# Reflections on the Evolution of MAA's Journals and Magazines

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## Introduction

The Mathematical Association of America is a mathematical ecosystem with a carrying capacity rich in human creativity. It was seeded by *The American Mathematical Monthly*, and each has helped the other to grow and flourish. During the last fifty-plus years, the Association has given birth and support to three additional journals, two magazines, and myriad offerings on its website. The personalities and interests of its editors have molded and flavored their publications and, with the contributions of their readers, have introduced a changing potpourri of distinctive features and special editions that have further distinguished their publications. And yet, over time, the longest standing journals, the *Monthly*, *Mathematics Magazine*, and *The College Mathematics Journal*, have converged to the same few core departments. This may be attributed, in part, to the growing availability of mathematics-related resources within the MAA and elsewhere. Within the MAA, these include the Association's newsmagazine, *MAA Focus*; its student magazine, *Math Horizons*; and its online journal on the history of mathematics and its use in teaching, *Convergence*; along with a robust website. It is left for readers to consider the influence of *MAA Focus* and of the multiplicity of its website offerings on the winnowing of the journals' departments and diminution of their distinguishing features.

This essay may be viewed as a collection of reflections on how the Association's diverse publications started and changed over time. It is hoped that these reflections will help to convey the pulse and vitality of the Association's publishing history.

### *The American Mathematical Monthly*

The first issue of *The American Mathematical Monthly* was published in January 1894 by Benjamin Franklin Finkel, a young schoolteacher in Missouri. From 1895 until 1947, he was a professor of mathematics at Drury College in Missouri. (For a personal account of his background and struggles with the *Monthly*, see [1], [2].) Finkel designed and jointly edited the journal with John M. Colaw in the hope of addressing the deplorable state of mathematics instruction in high schools and colleges. In their introduction of the *Monthly*'s first issue, they wrote [3]:

> Most of our existing journals deal almost exclusively with subjects
> beyond the reach of the average student or teacher of mathematics or at

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least with subjects with which they are familiar, and little, if any, space is devoted to the solution of problems. … No pains will be spared on the part of the Editors to make this the most interesting and most popular journal published in America.

It was also announced that the journal was "devoted to the solution of problems in pure and applied mathematics, papers on mathematical subjects, biographies of noted mathematicians, etc." Since it was difficult to obtain good articles, early issues of the *Monthly* consisted primarily of posed problems and solutions ([4], [5]).

Few high school teachers subscribed to the *Monthly*, but there was considerable interest in the journal by college mathematics faculty. From 1913 to 1916, Herbert Ellsworth Slaught served as managing editor of the *Monthly*, which was owned and published through the cooperation of fourteen colleges and universities in the Midwest.  In response to Slaught's letter to mathematicians around the country and in Canada asking about interest in forming a new mathematics association, an organizational meeting was held in December 1915. Earle Raymond Hedrick (of the University of Missouri) was elected president of the newly formed association, named the Mathematical Association of America. The cover of the *Monthly*'s January 1916 issue indicated that it was an "Official Journal of the MAA Devoted to the Interests of Collegiate Mathematics." In 1920, the MAA was incorporated in Illinois.

   In 1942, Lester R. Ford became editor of the *Monthly*. His new *Monthly* covers of blue ink on blue paper remained unchanged for the next 26 years. Since then, in addition to main articles, the *Monthly*'s departments – *NOTES, PROBLEMS & SOLUTIONS* (partitioned as Elementary and Advanced), *REVIEWS*, and *NEWS and NOTICES* – have continued to appear in every issue. An MAA component, devoted to information about the Association and its sections, also appeared in every issue through 1988. With few exceptions, the *Monthly*'s issues since 1938 have included the results and examination questions of the annual William Lowell Putnam Mathematics Competition and since 1940 have announced the recipients of the Chauvenet Prize for an outstanding expository article on mathematics. (MAA's website lists the Chauvenet recipients and provides abstracts of their papers.)

Because of war conditions, there was no Putnam competition during the years 1943-1945. The *Monthly*'s issues from March 1943 to June-July 1945 featured the section *WAR INFORMATION*, edited by Carroll V. Newson, which invited news reports of importance to mathematicians and mathematics in war activities. Mina Rees's article "The Mathematical Sciences and World War II," in the *Monthly*'s October 1980 issue, provides an account of mathematics carried on in support of the war effort and some of the applied fields and professional societies that grew out of these activities. (Concerned about the looming war's demands on mathematicians and the increasing shortages of

mathematics teachers, the American Mathematical Society and the Mathematical Association of America had earlier appointed a joint War Policy Committee "to act for mathematicians on problems arising during the war period.")

Ford was succeeded in 1947 by Carroll V. Newson. His January 1947 issue of the *Monthly* introduced *CLASSROOM NOTES*, edited by Carl B. Allendoerfer. This department, which invited contributions on topics of interest to teachers of undergraduate mathematics, continued until the *Monthly*'s December 1981 issue. The August-September 1947 issue was supplemented by Number 1 of the Herbert Ellsworth Slaught Memorial Papers. (The MAA Board of Governors had authorized this series of scholarly expositions, titled as above and published as supplementary issues of the *Monthly*.) Number 2 of the Slaught Memorial Papers supplemented the January 1949 issue. The latest of the Papers, Number 13, supplemented the June-July 1973 issue.

Ralph D. James edited the *Monthly* during 1957-1961. The February 1958 issue introduced the section *BRIEF MENTION*, which briefly described "publications of potential interest, but which are more properly reviewed in other periodicals." Consonant with technology's increasing importance, the *Monthly*'s June-July 1958 issue was devoted to the uses of film and television in mathematics education. It contained the comprehensive, detailed recommendations of the Standing Committee on Mathematical Films and Television within the National Academy of Science's National Research Council. The October 1958 issue introduced *MATHEMATICS EDUCATION NOTES*, co-edited by John R. Mayer and John A. Brown, which aims to provide "information and viewpoints on mathematics and science curricula, experimental studies in progress, educational uses of film and television, and activities of importance to mathematics education." This department continued to the *Monthly*'s December 1991 issue.

The *Monthly* was edited by Frederick A. Ficken from 1962 to 1966 and by Robert A. Rosenbaum in 1967 and 1968. Its January 1967 issue, the Association's Fiftieth Anniversary issue, introduced *TELEGRAPHIC REVIEWS*, which categorized new books according to use (as a textbook, supplemental reading, professional reading, undergraduate library purchase), level of sophistication (freshman to second year graduate), and number of semesters to cover the text. These reviews continued until the journal's November 2003 issue.

Meanwhile, trouble was brewing, intimated by the appearance of *BRIEF VERSIONS* in the December 1967 through November 1968 issues. It stated:

> Because of the extraordinary pressure for publication, some papers are being presented in brief form in this department of the *Monthly*. Authors have agreed to provide interested readers with extended versions of their

papers. The address to which to write for such an extended version is given at the end of the paper.

In 1968, editor-elect Harley Flanders noted that 300 papers were out in the hands of referees, and that there were "chains of *Monthly* minor research." His Statement of Policy appeared in the May 1968 issue. It endorsed the founders' pledges to promote and advance college mathematics, and it set the standards for each of the *Monthly*'s traditional features. Some iteration of this Statement now appears or is referenced in every issue. At its January 1969 meeting, the Board of Governors approved 112 additional pages to exhaust the large backlog of articles accepted prior to his editorship.

Flanders changed the *Monthly* covers (from Ford's blue ink on blue paper) to green ink on white paper, and this format continued for the next ten years. His January 1969 issue introduced *RESEARCH PROBLEMS*, edited by Victor Klee, which presented "easily stated research problems dealing with notions ordinarily encountered in undergraduate mathematics." The May 1973 issue included Samuel Greitzer's description, with problems and solutions, of the First U. S. A. Mathematical Olympiad, held May 9th, 1972. Coverage of these Olympiads has continued since.

A common concern of editors has always been balancing the need for suitable material and its overabundance. In the January 1970 issue, Flanders lamented:

> Although I receive many submitted main articles every single week, most belong in research journals, and there are never enough really good expository and survey articles … I solicit many articles, but unfortunately bag only about one in ten. There is a critical need for certain articles in certain fields. It seems almost impossible to get anyone to tell us what is happening in applied mathematics, in computer science, and in the exciting mainstream of algebraic geometry, differential topology, complex manifolds, K-theory, etc.

Notwithstanding Flanders' concerns, the *Monthly*'s backlog in the December 1973 issue was: *ARTICLES*, 12 months; *MATHEMATICAL NOTES*, 13 months; *RESEARCH PROBLEMS*, 7 months; *CLASSROOM NOTES*, 11 months; *MATHEMATICS EDUCATION NOTES*, 10 months.

The *Monthly* was edited by Alex Rosenberg during 1974-1976 and co-edited with Ralph P. Boas through its April 1978 issue. The Association's fiscal problems were reflected in the June-July 1974 issue's "Notice to Our Contributors."

> Because of rapidly increasing costs, authors of material accepted for the *Monthly* which contains figures or diagrams MUST supply these in form suitable for photographic reproduction. Figures must be fully lettered in

a style consistent with that used in the rest of the article. The figures may be larger than the form in which they will finally appear.

And in the August-September 1975 issue, a "Notice to Readers" indicated:

> Due to the present serious financial situation of the MAA, all possible steps to reduce expenditures have been considered. As a result, the format of a *Monthly* page is being changed, beginning with this issue. By using somewhat less space between lines and decreasing the size of margins, it has proved possible to print the same amount of material on 96 pages as on 128. It is hoped that our readers will show understanding for this step.

Nevertheless, the backlog listed in the January 1976 issue had increased to: Main articles, 15 months; *MATHEMATICAL NOTES*, 20 months; *RESEARCH PROBLEMS*, 16 months; *CLASSROOM NOTES,* 24 months*; MATHEMATICS EDUCATION NOTES*, 19 months.

The November 1977 issue introduced *PROGRESS REPORTS* edited by Paul R. Halmos. This department, which continued to the December 1986 issue, was intended to increase readers' understandings of recent advances in mathematics. Its call for papers stated:

> Everyone is invited to nominate subjects to be reported on and authors to prepare the reports. In practice, most reports will probably be on progress achieved somewhere between five and fifteen years ago.

Ralph P. Boas, editor from May 1978 to 1981, enlivened the *Monthly* covers with colored print and borders on white paper that featured a drawing and teasers in place of the traditional Table of Contents. No Table of Contents??? Covers with drawings??? Was the *Monthly* morphing into *The New Yorker*? (Boas may have been influenced by the *Mathematics Magazine*'s zany cover art introduced by its co-editors J. Arthur Seebach and Lynn A. Steen.) However, when Paul Halmos became editor in 1982, the *Monthly*'s covers again displayed the Table of Contents framed by colored borders.

Halmos's photographs of eminent mathematicians enriched the *Monthly*'s issues during his editorship from1982 to 1986. And *LETTERS TO THE EDITOR* was introduced. *RESEARCH PROBLEMS*, edited by Richard K. Guy since 1971, was renamed *UNSOLVED PROBLEMS*, edited by Guy until 1994, co-edited with Richard Nowakowski until 1996, and by Nowakowski up to the June-July 2000 issue. (See [6], [7] for the history of the *Monthly*'s unsolved problems.) *THE TEACHING OF MATHEMATICS*, edited by Mary R. and Robert F. Wardrop, combined the former departments *MATHEMATICS EDUCATION* and *CLASSROOM NOTES*, and was intended "to contain brief articles concerning the teaching of mathematics at college and introductory graduate level."

These departments continued during the 1987 – 1991 term of Herbert Wilf's editorship. The *Monthly*'s cover format also remained essentially unchanged, except for an unexpected visual outlier – the colorful cover of the December 1990 special issue devoted to geometry. Wilf introduced *EDITOR'S CORNER*, which contained mathematics expositions by Wilf and others on topics of current mathematical interest.

The *Monthly* was edited by John Ewing from 1992 to 1996, during which his op-ed column *COMMENTS* addressed issues and policy matters of importance to the profession. The journal*'s* earlier sections were combined and reduced to *ARTICLES*, *NOTES*, and *PROBLEMS*. Ewing explained:

> The mathematical principle motivating these changes is the belief that mathematics ought to be viewed as a unified field, both horizontally and vertically. Articles on the mathematics of computers ought to belong next to articles on Riemann surfaces; comments on teaching Calculus ought to be read with as much enthusiasm as comments on representations of Lie groups; elementary problems are often as inviting (and as difficult) as advanced.

The *Monthly*'s May 1993 issue introduced *THE COMPUTER SAMPLER*, edited by Catherine C. McGeoch, in which McGeoch and guest columnists wrote about "intriguing mathematical results, old and new, that make possible the developments of modern computing machines." The January 1994 issue launched *"THE EVOLUTION OF …,"* edited by Abe Shenitzer, in which a 2-5 page article "will be an account of important mainstream mathematics." Its first article, "The Evolution of Integration" by Shenitzer and J. Steprans, exemplified what was being sought. This department continued to the November 2000 issue.

Although cover art for the *Monthly* was considered radical, Ewing's covers displayed photos of prominent mathematicians, zany cartoons, pictures, and diagrams, usually within colored borders. But these *rarae aves* were replaced as of January 1996 by white covers displaying the issue's table of contents in black ink. Since then, the *Monthly*'s conservative, business-like format has not changed. It reflects the stateliness of the Association's "flagship" journal, which receives about 1,000 submissions annually.

The *Monthly* was edited by Roger Horn during 1997-2001, by Bruce P. Palka during 2002-2006, and by Dan Vellman during 2007-2011. In the January 1997 issue, Horn introduced *EDITOR'S ENDNOTES*, which communicate comments received from readers on articles in previous *Monthly* issues. To date, this has continued during Scott Chapman's editorship, from 2012 to 2016. The March 2013 issue contained expository articles by speakers at the first International Summer School for Students (high school juniors and seniors and college freshmen and sophomores) held in July 2011 at Jacobs University in Bremen,

Germany. The *Monthly*'s November 2014 special issue was devoted to mathematical biology.

When Lester R. Ford became MAA President in 1947, he jokingly referred to "three famous mathematical constants," e, π, and 4, the latter representing MAA's $4 annual dues since 1921. Ford, of course, couldn't know that 4 would become 5 in 1957. Nor could anyone have predicted in 1920 that the MAA would become such a dynamic, complex organization, and that *The American Mathematical Monthly* would become one of the most widely read mathematics journals in the world.

### *Mathematics Magazine*

This journal began in October 1926 as a series of promotional newsletters to encourage membership in the Louisiana-Mississippi section of the MAA. In 1928, Henry Schroeder (of Ruston, Louisiana, High School) and Professor Samuel Thomas Sanders (Louisiana State University) were appointed the first co-editors of the newsletter, which had been titled *Mathematics News Letter* in 1927. To gain support in other states, the *News Letter*'s statement of purpose was broadened in 1929 to include its dedication to "the common problems of grade, high-school, and college mathematical teaching" and "the publication of high-class expository papers in mathematics." In view of its expanded coverage, Sanders changed its name to *National Mathematics Magazine* in 1934 and scaled its purpose upward to include its dedication "to publish and to distribute to the groups most interested high-class papers of research quality representing all mathematical fields."

Because of its increasing debt and lack of institutional support, The *National Mathematics Magazine* abruptly ceased publication in 1945. To the rescue came Glenn James, a mathematics professor at UCLA, who had some experience publishing on a shoestring. James and his family made the *Magazine* self-sustaining by doing the production and distribution work in his home, together with other cost-cutting measures and fund-raising schemes. Through his efforts and editorship, the *Magazine* grew in stature and circulation, from a few hundred to 2200, and became international in appeal. Thus, in 1947, *National* was dropped from its title (and its problems were renumbered to begin with 1). In 1959, James announced his retirement because of failing eyesight. Meanwhile, negotiations had been going on between the MAA and the *Magazine's* Executive Committee. And on August 29, 1960, MAA's Board of Governors approved the following statement:

> The Association shall take over the publication and editorship of the *Mathematics Magazine*, to be sold on a subscription basis with, possibly, a reduced rate to members of the Association and the National Council of Teachers of Mathematics. The mathematical level of the *Magazine*

shall be below that of the *Monthly* but above that of the NCTM's *Mathematics Teacher.*

*Mathematics Magazine* became an official MAA publication in August 1961, when the transfer to the Association was deemed legal. (For a detailed account of the *Magazine*'s first half-century, see [8].)

The *Magazine*'s February 1962 issue, its first as an official MAA publication, was edited by Robert E. Horton. It had a yellow cover that in black ink displayed its table of contents, sectioned as *ARTICLES, NOTES, TEACHING OF MATHEMATICS, REVIEWS,* and *PROBLEMS & SOLUTIONS*. With few exceptions, this cover remained unchanged for the next thirteen years. *QUICKIES*, featuring "problems which may be solved by laborious methods, but which with the proper insight may be disposed of with dispatch," was created in the *Magazine*'s March-April 1950 issue, and has continued to this date.

Horton also edited the *Magazine*'s problems section from 1953 to 1975, and has the Association's distinctive editorial title, bestowed by its Board of Governors:

> In grateful recognition of his many years of devoted and effective service to the *Mathematics Magazine* and through it to mathematics and mathematical education, Robert E. Horton is hereby elected Associate Editor Emeritus of the *Mathematics Magazine.*

The *Magazine* was edited by Roy Dubish from 1964 to 1968 and by Stephen A. Jennings from 1969 to 1970. Editorial statements during this period reflect the yet unsettled division of responsibility for book reviews between this nascent journal and its older sibling. In his January 1964 editorial, Dubish indicated that the teaching of mathematics and reviews would no longer be treated as separate sections, the latter "due to lack of space and duplication of effort with other journals in covering a wide range of books." But in the September 1964 issue, his editorial announced the reinstatement of more narrowly focused reviews.

> In conformity with recommendations by the Committee on Publications and the Board of Governors, reviews will be confined to books of interest to students and teachers of the first two years of college mathematics. … Some overlap with the books reviewed in the *Monthly* and the *Mathematics Teacher* is to be expected and, indeed, may be desirable, but it is hoped that the overlap will be minimal.

Acknowledging the *Monthly*'s extensive book review section and telegraphic reviews, Jennings wrote in the January 1970 issue:

> To avoid unnecessary duplication, *Mathematics Magazine* will no longer publish very short reviews, and will restrict itself to longer critical reviews of publications of interest to our readers.

Gerhard N. Wollan edited the *Magazine* from 1971 to 1975. His November 1971 issue introduced *NEWS and COMMENTS*, which communicated readers' responses to articles recently published in the *Monthly* and *Magazine*. The appearance of "Two Mathematical Papers Without Words," by Rufus Isaacs, in the *Magazine*'s September 1975 issue foreshadowed the prevalence of "proofs without words" in future issues of MAA journals.

The *Magazine*'s cover, format, and content received a "makeover" under the co-editorship of J. Arthur Seebach and Lynn A. Steen, from 1976 to 1980. As Steen indicated:

> At that time the Magazine looked a bit dowdy with little natural appeal. Armed with the philosophy that it's better to ask for forgiveness than for permission, Arthur and I jettisoned the cover's table of contents in favor of a drawing or photograph related to some article in the issue. We also added a section for late-breaking news and letters. Later, to add a bit of "color," we introduced brief graphic features called "Proofs without Words." Our goal in these and other changes was to let the *Mathematics Magazine* live up to the name "*Magazine*."

The journal's covers, with brown ink on gold paper, had the title in serif font displayed horizontally and vertically on a cobweb. Its *NEWS and LETTERS* sections were chock full of useful information. The first five sections of one of Seebach and Steen's first issues contained the problems and solutions from the 1975 William Lowell Putnam Competition, the 1976 U.S.A. Mathematical Olympiad, and the 1976 International Mathematics Olympiad. Coverage of these competitions in *NEWS and LETTERS* has continued ever since. *PROOFS without WORDS*, popular from its beginning, was another distinguishing feature of the *Magazine*. They have continued to appear in this and other journals, and collections of such proofs have been published in two MAA volumes. Most recently, "Proofs without Words 2.0" have appeared in *Convergence*, the MAA's online journal on the history of mathematics. Perhaps due to the *Magazine*'s new format and features, the number of subscribers increased from 6,124 on January 1,1975 to 8,665 on January 1, 1978.

The September 1977 issue's *NEWS and LETTERS* announced the 1976 recipients of MAA's newly designated Carl B. Allendoerfer Award for outstanding exposition published in *Mathematics Magazine* and the George Po′lya Award for such exposition published in *The Two-Year College Mathematics Journal* (later renamed *The College Mathematics Journal*). This announcement, reflecting the increased growth and stature of both journals within the MAA, served as a postscript to the *Monthly*'s January 1968 notification about the Association's establishment of, and invited contributions to, the Lester R. Ford Fund, whose income would be used "for payment of the Ford Awards to authors of expository articles published in the *Monthly* and *Mathematics Magazine,* and for such publications and other purposes as may be

voted by the Board of Governors." In 2012, the Board of Governors renamed the Ford Award as the Paul R. Halmos-Lester R. Ford Award in honor of Halmos and in recognition "of the support for the awards provided by the Halmos family."

In 1981, Doris Schattschneider became the *Magazine*'s editor, the first female editor of an MAA publication. The *Magazine*'s covers, sans cobwebs, changed color each volume, and a rainbow of cover colors continues to this date. Schattschneider maintained much of the tone, style, and format established by Seebach and Steen. *NEWS and LETTERS* contained the problems and solutions from the 1981 Canadian Mathematical Olympiad, and has continued this Olympiad's coverage since. The November 1983 issue, "A Tribute to Leonhard Euler 1707-1783," featured a biography of Euler by J. J. Burckhardt and articles about Euler as writer and teacher (Gerald L. Alexanderson), Euler's Pentagonal Number Theorem (George E. Andrews), Euler and quadratic reciprocity (Harold M. Edwards), and Euler and infinite series (Morris Kline).

The *Magazine's* greatest impact most likely occurred in January 1985 with an issue containing Branko Grünbaum's article "Geometry Strikes Again." Reading an article in the May 1984 *Magazine*, Grünbaum noticed that the icosahedron in an East German stamp was incorrectly drawn. He recalls:

> Snickering and full of condescension, I closed my issue of the *Magazine*. But the heavier outer cover of the issue opened by itself, and revealed to my horrified and unbelieving eyes another fallacious rendition of the regular icosahedron, in the upper left corner of the title page, IN THE LOGO OF THE MATHEMATICAL ASSOCIATION OF AMERICA!!!

Thumbing through back issues of the *Monthly*, Grünbaum discovered that the defective logo appeared in 1972, when the previous one was discarded after the December 1971 issue. In short order, a mathematically correct seal was drawn and replaced on all official Association stationery and materials. Thus was expunged that stain on the MAA's collective ego.

There was no Internet in 1981, so submissions, reviews, revisions, and almost all other correspondence were done by mail. This drawn-out process also was labor intensive. Schattschneider recalls:

> We used an electronic IBM typewriter, and typing mistakes were corrected with whiteout. Some symbols and many drawings had to be done by hand – I had a compass containing an ink point, various rulers, French curves, and so on. Labels and shading were added by hand. We often used sheets of letters and of various shadings, bought at an art and drafting store, from which we could peel off letters and cut shaded shapes to rub onto a figure. As Seebach and Steen did, the body of the

*Magazine* was laid out in our office and sent to the MAA's managing editor Raoul Hailperin in Buffalo, NY. He sent it with his corrections to be typeset. On receiving a set of galley proofs from the typesetter, we'd cut them up and compose pages by pasting them onto template pages. Then we returned the pasted pages to Raoul for final production.

Gerald L. Alexanderson edited *Mathematics Magazine* from1986 to 1990. *LETTERS to the EDITOR* appeared in *NEWS and LETTERS* beginning with the October 1987 issue. The December 1987 special issue, "George Pólya (1887 – 1985)," featured Agnes A. Wieschenberg's conversation with Pólya, and articles about Pólya's work in complex analysis (Ralph P. Boas), his contributions to problem solving and education (Alan H. Schoenfeld), his influence on mathematics education (Jeremy Kilpatrick), and the Pólya-Escher connection (Doris Schattschneider). In 1988, Alexanderson broke with tradition and changed the cover format to white ink on colored paper with the title in Roman letters. This cover style has not changed since.

Martha Siegel edited the *Magazine* from 1991 to 1995 and was succeeded by Paul Zorn from 1996 to 2000. By the mid-1990s, the journal's issues had increased to approximately eighty pages. Therefore, beginning with the February 2000 issue, *Mathematics Magazine* was bound with a spine containing information in white ink, creating a fuller, more appealing mien. (This was also true for *The College Mathematics Journal*, beginning with its January 2000 issue.)

The *Magazine* was edited by Frank A. Farris during 2001-2005, by Allen J. Schwenk from 2006 to 2008, and again by Farris for another year in 2009. (The December 2005 issue included the article "Twentieth Century Gems from *Mathematics Magazine*," by Gerald L. Alexanderson and Peter Ross.) In the January 2009 issue's editorial, Farris updated prospective authors about the Association's online-publishing system.

> If your article is accepted, we will ask you to provide (if possible) a LaTex file using one of the templates provided at our website, along with electronic versions of figures. If you wish to provide one or more electronic complements to your manuscript, such as color illustrations, Java applets, or statistical datasets, please include links to these materials with your manuscript. If your article is accepted, the complements will be hosted at our site.

Walter Stromquist edited *Mathematics Magazine* from 2010 through 2014. Beginning with his January 2010 issue, there is a brief summary at the end of each main article, and authors' bios (formerly on the journal's inside cover) appear after the summary. The October 2010 issue's *NEWS and LETTERS* described the first USA Junior Mathematics Olympiad (for students in 10th

grade and below) and included its problems and solutions. Coverage of this Olympiad has continued since.

As with the *Monthly*, the *Magazine*'s cover and features have converged to a steady-state format of *ARTICLES*, *NOTES*, *PROBLEMS & SOLUTIONS*, *REVIEWS*, and *NEWS*.


### The College Mathematics Journal

The first volume of *The Two-Year College Mathematics Journal* was published in the spring of 1970 by Prindle, Weber & Schmidt in collaboration with the MAA. It consisted of two issues per annual volume. Volume 1, Number 1 contained the statement of purpose:

> *The Two-Year College Mathematics Journal* has been created to provide communication for mathematicians interested and involved in the curricular and pedagogical problems of two-year colleges. The majority of such people are teaching in two-year colleges. They will contribute most of the articles. However, it is our hope that all mathematicians interested in such problems, whether they teach in secondary, two-, or four-year institutions will use the *Journal* to communicate their ideas.

Recognizing the increasing importance of two-year college mathematics, and the concomitant needs and interests of its growing membership at two-year colleges, the MAA assumed ownership of the *TYCMJ* in September 1974. This official MAA publication was co-edited by Calvin Lathan and Joseph Hashisaki. By volume 8, the number of issues per annual volume had increased to five.

Donald J. Albers, who edited the *TYCMJ* during 1979-1983, introduced a lively journal heralded by a bright yellow cover with a cartoon and teasers. Since then, the journal's covers have continued to display photographs, cartoons, pictures, and drawings. The covers of his issues did not change color, and this also has continued for each of the journal's editors. The *TYCMJ*'s new features included *COMPUTERS & CALCULATORS*, *MATHEMATICAL GEMS* by Ross Honsberger, and humor in THE *LIGHTER SIDE*. The January 1979 issue launched Warren Page's *CLASSROOM CAPSULES* column, whose short items conveyed new insights on familiar topics. Since then, other than the January 2012 issue, *CLASSROOM CAPSULES* has continued to appear in every issue of the journal. During 1979, Gerald Alexanderson's *CLASSICS REVISITED* called attention to ideas for classroom use from available books that are considered classics in mathematics. Interviews by Albers and others of prominent mathematicians were very popular, collections of which have been published in two MAA volumes.

But, as Albers discovered, getting launched was not so simple. The first signs of trouble were Page's rejections of papers Albers had sent him for possible inclusion in his *CLASSROOM CAPSULES* column. Unbeknownst to Page, these articles had already been accepted for publication by Albers' predecessor. It soon became apparent that Albers had inherited a large backlog of previously accepted articles, some mathematically incorrect and others of dubious quality. Albers and Page presented this imbroglio to MAA's Committee on Publications, and Page was nominated to correct and revise these articles for an MAA volume directed to the interests of its two-year college members. Page obtained an Alfred P. Sloan grant for released time from teaching to work on this project. And in 1981, the volume *Two-Year College Mathematics Readings* was published, a seemingly satisfactory denouement to all concerned.

Albers and Page worked together and with the Committee on Two-Year Colleges to enhance the status and increase the participation of two-year college members within MAA. Both felt that many MAA members were hesitant to subscribe to a journal devoted primarily to teachers at two-year colleges, and that some who read the *TYCMJ* did so by placing it inside the *Monthly* or *Math Magazine*. Page suggested dropping the "Two-Year" in the title. That name change was adopted by the Association, and in 1984 he assumed editorship of *The College Mathematics Journal*. Its new Statement of Purpose indicated that

> The *CMJ* exists to serve all who are interested in the earlier years of college-level mathematics, the primary focus being on the first two years.

The intent was no longer to serve only those at two-year colleges, but rather to integrate and unite mathematics teachers at two-year colleges with those at all institutions who teach or are involved with such courses.

From 1984 to 1988, Warren Page edited *The College Mathematics Journal* and its *CLASSROOM CAPSULES* column. In 1984, he introduced *MEDIA HIGHLIGHTS*, which summarizes mathematics-related articles from a broad spectrum of publications and resources. He has continued to edit this column since then.

*COMPUTERS & CALCULATORS* was transformed into the *COMPUTER CORNER*, which included software reviews. The May 1986 issue of *COMPUTER CORNER* introduced "A Mathematics Software Database" for college-level mathematics instruction by the column's co-editors R.S. Cunningham and David A. Smith. This was updated in the column's May 1987 and May 1988 issues. And from the January 1987 through November 1988 issues, *COMPUTER CORNER* also included Harley Flanders' *ALGORITHM of the BI-MONTH*. By then, the *CMJ* had become the "go-to" source for computer-related instruction, software, and information.

Also introduced were *FORUM*s, whose purposes were "to provide open, interactive exchanges on issues of current significance to the mathematical community." *CMJ* issues that featured *FORUM*s drew widespread interest. The November 1984 *FORUM* centered on the solicited articles "Will Discrete Mathematics Surpass Calculus in Importance?" by Anthony Ralston, and "The Introductory Mathematics Curriculum: Misleading, Outdated, and Unfair" by Fred Roberts. Each article included the invited comments of prominent colleagues, remarks by the journal's readers, and responses from the author. The January 1985 *FORUM* was based on Stephen Maurer's provocative article "The Algorithmic Way of Life is Best," and the January 1988 *FORUM* debated David Moore's article "Should Mathematicians Teach Statistics?"

The November 1985 issue focused on Olympiads. It featured Page's interview of the 1985 United States International Mathematical Olympiad team, supplemented by each member's brief biography and his solution of one of the Olympiad's problems. The interview was preceded by Nora Turner's "A Historical Sketch of Olympiads: USA and International," followed by Cecil Rousseau's and Greg Patruno's "The International Mathematical Olympiad Training Session," and Turner's survey in "A Follow-up on the USAMO Winners" of the family background and career plans of seventy-nine such winners.

The *CMJ*'s circulation jumped from 6,538 in 1983 to 10,520 by 1989. This, as with *Mathematics Magazine*, was most likely due to the features newly introduced during that period.

During 1989-1993, Ann and William Watkins co-edited the *CMJ* and continued its tradition of introducing innovations. In their first issue, they added the following sentence to the instructions for submitting an article: "The author's name should not appear on the manuscript." The *CMJ* has been using this "double-blind" system of reviews ever since. The January 1989 issue launched Ed Barbeau's column *FALLACIES, FLAWS, and FLIMFLAM*, whose purpose was to collect, comment on, and serve as a clearinghouse for mistakes that cause readers to reflect and marvel: "Something is wrong, but what is it?" Beginning with the May 1990 issue, the *COMPUTER CORNER* included *CLASSROOM COMPUTER CAPSULES*, lessons that demonstrate how readily available software can have an immediate and beneficial effect in the classroom. The September 1990 issue introduced *STUDENT RESEARCH PROJECTS*, edited by Irl Bivens. Readers were invited to submit an open-ended question or set of questions intended to give undergraduate students experience doing "junior" mathematical research.

Bart Braden was the *CMJ*'s editor during 1994-1998. His May 1994 issue featured the *FORUM* "Newton's Image Problem," in which Robert Weinstock's article "Isaac Newton: Credit Where Credit Won't Do" pointed out results mistakenly attributed to Newton. This was debated by four invited Newton

scholars in the articles "Newton's Orbit Problem: A Historian's Response" (Curtis Wilson), "In Defense of Newton: His Biographer Replies" (Richard S. Westfall), "In Defense of Newton: A Physicist's View" (A. P. French), and "Newton's Principia and Inverse-Square Orbits" (M. Nauenberg). The *FORUM* concluded with Weinstock's reply to Nauenberg and his offer to send readers his rebuttals to the other critiques of his paper. *COMPUTER CORNER* concluded with the November 1998 issue.

The *CMJ* was edited by Underwood Dudley during 1999-2003 and by Lowell Beineke from 2004 to 2008. Both greatly increased the number of amusing filler items. Looking back, Beineke says, "My regard for fillers is supported by the fact that I received more comments from readers about them than about either the articles or the capsules." *FALLACIES, FLAWS, and FLIMFLAM* concluded with the November 2008 issue.

Under Michael Henle's editorship, from 2009 to 2013, the *CMJ* featured four special issues. His June 2009 "Puzzle Issue" contained an interview with Martin Gardner, followed by articles involving L-tromino tilings, polyominos and computers, Sudoku Latin squares, card tricks, chess, puzzling mechanisms, a crossword puzzle, and Mark Bollman's book review of *Professor Stewart's Cabinet of Mathematical Curiosities*. The issue also included solutions to the puzzles and brain teasers.

September 2010's "The Fairness Issue" began with Michael A Jones' interview of the game theorist and political scientist Steven J. Brams. Its articles discussed the consequences of small changes in the hypotheses of classical cut-and-choose and moving-knife algorithms, optimal strategies for the sequential selection of indivisible resources, game-theoretic analyses of the division of work in a task to be done by two people, approximations of Lewis Carroll's method for picking an election's winner, gerrymandering and convexity-based measures of shape compactness, and the visualization of election results using Saari triangles.

"The Mathematics of Martin Gardner" in the expanded January 2012 issue, supplemented by "More Martin Gardner Mathematics" in the March 2012 issue, offered *CMJ*'s readers a veritable feast of Gardner-introduced and inspired mathematics, a sample of which included articles about hexaflexagons, polynomial dissections, KenKens, magic knight's tours, the Secretary Problem from the applicant's viewpoint, snarks, Bulgarian solitaire, Lake Wobegon dice, Gardner's Three-penny Trick, and the game RATWYT. A crossword puzzle also was included, as was Tanya Khovanova's article discussing Gardner's mistake and self-corrected error in the Two-Children Problem (determine the probability that both children are boys, given that at least one is).

The November 2013 special issue, "The Mathematics of Planet Earth," included articles related to seasonal variation of epidemics, dynamics of global

temperature, cyanobacteria growth in lake ecosystems, climate modeling, underground mathematics, and forest carbon uptake. Also included was Benjamin Fusaro's book review of *Mathematics for the Environment* by Martin Walter.

*STUDENT RESEARCH PROJECTS* concluded with Henle's November 2013 issue. Brian Hopkins, the *CMJ*'s current editor, has continued the inclusion, since the January 2010 issue, of a very short summary at the end of each article and *CLASSROOM CAPSULE*, and of an annual "Puzzle Issue."

Thus, as with the *Monthly* and *Magazine*, *The CMJ* has consolidated to a few core departments: *ARTICLES*, *CLASSROOM CAPSULES*, *PROBLEMS & SOLUTIONS*, and *MEDIA HIGHLIGHTS*. In fact, the three journals have similar core categorizations, if classroom capsules are viewed as notes and media highlights are considered reviews.


**Math Horizons**

In the fall of 1990, MAA's Executive Director Marcia Sward lamented to Donald Albers, soon to become MAA's Director of Publication and Programs and Associate Executive Director, that it was unfortunate the Association did not publish a journal for students. A few weeks later, Albers sent her an outline for a magazine for students. Survey inputs from students, faculty, and others were gathered by the Committee on Publications, and a mock issue was prepared to gather more comments from prospective readers. At its 1991 summer meeting, the Board of Governors endorsed the addition of *Math Horizons* to MAA's suite of publications, but with the caveat that Albers and Sward had to raise the money to get it started.

Over the next few months, Sward and Albers obtained grants from the Exxon Educational Foundation, the William and Flora Hewlett Foundation, and the National Science Foundation. And in 1992, the Board of Governors established the Trevor Evans Awards, named after the mathematician, writer, and teacher at Emory University, to be presented to authors of exceptional articles published in *Math Horizons.*

To greatly reduce mailing and renewal costs, and to facilitate the purchase of departmental subscriptions, *Horizons* was distributed free in bulk to all mathematics departments in two-year and four-year colleges. Its premiere issue was distributed in November 1993, and its second issue in the spring of 1994. The magazine's inside cover stated*:*

> *Math Horizons* is for undergraduates and others who are interested in mathematics. Its purpose is to expand both the career and intellectual horizons of students.

By the fall of 1994, *Math Horizons* had become self-sufficient, with more than 17, 000 subscriptions. By February 1995, subscriptions reached 22, 000, making it MAA's most widely distributed publication.

Don Albers served as the magazine's founding editor from 1994 to1998 and was succeeded by co-editors Deanna Haunsperger and Steve Kennedy during 1999-2003. When Arthur Benjamin and Jennifer Quinn co-edited the magazine, during 2004-2008, they created a Student Advisory Group that would recommend ideas, review books, and occasionally write articles. Every issue now has student-written book reviews and nearly every issue has at least one article with student authorship.

Since the Association had not yet accorded *Horizons* equal status with its journals, the sentiments of some MAA members resonated with Benjamin's feelings:

> I would like to see *Math Horizons* someday be given the same status as the other three journals by allowing members to choose *Horizons* as their publication of choice. Currently, you can only get it as an 'add-on' to regular membership. I think that MAA could attract and retain more members (say, high school teachers) who would prefer to get *Math Horizons* as their publication of choice, instead of having to purchase one of the other journals.

Although MAA members began in mid-2006 to have access to electronic versions of the *Monthly*, *Magazine*, and *CMJ* to which they subscribed, electronic versions of *Horizons* did not become available to subscribers until 2010. However, as of 2014, MAA membership includes electronic access to all four publications. Print versions of each publication continue to be available at an additional cost.

A major change in *Math Horizons* was the inclusion of color, beginning in 2005. Its current appealing full-color page layout, set in three columns, renders the magazine quite distinct from the layout of MAA's journals. As Benjamin recalls:

> When we started, every page except the cover had at most one color, a pale blue. The previous editors had to raise funds or ask MAA to pay for color pages, which cost $1000 for eight pages. By 2008, the cost of color printing had come down enough that MAA was willing to let every page have full color. Had this happened earlier in our term, we would have worked even harder to find articles that would exploit the magazine's color capability.

While some journal issues have been printed with color, doing so is not cost effective for the Association.  Since relatively few people now receive print copies of journals, the expense of printing in color exceeds what this small audience pays for print. However, the extra cost of color for *Math Horizons* and *MAA FOCUS* is not prohibitive because they have fewer pages than the journals and a different production, composition, layout, and printing process. And since a larger number of copies are printed, the cost per issue is much lower than for journals. Journal editors and prospective authors have long been encouraged to include color in their electronic versions, and almost all journal issues now have color.

Stephen Abbott and Bruce Torrence co-edited *Math Horizons* from 2009 to 2013, during which *AFTERMATH* featured an editorial by a different author that concluded each issue. The February 2009 issue initiated the column *A VIEW FROM HERE* that consisted of a student's writings on a range of topics. It also introduced a dramatically revamped problems section, *THE PLAYGROUND!*, edited by Derek Smith, which contained "The Sandbox" (problems anyone can play regardless of mathematics background), "The Zip-line" (problems connected to articles in the issue), "The Jungle Gym" (any type of problem), "The Carousel" (old problems deemed worthy of another round), and "Wrap Up" (readers' comments on published problems).

*Math Horizons* is currently edited by David Richeson.


## *MAA FOCUS*

In his obituary of Arthur Seebach, in *Mathematics Magazine*'s February 1997 issue, Lynn Steen recalled how pages in the September 1976 issue's *NEWS and LETTERS* caught the attention of Edwin Beckenbach, then chair of the *MAA*'s Publications Committee.  With Beckenbach's urging, the Association began the newsletter *MAA FOCUS*. Its first issue appeared in March of 1981. The September-October 1981 issue featured a "Friends of *FOCUS*" appeal for funds to support publication of the newsletter. In it, Beckenbach wrote:

> We hope routinely to publish articles …, along with a variety of reports and announcements, to help MAA members keep better informed about the activities and services of the Association, as well as current events in the mathematical world.

*MAA FOCUS* was edited at the MAA national office until 1991, when Keith Devlin (at Colby College) began a five-year term as editor. Devlin began an op-ed column in *FOCUS* that since 1996 has appeared on MAA's website as the monthly blog *Devlin's Angle*.  After Devlin's term, *FOCUS* was edited at MAA's national office by Harry Waldman, MAA Journals Editorial Manager. During 1999-2011, Fernando Gouvêa (also at Colby College) served as editor of

*FOCUS*, after which MAA Director of Publications Ivars Peterson became editor.

From its 1981 inception, *MAA FOCUS* continued to broaden its coverage and, beginning with its December 2007 issue, was redesignated as the Association's newsmagazine. Its June-July 2014 issue indicated that:

> It contains information about MAA activities, news about mathematics and the mathematical community and lively articles about interesting new (or sometimes not so new) ideas in mathematics, mathematics education, and related areas. It is published six times a year and received (online) by all members of the MAA.

### *JOMA* and *Loci*

MAA's first venture into online publication was a single "prototype" issue of *Communications in Visual Mathematics* (*CVM*), sponsored by NSF via MAA and edited by Davide Cervone, then at the Geometry Center at the University of Minnesota, Tom Banchoff, and others. This attempt inspired the *Journal of Online Mathematics* (*JOMA*), founded in 2001 with another NSF grant to MAA. David Smith edited this journal until 2006, when Kyle Siegrist took over. In 2008, *JOMA* was folded into *Loci,* the journal of the MAA Mathematical Sciences Digital Library (MathDL). Lawrence Moore directed MathDL and Tom Leathrum edited *Loci.* In 2013, MathDL and *Loci* were discontinued. *CVM, JOMA,* and *Loci* are archived at
http://www.maa.org/publications/periodicals/loci

### *Convergence*

MAA's free online publication, *Convergence,* is both an online journal on mathematics history and an ever-expanding collection of online resources to help instructors at many levels teach mathematics using its history. The idea of *Convergence* came from an MAA ad-hoc committee on the history of mathematics formed in the late 1990s. The decision to start an online magazine was made at the committee meeting in January 2001, with Victor J. Katz agreeing to lead the effort. The MAA received a planning grant from the NSF in early 2002 to flesh out the ideas for the magazine. Frank Swetz, who had joined the effort, suggested the name *Convergence*, because this would be a magazine in which mathematics, history, and education "converge." After further development work, the MAA was awarded a full grant from the NSF in 2003, and the magazine then went live
(http://www.maa.org/publications/periodicals/convergence) in April of 2004. It featured five articles, book reviews, an *ON THIS DAY* calendar of each day's mathematics-related events, another calendar of upcoming mathematics history conferences and special events, a collection *MATHEMATICAL QUOTATIONS* of daily quotes, and sets of *PROBLEMS FROM ANOTHER TIME*. Other departments

added over the next few years were the *PORTRAIT GALLERY* of images of mathematicians from ancient to modern times; *MATHEMATICAL TREASURES*, containing images of historical mathematics texts and objects; and the Paul R. Halmos *PHOTOGRAPH COLLECTION*, 342 photos he had taken of twentieth-century mathematicians.

The Table of Contents at http://www.maa.org/publications/periodicals/convergence/whats-in-convergence-tables-of-contents shows that, after NSF's initial grant to MAA for the magazine ended, the MAA included *Convergence* as a "department" of *Loci* in the NSF grant for MathDL. But when *Loci* was discontinued in 2013, *Convergence* once again became a stand-alone journal.

One gradual change in *Convergence* over time, partly due to changes in its funding, but mainly due to greater awareness of MAA among college and university faculty than among high school teachers, has been its shift in audience to mainly undergraduate instructors. This has been accompanied by a shift from "magazine" to refereed "journal."  Also, as the MAA's technical resources have improved, so has the quality and quantity of dynamic, interactive features in *Convergence*. Thus, most articles published today take full advantage of the online nature of the journal.  *Convergence* has been edited since 2009 by Janet Beery.


**Collaboration and collegiality**

It would be appropriate at this point to mention briefly how editors of MAA's journals interact and collaborate for the Association's benefit. Editors periodically share ideas, discuss concerns, and inform each other of articles that will appear in forthcoming issues. Thus, for example, the *Mathematics Magazine*'s January 2002 issue, which covered the 62$^{nd}$ Putnam Competition, included the editorial note: "The *American Mathematical Monthly* will print additional Putnam solutions later in the year. The solutions here were chosen to be among the most elegant."

An editor who receives an interesting, yet unsuitable article often forwards it for consideration to the editor of a more appropriate journal. In this collegial spirit, editors also share the humor inherent in editing; for instance, in the following letters received by *CMJ* editors Ann and William Watkins and *Magazine* editor Gerald Alexanderson.

> Dear Ann and Bill,
>   So glad you sent me Manuscript #7689 to referee. I hope you don't mind if I send you my report on it that I wrote 6 months ago for the *Monthly*. I note the author has revised his paper by changing the title.

Dear Professor Alexanderson,

   Rejected! My gift to the mathematical community was rejected! You have the most stupid referees in the U. S. Your inability of publishing this result represents your inability of acting as an editor! Since my paper is too good for you, I'm sending my paper to the *Monthly*!

Editors can also be impish. As Allen Schwenk was proofreading an issue of the *Magazine*, he noticed that the last word on one page was inadvertently repeated as the first word of the next page. Feeling mischievous, he couldn't resist sending the printer the overly pedantic directive:

The last word on page 364, "one," is repeated as the first word on page 365. So the sentence contains "one one" where there should only be one "one." Delete one "one" and keep one "one." You can delete either "one," I don't care which "one." Just so we are left with one "one" and not "one one."

**Future considerations**

MAA's journals and magazines continue to flourish, and its website hosts a growing treasure trove of multimedia features and interactive mathematics. The continued growth and success of the Association's publications also suggests concomitant matters that may need to be considered, since there is only so much that anyone, especially busy instructors, can read and process. In view of the seductive pull from one appealing article or feature to another, it may be useful for the Association to survey how much of which published offerings its members actually peruse. (Or, whether readers are becoming anxious about not keeping current with so much of the instantly available competitive beckonings.)

Given the MAA's resources in human talent and creativity, and the publishing environment's rapidly changing technologies, it is tempting to conjecture how over the next fifty years the Association's publications and website offerings will evolve, and on what platforms they may become available.

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