VAN VLECK NOTES

April 1988

We have heard a number of positive comments about last year's issue of Van Vleck Notes. We hope you will enjoy this year's as well. There really is a lot of news from Van Vleck this year, several new faculty, a Special Year in Lie Algebras, the AT&T computer system, and one item we hope you have already heard about, next May's celebration of the 25th Anniversary of the dedication of Van Vleck Hall. We hope we will see many of you here in May. In the mean time your comments and suggestions will be appreciated. We are even into this enough now that we could probably take a little criticism.

Van Vleck Hall at 25

In 1988, Van Vleck Hall will be 25 years old. The building was opened in 1963 with an international symposium, and its quarter-century will be celebrated with another in May. All our alumni and friends are cordially invited to come to the big doings on 19-21 May 1988.

In the early 60s, the Math Dept was bursting the seams of North Hall, and desperately seeking a new site. There was strong pressure to relocate in the Johnson Street area, but we clung to a demand for a site on Bascom Hill. Eventually, the Department was assigned a place in Bascom Woods, on the shore of Lake Mendota. Mathematics Department Chairman, Stephen Kleene, was implored by conservationists not to impose a building on the nature preserve, and agreed to give up the site (which almost immediately became the site of the Social Science Building). After a bit more haggling, we were awarded the present Van Vleck site, which had the advantage of close proximity to the Physics Department and the Army Mathematics Research Center in the Sterling Hall addition. (This latter "advantage" may not have seemed like one when in 1970 the MRC was bombed and Van Vleck lost most of its windows.)

The building itself is a very innovative and capable use of the site. Although the classroom portion is basically underground, only the three lecture halls are lacking in windows, and this is an advantage in that kind of room. Even the library has the amenity of a skylight. The separation of the offices from the classrooms is a direct result of the noise we endured in North Hall with every class change. The building was in large part the creation of the architect, Wesley Peters, with whom Professor Kleene worked unusually closely on many details. It was Peters' idea to put a tall tower over an extensive classroom and library section. Van Vleck Hall was not originally designed for air conditioning. The original idea was that the building could be cooled by cross-ventilation in the summer as North Hall had been, but more effectively for being so much higher up. To make this possible, transoms were included, as they had been in North. They were eliminated in a cost-cutting move by the State, which accounts for the non-transom wooden inserts on the doors. Eventually, air conditioning had to be added at substantial added cost. The cost would have been less if the original plan had been followed, since air ducts were included in the design, but the University decided on a central chilled-water plant, which meant that holes for pipes had to be drilled through the thick concrete floors, rendering the building nearly unusable while the noisy process was pursued.

More recent changes in the building reflect, in part, changes in our profession. Two classrooms and one of the large lecture halls now contain microcomputers and Sony video projectors; the second balcony above the library, originally an undergraduate reading room, is now a microcomputer laboratory; and this past summer holes were once again being drilled as the building was wired for the installation of our new network of

AT&T computers. The ninth floor lounge continues to be the center of departmental life and, thanks to the generous endowment from the Van Vleck family, has now been completely refurnished.

Anatole Beck

Calculus future

"Calculus for a New Century" was the title of a conference held in Washington, D.C., October 28-29, sponsored jointly by the Sloan Foundation, the National Research Council, and the MAA. As chairman of our department's "Calculus Future" Committee, I attended the meeting in order to get a better sense of the current widespread concern about the status of calculus instruction--and to see to what extent these concerns apply to us. There were some 600 others in attendance including Creighton Buck and John Harvey, as well as a generous sampling of former Wisconsin PhD's.

The general tone of the meeting was one of alarm marked by repeated affirmation of the existence of the "Crisis in Calculus"--(Leonard Gillman notwithstanding—cf. his recent article in Focus), and Judith Sunley, Division Director of Mathematical Sciences at NSF, announced that two million dollars in grants would be awarded to fund experimental syllabi, texts, workshops, etc., devoted to readying calculus instruction for the New Century. (An initial weapons allocation to combat the "Evil Empire" of calculus ignorance.)

The afternoon sessions consisted of two panel discussions. The first was moderated by Cathleen Morawetz of Courant Institute who served in the discreet defense of teaching "continuous mathematics" against the indiscreet urgings of Tony Ralston for discrete mathematics in its place. Among the suggestions offered by this panel were greater emphasis on the concepts, modeling applications, making it clear that real problems are not neatly packaged and generally do not lead to clean answers.
The final panel session, "Views from Across Campus", moderated by Andy Gleason, was concerned with the administrative and fiscal problems inherent in implementing major revisions in calculus instruction--smaller classes, more faculty, more homework grading, increasing the number of TAs with fluency in English, computing equipment, etc. It was agreed that the mathematical community will have to sell university administration the notion that calculus instruction in the future will require greatly increased funding.

Until Oberlin's president made the point, no-one had remarked that--as he put it--the concern seems to be with repairing the roof without attending to the weakening substructure--i.e., unless we do something about high school and pre-calculus training as well, all this effort may go for naught.

It seems that calculus instruction on many campuses has indeed deteriorated to the crisis stage. After listening to the particular problems prevalent at other institutions which were aired at the workshop, I am pleased to report that we are doing well by comparison. We do, however, share many of the common problems to some degree. We should attempt to rectify the problems we do have. In addition we face the challenge of teaching calculus to a growingly diverse set of "majors" as well as integrating symbolic calculators and computers into the instruction of calculus in an intelligent way.

Si Hellerstein

New Associate Chair

Phil Miles has assumed a new role in the Department. He will be developing a high school junior testing program similar to the one that has operated successfully in Ohio for several years. The program is directed at encouraging high school students to take more of the high school math that they need while they are in high school. Fred Brauer is the new Associate Chair.

AT&T computer system is up and running

The AT&T 3B15, 7 3B2's, and a host of microcomputers and terminals are now installed and networked. We are still learning, but the impact on how we do business and even what we do is already being felt. REDUCE, a symbolic manipulation program, and MatLab have been installed, and Cayley, an expert system for the study of finite groups, is on the way. E-mail has reduced the waste paper, and discussion of how to make the laser printers work now competes with mathematics and politics in coffee-time conversations. But the dust is settling (literally and figuratively) and it is beginning to feel like the computers have been around forever.

E-mail Access to Van Vleck

Most Math Department faculty can now receive e-mail on ARPANET. Most addresses are of the form lastname@vanvleck.math.wisc.edu. If that doesn't work, try kurtz@vanvleck.math.wisc.edu, and we will let you know the correct address.

Foundation Contributions

In this era of tight university budgets, contributions from alumni and friends of the Mathematics Department through the University of Wisconsin Foundation provide us with valuable, flexible funding for a number of important projects. In the past year these funds have been used to support our very successful High School Talent Search at a time when other sources of funding were being cut back, to provide much needed computer software, and to help in bringing speakers to campus. Thanks to everyone who contributed to the Mathematics Fund.

Cray Research to support Talent Search

The Cray Research Foundation has agreed to fund the Mathematics, Science and Engineering Talent Search. This program directed at identifying mathematically talented high school students and providing them both challenge and encouragement was originally developed by L. C. Young in 1963 and in recent years has thrived under the leadership of Marty Isaacs. Our thanks to Cray. If you need a supercomputer, keep them in mind.

Graduate Program

According to data in the December issue of the AMS Notices, our department is third (following Berkeley and MIT) in the production of new PhD's in mathematics. Of course, quantity is not as important as quality, but we are happy about the quality, too. Our newest group and their current locations:

John Berge .... U. of Texas, Austin
Douglas Blount .... U. of Utah, Salt Lake
Cristina Costantini .... U. di Roma, Italy
Naomi Decker .... NASA Langely Res. Ctr., Hampton, VA
Elsa Gunter .... Cambridge Computer Lab, England
Mark Hall .... Simpson Col., Indianola, IA
Valentina Harizanov .... Geo. Washington U., Washington, DC
Pedro Henriques .... Inst. Superior Tecnico, Lisbon, Portugal
Geck Chan Hong .... U. of Toledo, OH
Yiming Long .... Nankai U., PRC
Scott Markel .... David Sarnoff Res. Ctr., Princeton, NJ
Richard Prescott .... Actuarial Tech. CUMIS Insurance, Madison
John Ramsay .... Coll. of Wooster, OH
Antonio Santos .... U. Federal de Minas Gerais, Belo Horizonte - Brazil
Josenildo Santos .... U. Federal de Pernambuco, Recife - Brazil
Gary Schroeder .... UW-Madison
Gail Schweiter .... Wagner Associates, Paoli, PA
Shanpu Shen .... Texas A&M Univ., College Station
Richard Stockbridge .... Case Western Reserve U., Cleveland, OH
Thomas Svobodny .... Vir. Polytechnic Inst., Blacksburg, VA
Bruce Wade .... Cornell U., Ithaca, NY
David Watson .... Rutgers U., Camden, NJ

Other Faculty News

CARL DE BOOR and PAUL RABINOWITZ were elected to membership in the American Academy of Arts and Sciences. Carl is also the new Steenbock Professor in the Mathematical Sciences.

GEORGIA BENKART received a campus teaching award in last May. This makes four of the last five years in which Math Department members have been honored in this way.

Wisconsin faculty continue to serve on a vast number of editorial boards. New appointments and changes in status: DON PASSMAN is in his second term as Associate Editor of the Proceedings of the AMS and is now serving on the AMS Council. DICK BRUALDI, already co-editor with HANS SCHNEIDER of Linear Algebra and Its Applications, has been appointed to the editorial board of Linear and Multilinear Algebra. PETER NEY is the new editor of the Annals of Probability. MARSHALL SLEMROD will succeed JOHN NOHEL as the editor-in-chief of the monograph series, SIAM Studies, and will be an associate editor for the new journal, Letters in Applied Mathematics. DAVID GRIFFEATH and JIM KUELBS are associate editors for the new journal, Theoretical Probability.

DAVID GRIFFEATH gave an hour talk at the AMS meeting in Lincoln in October. DICK BRUALDI spent a week at Emory University in last March as part of their Distinguished Visitor Program, and TOM KURTZ did similar duty at the University of Maryland Systems Research Center. LOU RALL will tour the Orient this summer, giving an invited address at a numerical analysis conference in Singapore and then lecturing at five Japanese universities with the sponsorship of the Japan Society for the Promotion of Science.

May 1988 will be conference month in Madison. In addition to the Van Vleck 25th Anniversary celebration, May 19-21 being organized by a committee headed by DON PASSMAN and DON CROWE which is discussed elsewhere in this newsletter, GEORGIA BENKART and MARSHALL OSBORN are organizing a conference May 21-30 which will culminate their special year on Lie Algebra, TOM KURTZ is Program Chair for a joint SIAM-IMS meeting May 16-18 which will focus on applied probability, and DICK BRUALDI and HANS SCHNEIDER are organizing the third Gatlinburg Conference on Linear Algebra and Matrix Theory, May 22-26.

Outside of Madison, MARSHALL SLEMROD was co-organizer of an NSF-CNRS conference on partial differential equations and phase transitions, January 18-22, 1988 in Nice (nice timing).

Watch for the new telecourse For All Practical Purposes: Introduction to Contemporary Mathematics, part of the Annenberg/CPB Project. Wisconsin involvement included faculty member, DON CROWE, and former students, SOL GARFUNKEL (PhD 1967), JOE MALKEVITCH (PhD 1968), and WALTER MEYER (PhD 1969).

Wisconsin was also well represented at the October conference "Calculus for a New Century" with CREIGHTON BUCK, JOHN HARVEY, and SIMON HELLERSTEIN in attendance. Creighton, John, and former student GORDON PRITCHETT (PhD 1970) wrote papers for the conference. See Si's report elsewhere in this newsletter.

On the non-mathematical front, ANATOLE BECK is writing a book, Justice Reticent, based on his experience guiding the appeal of an Assistant Professor denied tenure, and JIM KUELBS is the coach of the state champion West High School soccer team.

TA Teaching Awards

Once again a Math Department TA, John Ramsey, won a campus-wide Graduate School teaching award. The lucky students at Wooster now attend John's classes. Last year's departmental teaching awards went to Paul Childs, Anne Dougherty, Craig Meyer, and Karl Peters.

Undergraduate scholarships

Generous gifts by alumni and friends over the years have made possible a number of undergraduate scholarships. Awards for the current year went to the following:

Irma L. Newman Scholarship: David J. Allen

Hazel Duling Scholarship: Elisabeth Angelos

Professor Linnaeus Wayland Dowling Scholarships: Chung-Kwan Choi, Cynthia Hess, Scott A. Mitchell, Gregory Whiffen

Mark H. Ingraham Scholarships: Erik J. Hanson, Adel Joobeur

David Lawrence Young Memorial Fund: Robert C. Mattson

Frank D. Cady Scholarship: Michelle Leslie

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