvin Woodard, Robert Zink.

Sustaining Members Paul and Pamela Abad, Robert Abernathy, Sheldon Akers, Donald Albers, Gerald Alexanderson, Frances Amemiya, Edward Andalafte, R. Lucile Anderson, Howard Anton, Hartwig Arenstorf, Florence Ashby, Clayton Atkins, John Ausink, Bernice Auslander, William Babcock, George Bachman, Harold Bacon, Edward Baker, George Baker, William Barker, Lida Barrett, Felice Bateman, Donald Batman, John Baum, Kathleen Baxter, Alfred Beebe, E. Maurice Beesley, Andrew Berry, John Best, T. A. Bick, John Bishir, Dorothee Blum, Luc Bonenfant, William Bosch, Murray Braden, Fred Brauer, George Brauer, Robert Breusch, Martin Brock, Milo Bryn, Sylvan Burgstahler, Charles Byrne, Jr., Edward Carroll, Herbert Carus, Mary Centola, Ronald Chase, Concordia Chen, Theodore Chihara, Gregory Chlouverakis, Hubert Chrestenson, William Clark, Peter Cocuzza, Harry Copperthwaite, Helen Coulson, Donald Craig, Joseph Creely, Robert Cushnie, Giuliana Davidoff, Morris DeLeon, Rex DePew, Donald Dessart, David Deutsch, George Dimitroff for Evergreen State College, Robert Donaski, John Dossey, Nicholas Draim, E. L. Eagle, Eric Easterberg, James Eastham, Frank Eccles, Joanne Elliott, Thomas Errico, Robert Eslinger, Franklin Everts, F. D. Faulkner, Manuel Feliciano, Jr., Daniel Finkbeiner, II, Michael Fletcher, Peter Flusser, Joseph Frechen, Stephen Friedberg, Richard Fritsche, Fannie Gee, Stephen Gill, Michael Gilpin, Gary Gislason, Robert Goss, Rony Gouraige, Sandy and Judith Grabiner, Jack Graver, Robert Graves, Willie Green, Herbert Greenberg, Borys Hac, William Hardell, Gordon Hare, Charles Harris, Lawrence Hart, Charles Haskell, Caroline Hatch, Nan Haymet, Miriam Hecht, Robert B. Herrera, Emil Herzog, Fritz Herzog, Gerald Heuer, Charles Hicks, Troy Hicks, Franz Hiergeist, Edwin Hoefer, Herbert Holden, J. B. Horrell, Fred Howard, Kenneth Hoyt, Mark Huibregtse, M. Gweneth Humphreys, Christopher Hunter, George Hutchinson, Lee Hutchison, Nan Jackson, Stanley Jackson, Carl Jockusch, Jr., Gerald Jahn, Gerald Johnson, Eleanor Jones, Robert Jones, Russell Jones, James Justice, Alfred Kalfus, Gerhard Kalisch, Rosella Kanarik, Kevin Kane, Talbot Katz, Patricia Kelley, Alice Kelly, John Kelly, Daniel Kemp, Louis Kemp, Edward Kennedy, J. F. Kent, Allan Kirch, Ernest Klotz, Hiroshi Kotera, Barry Kramer, John Kronholm, Bernadine Lanzano, Martha Larkin, Arnold Lebow, Robert Leggett, James Leitzel, Daniel Lewis, Fred Lewis, Michael Lightner, Ella Lillie, Chin-Yeang Lim, Rudolf Lim, Kay Litchfield, Clifford Long, Russell Lyons, Thomas Maddox, Marjorie Maher, George Mann, III, Kishore Marathe, Helen Marston, Ronald Mathsen, Raymond Mayer, Jr., Keith McCroan, Robert McLeod, Robert McNaughton, Jr., Michael Mears, Negash Medhin, Morris Meisner, Gerald Mischke, Alfred and Dorothy Mitchell, James Moore, Robert Moore, Robert Mollo, Harriet Montague, Lawrence Morscher, Ronald Mosier, Lester Moston, Richard Moynihan, C. J. Mozzochi, Elsie Muller, Marvin Muller, W. R. Murray, Herbert Nadler, Shailaja and Umesh Nagarkatte, Abba Newton, George Norton, M. Lesley O'Connor, Gay M. Olesen, Anne O'Neill, Mason Osborne, Henry Osner, Robert Osserman, Clem Ota, Harold Oxsen, Bernard Pardee, Paul Peck, Joseph Pekarsky, Sanford Perlman, Charles Peterson, Dean Phelps, George Piranian, Frederick Pohle, Gerald Porter, Calvin Pullias, Anthony Ralston, John Randolph, Maxwell Reade, Raymond Redheffer, Charles Rees, Irving Reiner, Robert Reitano, Charles Rickart, Thomas Robbins, James Robertson, David Rose, Alex Rosenberg, Paul Ross, Erich Rothe, Neal Rothman, Bruce Rothschild, Robert Rowley, Edward Saibel, C. M. Sandwick, Richard Schauer, Ernest Schlesinger, Alan Schulhoff, James Seidel, George Seifert, John Sepikas, John Seymour, Abdul Shabazz, Henry Sharp, Jr., Yuan-Yuan Shen, Frank Sherburne, Martha Siegel, Abe Sklar, Basil Skordinski, Bernard Smilowitz, David Smith, Gregory Smith, Michael Smith, Louis Solomon, Ruben Spake, Stephen Spielberg, Lynn Steen, Robert Stacy, William Steger, James Steinkraus, Paul Stockmeyer, Charles Stuckey, Ida Sussman, Angus Taylor, Robin Taylor, Theodora Tsakiris, Yasushi Unai, H. Robert Van Der Vaart, Jan Van Hoydonck, Donald Wall, Sylvan Wallach, John Ward, Tseng-Chan Wang, Frank Warner, John Wehausen, John Weibel, Elizabeth Weinstock, Agnes Wieschenberg, Harvey Weitkamp, G. P. Wene, Richard Whitehill, Albert Whiteman, Stephen Willson, Robert Xeras, A. A. Yayanos, Genji Yoshino, Nicholas Zainoon, Harry Zaremba, Frederick Zeiler, Richmond Zoch, Anon. (4).

Calendar

National MAA Meetings

65th Summer Meeting, Laramie, Wyoming, August 12–15, 1985.
69th Annual Meeting, New Orleans, Louisiana, January 9–11, 1986.
70th Annual Meeting, San Antonio, Texas, January 23–25, 1987.

71st Annual Meeting, Atlanta, Georgia, January 8–10, 1988.
72nd Annual Meeting, Phoenix, Arizona, January 10-14, 1989.

Sectional MAA Meetings

Allegheny Mountain University of Pittsburgh at Johnstown, Johnstown, Pennsylvania, April 26–27, 1985.
Eastern Pennsylvania and Delaware Bloomsburg University, Bloomsburg, Pennsylvania, March 30, 1985.
Florida Stetson University, Deland, Florida, March 8–9, 1985.
Illinois University of Illinois, Champaign-Urbana, Illinois, May 3–4, 1985.
Indiana Ball State University, Muncie, Indiana, April 13, 1985.
Intermountain Weber State College, Ogden, Utah, April 26–27, 1985.
Iowa Drake University, Des Moines, Iowa, April 12–13, 1985.
Kansas Kansas Wesleyan University, Salina, Kansas; joint meeting with Kansas Association of Teachers of Mathematics; March 29–30, 1985.
Kentucky Eastern Kentucky University, Richmond, Kentucky, April 19–20, 1985.
Maryland-DC-Virginia Hollins College, Virginia, April 27, 1985.
Metropolitan New York Webb Institute of Naval Architecture, Glen Cove, New York, May 4, 1985.
Michigan Western Michigan University, Kalamazoo, Michigan, May 3–4, 1985.
Missouri Central Missouri State University, Warrensburg, Missouri, April 12–13, 1985.
Nebraska Hastings College, Hastings, Nebraska, April 1985.

New Jersey Monmouth College, West Long Branch, New Jersey, April 27, 1985.
North Central College of Saint Benedict, Collegeville, Minnesota, April 26–27, 1985.
Northeastern Norwich University, Northfield, Vermont, June 14–15, 1985.
Ohio University of Akron, Akron, Ohio, April 12–13, 1985.
Oklahoma-Arkansas University of Tulsa, Tulsa, Oklahoma, March 29–30, 1985.
Pacific Northwest Willamette University, Salem, Oregon, June 1985.
Rocky Mountain Casper College, Casper, Wyoming, March 15–16, 1985.
Seaway Rochester Hilton, Rochester, New York; joint meeting with New York State Mathematical Association of Two-Year Colleges; April 26–27, 1985.
Southeastern Wake Forest University, Winston-Salem, North Carolina, April 12–13, 1985
Southwestern University of Arizona, Tucson, Arizona; joint meeting with American Mathematical Society and Sociedad Matematica de Mexicana; April 12–13, 1985.
Texas Texas A&M University, Galveston, Texas, April 1985.
Wisconsin Marquette University, Milwaukee, Wisconsin, April 26–27, 1985.

Other Meetings

APRIL 1985

17–20. **63rd Annual Meeting of the National Council of Teachers of Mathematics—Exploring Curriculum Alternatives**, San Antonio, Texas. Contact: NCTM, 1906 Association Drive, Reston, VA 22091.

19–20. **Second Annual Rose-Hulman Conference on Undergraduate Mathematics**, Rose-Hulman Institute of Technology. Theme: Applied Mathematics and Mathematical Modeling. Student papers are invited. Contact: Department of Mathematics, Rose-Hulman Institute of Technology, 5500 Wabash Avenue, Terre Haute, IN 47803.

25–26. **Sixteenth Annual Pittsburgh Conference on Modeling and Simulation**, University of Pittsburgh. Contact: William G. Vogt or Marlin H. Mickle, 348 Benedum Engineering Hall, University of Pittsburgh, Pittsburgh, PA 15261.

26–27. **Association for Symbolic Logic Spring Meeting**, Chicago, Illinois. Contact: P. Hinman, Mathematics Department, University of Michigan, Ann Arbor, MI 46106.

MAY 1985

17–19. **Conference on the History and Philosophy of Modern Mathematics**, Minneapolis, Minnesota. Contact: William Aspray, Charles Babbage Institute, 104 Walter Library, 117 Pleasant Street S.E., University of Minnesota, Minneapolis, MN 55455.

26–31. **151st National Meeting of the American Association for the Advancement of Science**, Los Angeles, California. Theme: "Science and Engineering: Diversity and Convergence." Contact: AAAS Meetings Department, 1101 Vermont Avenue, N.W., Washington, D.C. 20005, or *Science*, March 8, 1985.

JUNE 1985

3–7. **MAA Maryland-DC-Virginia Section Summer Workshop—**

Program Design and Pascal, Salisbury State College. (See *FOCUS*, January–February 1985.)

8–9. **MAA Maryland-DC-Virginia Section Weekend Summer Workshop—Fractals and the Geometry of Nature**, Salisbury State College. (See page 6 of this issue.)

10–14. **MAA Maryland-DC-Virginia Section Summer Workshop—Computer Solutions of Differential Equations**, Salisbury State College. (See *FOCUS*, January–February 1985.)

10–14. **MAA Northeast Section Seventh Annual Short Course—The Total Role of the Mathematician—Researcher, Consultant, Teacher, Curriculum Developer, and Damn Nuisance**, University of Maine at Orono. (See *FOCUS*, January–February 1985.)

10–28. **MAA Ohio Section Short Course—Data Systems**, Denison University. (See *FOCUS*, January–February 1985.)

10–28. **MAA Ohio Section Short Course—Operating Systems**, Bowling Green State University. (See *FOCUS*, January–February 1985.)

16–21. **MAA North Central Section Fifth Biennial Summer Seminar—Applications of Discrete Mathematics**, St. Olaf College. (See page 6 of this issue.)

24–26. **Society for Industrial and Applied Mathematics 1985 Spring Meeting**, Pittsburgh, Pennsylvania. Contact: SIAM, 117 South 17th Street, Suite 1405, Philadelphia, PA 19103.

AUGUST 1985

12–15. **89th Summer Meeting of the American Mathematical Society**, Laramie, Wyoming. Contact: AMS, P.O. Box 6248, Providence, RI 02940.

12–15. **Meeting of the Association for Women in Mathematics**, Laramie, Wyoming. Contact: AWM, Box 178, Wellesley College, Wellesley, MA 02181.