

I. GENERAL DEVELOPMENTS

A. PERSONNEL CHANGES AND DEVELOPMENTS

John DePree ended seven successful years as department head on June 30, 1979. Carol Walker was appointed as new department head. Keith Phillips was promoted to professor and Barry MacKichan was awarded tenure, both effective fall semester, 1979.

John DePree participated in a faculty exchange, beginning fall semester. He spent this semester teaching and doing research in analysis at the University of Hawaii, while Adolf Mader, Professor of Mathematics at the University of Hawaii, spent fall semester teaching and doing research in abelian groups at New Mexico State University. The arrangements went smoothly, and it is anticipated that other departments will follow this example in the near future.

During the spring semester of 1979 David Arnold and William Torrez were on leave without pay. D. Arnold participated with several other outstanding algebraists in an "Algebra Year" at the University of Connecticut and W. Torrez visited the Department of Statistics at the University of California at Berkeley, with a National Chicano Council on Higher Education Post-doctoral Fellowship. Mary Anne Maher spent spring semester as visiting assistant professor at Yale University, a joint appointment in the Department of Statistics and the School of Organization and Management.

On sabbatical leave during fall semester were Arthur Knoebel and Irvin Vance. A. Knoebel spent the semester at Bedford College in London, doing research in universal algebra, and I. Vance was a visiting professor at Ohio State University, doing research in mathematics education, studying computer science, and teaching. During fall semester, Mark Mandelkern, William Torrez and Darell J. Johnson took leave without pay. M. Mandelkern was in Germany doing research in constructive mathematics, W. Torrez was an assistant professor in the Department of Statistics at the University of California at Riverside, and D. J. Johnson embarked on a program of study in physics at Massachusetts Institute of Technology.

As visiting faculty during the spring semester of 1979, the department had Garrett Sylvester, Temple Fay and James Baldwin. Also visiting the department were mathematicians Elizabeth Grobe and Charles A. Grobe, Jr., the latter on sabbatical leave from Bowdoin College. As visiting faculty fall semester, 1979, the department had Douglas Bridges, Allan Calder, Michael Kazlow, and Adolf Mader.

Fall semester, 1979, two full-time and several part-time teachers were employed for the department's new program of individually paced courses, offered in the Mathematics Learning Center. Three others were employed as Lecturer I during spring and/or fall semester, 1979.

Six graduate and undergraduate students were initiated into the mathematics honorary, Pi Mu Epsilon, at the annual math department spring picnic. During 1979, Pi Mu Epsilon held several meetings with invited speakers from the faculty or student body. During fall semester, 1979, 78 undergraduate students were enrolled with mathematics as a major, 58 of whom had declared more than one major. In spring and/or fall semesters five students had PSL scholarships in mathematics. Fall semester, three mathematics majors were designated as Crimson Scholars. The department employed ten Crimson Scholars, majoring in mathematics or an area which utilizes mathematics, as classroom assistants in the Mathematics Learning Center during fall semester. Fifteen students were awarded the bachelor of science in mathematics in 1979, and four students received the master of science degree in mathematics during this period.

B. NEW OR REVISED PROGRAMS

Beginning with the fall semester of 1979, most students were required to take the Mathematics Placement Examination before enrolling in their first mathematics course, and the exam results (and guidelines for their use) were made available to all advisers on campus. In addition, two new basic skills courses--MATH 100: Arithmetic and Basic Algebra, and MATH 102: Basic Algebra--were offered for the first time. These courses had been developed in an individually-paced, unit-mastery format, and were designed to meet the needs both of the inadequately prepared recent high school graduate who has not yet mastered basic skills in mathematics as well as the returning student who has forgotten certain basic skills and requires a thorough review before proceeding with traditional college courses. Individually-paced courses are also quite useful for students who enroll in mathematics courses they are not prepared for and consequently need to drop back to begin in a lower level course part way through the semester.

The new basic skills courses were only part of a major study and revision of the lower division curriculum undertaken during 1979. The other changes will appear in the 1980-81 Undergraduate Bulletin, and will be implemented in fall 1980.

The Faculty Senate passed a bill during fall semester, 1979, establishing a basic skills requirement in mathematics that must be met by all students before they will be permitted to enroll in any upper division courses. This requirement will go into effect for students entering summer 1980. The department will cooperate in implementing this program.

C. PHYSICAL PLANT

The Mathematics Learning Center was remodeled during the summer of 1979. The Testing Center was separated from the general tutoring area in order to more efficiently serve students taking the new individually-paced courses.

A glass front bulletin board was purchased by the department for the purpose of displaying photographs of faculty, staff and teaching assistants.

D. STEPS TAKEN TO INCREASE STUDENT MAJORS

A significant portion of the department budget was spent in advertising and corresponding with potential majors, both graduate and undergraduate. A new flyer "Mathematics as a Major" was prepared by the Undergraduate Majors Committee and mailed, along with PSL scholarship information, to counselors and mathematics teachers at many state high schools, and to students on mailing lists provided by Admissions. A detailed informational bulletin was prepared by the Graduate Committee and mailed to potential graduate students. An imaginative poster describing our graduate program was mailed to many colleges and universities. Advertisements were purchased in Peterson's Guide to Graduate Study and other professional publications. The Graduate Committee also submitted news releases to southwestern city and campus radio stations and newspapers. Faculty were encouraged to take advantage of personal contacts to advertise our graduate programs, particularly the relatively new programs in numerical analysis and applied statistics.

II. RESEARCH ACTIVITIES

A. PUBLICATIONS

In 1979, 12 members of the faculty had 23 research papers published in professional journals or conference proceedings. In addition, 23 faculty members attended one or more professional meetings and presented 23 research papers.

B. COLLOQUIA AND SEMINARS

During 1979 the department held 16 regular colloquia and one "super colloquium"--a week-long series of five lectures given by an outstanding, internationally recognized mathematician. Several of our faculty presented colloquia at other universities.

Active seminars included constructive mathematics, text processing, algebra, theoretical computer science, analysis, abelian groups, algebraic topology, statistics, philosophy of mathematics, and algebraic geometry.

C. RESEARCH PROPOSALS AND GRANTS

Twelve research proposals were submitted to federal agencies by 15 faculty members. Three proposals (5 faculty members) were funded in 1979 for a total of \$87,836. Eight proposals (14 faculty members, \$652,820) are still pending.

III. CRITICAL ANALYSIS AND RECOMMENDATIONS

The problems of the department during the current year are continuing ones, one being the shortage of qualified applicants to mathematics graduate programs, together with the lack of federal fellowship support for graduate students in mathematics, and another being lack of mathematical skills on the part of most entering freshmen, with the accompanying increased demand on instructional time brought about by their need for basic skills review courses in addition to courses traditionally in the university curriculum.

In addition to extensive advertising campaigns for graduate students, the department has concentrated on developing the graduate programs in numerical analysis, statistics, and applied mathematics. Continuing curriculum review and development is taking place, and in addition, some faculty members are virtually retraining themselves so that they can contribute to these programs as well as to the graduate programs in their major area of research. In order to maintain and further develop our graduate programs we require continued support from the administration for adequate staffing, to allow for faculty assigned time for research and graduate student instruction and continued financial support for graduate students. The department is considering a program of campus visitation as a means of one-on-one recruiting. These visits would be coordinated with regular faculty travel.

The new programs for entering freshmen, including the Mathematics Placement Examination and individually-paced basic skills courses, were necessary to meet the challenge posed by the dramatic decline

in the mathematical skills of entering students--a problem that is nationwide in scope. These programs are innovative and extensive. Although they cannot be adequately evaluated until follow-up studies can be made, preliminary indications are largely positive. Students seem to have accepted both programs--by the end of the fall semester approximately 2400 students had taken the Mathematics Placement Examination, and most were willing to follow the advice based upon their performance on this exam. MATH 100 and MATH 102 had an enrollment of 837 students during the fall semester, and prospects are that enrollment at approximately this level or higher will continue for some time. High enrollment in these courses led to a marked increase in total student credit hours for the department, since enrollment in other courses remained relatively stable. With the cooperation of the administration, the department was able to provide this increased amount of instruction--positions formerly administered through Continuing Education as part-time teachers for remedial courses were converted to temporary full-time instructors in the department classified as professional staff, and additional salary savings from mathematics faculty on sabbatical leave were approved for course development, for visiting faculty positions, and for Lecturer I's. In order to maintain the program of service courses for entering freshmen, it is absolutely essential that this full level of support be continued. The department is functioning with minimal staffing, taking into consideration that the department is at the same time encouraging quality research activity among the faculty, maintaining a diverse and reasonably stable graduate program of high quality, and providing an extensive service program for undergraduates.

The department plans to continue development of individually-paced courses until a full offering of precalculus courses is available in the individually-paced format. Some of these courses will continue to be offered in traditional classroom lecture format as well.

Another approach to undergraduate instruction is emerging as more and more of the faculty become involved in computer-related activities. Two grant proposals were submitted in 1979 for support for development of computer assisted instructional programs. Other proposals are anticipated in the near future. The department foresees a very significant shift to computer-based instruction in mathematics and computer science within the next few years. The potential for improvement of instruction is enormous, and a substantial effort to ensure that the department is among the first to realize this potential is fundamentally important. If these grant proposals are funded, they will provide equipment and support for the development of software for one course each. A well developed program for computer-based instruction and instructional supplements that would fully

service students of mathematics will require major additional support from the university for equipment and classroom facilities, as well as faculty supported time for courseware development. Professor Alfred Bork from the University of California at Irvine has been invited to give a workshop on developing materials for computer-assisted instruction in the spring of 1980. In fact, six departments from three different colleges have pooled funds to support this workshop.

The fastest growing areas of research within the department include numerical analysis, applied mathematics, and several areas involving extensive computer software development. For this reason as well as for instructional purposes, the need for computer equipment in the department is taking a quantum leap. Since for many years mathematicians required little more than paper and pencils, and blackboards and chalk, there are no local traditions for funding this equipment. For the same reason, external funding is also hard to come by. Thus, when new money becomes available for scientific equipment, it is important that the department be given special consideration.

IV. GOALS AND OBJECTIVES

- A. GOAL: The department will strive to maintain continued excellence in research and professional activities.
1. Objective: The department will provide faculty members who are actively involved in mathematical research with the time, encouragement and support services they require for their research.
 2. Objective: The department will sponsor two conferences in addition to colloquia to provide in-depth contact with experts in various research areas.
 3. Objective: The department will encourage and support research seminars, including interdepartmental seminars, to explore areas of applications of mathematics.
 4. Objective: The department will continue to request new faculty positions so that active research faculty can once again be given appropriate released time for research activities without slighting the teaching responsibilities of the department.
- B. GOAL: The department will work to further develop and strengthen the graduate program in mathematics.
1. Objective: The graduate committee of the department plans continued extensive regional and national

advertising in 1980 to attract qualified applicants to the graduate program in mathematics. They will encourage increased one-on-one recruiting by members of the faculty.

2. Objective: The department will maintain communication with mathematicians at White Sands, and will continue to offer sequences of courses at appropriate times to attract these potential students.
 3. Objective: The department will further develop the graduate programs in numerical analysis, statistics, and applied mathematics.
 4. Objective: The department will continue to support graduate programs in pure mathematics.
 5. Objective: The department will continue to hire visiting faculty primarily on the basis of their potential to further the graduate and research programs, and to effectively teach mathematics.
 6. Objective: The department will continue its program of supervision for graduate assistants teaching lecture sections.
 7. Objective: The department will continue to request new faculty positions to help develop the graduate programs, particularly those in numerical analysis, statistics, and applied mathematics.
- C. GOAL: It is the intention of the Department of Mathematical Sciences to provide the best possible program of service courses.
1. Objective: The department will continue the re-evaluation of the entire undergraduate mathematics curriculum, keeping in mind the needs of the students, the mathematics department and other interested departments. Support courses for the new business systems analysis program and the information systems option in computer science will receive special attention, and a minor appropriate for those students will be considered.
 2. Objective: The department will give continued attention to the coordination of the calculus sequence, including giving common midterm and final examinations in MATH 191 and MATH 192.

3. Objective: The department will give a mathematics placement examination to most incoming freshmen, a program begun fall semester 1979, and continue to evaluate the effectiveness of this new placement program.
4. Objective: The program of individually-paced, unit mastery, remedial and precalculus courses, will be expanded to include a complete sequence of precalculus courses by fall semester 1981.
5. Objective: The department will support programs leading to the development of computer-assisted instruction at New Mexico State University.
6. Objective: The department will help to implement the Basic Skills Requirement in mathematics which will go into effect for students entering summer 1980.
7. Objective: The department will continue to request new faculty positions to better serve the mathematical needs of undergraduate students who, under present conditions, can be accommodated only in large or very large classes.

I. PERSONNEL ACTIVITIES

A. PROFESSIONAL ACTIVITY

D. M. Arnold

Member, American Mathematical Society.

Reviewer, Mathematical Reviews.

Invited participant, "Year of Algebra," University of Connecticut.

Invited lecturer, series of lectures on recent developments in the theory of finite rank torsion free abelian groups, Laval University, Quebec, Canada.

Member, departmental committees: Mathematics Education, Graduate (ex officio), Advisory (ex officio).

Course coordinator and faculty supervisor for teaching assistants, MATH 105, 106.

Course coordinator, MATH 111.

R. J. Bagby

Member, American Mathematical Society.

Member, Mathematical Association of America.

Member, Executive Board of New Mexico State University Chapter, American Association of University Professors.

Reviewer, Mathematical Reviews.

Judge, Science Fair.

Member, departmental committees: Biological and Social Sciences, Tenure and Promotion to Associate Professor (chairman), Comprehensive Examinations in Analysis.

Member, doctoral oral comprehensive examination committees: mathematics, one; physics, one; electrical engineering, one.

Course coordinator, MATH 192.

J. D. DePree

Head, Department of Mathematical Sciences, through June 30.

Member, American Mathematical Society.

Member, Board of Governors, Pacific Journal of Mathematics.

Reviewer, Mathematical Reviews.

Chairman, departmental committee: Faculty Search.

E. D. Gaughan

Member, National Council of Teachers of Mathematics.

Member, Greater El Paso Council of Teachers of Mathematics.

Member, Mathematical Association of America.

Member, Nominating Committee, Mathematical Association of America.

Member, departmental committees: Mathematics Education, Remedial Course Development, Basic Skills and Placement, Branch Campuses.

Chairman, Department of Mathematical Sciences Department Head Search Committee.

Member, doctoral committees: education, one;
interdisciplinary, one.
Course coordinator and faculty supervisor for teaching
assistants, MATH 105, 106, 190, 141.

J. B. Giever

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Association for Symbolic Logic.
Member and President, New Mexico State University Chapter,
American Association of University Professors.
Member, Faculty Senate.
Member, Faculty Affairs Committee.
Member, Ad Hoc Committee to Revise Constitution of the
Faculty Senate.
Member, University Appeals Board.
Member, departmental committees: Lower Division Curriculum,
Remedial Course Development, Undergraduate Majors.

R. H. Hunter

Member, American Mathematical Society.
Member, Australian Mathematical Society.
Referee, Journal of the Australian Mathematical Society.
Referee, Rocky Mountain Journal of Mathematics.
Referee, Pacific Journal of Mathematics.
Reviewer, Mathematical Reviews.
Member, departmental committees: Mathematics Education,
Computer, Basic Skills and Placement.
Course development: Wrote programs to generate quizzes for
the Mathematics Testing Center, and to keep student
performance records for those quizzes. Wrote bank of
questions for computer test-generator for MATH 130 and
MATH 111.
Computer software development: Technical Text Editor, now in
use at University of Virginia, University of Kansas,
University of California-Irvine.

D. G. Johnson

Member, American Mathematical Society.
Member, National Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, Mathematical Association of America.
Vice-Chairman, Southwestern Section of the Mathematical
Association of America.
Referee, General Topology and its Applications.
Referee, Pacific Journal of Mathematics.
Reviewer, Mathematical Reviews.
Member, interdepartmental committees: Mathematics/Engineering,
Mathematics/Business.

Member, departmental committees: Colloquium (chairman), Remedial Course Development (chairman), Basic Skills and Placement (chairman), Undergraduate (chairman), Lower Division Curriculum, Advisory (ex officio), Branch Campus (chairman).

Design and implementation of Mathematics Placement Exam.

Designed and supervised administration of MPE to approximately 2,500 students on the main campus in 1979.

Prepared and distributed advisors' guide to MPE and its use.

Supervised construction and administration of basic skills diagnostic examination to several hundred students in 1979.

Design and implementation of basic skills courses, MATH 100, 102, and the pre-calculus courses, MATH 115 and 180.

Speaker and discussion director, "Needs Assessment Conference" of mathematics teachers and counselors from Las Cruces and Mayfield High Schools, spring 1979.

Panel participant, "High School Preparation Expectation," High School Counselors Conference, November.

Investigated existing remedial self-paced instruction programs at Michigan State University, Central Michigan University, CUNY Hunter College, Manhattan College.

D. J. Johnson

Member, American Mathematical Society.

Member, American Physical Society.

Member, Mathematical Association of America.

Member, American Association for the Advancement of Science.

Reviewer, Journal of Approximation Theory.

Reviewer, Mathematical Reviews.

Judge, Science Fair.

Member, departmental committee: Undergraduate.

W. H. Julian

Member, Sigma Xi.

Member, American Association for the Advancement of Science.

Member, Pi Mu Epsilon.

Member, American Astronomical Society.

Reviewer, Mathematical Reviews.

Reviewer, Astrophysical Journal.

Member, departmental committees: Library/Reading Room (chairman).

Photographer, departmental roster.

Course coordinator, MATH 110.

Member, doctoral committees: physics, two; astronomy, one.

J. E. Kist

Member, American Mathematical Society.

Member, Mathematical Association of America.

Member, American Association for the Advancement of Science.

Member, Sigma Xi.

Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Member, departmental committee: Advisory.
Dean's representative, doctoral final oral examination,
electrical engineering.
Course coordinator, MATH 142.

R. A. Knoebel

Member, American Mathematical Society.
Member, British Society for the History of Mathematics.
Member, Deutsche Mathematiker-Vereinigung.
Member, London Mathematical Society.
Member, Mathematical Association of America.
Member, New Mexico Academy of Science.
Member, Österreichische Mathematische Gesellschaft.
Member, Sociedad Matemática Mexicana
Member, Société Mathématique Suisse.
Member, Société Mathématique de Belgique.
Member, departmental committees: Biological and Social
Sciences, Computer.
Chairman, doctoral committee, mathematics.

W. M. Krueger

Member, American Mathematical Society.
Reviewer, Zentralblatt für Mathematik.
Member, departmental committee: Graduate (chairman),
Undergraduate.
Participated in promotion review of assistant professor,
Arizona State University.
Advisor, doctoral dissertation, one.
Chairman, doctoral oral comprehensive examination committee,
one; member, one.
Dean's representative, doctoral final oral examination.
Chairman, master's oral examination committee.

A. H. Kruse

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Sigma Xi.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Referee, Rocky Mountain Journal of Mathematics.
Editor, Rocky Mountain Journal of Mathematics.
Member, departmental committee: Promotion to Professor
(chairman).

J. O. Loustaunau

Member, American Mathematical Society.
Member, College of Arts and Sciences Improvement of Instruc-
tion and Student Relations Committee.

Chairman, College of Arts and Sciences Student Appeals Board.
Member, departmental committees: Undergraduate, Undergraduate
Majors, Physical and Engineering Sciences (chairman).
Taught four-week short course in linear programming for
Animal Science faculty and graduate students, University of
Chihuahua.
Lecturer, Conacyt sponsored program for development of
faculty, University of Chihuahua.
Consultant for Engineering and Science faculty, University of
Chihuahua. Wrote several computer programs for statistics
and linear programming and instructed faculty on how to use
them.

B. MacKichan

Member, American Mathematical Society.
Referee, National Science Foundation summer support proposal.
Referee, Rocky Mountain Journal of Mathematics.
Reviewer, Mathematical Reviews.
Member, departmental committees: Colloquium (chairman),
Graduate, Comprehensive Examinations.
Member, Mini-Microcomputer Users Group.
Course coordinator and faculty supervisor for teaching
assistants, MATH 190.
Doctoral oral comprehensive examination committee, mathematics.
Consultant in software development for Terak Corporation,
Scottsdale, Arizona.
Computer software development: Technical Text Editor, now in
use at University of Virginia, University of Kansas,
University of California-Irvine.

R. J. Y. McLeod

Member, Institute of Applied Mathematics and its Applications.
Member, departmental committee: Physical and Engineering
Sciences.
Invited to write introduction to special issue on curved
finite elements, Computers and Mathematics with Applications.
Invited address, "Recent Developments in Curved Finite
Elements," Second International Conference on Computational
Methods in Non-linear Mechanics, University of Texas,
Austin, Tex.
Organizer, research workshop, "Frontiers in Applied Geometry,"
to be held in Las Cruces in January 1980.
Explored funding possibilities for faculty and graduate
student research, and investigated applications of numer-
ical analysis at NASA AMES Research Center, Moffett Field,
Calif.

M. A. Maher

Member, American Mathematical Society.
Member, Institute for Mathematical Statistics.
Member, departmental committee: Statistics.
Reviewer, A Second Course in Complex Analysis, to be published by North-Holland.

M. Mandelkern

Member, American Mathematical Society.
Member, London Mathematical Society.

R. Mines

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Association for Advancement of Science.
Reviewer, Mathematical Reviews.
Referee, Communications in Algebra.
Member, College of Arts and Sciences Faculty Affairs Committee (chairman, fall 1979).
Member, Committee of 8, Task Force 88.
Member, departmental committee: Undergraduate Majors, Undergraduate (chairman), Computer.
Coach, Putnam Team, national mathematics competition.
Faculty advisor, Pi Mu Epsilon, national mathematics honorary fraternity.
Course coordinator and faculty supervisor for teaching assistants, MATH 120.
Invited participant, "Summer of Algebra," University of Essen, Essen, Germany.
Invited address, "Cotorsion abelian groups," colloquium series in honor of Reinhold Baer, University of Essen, Essen, Germany.
Colloquium address, "Factoring polynomials over algebraic number fields," Technischen Universität München, Munich, Germany.
Invited addresses, "Cotorsion modules," "Affirmative action now--proofs by contradiction in mathematics," special meeting of seminar on abelian groups, Oxford University, Oxford, England.

K. L. Phillips

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Sigma Xi.
Member, New Mexico Academy of Sciences.
Editor work and reviewer, W. H. Freeman, Inc.
Reviewer, Mathematical Reviews.
Referee, American Mathematical Society publications.
Referee, Rocky Mountain Journal of Mathematics.

Member, departmental committees: Graduate, Physical and Engineering Sciences.
Chairman, College of Arts and Sciences Planning Committee.
Course coordinator and faculty supervisor for teaching assistants, MATH 125.
Colloquium address, "Distributions and Homogeneity for Local Fields," University of New Mexico.

F. Richman

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, London Mathematical Society.
Referee, National Science Foundation proposals in algebra and in foundations.
Referee, Canadian Mathematical Bulletin.
Referee, Rocky Mountain Journal of Mathematics.
Member, departmental committees: Advisory, Faculty Search, Biological and Social Sciences.
Invited address, "Global Azumaya Theorems," Department of Mathematics, Tulane University.
Consultant, Institute for Defense Analyses' summer program in applied mathematics.
Member, joint committee on Computer Science Ph.D. program.
Computer software development: Technical Text Editor, now in use at University of Virginia, University of Kansas, University of California-Irvine.

G. S. Rogers

Member, Institute for Mathematical Statistics.
Member, American Statistical Association.
Member, Mathematical Association of America.
Member, Board of Governors, Mathematical Association of America, 1979-82.
Member, departmental committees: Undergraduate Majors (chairman), Undergraduate, Statistics (chairman).
Advisor, College of Arts and Sciences Advising Center.
Member, Advisory Committee, University Statistics Center.
Member, organizing committee for research workshop, "Frontiers in Applied Geometry."
Reviewer, New Hampshire Statistics Project.
Course coordinator, STAT 251.

C. C. Sherman

Member, American Mathematical Society.
Substitute member, Advisory Council on Library Policy.
Member, departmental committees: Undergraduate, Library/Reading Room.
Colloquium address, "Algebraic K-Theory and Algebraic Geometry," University of Oklahoma, Norman.
Course coordinator, MATH 392.

C. W. Swartz

Member, American Mathematical Society.
Member, Mathematical Association of America.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Referee, National Science Foundation grant proposal.
Referee, Rocky Mountain Journal of Mathematics.
Department representative to the Rocky Mountain Mathematics Consortium.
Referee, promotion evaluation for Department of Mathematics, North Texas State University.
Member, departmental committees: Advisory, Biological and Social Sciences (chairman), Undergraduate.

J. D. Thomas

Member, National Council of Teachers of Mathematics.
Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, Association for Computing Machinery (SIGNUM, STAPL).
Reviewer, Zentralblatt für Mathematik.
Member, Arts and Sciences College Curriculum and Educational Policies Committee.
Member, Computer Advisory Group (chairman, spring 1979).
Member, departmental committees: Advisory (alternate), Computer (chairman), Undergraduate Majors.
Faculty advisor, Pi Mu Epsilon, mathematics honorary fraternity.
Course coordinator and faculty supervisor for teaching assistants, MATH 191.
Served on various doctoral and masters examination committees.
Conferred with GTE Laboratories Research Center officials concerning proposed NSF/GTE graduate and undergraduate research participation projects, Waltham, Mass.

W. C. Torrez

Member, Institute for Mathematical Statistics.
Member, American Mathematical Society.
Member, American Association for the Advancement of Science.
Member, Sigma Xi.

I. E. Vance

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, National Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, New Mexico Council of Teachers of Mathematics.
Member, departmental committees: Mathematics Education, Advisory.
Consultant, Socorro Public Schools (workshop).

Consultant, Belen Public Schools (workshop).
Chairman of the Board of Directors, Development of Research
and Human Development (DORAHS).
Reader, Educational Testing Service, Advanced Placement--
Calculus (one week, summer).

C. L. Walker

Head, Department of Mathematical Sciences, effective July 1.
Member, American Mathematical Society.
Member, Association for Women in Mathematics.
Member, Phi Kappa Phi.
Reviewer, Mathematical Reviews.
Member, departmental committees: Biological and Social
Sciences, Undergraduate Majors, Advisory (chairman), Tenure
and Promotion to Associate Professor (ex officio),
Promotion to Professor (ex officio).
Member, doctoral comprehensive examination committees,
electrical engineering, two.
Member, doctoral final oral examination committees,
electrical engineering, two.

E. A. Walker

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Statistical Association.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt für Mathematik.
Referee, Proceedings of the American Mathematical Society.
Referee, Pacific Journal of Mathematics.
Referee, Canadian Mathematical Bulletin.
Referee, National Science Foundation research grant proposals.
Member, Graduate Council.
Member, departmental committees: Statistics, Tenure and
Promotion to Associate Professor, Promotion to Professor.
Conferred with GTE Laboratories Research Center officials
concerning proposed NSF/GTE graduate and undergraduate
research participation projects, Waltham, Mass.

F. D. Williams

Member, American Mathematical Society.
Member, Phi Beta Kappa.
Member, College of Arts and Sciences Faculty Affairs
Committee.
Member, departmental committees: Physical and Engineering
Sciences, Undergraduate Majors, Crimson Scholars
(coordinator).
Advisor, Sigma Alpha Epsilon Fraternity.
Member, doctoral committee, mechanical engineering, one.
Course coordinator, MATH 291.

R. J. Wisner

Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Mathematical Association for Two Year Colleges.
Member, National Council of Teachers of Mathematics.
Member, National Commission for Accreditation for Teacher Education.
Member, Advisory Committee, National Science Foundation grant, Elementary Teachers Mathematics Project.
Member, departmental committees: Mathematics Education (chairman), Undergraduate, Basic Skills and Placement, Remedial Course Development.
Member, master's examination committees, mathematics, two.
Faculty supervisor for teaching assistant, MATH 495.
Contributor to Graduate Education in Mathematics published by Rocky Mountain Mathematics Consortium.
Invited address, "Some Thoughts on the Teaching of Fractions," Dallas In-Service Workshop, Dallas, Tex.
Invited addresses, "Geometric Constructions," "Some Thoughts on the Teaching of Fractions," "Number Theory in the Elementary Grades," "Approximations," Houston In-Service Workshop, Houston, Tex.
Consulting editor, College Undergraduate Series, Brooks/Cole Publishing Company.
Co-author, Scott Foresman Mathematics, Grade One, Student Edition, 1980, Scott, Foresman & Co., Glenview, Ill.
Co-author, Scott Foresman Mathematics, Grade One, Teacher's Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Two, Student Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Two, Teacher's Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Three, Student Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Three, Teacher's Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Four, Student Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Four, Teacher's Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Five, Student Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Five, Teacher's Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Six, Student Edition, 1980.
Co-author, Scott Foresman Mathematics, Grade Six, Teacher's Edition, 1980.

J. D. Zund

Member, American Mathematical Society.
Member, Unione Matematica Italiana.
Member, London Mathematical Society.
Member, Tensor Society.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt fur Mathematik.
Referee, Physical Review Letters.
Referee, Journal of Mathematical Physics.
Referee, Annali di Matematica Pura ed Applicata.
Referee, Journal of the Australian Mathematical Society.
Member, Advisory Council on Library Policy.
Member, departmental committees: Tenure and Promotion to Associate Professor, Promotion to Professor, Physical and Engineering Sciences.
Dean's representative, master's examination committee, electrical engineering, one.
Chairman, master's examination committee, mathematics, one.
Course coordinator, MATH 192, 292.

B. PROFESSIONAL MEETINGS ATTENDED

R. J. Bagby

Mathematical Association of America, Southwestern Section Meeting, El Paso, Tex.

A. G. R. Calder

American Mathematical Society Regional Meeting, Birmingham.

T. H. Fay

Séminaire de Mathématiques Supérieures: Groupes Abéliens, Modules et Connexes, University of Montreal, Montreal, Quebec, Canada.
American Mathematical Society Annual Meeting, Biloxi, Miss.

C. L. Evans

National Council of Teachers of Mathematics, Albuquerque.

E. D. Gaughan

Mathematical Association of America Southwestern Section Meeting, El Paso, Tex.
Symposium on Computers in Education, Adams State College, Alamosa, Colo.
National Council of Teachers of Mathematics, Albuquerque.

J. C. Giever (graduate student)

Society for Industrial and Applied Mathematics Fall Meeting, Denver, Colo.

M. G. Hickman (graduate student)
Society for Industrial and Applied Mathematics Fall Meeting,
Denver, Colo.

R. H. Hunter
American Mathematical Society Annual Meeting, Biloxi, Miss.
National Educational Computing Conference, Iowa City, Iowa.

D. G. Johnson
Mathematical Association of American Southwestern Section
Meeting, El Paso, Tex.

W. H. Julian
American Mathematical Society Annual Meeting, Biloxi, Miss.
Rocky Mountain Educational Research Association, Tucson, Ariz.

R. A. Knoebel
Professional Services Institute, seminar on writing grant
proposals, El Paso, Tex.
American Association of Physics Teachers Summer Meeting,
Las Cruces.
Bolyai János Mathematical Society, Colloquium on Finite
Algebra and Multiple-valued Logic, Szeged, Hungary.
British Society for the History of Mathematics, Conference on
Geometry and Physical Theory (1630-1930), Pembroke College,
Oxford, England.
London Mathematical Society Monthly Meeting, Burlington House,
Piccadilly, London, England.

A. H. Kruse
Symposium on General Topology and its Applications,
University of New Delhi, New Delhi, India.
Indian Science Congress, Osmania University, Hyderabad, India.

T. W. Larkin (graduate student)
Society for Industrial and Applied Mathematics Fall Meeting,
Denver, Colo.

B. MacKichan
Conference on Several Complex Variables, Princeton, N. J.
National Educational Computing Conference, Iowa City, Iowa.

R. J. Y. McLeod
Second International Conference on Computational Methods in
Non-linear Mechanics, University of Texas at Austin,
Austin, Tex.
Association for Computing Machinery SIGNUM Meeting on
Numerical Ordinary Differential Equations, University of
Illinois at Urbana-Champaign, Urbana, Ill.

Dundee Biennial Conference on Numerical Analysis, University
of Dundee, Dundee, Scotland.
Society for Industrial and Applied Mathematics Fall Meeting,
Denver, Colo.

M. A. Maher

Operations Research Seminar, Bell Telephone Laboratories,
Holmdell, N. J.
Ninth Annual Conference on Stochastic Processes and their
Applications, Northwestern University, Evanston, Ill.
First Midwest Colloquium on Probability Theory, Northwestern
University, Evanston, Ill.
Harvard-Yale Statistics Day, Yale University, New Haven, Conn.

R. Mines

Organized and co-chaired special session on constructive
mathematics, American Mathematical Society Annual Meeting,
Biloxi, Miss.
Mathematical Association of America Southwestern Section
Meeting, El Paso, Tex.
American Mathematical Society Regional Meeting, Honolulu,
Hawaii.

F. Richman

Mathematical Association of America Southwestern Section
Meeting, El Paso, Tex.
Organized and co-chaired special session on constructive
mathematics, American Mathematical Society Annual Meeting,
Biloxi, Miss.

G. S. Rogers

Mathematical Association of America, Southwestern Section
Meeting, El Paso, Tex.
Mathematical Association of America, Governors Meeting,
Duluth, Minn.

C. C. Sherman

American Mathematical Society Annual Meeting, Biloxi, Miss.
Algebra and Ring Theory Conference, University of Oklahoma,
Norman, Okla.

G. S. Sylvester

American Mathematical Society Annual Meeting, Biloxi, Miss.

W. C. Torrez

Ninth Annual Conference on Stochastic Processes and their
Applications, Northwestern University, Evanston, Ill.

I. E. Vance

New Mexico Council of Teachers of Mathematics Meeting, Taos.
National Science Foundation Directors Meeting, San Francisco,
Calif.
Council of Teachers of Mathematics State Supervisors Meeting,
attending as New Mexico Delegate, Boston, Mass.
National Council of Teachers of Mathematics National Meeting,
Boston, Mass.
National Council of Teachers of Mathematics Regional Meeting,
Shreveport, La.
New Mexico State University-Mathematics Project Advisory
Board Meeting, Las Cruces.
National Council of Teachers of Mathematics, Albuquerque.
Conference for the Advancement of Mathematics, Teaching,
State Meeting, Austin, Tex.
California Mathematics Council Meeting, San Francisco, Calif.
National Science Foundation Cautauqua-Type Short Course on
"Math Anxiety," Santa Ana College, Santa Ana, Calif.

C. L. Walker

Séminaire de Mathématiques Supérieures: Groupes Abéliens,
Modules et Connexes, University of Montreal, Montreal,
Quebec, Canada.

E. A. Walker

American Mathematical Society and Mathematical Association of
America, Biloxi, Miss.
Institute of Mathematical Statistics, Biometric Society, and
American Statistical Association, New Orleans, La.
Southern Region Educational Board Summer Research Conference
in Statistics, Degray State Park, Ark.
American Statistical Association, Biometric Society, and
Institute of Mathematical Statistics, Washington, D.C.
American Mathematical Society and Mathematical Association of
America, Duluth, Minn.
35th Annual Princeton Conference on Applied Statistics,
Villanova University, Villanova, Pa.

R. J. Wisner

American Mathematical Society and Mathematical Association of
America National Meetings, Biloxi, Miss.
National Council of Teachers of Mathematics Regional Meeting,
Albuquerque, N. Mex.
Mathematical Association for Two-Year Colleges National
Meeting, San Diego, Calif.
Conference for the Advancement of Mathematics Teaching,
State Meeting, Austin, Tex.

II. COLLOQUIUM SPEAKERS

- George C. Debney, Virginia Polytechnic Institute and State University, "Killing Vector Fields in Differential Geometry and General Relativity."
- Allan G. R. Calder, Birkbeck College, University of London, "Should We Worry About the Nature of Mathematics?"
- Richard J. Bagby, New Mexico State University, "Strengthened Maximal Functions and the Differentiation of Integrals."
- William J. Firey, Oregon State University, "A Motion Invariant for Spatial Loops."
- E. Wachspress, Knowles Atomic Power Laboratory, "A Rational Finite Element Basis."
- Colin W. Clark, University of British Columbia, series of five lectures, "Mathematical Models and the Management of Common Property Resources."
- Jack D. Lambert, University of Dundee, Scotland, "Stiffness in the Numerical Solution of Ordinary Differential Equations; a Critical Appraisal."
- Dick Bourgin, University of New Mexico, "Probabilistic Methods for Geometry in Banach Spaces."
- Khalid Benabdallah, University of Montreal, Quebec, "Torsion-free Groups of Rank 2."
- David Tartakoff, University of Illinois at Chicago Circle, "Partial Differential Equations Whose Solutions Have to be Analytic."
- John J. Sember, Simon Fraser University, "On Summing Sequences of 0's and 1's."
- Jerrold Siegel, University of Missouri at St. Louis, "A Generalization of the Contraction Principle."
- Douglas S. Bridges, University College at Buckingham, England, "What is the Point of Doing Constructive Mathematics?"
- Allan G. R. Calder, Birkbeck College, University of London, "The Width of Homotopies."
- Wilfrid Hodges, Bedford College, London, "Locally Free Structures."
- Vladimir Lifschitz, Brigham Young University, "An Interpretation of Constructive Mathematics."
- Newcomb Greenleaf, Naropa Institute, "The Constructive Meaning of Cantor's Concept of Higher Cardinality."

III. GRANTS AND PROPOSALS

	Grants Funded		Grants Pending	
	Agency	Value	Agency	Value
Adams, J. (with Hunter, R., MacKichan, B.)			NSF	\$ 245,433
Bagby, R.			NSF	21,464
Julian, W. (with Mines, R., Richman, F.)			NSF	13,050
McLeod, R.			ARO	84,211
MacKichan, B.			NSF	20,673
Sherman, C.	NSF	\$ 14,300		
Thomas, J (with Adams, J., Gaughan, E., Hunter, R., Johnson, D.G., MacKichan, B., Richman, F., Vance, I., Wisner, R.)			NSF	18,000
Vance, I.	NSF	37,497		
Walker, E. (with Arnold, D., Richman, F.)	NSF	36,039		
Walker, E. (with Arnold, D., Hunter, R., Richman, F.)			NSF	151,877
Walker, E. (with Hunter, R.)			NIH	98,112

IV. RESEARCH PAPERS PUBLISHED

- Arnold, D. M., Hunter, R., Walker, E. A., Summands of direct sums of cyclic valuated groups, Symposia Mathematica, Vol. XXIII, Academic Press, Rome, 1979, 77-84.
- Bagby, R. J., Riesz potentials and Fourier Multiplier, Proc. Symp. Pure Math., XXXV, Part 1, 115-119.
- Bagby, R. J., Mixed Norm Sobolev Theorems for Lipschitz Spaces, Indiana J. Math., 1979, 28(3), 417-427.
- Bagby, R. J., Taylor polynomials and difference quotients, Amer. Math. Monthly, 1979, 86(8), 681-684.
- Hunter, R. H., cf. Arnold, D. M.
- Mandelkern, M., An example in connectivity, Bull. London Math. Soc., 1979, 10, 314.

- Phillips, K. L., Distributional and operational integral homogeneity over local fields, Math. Ann., 1979, 242, 69-84.
- Phillips, K. L., Extendability of convolution operators and convergence of fourier series on local fields, integral homogeneity of distribution, Proc. Symposium Pure Math., Vol. XXXV, Part 2.
- Richman, F., Walker, E. A., Valuated groups, J. Algebra, 56(1), 145-167.
- Sherman, C. C., Some splitting results in the K-theory of rings, Amer. J. Math., 1979, 3(101), 609-632.
- Sherman, C. C., Gersten's conjecture for arithmetic surfaces, J. Pure Appl. Algebra, 1979, 14, 167-174.
- Sherman, C. C., K-cohomology of regular schemes, Comm. Algebra, 1979, 7(14), 999-1027.
- Sherman, C. C., A note on the localization theorem for projective modules, Proc. Amer. Math. Soc., 1979, 2(75), 207-208.
- Swartz, C. W., A generalized Orlicz-Pettis theorem and applications, Math. Ann., 1978, 163, 283-290.
- Swartz, C. W., Nikodym's theorems for set functions on algebras, Rev. Roumaine Math., 1977, 22, 347-353.
- Swartz, C. W., Products of vector measures by means of Fubini's theorem, Mat. Casop., 1977, 27, 375-382.
- Swartz, C. W., Applications of the Mikusinski diagonal theorem, Polish Acad. Sci. Bull., 1978, 26, 421-424.
- Torrez, W. C., On a genetics model of Moran evolving in random environments, Rocky Mountain J. Math., 1979, 9, 153-161.
- Torrez, W. C., Calculating extinction probabilities for the birth and death chain in a random environment, J. Appl. Probab., 1979, 16, 709-720.
- Torrez, W. C., The effect of random selective intensities on fixation probabilities, Contemporary Quantitative Ecology and Related Ecometrics, 1979, 421-438. Ed. G. P. Patil and M. L. Rosenzweig, International Co-operative Publishing House, Maryland.
- Walker, E. A., cf. Arnold, D. M.
- Walker, E. A., cf. Richman, F.
- Wisner, R. J., Jordan, J. H., Walch, R., Triangles with integer sides, Amer. Math. Monthly, 1979, 86(8), 686-689.
- Zund, J. D., The projective geometry of the Weyl spinor, Accademia Nazionale dei Lincei Rendiconti, Classe di Scienze Fisiche, Matematiche e Naturali, July, 1979.
- Zund, J. D., Wallace, G. L., Electromagnetic theory in general relativity VI: the Poynting vector and zilch tensor, Tensor (N.S.), 1979, 33.
- Zund, J. D., Wilkes, J. M., Maxwell's equations and Meray's theorem, Tensor (N.S.), 1979, 33.

V. RESEARCH PAPERS PRESENTED

- Bagby, R. J., "A Variant of Lebesgue's Differentiation Theorem," Mathematical Association of America Southwestern Section Meeting, El Paso, Tex.
- Hunter, R. J., "Global Warfield Groups," American Mathematical Society Annual Meeting, Biloxi, Miss.
- Julian, W. H., "The Jordan Curve Theorem," Special Session on Constructive Mathematics, American Mathematical Society Annual Meeting, Biloxi, Miss.
- Knoebel, R. A., "A Decomposition Theorem for Several-sorted Algebras," Colloquium on Finite Algebra and Multiple-valued Logic, Szeged, Hungary.
- Kruse, A. H., "Natural Resolutions of Families of Nested Souslin Representations: A Revisitation of some Classical Theorems about Analytic Sets," Symposium on General Topology and its Applications, University of New Delhi, New Delhi, India.
- Kruse, A. H., "Some Comments about Stone-Čech Compactifications of Boolean Spaces," Topology Symposium, Indian Science Congress, Hyderabad, India.
- Kruse, A. H., "Some Analytic Sets Arising from Relational Systems with Countable Underlying Set," Meerut University, Meerut, India.
- McLeod, R. J. Y., "Numerical Methods for Phase-plane Problems in Ordinary Differential Equations," Dundee Biennial Conference on Numerical Analysis, University of Dundee, Dundee, Scotland.
- Maher, M. A., "Positive Random Walks," Ninth Conference on Stochastic Processes and Their Applications, Northwestern University, Evanston, Ill.
- Mines, R., "Constructive Algebraic Number Theory," American Mathematical Society Annual Meeting, Biloxi, Miss.
- Mines, R., "Affirmative Action Now--Proofs by Contradiction in Mathematics," Mathematical Association of America Southwestern Section Meeting, El Paso, Tex.
- Mines, R., Mader, A. G., "Functional Topologies with a Linearly Ordered Base," American Mathematical Society Regional Meeting, Honolulu, Hawaii.
- Richman, F., "Finite Dimensional Algebras," American Mathematical Society Annual Meeting, Biloxi, Miss.
- Richman, F., "Why Equivalence Classes?" Mathematical Association of America Southwestern Section Meeting, El Paso, Tex.
- Rogers, G. S., "Testing Goodness of Fit," Mathematical Association of America Southwestern Section Meeting, El Paso, Tex.
- Torrez, W. C., Cogburn, R., "Birth and Death Processes with Random Environments in Continuous Time," Ninth Conference on Stochastic Processes and Their Applications, Northwestern University, Evanston, Ill.
- Vance, I. E., "Basic Operations on Whole Numbers," New Mexico Council of Teachers of Mathematics, Taos, N. Mex.

- Vance, I. E., "Yes, Virginia, the $\sqrt{2}$ is Real and You Can Construct a Square with Area 20"." National Council of Teachers of Mathematics National Meeting, Boston, Mass.
- Vance, I. E., "Squares, Square Roots and all that Jazz," National Council of Teachers of Mathematics Regional Meeting, Shreveport, La.
- Vance, I. E., "Getting Basic with the Basic Operations on Whole Numbers," National Council of Teachers of Mathematics, Albuquerque, N. Mex.
- Vance, I. E., "Problem Solving for the '80's," Conference for the Advancement of Mathematics Teaching, State Meeting, Austin, Tex.
- Wisner, R. J., "Base Independent Number Patterns," National Council of Teachers of Mathematics Regional Meeting, Albuquerque, N. Mex.
- Wisner, R. J., "New Rules for Divisibility," Conference for the Advancement of Mathematics Teaching, State Meeting, Austin, Tex.