Berkeley

Mathematics

Newsletter

LETTER FROM THE CHAIR

CHAIR THEODORE A. SLAMAN

It is my privilege to write as Chair about the events and circumstances of the Berkeley Department of Mathematics.

The year is starting off in a remarkable way. For one, we enjoyed two outstanding lecture series. Professor John Conway from Princeton University delivered the Bowen Lectures. Conway started with the Platonic solids, ended with symmetries of crystals and exotic geometry, and taught something to everyone in the audience. Terence Tao from UCLA delivered the Chern Lectures. Tao's lectures presented an artful mix of analysis and geometry applied to topics covering the mathematical swath from finding solutions of the Maxwell-Klein-Gordon and Yang-Mills equations to finding long arithmetic progressions in the primes. Thanks to both speakers for a terrific mathematical experience. I remind everyone that we have two named lectures to come in the spring, the DiPerna and Tarski Lectures. These lectures are open to the public and I encourage everyone to attend. Check the Departmental website for dates and details.

The second out-of-the-ordinary aspect of the fall semester is that the Department is host to MSRI from the middle of November to the middle of January. MSRI is constructing a new building at its permanent site on the hill above Berkeley and had moved to a temporary site while the work is being done. However, the construction is taking longer than anticipated, the new building is not ready to be occupied, and the rental lease at the temporary site has expired. The Mathematics Department could not leave MSRI out in the cold rain and snow. In the Berkeley spirit, we have converted the Department's common room into an MSRI commune. We have also opened up what other space we have to the MSRI members and staff. It is said that the best thing about participating in an MSRI program is the close proximity to and common focus with all the other participants. Welcome to all the MSRI participants; we can certainly guarantee close proximity.

MATHEMATICS AT BERKELEY
A HISTORY

CALVIN MOORE

Note - Professor Calvin Moore has written a history of the UCB Mathematics Department, which will be published in mid 2006 by A K Peters Ltd. as a book with the tentative title Mathematics at Berkeley - A History. *His article, which follows, was adapted by him from the Introduction of that book. All royalties from this book will be donated directly to the UC Berkeley Foundation and will be dedicated to graduate student fellowship support in the Mathematics Department.*

The history of mathematics at Berkeley really starts in the 1850's shortly after California entered the union as a state. One major theme of the story will be how a mathematics department that for many years was devoted largely to teaching and which was seen by the university primarily in this role, developed over time into a major research center that is ranked among a very small group of the very best departments in the country and the world. This development reflected a similar change, although maybe a little out of phase, that was occurring in the American mathematical community generally. Indeed, it was said of Benjamin Peirce, the leading US

Highlights

What's inside:

FACULTY HONORS AND AWARDS
2004/2005 Academic Year

Grigory Barenblatt
Received an honorary degree of Doctor of Civil Engineering from the Turin Polytechnic Institute Timoshenko Medal of the American Society of Mechanical Engineers. The award citation reads, "For seminal contributions to nearly every area of solid and fluid mechanics, including fracture mechanics, turbulence, stratified flows, flames, flow in porous media, and the theory and application of intermediate asymptotics." Elected the Member of the European Academy of Sciences.

Elwyn Berlekamp
Presented the AMS Arnold Ross Lecture in St. Louis.

Alexandre Chorin
Received an honorary doctorate from the Swiss Federal Institute of Technology in Lausanne.

Robert Coleman
Gave a reading course to undergraduate, Adliredja. As a result, Adliredja won a science contest.

Ioana Dumitriu
Received an Honorable Mention in the Alston S. Householder Award XII. The Householder Award is given to the best Numerical Algebra PhD thesis produced world-wide, in a three-year period (this year the period was 2000-2003). This year they awarded the Prize, plus three Honorable Mentions. NOTE: Plamen Koev, who got his PhD in Applied Math from Jim Demmel in 2001, was another one of the Honorable Mentions.

Of interest: Previous winners of the Householder award were **Ole Hald** (1974), **James Dennel** (1984), and **Ming Gu** (1996).

L. Craig Evans
Sponsored two teams in the International Mathematical Contest in Modeling. One was designated Outstanding Winner and also won the Ben Fusaro Award. The other was designated as a Meritorious Winner.

Ole Hald
Received the 2005 Faculty Award for Outstanding Mentorship of GSIs. This award recognizes faculty (including both Senate and non-Senate faculty) who have provided GSIs outstanding mentorship in teaching at Berkeley and preparation for the teaching that graduate students may do in future careers.

William Kahan
Elected to the National Academy of Engineering. The Academy cited his development of techniques for reliable floating point computation, especially the IEEE Floating Point Standards.

Allen Knutson (with Terence Tao)
Received the 2005 AMS Levi L. Conant Prize. Knutson and Tao were honored for their stimulating article "Honeycombs and Sums of Hermitian Matrices" that appeared in *Notices of the AMS*. The article describes the solution of a mathematical problem that has connections to quantum theory and that was first posed in 1912 by the renowned mathematician Hermann Weyl. By skillfully combining honeycomb diagrams with a high level of exposition, Knutson and Tao make this fascinating subject accessible to a wide mathematical audience.

Hendrik Lenstra
Elected Member of the Academia Europaea.

Calvin Moore
Received the Berkeley Faculty Service Award. The is the first Berkeley Faculty Service Award (BFSA) and was presented to Professor Emeritus Moore to honor his longstanding commitment to the Berkeley Division of the Academic Senate, and to the University.

Beresford Parlett
Elected Honorary Fellow of New College, Oxford.

Bjorn Poonen
Awarded a Miller Professorship to be held during the Fall of 2005. Promoted to the rank of Professor.

Fraydoun Rezakhanlou
Promoted to the rank of Professor.

Thomas Scanlon
Was honored at the Distinguished Faculty Mentoring Award ceremony. This was the second annual ceremony, was created by the UC Berkeley Graduate Assembly, and honored faculty members who exhibit outstanding leadership in mentoring graduate student researchers. The Assembly believes strongly that excellence in research mentoring helps Berkeley maintain its preeminence. Nominations were submitted by graduate students.

Steve Smale
Received the Murgen Moser Prize from SIZM Dynamics Group. Also Received an honorary degree in computer science from the University of Genova. The town of Genova was the European capital of culture for the year 2004.
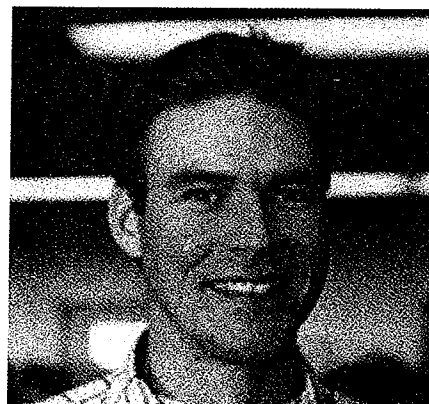
Bernd Sturmfels
Professor Sturmfels, with Professor Richard Stanley of MIT, were first in the nation to be named Clay Senior Scholars.

Jim Pitman
Sponsored a team in the International Mathematical Contest in Modeling. This team was designated as an Outstanding Winner and also won the Informs Prize. ✦

FROM THE MATH - STATISTICS LIBRARY
Ann Jensen, Librarian

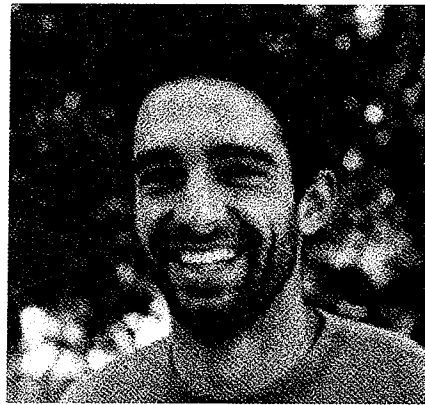What were David Brillinger, Cal Moore, Ken Ribet and Jamie Sethian up to on Homecoming Friday?

They participated as creators, teachers, and practitioners of the mathematical sciences at a kick-off panel for a Doe Library exhibit of historically significant rare books and manuscripts related to the mathematical sciences. The 3-month long exhibit included selections from the Bancroft Library's collection that illustrated the development and expression of mathematical concepts over time, as well as the development of printing technology, pedagogy, higher education, and the distinguished contributions of Berkeley's mathematicians and statisticians to the science and to society. The four Berkeley faculty who shared the excitement of their careers with the eager crowd in the Morrison Room truly brought mathematics home in new and exciting ways. The books and manuscripts stood as examples in the history of mathematics; the mathematicians exemplified the real-time excitement of active mathematics today.

Thanks to all who worked together on a wonderful illumination of the mathematical sciences for the wider UC Berkeley community of scholars, visitors, and bibliophiles. ✦

NEW FACULTY

JON WILKENING

Jon Wilkening grew up in Phoenix and attended the University of Arizona, where he was a Flinn Scholar and graduated Summa Cum Laude with Honors in 1996 with a BS in Engineering Physics. He then changed fields and enrolled in graduate school in our Department of Mathematics. In 1997 he received a Department of Energy Computational Science Graduate Fellowship as well as an NSF Graduate Research Fellowship; he accepted the former. He completed his PhD under the supervision of James Sethian in 2002. He then moved to Manhattan, where he was a Research Postdoc and Courant Instructor at the Courant Institute at NYU, and worked with Robert Kohn, Michael Shelley, and Leslie Greengard. In 2003, he and Oliver Fringer were named Frederick A. Howes Scholars in Computational Science.

Our Department of Mathematics is very pleased that Wilkening returned to Berkeley to accept the position of Assistant Professor in Fall of 2005. His general research interests include numerical analysis, computational physics, partial differential equations, and scientific computing. When he is not actively pursuing his career in mathematics, he enjoys swimming competitively (100/200/500 freestyle, 50/100 fly), playing intramural and pick-up basketball (power forward, center), and playing classical piano. ✦

CPAM NEWS

The Center for Pure and Applied Mathematics (CPAM) Interdisciplinary Lecture Series continues this year, meeting 12-1:30 on alternate Thursdays in the Lewis-Latimer Room of the UC Faculty Club. The continuing format is that participants buy their own lunch and then meet to eat together and to hear a half-hour expository research talk given by a UC faculty member from the mathematical sciences. ✦

POSTDOCTORAL FACULTY AND FELLOWS

Christian Blohmann, a Marie Curie Fellow, received his PhD in 2001 from Munich University. His research interests include noncommutative geometry, symplectic geometry, representation theory, and mathematical physics.

David Cimasoni, a Swiss National Science Foundation Fellow, received his PhD in 2002 from the University of Geneva. His research interests lie in the areas of geometric topology and knot theory.

PhD in 2005 from the Hebrew University of Jerusalem. His fields of interest lie in the areas of computer graphics and image processing, and computational fluid mechanics of complex fluids.
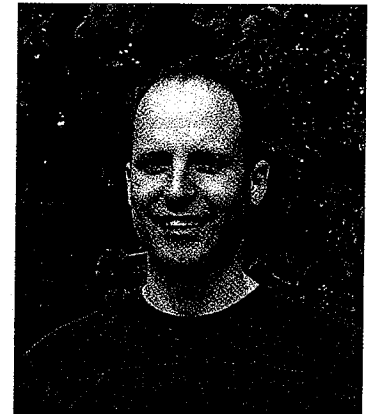

Dror Givon is an LBL postdoctoral fellow. He received his PhD in 2005 from the Hebrew University of Jerusalem. His fields of interest lie in the areas of applied math, computation, and optimal prediction.

Giulio Caviglia is a Visiting Assistant Professor. He received his PhD in 2004 from the University of Kansas. His fields of interest include commutative algebra: Koszul algebras, Castelnuovo-Mumford regularity, properties of initial ideals, and Grobner basis.

Michael Develin is an American Institute of Mathematics Fellow. He received his PhD in 2003 from UC Berkeley. His field of interest is in the area of discrete geometry.
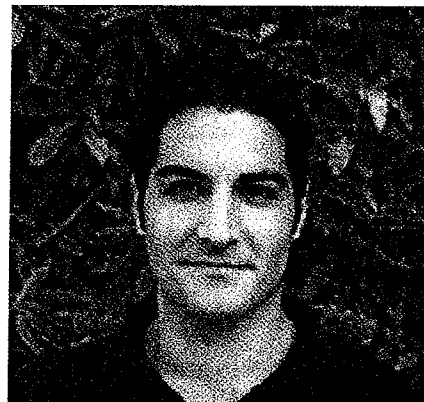
Raanan Fattal is a Miller Research Fellow. He received his

Dagan Karp, an NSERC postdoctoral fellow, received his PhD in Spring 2005 from the University of British Columbia. His research interest is in the area of Gromov-Witten theory on toric Calabi-Yau threefolds.

Dan Levy, a postdoctoral research fellow, received his PhD this fall from UC Berkeley. His interest is in the area of graph theory and computational biology.

Jason Metcalfe, an NSF Postdoctoral Fellow, received his PhD in 2003, from Johns Hopkins University. His research interests include partial differential equations and harmonic analysis.

Beth Samuels is a Visiting Assistant Professor. She received her PhD this fall from Yale University. Her areas of research include automorphic forms and number theory.

Alexis Virelizier, a Marie Curie Fellow, received his PhD in 2001 at the Institut de Recherche Mathematique Avancee, University of Louis Pasteur. His research interests include low dimensional topology and Hopf algebras, topology, algebra, and mathematical physics.
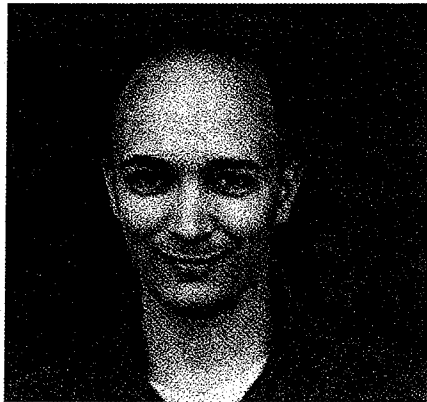

Lauren Williams, an NSF Postdoctoral Fellow, received her PhD this fall from MIT. Her fields of interest are combinatorial aspects of geometry and representation theory. ◆
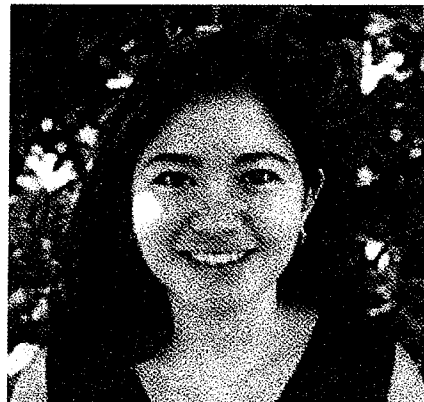
Visiting Faculty

Pierre van Moerbeke is visiting from Louvain-la-Neuve and Brandeis University as a Miller Visiting Research Professor. His fields of interest include integrable systems and the interactions between mathematical physics and algebraic geometry.

Appointed as this year's Chancellor's Professor, the Department is pleased to welcome Professor **Neil Trudinger.** He is visiting from the Australian National University and will teach an advanced graduate course in the fall. His fields of interest include nonlinear elliptic partial differential equations and related functional analysis, differential geometry, and numerical analysis.

Eric Vanden-Eijnden is visiting from the Courant Institute, NYU as a Miller Visiting Research Professor for the fall semester. His interests lie in the areas of computational science and multiscale analysis. ◆

GRADUATE STUDENT AWARDS

The following awards were honored at the Mathematics Department Commencement Ceremony held on May 23, 2005.

The Herb Alexander Prize was established by family and friends in the memory of Herbert Alexander, a distinguished complex analyst who received his PhD from Berkeley in 1968. The following students received a cash prize for an outstanding dissertation in pure mathematics: **Joel Kamnitzer, Aaron David Levin,** and **Aaron Nathan Siegel.**

The Bernard Friedman Memorial Prize in Applied Mathematics was established in 1966 as a memorial to Bernard Friedman, a distinguished applied mathematician and the ninth Chairman of the Department of Mathematics. Cash prizes were awarded to graduate students who demonstrated exceptional ability to do research in applied mathematics. The recipients were **Seth Michael Sullivant**, Department of Mathematics and **Aaron Benjamin Wagner**, Electrical Engineering & Computer Science.

The Nikki Kose Memorial Teaching Prize was established in 1981 as a memorial to Nariaki (Nikki) Kose, a graduate student from Japan who died in a mountaineering accident in the summer of 1980. The prize is awarded to a Graduate Student Instructor for truly exceptional teaching performance. The recipient was **Norah Catherine Esty.**

The Mathematics Department encourages second-year graduate students to apply for NSF fellowships. We would like to congratulate the following students for receiving an NSF fellowship starting in Fall 2005. The students are **Jonah Blasiak, David Brown, Nathan George,** and **Anton Geraschenko**.

Outstanding Graduate Student
Award Recipients
2004-2005

Scott Armstrong
Sami Assaf
Ioan Berbec
Michelle Bylund Johnston
Scott Carnahan
Yanfeng Chen
Aubrey Clayton
Dennis Courtney
Kendra Lockman
Issam Strub-Brahimi

UNDERGRADUATE STUDENT AWARDS

The following undergraduate students were honored at the May, 2005 Mathematics Commencement Ceremony.

The Departmental Citation, in recognition of being the top mathematics scholar in the 2004-2005 graduating class, was awarded to **Nathaniel Alexander Singer**. Nathaniel has a long list of accomplishments. He presented the Valedictory Address. He is a recipient of the Robert Gordon and Ida W. Sproul Scholarship, which is awarded to the top junior students at UC Berkeley, winner of the prestigious Goldwater Scholarship and a recipient of the Dorothea Klumpke Roberts Prize in Mathematics. Nathaniel graduated with a 4.0 in mathematics and overall coursework.

The Dorothea Klumpke Roberts Prize in Mathematics, a cash prize for seniors who have demonstrated truly exceptional scholarship in mathematics, was also awarded to **Uri Andrews, Boris Bukh, Lawrence Christopher Evans, Elena Dmitry Fuchs,** and **Danna Yaniv.**

The Percy Lionel Davis Award for Excellence in Scholarship in Mathematics was established in honor of Percy Lionel Davis, who graduated in Engineering in 1913. The award acknowledges seniors who have demonstrated excellent scholarship in mathematics. The 2004-2005 recipients were **Spencer Joseph Breiner, Christopher Joseph Culter, Stefanus Jasin, Jeremiah Joel Tauzer, Nina White,** and **Liang Yu.**

Mathematical Contest in Modeling (MCM)

In February 2005, 644 teams competed from 10 countries in the Mathematical Contest in Modeling (MCM). Teams of three students work over a five-day period to develop and publish a mathematical solution to a complex real-world problem. Two teams from UC Berkeley were designated as Outstanding Winners and a third team as a Meritorious Winner.

Team One - an Outstanding Winner and recipient of the Ben Fusaro Award was sponsored by Professor L. Craig Evans and included students **Ephrat Bitton, Anand Kulkarni,** and **Mark Shlimovich.**

Team Two – an Outstanding Winner and Informs Prize recipient was sponsored by Professor Jim

News on the faculty front: We made one new appointment this year. Jon Wilkening, an applied mathematician specializing in numerical analysis, joins us as an Assistant Professor. Jon received his PhD from Berkeley in 2002 and then had a postdoctoral appointment at the Courant Institute. We are glad to have him back. I also have departures to report. Paul Chernoff, Robin Hartshorne, Keith Miller, and Charles Pugh retired this past year. The size of the active faculty is now at a local minimum, 53 full-time-equivalents compared to our asymptotic target of 60. We are currently shorthanded, but that also means that there are opportunities at Berkeley. On a sad note, I am sorry to report that Shiing-Shen Chern, Gerard Debreu, and Emery Thomas passed away this past year. They will be missed.

We have made a deliberate decision to limit the number of students in our graduate program in order to support them more generously. This is a sticky problem for the Department. We believe that the Berkeley pay scale, which is uniformly determined across all departments, is not sufficient for living in the Bay Area and not competitive with the level of support offered by other high-level departments. Further, our ability to supply research fellowships rather than teaching fellowships is severely limited. Consequently, we have to look to support from external fellowships, research grants, and endowments. Endowing graduate support is our most critical need. Last year, we received a generous donation from Professor Robert Coleman when he established the Ethel Coleman Fellowship for the support of graduate students. It was an excellent start, but we still have a long way to go.

Our undergraduate program seems to have stabilized with a population of 550 declared mathematics majors. This number of majors is more than three times what it was ten years ago. Increased student population, decreased funding for postdoctoral appointments, and the current local minimum in the size of the regular faculty are straining our teaching capability. Even so, we are keeping to our policy that our lower-division courses (e.g. calculus) should be taught by regular members of the Department.

This is my third and final year as Chair. Anyone who has been in an administrative academic position knows about the disadvantages of being chair of a department. Being Chair has the unique perquisite of interacting with the talented and dedicated people who make up the Berkeley Mathematics Department. I wish to thank my colleagues on the faculty, members of the staff, and the students in the department for the opportunity to work with them. ✦

Pittman and included students **Yang Liu, Azra Panjwani,** and **Huan Huan (Daphney) Qi.**

Team Three – a Meritorious Winner was also sponsored by Professor L. Craig Evans and included students **Jeffrey Bridge, Janpei Chen,** and **Linda Hung.**

William Lowell Putnam Mathematical Competition

The 65th Putnam Competition was held on December 4, 2004. A total of 3,733 students from 515 colleges and universities in Canada and the United States participated in the competition. Each fall semester the Mathematics Department offers Math H90, a seminar to prepare students for this event. Interested students should contact Professor William Kahan.

UC Berkeley's 2004 team, comprised of **Boris Bukh, Xia Hua,** and **Vedran Sohinger,** received Honorable Mention. **Boris Bukh** has scored individually as well as placing with teams for the past three years. **Jeremiah J. Tauzer** received Honorable Mention in the Individuals category. Other students scoring in the 2004 exam include **Yann-Shin Chen, Michel A. D'Sa, Linda Hung, Akifumi Iwahashi,** and **Austin W. Shapiro.** ✦

GRATEFUL THANKS TO OUR FRIENDS

The Department of Mathematics extends heartfelt thanks to all our donors over the past years for their generous support. Our donors have contributed to the strength and vitality of our students and the Department. The list of our donors from 1995-2005 can be found on the departmental website at http://math.berkeley.edu/.

We apologize if we have omitted anyone. Please do let us know if that is the case. A special thanks to all our donors who wish to remain anonymous. ✦

MANAGER'S REPORT

Mary Pepple

FOND FAREWELLS

The Spring 2005 semester closed with the retirement of Dave Mina from the Department's Undergraduate Front Office. Dave began working on campus in 1986 as a supervisor in Loans and Receivables. He worked in Graduate Division from August 1988 to August 1989 administering fellowships and graduate student instructor appointments. In August 1989, he joined the Math Diagnostic Testing Project as the Program Assistant, where he worked until June 2004. In July 2004, he was promoted to Student Affairs Officer I in the Department of Mathematics and served as the Undergraduate Front Office Coordinator until he retired in May 2005. We are grateful for the 15 years of dedicated service he has provided to the campus. He will be missed by all of us!

In late September 2005, both Catherine Pauling and Alison Thompson resigned from their advising positions in Undergraduate Student Affairs. Catherine graduated from UC Berkeley with a Bachelor of Arts in Political Science, in May of 1998. She worked as a Student Advisor for Peace and Conflict Studies for 7 years. She was hired by Math in 1997. Catherine's student advising skills were key at increasing our undergraduate math majors from 185 to 550 during her 8 years of service. Catherine accepted an advising position with Earth and Planetary Science. We are grateful for her contributions and wish her the best!

Alison Thompson accepted a job with the United States Foreign Service and begins her post in January 2006. Alison was hired into the Mathematics Department on October 1, 2001. She worked for two years as the Undergraduate Front Office Coordinator. On July 28, 2003, she was promoted to Student Affairs Officer I and has served as an Undergraduate Student Advisor for the last 2-1/2 years. Alison's previous experience on campus was with the Undergraduate Program at the Haas School of Business. She is a UC Berkeley Graduate with a Bachelor of Arts in History, May of 2000. We are grateful for her committed service to the Department and wish her every success in the future!

Changing Places and New Faces

Jennifer Sixt

On June 1, 2005, Jennifer Sixt was hired in Student Services as our new Undergraduate Front Office Coordinator. Jennifer joined us from the Department of History, where she worked for the last 5 years as the front desk Administrative Assistant. Her first Berkeley appointment began in 1997, in the Division of Undergraduate and Interdisciplinary Studies. She is a UC Berkeley Graduate with a Bachelor of Arts in Mass Communication and Sociology. In her new position, Jennifer performs triage. She is both a front-line Undergraduate Advisor and the Undergraduate Office Coordinator. Jennifer's sister Heidi is a 1997 graduate of the Mathematics Department and a winner of the Percy Lionel Davis Award. We are extremely fortunate to have Jennifer join our staff.

Judie Welch

On December 18, 2004, Judie Welch joined the Math Diagnostic Testing Project. She is the new Program Assistant and works closely with Emiliano Gomez. Judie previously worked for Dick Stanley in the Professional Development Program on campus. We are very pleased to have Judie join our staff. ✦

mathematician of the mid-19th century, who spent his career at Harvard, that before his time it never occurred to anyone that "mathematical research was one of the things for which a mathematics department existed." At Berkeley the development of research over time was marked by three major events that can be seen as "phase changes" and which also involved changes in departmental leadership. These three critical events in the history of the Department occurred in 1881-82, 1933-34, and 1957-58, respectively.

The University of California, which was chartered in 1868, resulted from the fusion of two institutional precursors or "parents". One of them was the College of California, which was conceptualized by its founders, many of whom were congregational ministers and Yale graduates, as a premier undergraduate college for California or even more explicitly as the "Yale of the West". It was to be a Christian, but non-sectarian, college. Although the College was chartered in 1855, there were virtually no students prepared for collegiate studies, so it started out as an Academy - the Contra Costa Academy, and was located in downtown Oakland. By 1860, enough students had received the necessary preparation so that collegiate instruction could begin. The college curriculum was rigid - no electives and very classical - the first two years consisted of Latin, Greek, and Mathematics. The mathematics instructor listed was the Rev. Francis Hodgson, MA whose credentials are unknown other than what is contained in his title. The College of California graduated its first class of four students in 1864. In the 1850's the College had acquired a magnificent parcel of land a few miles north of Oakland in open country as its future permanent home. In 1866, the college land and its environs were designated by the College as Berkeley in honor of the Irish philosopher and bishop, George Berkeley.

Meanwhile, the State was trying to figure out how to establish an Agricultural and Mechanical College, funds for which were provided in the Morrill Act. The Legislature had chartered this college in 1866, but it existed only on paper. The plan that emerged in 1868 was to fold the College of California, shorn of its religious bearings, and the A&M college together into a single University, the University of California, that would comprehend all areas of knowledge. This was a wise and forward-looking decision, to which we owe our existence, but it engendered warfare in the early years of the University between the competing parents (polytechnic vs liberal arts) for the heart and soul of the University. The Board Regents of the University spent the year 1868-69 hiring the initial faculty, a task they took upon themselves, and the University opened in 1869 with an entering freshman class of 12 students plus more advanced students from the College of California. The University began construction of buildings on its Berkeley site, and moved from Oakland to Berkeley in 1873.

When UC opened for business in 1869, the first Chair of Mathematics was a West Point (USMA) graduate who had never taught mathematics at the collegiate level - William Welcker. He imported the West Point curriculum, which had been widely adopted throughout the country for many decades, but which was seen by then as somewhat dated and more resembled a drill room. Welcker was fired in 1881 by the Regents who wanted a more "scholarly" department whose curriculum was more up-to-date. At the time, the Department consisted of one professor and a few assistants. This action, which was widely reported in the newspapers, was one of the final shots in the battle over the mission and heart of the University - a polytechnic versus a comprehensive university. This was the first turning point.
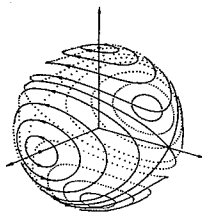
Irving Stringham, who succeeded Welcker in 1882, was selected by a committee of Regents, headed by Horatio Stebbins, Minister of the First Unitarian Church in San Francisco and a man with many Harvard connections and friendships. Stringham had sterling credentials - he had studied under Benjamin Peirce at Harvard as an undergraduate, J.J Sylvester at Hopkins for his PhD, and Felix Klein at Leipzig for post doctoral studies. He was joined in 1890 by Mellin Haskell - another Harvard B.A. - and then a doctoral student of Klein at Goettingen. Stringham and Haskell modernized the curriculum and added breadth and depth to the course offerings. Their research interests were in the Klein tradition of function theory, elliptic functions, and classical algebraic geometry. Derrick Norman Lehmer, who joined the Department in 1900 with a PhD from Chicago under Eliakim Hastings Moore, was perhaps the most visible member of the Department from the outside. The first PhD degree granted by the Department was in 1901. There was a gap until 1909; then, about two completions per year on average until the 1930's.

Stringham, and then Haskell, after Stringham's death in 1909, ran the Department for over 50 years from 1882 to 1933 - the tradition was "chair for life." The emphasis was on teaching with some research, but not much, and the Department became ingrown - 10 of 11 appointments to faculty positions from 1913 to 1933 were Berkeley PhDs. Haskell was scheduled to retire in 1933. However, in 1932 some Chairs of other science departments, notably Chemistry, Physics, Astronomy, plus President Sproul, his Provost and the Academic Senate Budget Committee were all persuaded that the Department needed to be seriously reconstituted and reorganized. It had fallen far behind these other departments in its research standing and intellectual distinction. A campus committee to review the Department proposed the dismissal of a number of non-research oriented junior faculty and that a distinguished leader from outside be brought in to make over the Department. This was unusual in the depth of the depression with a virtual hiring freeze. This decision was "imposed from above" by campus leadership and without consultation with the Department - an action that produced some unhappiness. This was the second turning point.

Joel Hildebrand (Chemistry) a high profile figure on campus, was deputized to go on a national talent scouting tour in February 1933. He identified Evans, then at Rice University, as a potential candidate to lead the Department renewal. He also identified several potential junior faculty members that might be hired (including Charles Morrey). The campus approved the Evans appointment, but it took Evans a year to disengage from Rice and make the move; he came in 1934. Evans was a Harvard AB and PhD (under Bocher) and postdoc with Vito Volterra. Integral equations was one of his specialities. Harvard had tried to hire him away from Rice in 1925, but he turned them down, much to the dismay of his many friends at Harvard. It is interesting to note that then Harvard hired Marston Morse instead as their second choice.

Evans served as Chair at Berkeley for 15 years and during his tenure he remade the Department. Among the notable early hires in the1930's and early 1940's were Jerzy Neyman (Statis-

tics) and Alfred Tarski (Logic), Charles Morrey, Hans Lewy (Analysis and PDE), and Derrick Lehmer (Number theory). Working with Neyman, he made a number of stellar appointments in Statistics, Erich Lehmann for one. Evans made 21 appointments in all and significantly raised the Department's standing and stature. Neyman was a builder and entrepreneur; and from the day he arrived in 1938, he wanted a separate Statistics Department. Evans vigorously resisted him, and it took Neyman 17 years but he was finally successful in 1955; indeed, only after Evans' retirement.

In the late 1940's and early 1950's the Department pursued development in actuarial science, applied mathematics, and computation. All of these initiatives came to naught; in particular, in 1948, Berkeley lost the competition to host the National Bureau of Standards Computational Center, the Institute for Numerical Analysis to UCLA, and the effort in 1949-50 to bring Richard Courant and his entire group at NYU to Berkeley ended in failure. Efforts

in actuarial science never got off the ground. The California loyalty oath controversy, which extended from 1949 to 1953, had a serious impact on the Department, resulting in faculty losses, interfering with some of the initiatives mentioned above, and placing academic growth in suspended animation for several years.

In spite of the obvious successes in hiring, and the rise in reputation and standing of the Department under Evans, its image on campus in the 1950's appeared to some still frozen in time from 1930 as a teaching and service Department. Located in Wheeler and then Dwinelle, among the humanities departments, it was remote from the other science departments, which were prospering. Its size was small, and the campus had been reluctant to invest in it in spite of vigorous protestations by the Department. Within the mathematics community, the Department was informally ranked somewhere in the top ten mathematics departments in the country; but it is not clear exactly where. Harvard, Princeton, and

Chicago had been the traditional top three departments for many decades and Berkeley Mathematics was by no means their equal. The Department was unbalanced with considerable strength in analysis and logic (and of course statistics, which had separated) but was lacking appropriate numbers of faculty in geometry and topology, algebra and applied mathematics, and had difficulty recruiting in these areas.

This all changed in 1957 when John Kelly assumed the Chairmanship. Under his leadership the Department proposed a plan of action, and convinced the campus leadership to invest very heavily in mathematics, including a number of senior appointments as well as substantial overall growth. Clark Kerr, who was the Berkeley Chancellor at the time, wrote in his memoirs [vol 1, p.85]: "Mathematics had quality of faculty under the guidance of Griffith Evans, but not quantity. The sciences and engineering had treated it mostly as a "service" department for training their students. I was convinced,

Alumni/ae News & Update Form (please type or print, using a separate sheet if necessary)

Name:

Last _____ First _____ MI_____

Degree & Year graduated:_____

Address Correction:

Email address:

Work - Position:
Institution or Company:
Location:
Personal and Professional News:

Ideas for our Newsletter:
What items in this issue were of particular interest to you?

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although I was a non-mathematical economist, that mathematics should and would be as central a department in a great research university of the future as philosophy had been in the past. Philosophy, once the 'mother' of so many other departments, itself had become one of its more specialized children. Quantitative methods were rapidly getting more emphasis across the board (as they had gradually and intermittently since Pythagoras). Thus, I concluded, if a campus were to have one preeminent department in modern times, it should be mathematics. Also statistics was a new department at Berkeley under the excellent leadership of Jerzy Neyman, and deserving of expansion for related reasons."

The number of faculty in the Department grew from 19 in 1955 to 75 in 1967, a quadrupling in size in 12 years. The Department made a series of strategic hires in 1958-1960 under John Kelley - notably Chern, Spanier, Smale, Hochschild, Rosenlicht, and Kato. These appointments, together with a number of junior appointments provided strength in geometry and topology, algebra, and applied mathematics for the first time. They corrected an imbalance, and the Department broke through to the very top in rankings by the early 1960's - it was a close second

to Harvard and ahead of Princeton in the 1964 ACE survey. Thus, 1957-58 was the third turning point for the Department. The first turning point in 1881-82, was imposed on the Department from the Board of Regents; the second, in 1933-34, was imposed on the Department by colleagues in other science departments and the campus academic leadership. The momentum for the third one really came from within the Department itself, and its ability to help persuade campus leadership to act.

The Department had moved into Campbell Hall along with the Departments of Astronomy and Statistics in 1959, finally bringing it into proximity to the other science departments. This move can also be seen as signaling recognition of mathematics as a science. Campbell was much too small, and early planning had already been underway in 1956 for a dedicated mathematical sciences building. This project was subject to many delays and was not completed until 1971. The result was Evans Hall (in honor of Griffith Evans) that one sees looming over the central glade of the campus.

In a real sense, change in the Mathematics Department in the 40-45 years since the early 1960's has been

evolutionary. Initial gains in geometry, topology, algebra, and applied mathematics were solidified. The Department has oscillated somewhat in faculty size, but this has been less the result of conscious academic planning and more the function of the economy of the State and in the university's budget. The sixties were, of course, a time of social and political turmoil and this turmoil had impacts on the Department. There was one signal event during this period - the founding of the Mathematical Sciences Research Institute (MSRI) in 1982. ◆