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CAMC Examines America

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FOCUS

on

MAA Committees

FOCUS Center Sections to Feature MAA Activities

Starting with this issue, each issue of *FOCUS* will contain a center section featuring the people and programs of the MAA. This *FOCUS on MAA Committees* contains articles about the important work done by four MAA committees, each of which has broad responsibilities and a long tradition within the MAA. These committees represent only a small portion of the MAA committee structure, which includes over 75 committees and subcommittees with a total of more than 600 members.

The March-April 1986 *FOCUS* center section will feature the 1986 International Congress of Mathematicians, which will be held at the University of California—Berkeley, from Sunday, August 3 through Monday, August 11. (For additional information see page 5 of the news section of this issue.) The usual MAA Summer Meeting is not being held in order to give MAA members the opportunity to participate in the Congress. In future years, the March-April issue of *FOCUS* will contain the MAA Summer Meeting program.

The May-June issue will contain an annual report describing the status of the major activities of the MAA, and any important developments of the past year.

The September issue will feature a *FOCUS on MAA Sections*, reporting on the activities of the 29 MAA Sections.

The October *FOCUS* will contain the program for the MAA Annual Meeting.

The November-December issue will feature a *FOCUS on MAA Publications* and will bring readers inside stories about the people who write MAA books, edit its journals, or help in other ways to make the MAA a successful publisher in the field of mathematics. Book lovers should also watch this center section for information about up-coming books.

Employment Ads

To serve the needs of the mathematical community, each center section will also contain Employment Ads listing positions available in the mathematical sciences. Information about rates and how to submit an ad may be found on page vi of this issue.

CAMC Examines America

Stephen B. Maurer

Each year you read in *FOCUS* about the results in the USA and International Mathematical Olympiads (USAMO and IMO), and about the top scores in the earlier American exams which lead up to these. Responsibility for these American exams, taken by over 500,000 students yearly, and for United States preparation for the IMO, rests with the Committee on the American Mathematics Competitions (CAMC). The work of this committee involves over 120 people and a yearly budget of \$350,000. Sponsored by 7 mathematics societies, the CAMC is administratively part of the MAA. It is one of the MAA's largest activities.

Structure and Activities

CAMC activity has three aspects: policy making, examination construction, and administration. Policy is the concern of the CAMC itself. Examination construction is delegated to subcommittees, aided by an Advisory Panel. Administration is handled by the office of the CAMC Executive Director, Professor Walter E. Mientka, in Lincoln, Nebraska, and some 80 Regional Examination Coordinators. In what follows, we elaborate this structure.

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Members of CAMC hard at work at the Toronto meetings in August 1982. From left to right: Stanley Rabinowitz, Stephen Maurer, Michael Ecker, Richard Pieters, Nura Turner, and Melvin Woodard.

CAMC (continued from page i)

The CAMC itself has 12 members: 1 or 2 representatives from each sponsor, the Chairman and the Executive Director, and the Chairmen of the subcommittees. The sort of policy issues which must be considered range from big ones—shall we undertake a junior high exam (Yes!)—to small ones which nonetheless set a tone to the work— should partially sighted students be allowed to use reading machines, and should they be given extra time?

As for subcommittees, there is one for each exam: the American Junior High School Mathematics Examination (AJHSME), chaired by Thomas R. Butts of the University of Texas-Dallas, the American High School Mathematics Examination (AHSME), chaired by this author, the American Invitational Mathematics Examination (AIME), chaired by George Berzsenyi of Lamar University, and the USA Mathematical Olympiad (USAMO), chaired by Ian Richards of the University of Minnesota. Each subcommittee has 8 to 10 members.

The primary responsibility of each subcommittee is to produce the examinations. This is easier said than done. Examination problems must be fresh, interesting, instructive, at varying levels of difficulty from moderate to extremely hard, and completely unambiguous. Furthermore, solutions are produced which are meant to instruct in problem-solving techniques and illustrate good writing style. All of this means that many problems and solutions must be collected and repeatedly critiqued by people with both creative and editorial talents. To accomplish this, most of the exams are two years in the making and require many hours of each subcommittee member's time each year.

Subcommittees consider policy, too—how hard its exam should be, what awards should be given, etc. While the CAMC has final say on such matters, obviously these issues cannot be separated from examination construction. In the case of the USAMO, the Subcommittee has many such issues to consider, and a sub-subcommittee writes the examination.

The Advisory Panel, consisting of 10 to 15 people, has several purposes. First, it provides more input on problems. (Panel members contribute by mail, while subcommittee members work by mail and through meetings at national MAA conventions.) Second, since the talents and commitment needed for CAMC work are unusual and hard to evaluate except through experience, the Panel is used as a trial ground. As openings arise, people who have expressed an interest in CAMC work, or who have been identified through the Sponsors, are appointed to the panel on a yearly basis. In time those who do very well are appointed to the CAMC or a subcommittee. As with other MAA committees, terms are for 3 years, with one renewal common.

Finally, in addition to the subcommittees the CAMC has 3 special posts: Director and Assistant Director of the Training Session for the IMO, and Editor of our problem-solving journal, the *Arbelos*.

Administration

The Executive Director, with the help of an administrative aide, one-and-one-half secretaries, part-time help and (recently) a VAX 11/750, carries out a vast number of duties. Just answering correspondence, from a great number of people around the world, is a major job. This year, we have taken a major step towards centralization: the AJHSME, first given on December 10, 1985, will be our first large-enrollment exam to be scored centrally. Formulating the procedures for

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Invitation to Participation

All of the committees featured here, and all other MAA committees welcome input from MAA members and others on matters within their charge. Individuals who wish to express their opinions, bring information to the attention of a committee, or otherwise assist a committee in its work, are invited to contact any member of the committee.

Most MAA committees meet at one or both of the national meetings, and many of these meetings are open to any MAA member who wishes to attend. For information about committee meetings, contact the committee chair.

Interested in Serving on an MAA Committee?

The Officers of the MAA are always looking for people with the special talents needed by committees. Interested individuals should write to the MAA Secretary indicating their particular areas of interest and providing information about their background. Write to: Professor Kenneth A. Ross, Department of Mathematics, University of Oregon, Eugene, OR 97403.

CUPM Tackles Issues in Undergraduate Curriculum

Jerome A. Goldstein

During the 1950's and 1960's, the Committee on the Undergraduate Program in Mathematics (CUPM) was a major activity of the MAA supported by a secession of NSF grants. Then, after a period of relative inactivity, CUPM was revitalized with a very intense meeting in Berkeley, California, in the summer of 1976. Three CUPM panels were created at this meeting. In the early 1980's these panels published reports concerned with a mathematical sciences major, mathematics appreciation courses, and minimal competence in mathematics for college graduates.

In recent years, several new CUPM panels have been created. Some remain as subcommittees of CUPM while others have been transformed into independent MAA activities.

Subcommittee on the Continuing Mathematical Education of Teachers. The Teacher Training Panel published its final report several years ago. The Panel was replaced by COMET, the Subcommittee on the Continuing Mathematical Education of Teachers. COMET has been extremely energetic and influential. A report on its activities by Bruce E. Meserve and Calvin T. Long appears elsewhere in this center section. COMET will break off from CUPM and become a standing committee of the MAA in January 1986.

Subcommittee on Calculus Articulation. This subcommittee, which consists of four high school teachers and three college teachers and is chaired by Donald B. Small of Colby College, has studied the nature of and problems associated with calculus in the secondary schools. It has just completed a draft of its final report.

Steen Forms New MAA Committees

In response to changing needs for MAA activity, President Lynn Arthur Steen has established several new committees to explore issues of current concern. Many of these committees are *ad hoc* and will investigate possible future activities of the MAA. Some may become standing committees in the future if their tasks appear to have continuing benefit to the Association.

Howard Anton of Drexel University is chairing an *ad hoc* **Committee on Student Chapters** to explore means (clubs, chapters) by which MAA could attract undergraduate students to mathematics and to membership in MAA. Attracting students to careers in mathematics is one of the most important priorities of the Association; this committee will explore various options for accomplishing this, and will report to the Board of Governors with its recommendations.

David P. Rosselle of Virginia Polytechnic Institute is chairing an *ad hoc* **Committee on Accreditation** to explore whether MAA should undertake any special activity that would help establish standards for quality in undergraduate mathematics departments. Many department chairmen have been seeking assistance from the Association in strengthening their hands vis a vis other programs in their institutions. Accreditation is just one of several ways of doing this. The Committee will explore many possible ways of achieving these objectives, and will report its recommendations to the Board of Governors.

Bernard Madison of the University of Arkansas is chairing an *ad hoc* **Planning Committee for a National Study of Resources for Collegiate Mathematics**. The aim of this committee is to submit a proposal to the National Research Council for a major national study to be undertaken jointly by the Board on Mathematical Sciences (chaired by Michael Artin of MIT) and the Mathematical Sciences Education Board (chaired by Shirley A. Hill of the University of Missouri-Kansas City).

A standing **Committee on Membership** has been established under the chairmanship of Will Hahn of South Dakota School of Mines and Technology. Currently only about half of the persons teaching college and university mathematics are members of the Association. The charge to the Committee on membership is to work with the Washington staff and the officers to develop new approaches to recruiting and retaining members.

President Steen has also appointed several other committees for reasons of internal review of MAA activities, and may establish several joint committees with other mathematical societies. Among the latter are an NCTM/MAA committee to review college entrance requirements in mathematics, a proposed ACM/MAA committee on computer science education in college mathematics departments, a possible AMS/MAA/NCTM task force on remediation, and a possible CBMS/MAA/AMS committee on opportunities for handicapped individuals. Joint work with our sister societies is a high priority for the MAA, since the mathematical community is strengthened by every example of cooperative activity.

CAMC (continued from page ii)

administering and grading the AJHSME, and getting the computer up and ready, has been the Executive Director's major activity for the past year.

Every year, the Executive Director manages the preparation of all brochures and manuals, the printing of all exams, and the mailing of these items plus orders for back exams and MAA problem books. He directs the computer scoring of the (lower participation) AIME, compiles the national results and awards for the AHSME, convenes a team of graders for the USAMO (essay questions), and extends invitations to the USAMO and IMO Training Session. He also does all the budgeting and accounting.

For the AHSME, which long predates modern computer power, much of the administration is decentralized. Each state has one or more Regional Examination Coordinators (REC), who invite schools to participate, handle the fees, compile results in the region (usually after the schools have scored their own papers), and make sure that students get the appropriate local awards. In some cases REC's have arranged for special awards and scholarships from businesses and colleges in their areas. Many are active in visiting schools and improving the quality of education. The 65 REC's in the U.S. and Canada are appointed by the Governors of their MAA Sections; there are 15 more overseas.

The administrative organization is not complete without mention of MAA Headquarters, West Point, and Annapolis. Arrangements for the elaborate USAMO Awards Ceremony each June, which is funded primarily by IBM, take a good deal of time at Headquarters in the late spring. The IMO Training Sessions, directed by Cecil C. Rousseau of Memphis State University and Gregg N. Patrino of Princeton University, would not be possible without grants from the Army and Navy and without the superb organization of staffs at the service academies, where the Training Sessions are held. Finally, some administration for all the exams is handled by the CAMC Chairman, notably personnel recommendations and investigations of questionable scores.

History

The American Mathematics Competitions have come a long way since 1950, when the AHSME began as a local examination of the Metropolitan New York MAA Section. Participation rapidly grew beyond New York, and in 1955 the national MAA agreed to provide sponsorship and administrative support. At the same time, the Society of Actuaries became the first co-sponsor. The next co-sponsor, Mu Alpha Theta, joined in 1965, and the second exam, the USAMO, commenced in 1972. Expansion has been very rapid in the last few years. Sponsors now include the MAA, the Society of Actuaries, Mu Alpha Theta, the National Council of Teachers of Mathematics, the Casualty Actuarial Society, the American Statistical Association, and the American Mathematical Association of Two-Year Colleges.

For more history, more details about how the CAMC operates, and information about the philosophy of the various exams, see Maurer & Mientka, "AHSME, AIME, USAMO: The Examinations of the Committee on High School Contests," *Mathematics Teacher*, 75 (October 1982) 548-557. (The article is out-of-date on the number of exams and the name of the committee.)

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