ASL
Association for Symbolic Logic

ASL NEWSLETTER   September 2013

- **In Memoriam: Richard Laver.** Richard Laver ("Rich" to those who knew him) died on September 19, 2012 after a several year struggle with Parkinson's disease, in Boulder, Colorado. He was born on October 20, 1942 in Los Angeles, California.

    Rich obtained his Ph.D. in 1969 at the University of California, Berkeley, under the direction of Ralph McKenzie. In his dissertation he solved a problem of Fraïssé, showing that there is no infinite sequence of scattered linear orderings each embeddable in the previous one but none embeddable in the following one. In his proof he used several facts about well- and better- quasi-orderings, Hausdorff's theorem on scattered orderings, and results of Fred Galvin. He developed these ideas in several papers.

    In a 1976 paper Laver settled another long-standing problem, showing that it is consistent that Borel's conjecture holds: no uncountable set has strong measure zero, while the continuum has size $\aleph_2$. He proved this by introducing what is now known as Laver forcing: forcing similar to Sachs forcing, but with trees which have stems, an element of the tree such that all other elements extend it. He used a countable support iteration of this forcing, one of the first uses of such an iteration.

    In a paper of 1978 he contributed to the theory of indestructiblity, showing that there is a forcing extension in which a given supercompact cardinal remains supercompact under certain further extensions. For this purpose he used what is now called a Laver function, and Laver preparation.

    In 1984 he proved an extension of the Halpern-Läuchli theorem to an infinite product of perfect trees.

    Beginning in 1990 Rich studied an algebraic notion deriving from a large cardinal notion. If λ is such that there is a nontrivial elementary embedding j of V_λ into V_λ, then the collection of all such embeddings can be made into a structure $(E_\lambda, *)$ where $*$ is a binary operation on E_λ which satisfies the left distributive law $a * (b * c) = (a * b) * (a * c)$. He studied this structure in a series of papers. Several of the algebraic results were proved under a large cardinal assumption, while some of them were later proved by purely algebraic methods. These considerations gave rise to an interesting finite structure called a Laver table. He showed that there is an operation $*$ on $\{1, \ldots, 2^n\}$ such that $a * 1 \equiv a + 1 \pmod{2^n}$ and the above left distributive law holds.

    Rich had many extra-mathematical interests. He had long been interested in chess. He was on the UC Berkeley winning team of the 1967 US Intercollegiate championship, and had the rank of an International Master. He played competitive bridge. He was an active climber; both pure rock climbing and mountaineering. For example, he climbed the normal route on the Eiger with Don Monk—a memorable trip involving a storm on the descent. He had a droll sense of humor, frequently expressed in word puzzles.

    His premature death leaves a gap in the lives of many people.

- **In Memoriam: Mary Ellen Rudin.** Mary Ellen Rudin was born December 7, 1924 in Hillsboro, Texas. She died March 18, 2013, peacefully at home, exactly as she wished, in Madison, Wisconsin.

    Mary Ellen got her Ph.D. in 1949 at the University of Texas, Austin under the supervision of R.L. Moore. After teaching at Duke University and the University of Rochester, she and her husband, Walter Rudin, joined the faculty of the University of Wisconsin in 1958. She became a Full Professor in 1970 and Professor Emeritus in 1991.

    Walter died in 2010. The Rudins are survived by their four children. There is an excellent biographical interview of her published in: Albers, Donald J. and Reid, Constance, *An Interview with Mary Ellen Rudin*, College Math. J. 19 (1988), no. 2, 114-137. `http://www.jstor.org/stable/pdfplus/2686174.pdf`.

    Mary Ellen Rudin was the Grace Chisholm Young Professor, a Hilldale Professor, a Fellow of the American Academy of Arts and and Sciences, member of the Hungarian Academy of Sciences, and received Honorary

Doctor of Science Degrees from the University of North Carolina, University of the South, Kenyon College, and Cedar Crest College. She served as the Vice President of the American Mathematical Society 1980-81 and was a member of the Board of Governors of the Mathematical Association of America 1973-75 as well as numerous other committees of the AMS and MAA.

Mary Ellen Rudin was one of the leading topologists of our time. Besides solving a number of well-known outstanding open problems, she was a pioneer in the use of set-theoretic tools. She was one of the first to apply the independence methods of Cohen and others to produce independence results in topology. An entire volume devoted to articles describing her mathematics appears in the Annals of the New York Academy of Sciences: *The Work of Mary Ellen Rudin*, Papers from the Summer Conference on General Topology and Applications in honor of Mary Ellen Rudin held in Madison, Wisconsin, June 26-29, 1991. Annals of the New York Academy of Sciences, 705, 1993. The quotations below are from this volume.

In her thesis she gave an example of a nonseparable Moore space that satisfies the countable chain condition. She published the results in three papers in the Duke Math Journal. To quote Steve Watson, "This cycle represents one of the greatest accomplishments in set-theoretic topology. However the mathematics in these papers is of such depth that, even forty years latter, they remain impenetrable to all but the most diligent and patient readers."

In 1955 she used a Souslin tree to construct a Dowker space. A Dowker space is a normal space whose product with the unit interval is not normal. The existence of a Souslin tree is consistent with ZFC, but not provable from ZFC. In 1971 she constructed a Dowker space without using any extra set-theoretic axiom. The space she constructed has cardinality $(\aleph_\omega)^{\aleph_0}$. It led to an invited address at the International Congress of Mathematicians in 1974. It also led to her interest in the box topology. In 1972 she proved that the Continuum Hypothesis (CH) implies that the box product of countably many compact metric spaces is normal. In 1989, assuming CH, she constructed a Dowker space of cardinality $\aleph_1$.

Mary Ellen is well-known for her work on $\beta\mathbb{N}$, the space of ultrafilters on the natural numbers, starting in 1966. She was co-inventor of two well-known partial orders on this space, the Rudin-Keisler order and the Rudin-Frolik order. The Rudin-Frolik order led to the first proof in ZFC that the space $\beta\mathbb{N} \setminus \mathbb{N}$ is not homogeneous. Under CH, this was already known by a result of Walter Rudin.

She worked extensively on the question of S and L spaces. Mary Ellen produced the first S-space (a hereditarily separable space that is not hereditarily Lindelöf) assuming the existence of Souslin tree in 1972. Her 1985 monograph, *Lectures in Set-theoretic Topology*, devotes an entire chapter to S and L spaces. To quote Stevo Todorčević, "The terms S and L space, which are predominant in most of the literature on this subject, are first found in these lectures. This shows a great influence not only of this monograph but also of M.E. Rudin's personality on the generation of mathematician's working in this area, since it is rather unusual in mathematics to talk about certain statements in terms of their counterexamples."

In 1999, almost a decade after her retirement, Mary Ellen settled a long-standing conjecture in set theoretic topology by showing that every monotonically normal compact space is the continuous image of linearly ordered compact space. This paper was the final one in a series of five which gradually settled more and more special cases of the final result. The construction of the linearly ordered compact space is extraordinarily complex. To quote Frank Tall, "Mary Ellen's fame is largely as a producer of weird and wonderful topological spaces – examples and counterexamples. One often wonders how on earth she was able to construct them. She has an uncanny ability to start off with a space that has some of the properties she wants, and then push it and pull it until she gets exactly what she wants. Mary Ellen cheerfully tells people not to read her papers, but rather the later ones by people who simplify what she has done, but she of course is the one who did it first."

Mary Ellen was by consensus a dominant figure in general topology. Her results are difficult, deep, original, and important. The connections she found between topology and logic attracted many set theorists and logicians to topology. The best general topologists and set theorists in the world passed regularly through Madison to visit her and work with her and her students and colleagues.

She had sixteen Ph.D. students, many of whom went on to have sterling careers of their own. To quote Michael Starbird, "From the perspective of a graduate student and collaborator, her most remarkable feature is the flood of ideas that is constantly bursting from her... It is easy to use the Mary Ellen Rudin model to become

a great advisor. The first step is to have an endless number of ideas. Then merely give them totally generously to your students to develop and learn from. It is really quite simple. For Mary Ellen Rudin."

- **The 2013 ASL Election.** At the end of this year the ASL will elect a Secretary-Treasurer, two members of the Executive Committee of the Council, and two members of the Council. All terms are for three years beginning January 1, 2014. The ballot will be sent to all ASL members with the November Newsletter. The 2013 Nominating Committee has nominated Charles Steinhorn (Vassar) as Secretary-Treasurer, Joan Bagaria (Barcelona) and Rod Downey (Victoria University of Wellington) for the Executive Committee positions, and Alessandro Andretta (Torino) and Patricia Blanchette (Notre Dame) for the Council positions. The Nominating Committee consisted of Julia Knight (Chair), Stephan Kreutzer, Penelope Maddy, Alf Onshuus, Martin Otto, Richard Shore, Katrin Tent, Andreas Weiermann, and Philip Welch.

    Additional nominations may be made by petition signed by 20 or more ASL members; such petitions should be received by the ASL Secretary-Treasurer (email `asl@vassar.edu` or ASL, Box 742, Vassar College, 124 Raymond Ave., Poughkeepsie, N.Y. 12604, USA) no later than November 1, 2013. In a contested election, each candidate has the opportunity to make a 100-word statement to be distributed with the ballot.

- **2013 Sacks Prize.** The ASL invites nominations for the 2013 Sacks Prize for the most outstanding doctoral dissertation in mathematical logic. Nominations must be received by September 30, 2013. The Sacks Prize was established to honor Professor Gerald Sacks of MIT and Harvard for his unique contribution to mathematical logic, particularly as adviser to a large number of excellent Ph.D. students. The Prize was first awarded in 1994 and became an ASL Prize in 1999. The Fund on which the Prize is based is now administered by the ASL and the selection of the recipient is made by the ASL Committee on Prizes and Awards. The Sacks Prize will consist of a cash award plus five years free membership in the ASL. For general information about the Prize, visit `http://www.aslonline.org/info-prizes.html`.

    Anyone who wishes to make a nomination for the 2013 Sacks Prize should consult the webpage `http://www.aslonline.org/Sacks_nominations.html` for the precise details of the application process. A brief summary of the procedure is provided below.

    Students who defend their dissertations (equivalent to the American doctoral dissertation) between October 1, 2012, and September 30, 2013, are eligible for the Prize this year. This is an international prize, with no restriction on the nationality of the candidate or the university where the doctorate is granted. Nominations should be made by the thesis adviser, and consist of: name of student, title and 1–2 page description of dissertation, date and location of the thesis defense, letter of recommendation from the adviser, an electronic copy of the thesis in .pdf form, or the address of a web site from which an electronic copy in .pdf form can be downloaded, and an independent second letter of recommendation. Nominations should be sent to the Committee Chair, Theodore A. Slaman; pdf files sent as attachments by email to `slaman@math.berkeley.edu` are preferred. The form of such letters and other pertinent details can be found at the web site above, and need to be read prior to submitting a nomination. Correspondence should be addressed to Theodore A. Slaman, The University of California, Berkeley, Department of Mathematics, 719 Evans Hall #3840, Berkeley, CA 94720-3840 USA.

    Those wishing to contribute to the Sacks Prize Fund may send contributions to the ASL office (ASL, Box 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, New York 12604). All such contributions are tax-deductible within the USA.

- **2013 Shoenfield Prizes.** The ASL invites nominations for the Shoenfield Prizes for outstanding expository writing in the field of logic. There are two Shoenfield prizes, one for books and one for expository articles, each to be awarded simultaneously every three years; the first Shoenfield Prizes were awarded in 2007. Any book first published in the past 9 years may be considered for the book award. Any article published in the past 6 years may be considered for the article award. Nominations should be submitted to Theodore A. Slaman (`slaman@math.berkeley.edu`), Chair of the ASL Committee on Prizes and Awards. The deadline for nominations for the 2013 Prizes is November 1, 2013.

    The Shoenfield prizes were established by the ASL to honor the late Joseph R. Shoenfield for his many outstanding contributions to logic and to the ASL. Generations of logicians have especially valued Shoenfield's

expository gifts, and his writings provide models of lucidity and elegance. The fund on which the Prize is based is administered by the ASL and the award is made by the Association upon the recommendation of the ASL Committee on Prizes and Awards. For general information about the Prize, visit `http://www.aslonline.org/info-prizes.html`.

- **Call for Proposals: 2015 AMS-ASL Joint Special Session.** The ASL Committee on Logic in North America requests proposals for an AMS-ASL Joint Special Session to be held at the Joint Mathematics Meetings in San Antonio, January 10–13, 2015. Proposals or requests for further information should be sent to the Committee Chair, Matt Valeriote (email: `matt@math.mcmaster.ca`). The deadline for receipt of proposals is January 6, 2014.

- **Call for Proposals: 2016 North American Annual Meeting.** The ASL Committee on Logic in North America requests proposals for the 2016 ASL North American Annual meeting, to be held some time in the first five months of 2016. The committee seeks a university somewhere in North America and a local committee to host the meeting and handle the local arrangements. The ASL meetings ordinarily cycle geographically in the pattern: east (Waterloo 2013), west (Boulder 2014), and midwest (Urbana 2015). Thus, for 2016 the committee seeks a location in the east. Any reasonable proposal, however, will be considered. For more information, interested parties should contact the Committee Chair, Matt Valeriote (email: `matt@math.mcmaster.ca`) no later than November 11, 2013.

- **Discounted Dues for New ASL Individual Members.** The ASL now offers a 50% discount on dues for new individual members during each of the first two years of membership. For more information, visit `http://www.aslonline.org/membership-individual.html`.

ASL MEETINGS

- **Student Travel Awards: The 2014 ASL North American Annual Meeting, and other ASL or ASL-Sponsored Meetings.** The ASL will make available modest travel awards to graduate students in logic so that they may attend the 2014 ASL North American Annual Meeting in Boulder, Colorado (the announcement for travel award applications for the 2014 European Summer Meeting will be made later in the fall of 2013). Student members of the ASL also may apply for travel grants to other ASL or ASL-sponsored meetings. To be considered for a travel award, please (1) send a letter of application, and (2) ask your thesis supervisor to send a brief recommendation letter. The application letter should be brief (preferably one page) and should include: (1) your name; (2) your home institution; (3) your thesis supervisor's name; (4) a one-paragraph description of your studies and work in logic, and a paragraph indicating why it is important to attend the meeting; (5) your estimate of the travel expenses you will incur; (6) (for citizens or residents of the USA) citizenship or visa status; and (7) (voluntary) indication of your gender and minority status. Women and members of minority groups are strongly encouraged to apply. In addition to funds provided by the ASL, the program of travel grants is supported by a grant from the US National Science Foundation; NSF funds for meetings outside of North America may be awarded only to students at USA universities and to citizens and permanent residents of the USA. Air travel paid for using NSF funds must be in accordance with the Fly America Act. Application by email is encouraged; put "ASL travel application" in the subject line of your message.

  For the 2014 ASL North American Annual Meeting, applications and recommendations should be received before the deadline of March 10, 2014, by the Program Chair: Marcia Groszek, Department of Mathematics, 6188 Kemeny Hall, Dartmouth College, Hanover, NH 03755-3551 USA; Fax: 603-646-1312; email: `marcia.groszek@dartmouth.edu`. Applications by email are preferred.

  For ASL student member travel grants to ASL or ASL-sponsored meetings (other than the 2014 North American Annual Meeting and the 2014 European Summer Meeting), applications and recommendations should be received at least three months prior to the meeting at the ASL Business Office: ASL, Box 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, New York 12604, USA; Fax: 1-845-437-7830; email: `asl@vassar.edu`. Decisions will be communicated at least two months prior to the meeting.

- **2013-14 ASL Winter Meeting (with Joint Mathematics Meetings).** *January 17–18, 2014, Baltimore, Maryland.* This meeting will take place in conjunction with the Joint Mathematics Meetings, to be held on January 15–18, 2014. The invited speakers include: J. Avigad, D. Dzhafarov, S. Gao, J. Hamkins, M. Malliaris, and A. Medvedev. The Program Committee members are A. Dow (Chair), K. Lange, and D. Lippel. The meeting also includes the joint AMS-ASL Special Session, *Logic and probability*, co-chaired by W. Calvert, D. Cenzer, J. Franklin, and V. Harizanov. A registration form and hotel information is enclosed in this Newsletter mailing.

- **2013-14 ASL Spring Meeting (with APA).** *April 16–17, 2014, San Diego, California.* This meeting will be held jointly with the Annual Meeting of the Pacific Division of the American Philosophical Association, April 16–20, 2014. The invited portion of the program includes three panels: *New work on intensional and epistemic logic*, with the speakers S. Artemov, J. Horty, and D. Tucker; *Formalism today*, with the speakers M Ganeo, L. Kirby, and A. Weir; and, *Metalogic and early analytic philosophy*, with the speakers P. Blanchette, G. Schiemer, and R. Zach. The members of the Program Committee are Z. Damnjanovic, E. Reck (Chair), and S. Walsh.

- **2014 ASL North American Annual Meeting.** *May 19–22, 2014, Boulder, Colorado.* The members of the Program Committee are: M. Groszek (Chair), A. Kanamori, K. Kearnes, J. Marikova, S. Thomas, and H. Towsner. The Local Organizing Committee includes: N. Dobrinen, G. Forbes, N. Galatos, K. Kearnes (Chair), D. Monk, and A. Szendrei.

  Abstracts of contributed talks submitted by ASL members will be published in *The Bulletin of Symbolic Logic* if they satisfy the Rules for Abstracts (see below). Abstracts must be received by the deadline of February 21, 2014, at the ASL Business Office: ASL, Box 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, New York 12604, USA; Fax: 1-845-437-7830; email: `asl@vassar.edu`.

- **2014 ASL European Summer Meeting (Logic Colloquium '14).** *July 14–19, 2014, Vienna, Austria.* Logic Colloquium '14 will take place during the Vienna Summer of Logic (see below). The Program Committee members are: Z. Adamowicz, J. Avigad (Chair), M. Bezem, S. Friedman, J. Koenigsman, K. Lodaya, P. Oliva, T. Slaman, and R. Zach. The Local Organizing Committee includes: M. Baaz (Chair), A. Ciabattoni, S. Eberhard, S. Hetzl (Co-chair), and M. Goldstern. For further information, visit `http://vsl2014.at/`.

- **Rules for Abstracts.** The rules for abstracts of contributed talks at ASL meetings (including those submitted "by title") may be found at `http://www.aslonline.org/rules_abstracts.html`. Please note that abstracts *must* follow the rules as set forth there; those which do not conform to the requirements will be returned immediately to the authors submitting them. Revised abstracts that follow the rules will be considered if they are received by the announced deadline.

ASL SPONSORED MEETINGS

- **The Andrzej Mostowski Centenary Conference (Mostowski 100).** *October 11–13, 2013, Warsaw, Poland.* Invited speakers include: M. Bojańczyk, M. Džamonja, H. Friedman, T. Jech, L. Kołodziejczyk, K. Krupiński, A. Macintyre, M. Magidor, Y. Moschovakis, L. Newelski, A. Pillay, C. Rosendal, Z. Sela, S. Solecki, J. Väänänen, J. Woleński, and W.H. Woodin. There will also be a poster session at which graduate students can present their work. The local organizers include: K. Jaworska, M. Kurkowski, H. Michalewski, F. Murlak, D. Niwiński, M. Sabok, M. Srebrny, and S. Toruńczyk. For further information, visit `http://mostowski100.mimuw.edu.pl/doku.php`.

- **Twenty-Third EACSL Annual Conference (CSL) and Twenty-ninth Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2014).** *July 14–18, 2014, Vienna, Austria.* The organizers of these two series of meetings have chosen to join the 2014 editions into a single event within the Sixth Federated Logic Conference (FLoC 2014) that will take place during the Vienna Summer of Logic 2014 (see below). CSL is the annual meeting of the European Association for Computer Science Logic (EACSL) intended for computer

scientists whose research activities involve logic, as well as for logicians working on issues significant for computer science. The LICS Symposium is an annual international forum on theoretical and practical topics in computer science that relate to logic. The Program Committee Chairs are T.A. Henzinger and D. Miller, the Workshop Chairs are P. Bouyer-Decitre and G. Moser, and the members of the Local Organizing Committee are K. Chatterjee and J. Otop. For further information, visit `http://lii.rwth-aachen.de/lics/csl-lics14/index.html`.

CALENDAR OF OTHER MEETINGS (Also see `http://www.aslonline.org`.)

- **Rutgers MAMLS Conference.** *October 19-20, 2013, New Brunswick, New Jersey.* The invited speakers include P. Larson, A. Marks, J. Moore, I. Neeman, M. Sabok, S. Unger, and T. Wilson. For further information, visit `http://www.math.rutgers.edu/∼gs481/mamls.html`.

- **Nineteenth International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR-19).** *December 14–19, 2013, Stellenbosch, South Africa.* This conference series provides a a forum where researchers in the areas of logic, automated reasoning, computational logic, programming languages and their applications come together to discuss advances in these fields. The Program Chairs are K. McMillan, A. Middeldorp, and A. Voronkov; the Conference Chairs are B. Fischer and G. Sutcliffe; and the Workshop Chair is L. Kovacs. For further information, visit `http://www.LPAR-19.info`.

- **Vienna Summer of Logic 2014.** *July 9–24, 2014, Vienna, Austria.* This event consists of several co-located conferences organized in three streams: Logic in Computer Science / Federated Logic Conference; Mathematical Logic; and Logic in Artificial Intelligence. Eight conferences are included in the Logic in Computer Science / Federated Logic Conference stream: the Twenty-sixth International Conference on Computer-Aided Verification (CAV), the Twenty-seventh IEEE Computer Security Foundations Symposium (CSF), the Thirtieth International Conference on Logic Programming (ICLP), the Seventh International Joint Conference on Automated Deduction (IJCAR), the Fifth Conference on Interactive Theorem Proving, the ASL-sponsored Joint meeting of the Twenty-third EACSL Annual Conference on Computer Science Logic (CSL) and the Twenty-ninth ACM/IEEE Symposium on Logic in Computer Science (LICS), the Twenty-fifth International Conference on Rewriting Techniques and Applications (RTA) joint with the Twelfth International Conference on Typed Lambda Calculi and Applications (TLCA), and the Seventeenth International Conference on Theory and Applications of Satisfiability Testing (SAT). The Mathematical Logic stream includes four conferences: the European Meeting of the ASL (Logic Colloquium 2014), the Infinity Workshop, Logic, Algebra and Truth Degrees 2014, and the Kurt Gödel Fellowship Conference. The three conferences in the Logic in Artificial Intelligence stream are: the Fourteenth International Conference on Principles of Knowledge Representation and Reasoning (KR), the Twenty-seventh International Workshop on Description Logics (DL), and the Fifteenth International Workshop on Non-Monotonic Reasoning (NMR). The Organizing Committee for the Vienna Summer of Logic includes: M. Baaz (Chair), A. Ciabattoni, T. Eiter, A. Leitsch, G. Gottlob, T. Henzinger, V. Sabljakovic-Fritz, S. Szeider, H. Veith, and S. Woltran. For further information, visit `http://vsl2014.at/`.

NEW BOOKS AND JOURNALS (Also see `http://www.aslonline.org`.)

- **New ASL Books.** To see new books in the ASL's *Lecture Notes in Logic* and *Perspectives in Logic* series, visit `http://www.aslonline.org/books-lnl-available.html` for LNL volumes and `http://www.aslonline.org/books-perspectives_cup_springer.html` for Perspectives volumes.

The next Newsletter will be sent in November 2013. Items to be included should reach the Secretary-Treasurer before October 31, 2013.

Submitted by Charles Steinhorn, Secretary-Treasurer.