I. GENERAL DEVELOPMENTS

A. PERSONNEL CHANGES AND DEVELOPMENTS

David Arnold was promoted to Professor, effective fall semester, 1980. John DePree spent spring semester 1980 at the University of Hawaii, teaching and doing research in analysis, as part of a faculty exchange. Adolf Mader of the University of Hawaii taught and did research in abelian groups at New Mexico State University, to complete the exchange.

On sabbatical leave spring 1980 was Irvin Vance, who spent that academic year as visiting professor at Ohio State University doing research in mathematics education, studying computer science, and teaching. On leave without pay spring semester were Darell J. Johnson, Arthur Knoebel, Mark Mandelkern and William Torrez. M. Mandelkern was in Germany doing research in constructive mathematics, A. Knoebel was doing research in universal algebra and computer science, D. J. Johnson was enrolled in a program of study at Massachusetts Institute of Technology, and W. Torrez was an assistant professor in the Department of Statistics at the University of California at Riverside. W. Torrez resigned his position in fall 1980 to remain at Riverside.

On sabbatical leave fall semester 1980 were Joaquin Loustaunau, Ray Mines and John Thomas. J. Loustaunau spent fall semester working with faculty at the University of Chihuahua on optimization and statistics problems related to experimental and theoretical work in agriculture. R. Mines spent fall semester doing research in abelian groups at the University of Essen in West Germany, and J. Thomas spent fall semester doing research in numerical analysis at the University of Dundee in Scotland. On leave without pay fall semester were Darell J. Johnson and Clayton Sherman. D. J. Johnson continued a program of study at Massachusetts Institute of Technology, and C. Sherman taught and did research in algebraic K-theory at Texas Tech University.

Visiting faculty spring semester 1980 were Douglas Bridges, on leave from University College at Buckingham, Allan Calder, on leave from Birkbeck College, University of London, David Pryce Thomas, on leave from University of Dundee, Michael Kazlow and Arvind Shah. Visiting faculty fall semester 1980 were Allan Calder, M. M. Chawla, on

leave from Indian Institute of Technology, New Delhi,
Charles Dixon, on leave from University of Dundee, and
D. G. Kabe, on sabbatical leave from Saint Mary's
University, Halifax. Donna Beers, on sabbatical leave
from Wellesley College, also visited the department fall
semester 1980.

Seven graduate and undergraduate students were initiated
into the mathematics honorary, Pi Mu Epsilon, at the annual
department spring picnic. During spring semester the
department employed 12 Crimson Scholars, majoring in
mathematics or an area which utilizes mathematics, as
classroom assistants in the Mathematics Learning Center or
as classroom aides. In fall semester the department
employed 16 Crimson Scholars.

In 1980, 10 students received the Bachelor of Science in
mathematics, 1 student received the Bachelor of Science in
electrical engineering with a minor in mathematics, 11
students received the Master of Science in mathematics and
1 student earned the Ph.D. in mathematics.

B. NEW OR REVISED PROGRAMS

During 1980, three courses, MATH 115 Intermediate Algebra,
MATH 180 Trigonometry, and MATH 185 College Algebra were
developed in an individually paced, unit mastery format to
be offered through the Mathematics Learning Center.
Together with MATH 100N and MATH 102N which were developed
in 1979, this provides a complete program of remedial and
pre-calculus courses in the individually paced format.
Donald G. Johnson was awarded a President's Teaching
Improvement Grant summer 1980 to support the development of
the individually paced version of the course MATH 185
College Algebra. The College of Arts and Sciences provided
additional support for this development.

A minor in mathematics was a new option begun in fall 1980.
A student earning a bachelor's degree in any college
qualifies for a minor in mathematics by completing 18
credits of approved mathematics and/or statistics courses,
at least 9 of the credits numbered above 300, with a
grade of C or better. The student must apply for the
minor when filing for the degree. One student majoring
in electrical engineering received the minor in
mathematics fall 1980, and several other students were
working toward the minor.

The university basic skill requirement in mathematics and
English went into effect for students entering summer 1980.
Students with a standard ACT score in mathematics below 22
must either pass MATH 102N or a mathematics course numbered
115 or above with a grade of C or higher, or pass a special
basic skills examination in mathematics, before enrolling in
any upper division course. The mathematics department
prepared the first version of this examination, and it was
available to students through the university Center for
Counseling and Student Development during the fall 1980.
No students chose to take this examination fall semester.

II. RESEARCH ACTIVITIES

A. PUBLICATIONS

In 1980, 15 members of the faculty had 18 research
papers published in professional journals or conference
proceedings. In addition, 25 faculty members attended
one or more professional meetings and presented 29
research papers.

B. COLLOQUIA, SEMINARS, AND CONFERENCES

During 1980 the department held 17 colloquia. Active
seminars included abelian groups, algebra, algebraic
topology, analysis, constructive algebra and topology,
constructive mathematics, numerical analysis, and
statistics.

The department hosted two research conferences in 1980. The
first, Frontiers of Applied Geometry, was held January
7-11 at Holy Cross Retreat. Participants included 13
faculty and students from New Mexico State University and
29 from 14 states and 2 foreign countries. The program
included 16 speakers giving a total of 21 talks. A
conference in Constructive Mathematics was held
August 11-15, also at Holy Cross Retreat. The 25
participants included 5 faculty from New Mexico State
University, and 20 from nine states and three foreign
countries. There were 23 talks given at this conference.
Proceedings of this conference will be published by
Springer-Verlag.

C. RESEARCH PROPOSALS AND GRANTS

Fourteen research proposals were submitted to federal
agencies by 11 faculty members. Four proposals (seven

faculty members) were funded in 1980 for a total of
$133,162. Twelve proposals (eleven faculty members,
$902,921) are still pending.

One proposal for the President's Teaching Improvement
Grant was funded for $3,471. The funding of a National
Science Foundation CAUSE grant included a commitment for
$30,812 in matching funds from New Mexico State University
for the first year, with an additional $213,938 pending.

III. CRITICAL ANALYSIS AND RECOMMENDATIONS

The new programs for entering freshmen, including the
mathematics placement examination and individually paced basic
skills courses, were continued this year. Enrollment in these
individually paced courses exceeded all expectations. We
reported an enrollment fall semester 1979 of 837 students in
the remedial courses MATH 100 and MATH 102, and the prospect
of continuing enrollment at that level or higher. In fall
1980 there were 1095 students in these two courses. At the
same time individually-paced versions of intermediate and
college algebra and trigonometry were developed. The total
student credit hour production in the mathematics learning
center, through which individually paced courses are run,
increased from 2,541 in the fall of 1979 to 4,074 in the fall
of 1980. Educational quality is stressed in these basic skills
courses. The "unit mastery" aspect requires that students
earn a high score on a quiz over each unit in the courses,
with no partial credit being given. The student has the
opportunity for multiple attempts on each quiz. The student
must then pass a comprehensive final to complete the course.

The existence of the individually paced courses makes possible
more flexible advising. Students in any entry level course who
are having difficulties due to inadequate prerequisite
skills are advised to drop back into an individually-paced
prerequisite course as soon as the difficulties are identified.
Individual pacing makes such dropbacks feasible. This dropback
feature is available throughout the first half of any semester.

Studies of students' performance in entry level mathematics
courses indicate that the mathematics placement examination
score coupled with the ACT mathematics score is a fairly
successful predictor. Based on these studies the department
recommends that the mathematics placement examination be
required of all students, and that the placement guidelines be
followed more closely by advisors than they have been in the past.
Students placed ahead of the course indicated by the placement

examination do not tend to succeed, and would benefit much more from spending their first semesters learning prerequisite material.

The funding by the National Science Foundation of a three year grant to support development of computer assisted instruction in mathematics and computer sciences has resulted in greatly increased activity in this area. This proposal is an ambitious project to develop course offerings from both areas in an interactive, computer based instructional format. We are standing on the threshold of many exciting new developments in education made possible through a variety of uses of computers in the classroom. The university has highly talented professionals in both mathematics and computer science with a strong interest in the educational function of the university, and the university has the opportunity to be at the forefront of progress in the area of computer assisted instruction. The departments are excited about the many possibilities that exist if the support is available for these projects to develop fully.

The state bond issue funds for scientific equipment enabled the department to increase the computer equipment available to faculty and graduate students for research, including terminals, microcomputers and printers. A seminar room was converted to a microcomputer laboratory which has been the center of much activity during the year.

Software developed and used by the department includes several packages related to the instructional program. One is a grading program for the individually paced courses which details enrollment and performance records for each student, including individual deadlines for quizzes. The program prints out complete records and a daily report on quizzes taken. Work on this program was begun in June 1979, and continued throughout 1980. Another program is a quiz editor and generator program. This program allows faculty or secretaries to type in a large store of questions and answers which are then used to generate 'random' quizzes. A typical run for a single quiz may be the generation of 500 versions. The program is used in several mathematics courses in addition to the individually—paced courses. The program enables questions and answers to be corrected easily and allows the user a wide range of quiz formats. A grading program for general use has been developed and is used by a number of faculty for record keeping purposes. Graphing programs are used in several courses. Technical text editing programs have been developed and are heavily used by faculty, graduate students, and staff in the department.

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 an active program of colloquia to provide in-depth contact with experts in various research areas.

3. Objective: The department will sponsor a short conference in Mathematics Education in the fall to discuss major problems in mathematics education that are both international in scope and pertinent to New Mexico State University.

4. Objective: The department will continue to encourage and support research seminars, including interdepartmental seminars, to explore areas of applications of mathematics.

5. Objective: The department will continue to request new faculty positions so that active research faculty can once again be given appropriate time for research activities without slighting the teaching responsibilities of the department.

B. GOAL: The department will work to develop and strengthen the graduate program in mathematics.

1. Objective: The graduate committee of the department plans continued extensive regional and national advertising in 1981 to attract qualified applicants to the graduate program in mathematics.

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 continue to develop master's programs in pure mathematics, numerical analysis, operations research, applied statistics, mathematical statistics and mathematics education.

4. <u>Objective</u>: The faculty of the department will continue to support the doctoral programs in mathematics.

5. <u>Objective</u>: The department will maintain close ties with the Department of Computer Science and support its new doctoral program.

6. <u>Objective</u>: The department will continue to offer service courses in mathematics in support of graduate programs in other departments.

7. <u>Objective</u>: The department will continue to hire visiting faculty primarily on the basis of their potential to further the graduate and research programs, and to teach mathematics effectively.

8. <u>Objective</u>: The department will continue its program of supervision for graduate assistants teaching lecture sections.

9. <u>Objective</u>: 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. <u>GOAL</u>: The department will work to strengthen the programs in mathematics and statistics for undergraduate majors and minors.

1. <u>Objective</u>: The department will work with the Deans of Arts and Sciences and Engineering to develop ways of obtaining more complete and timely reports on mathematics majors, including second majors, in order to communicate more effectively with students.

2. <u>Objective</u>: The department will work with the Dean of Education to find ways to improve communication with students having mathematics as a teaching field.

3. <u>Objective</u>: The department will continue to mail information about mathematics programs to students and high schools in New Mexico.

4. <u>Objective</u>: The department will explore possibilities for advertising New Mexico State University undergraduate mathematics programs to students and faculty in El Paso high schools.

5. Objective: The undergraduate committee will study the mathematics curriculum with a view toward the needs of mathematics majors and minors.

6. Objective: The department will seek support for expanded computer clusters on campus to meet the needs of students majoring in mathematics.

D. 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 reevaluation of the undergraduate mathematics curriculum, keeping in mind the needs of the students from all colleges. Support courses for the College of Business Administration and Economics and for the Department of Computer Science will receive special attention.

2. Objective: The department will give a mathematics placement examination to new students, a program begun in 1979, and continue to evaluate the effectiveness of this placement program.

3. Objective: The department will continue to develop its program of advising and placement for students in lower division courses, taking advantage of the individually paced remedial and precalculus courses which are available for students to drop back into during a semester.

4. Objective: The department will support programs leading to the development of computer-assisted instruction at New Mexico State University.

5. Objective: The department will support the university's request for a new building which will include space for the Mathematics Learning Center, space for both development and implementation of computer aided instruction, and a computer cluster for mathematics students and staff.

6. Objective: The department will cooperate in the implementation of the basic skills requirement in mathematics, which went into effect for students entering summer 1980.

7. <u>Objective</u>: The department will continue to request new
   faculty positions to better serve the mathematical
   needs of undergraduate students, many of whom, under
   present conditions, can be accommodated only in large
   or very large classrooms.

I. PERSONNEL ACTIVITIES

   A. PROFESSIONAL ACTIVITY

       D. M. Arnold
       Member, American Mathematical Society.
       Member, National Council of Teachers of Mathematics.
       Referee, Rocky Mountain Journal of Mathematics.
       Member, departmental committees: Advisory (ex officio),
           Graduate (ex officio), Mathematics Education, Comprehensive
           Examinatons in Algebra.
       Member, doctoral committee, mathematics.
       Member, master's examination committee, electrical
           engineering.
       Course coordinator, MATH 311.
       Course coordinator and faculty supervisor for Graduate
           Assistants, MATH 142, 205.

       R. J. Bagby
       Member, American Mathematical Society.
       Member, Mathematical Association of America.
       Member, American Association of University Professors.
       Member, Board of Directors, New Mexico State University
           Chapter, American Association of University Professors.
       Referee, two research proposals for National Science
           Foundation.
       Referee, Indiana University Mathematics Journal.
       Reviewer, Mathematical Reviews.
       Wrote extended critique of Mathematics as a Second Language
           by F. Lake and J. Newman for Addison-Wesley Publishing
           Company.
       Faculty supervisor, William Lowell Putnam Mathematics
           Competition.
       Member, College of Arts and Sciences Curriculum and
           Educational Policies Committee, fall.
       Member, departmental committees: Biological and Social
           Sciences, Undergraduate.
       Member, master's examination committees: mechanical
           engineering, one; mathematics, one; electrical
           engineering, one.
       Member, doctoral committee, mathematics.
       Course coordinator and faculty supervisor for Graduate
           Assistants, MATH 125.

       A. G. R. Calder
       Member, American Mathematical Society.
       Member, London Mathematical Society.
       Referee, Pacific Journal of Mathematics.
       Reviewer, Mathematical Reviews.

Colloquium speaker: University of Chicago, University of
    Alberta, University of British Columbia, University of
    California at Irvine, University of California at
    Los Angeles, University of New Mexico, Princeton
    University, Yale University, University of Michigan,
    Wayne State University, Case Western Reserve University,
    Cornell University.
Member, departmental committee: Comprehensive Examinations
    in Topology.

M. M. Chawla
Fellow, Institute of Mathematics and its Applications,
    United Kingdom.
Referee, Journal of the Institute of Mathematics and its
    Applications.
Referee, Monographs in Mathematics, University of Roorkee,
    India.
Referee, Journal of Pure and Applied Mathematics, India.
Referee, Indian National Science Academy.
Reviewer, Mathematical Reviews.
Reviewer, Computing Reviews.
Doctoral thesis supervisor, Indian Institute of Technology,
    two.

M. F. Combs
Member, National Council of Teachers of Mathematics.
Member, departmental committee: Basic Skills and Placement.

J. D. DePree
Member, American Mathematical Society.
Member, Board of Governors, Pacific Journal of Mathematics.
Member, College of Arts and Sciences Bachelor of
    Individualized Studies Committee.
Member, Distinguished Visiting Professorship Committee.
Reviewer, Mathematical Reviews.
Referee, Pacific Journal of Mathematics.
Referee, Journal of the Indian Mathematical Society.

C. L. Evans
Member, National Council of Teachers of Mathematics.
Member, Colorado Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, United States Metric Association, Inc.

E. D. Gaughan
Member, Greater El Paso Council of Teachers of Mathematics.
Institutional representative for New Mexico State University,
    Mathematical Association of America.

Workshop chairman for 1981 regional meeting to be held in
    El Paso, National Council of Teachers of Mathematics.
Member, Ralph B. Crouch Scholarship Board of Trustees.
Member, Willoughby L. Nason Scholarship Board of Trustees.
College of Arts and Sciences representative, Homecoming
    Committee.
Advisor, College of Arts and Sciences Advising Center.
Member, departmental committees: Undergraduate (chairman),
    Basic Skills and Placement, Mathematics Education.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 142, 191.
Author, College Algebra second edition, Brooks/Cole
    Publishing Company.
Author, Algebra, First Course, Scott Foresman & Co.

J. B. Giever
Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Association for Symbolic Logic.
President, local chapter of American Association of
    University Professors, spring.
Member, Faculty Senate.
Member, Faculty Senate committees: Faculty Affairs
    Committee, spring; Committee on Committees, spring; Ad Hoc
    Committee I, spring; University Affairs, fall.
Chairman, University Appeals Board.
Member, departmental committee: Tenure and Promotion to
    Associate Professor.
Member, doctoral committee, mathematics.
Course coordinator MATH 110, 235.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 135, 136.

R. H. Hunter
Member, American Mathematical Society.
Member, Australian Mathematical Society.
Referee, Journal of Australian Mathematical Society.
Referee, Rocky Mountain Journal of Mathematics.
Referee, Pacific Journal of Mathematics.
Referee, Proceedings of the American Mathematical Society.
Reviewer, Mathematical Reviews.
Member, departmental committees: Computer, Basic Skills and
    Placement, Comprehensive Examinations in Algebra.
Departmental computer coordinator, fall.
Member, university committees: Computer Advisory Group,
    Ad Hoc Committee on Word Processing.
Member, doctoral committees, two.
Master's thesis advisor for R. Cowdry, computer science,
  spring.

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External examiner, Ph.D. thesis in general topology,
P. K. Jain, University of Delhi, India.

J. O. Loustaunau
Member, American Mathematical Society.
Member, College of Arts and Sciences Improvement of
Instruction and Student Relations Committee, spring.
Chairman, College of Arts and Sciences Student Appeals Board,
spring.
Member, departmental committees: Undergraduate,
Undergraduate Majors, Physical and Engineering Sciences
(chairman).
Course coordinator and faculty supervisor for Graduate
Assistants, MATH 192.
Dean's representative, master's examination, chemical
engineering.
Worked in areas of optimization and mathematical modeling
with faculty members in schools of Engineering and
Animal Sciences, University of Chihuahua, fall.
Assisted team working on models for milk industry in the
State of Chihuahua, Mexico, fall.
Wrote proposal to Industrial Minera Mexico to do research in
optimization techniques in the metallurgy of copper.

R. J. Y. McLeod
Member, Institute of Mathematics and its Applications.
Referee, International Journal for Numerical Methods in
Engineering.
Guest editor, International Journal of Mathematical Modeling
Special Issue on Applied Geometry.
Co-organizer, Frontiers in Applied Geometry Conference.
Colloquium speaker: University of New South Wales,
University Queensland, Australian National University,
University of Tasmania, La Trobe University, Flinders
University of South Australia, University of Adelaide.
Lecture series: Western Australian Institute of Technology.
Member, departmental committee: Graduate, Comprehensive
Examinations in Numerical Analysis.
Member, master's examinaton, mathematics, two.

B. MacKichan
Member, American Mathematical Society.
Reviewer, Mathematical Reviews.
Member, university committees: Ad Hoc Committee on Word
Processing, Mini/MicroComputer User's Group.
Member, departmental committees: Advisory, Graduate,
Comprehensive Examinations in Analysis, Colloquium
Chairman.

M. A. Maher
Member, American Mathematical Society.
Member, Institute of Mathematical Statistics.
Member, Society for Industrial and Applied Mathematics.
Reviewer, Mathematical Reviews.
Reviewer, Bell Telephone Laboratories Technical Reports.
Reviewer, Elsevier/North Holland Publishing Company.
Member, departmental committees: Statistics, Comprehensive
    Examinations in Statistics.
Member, master's examination committees: mathematics, five;
    education, one.

M. Mandelkern
Member, American Mathematical Society.
Member, London Mathematical Society.
Reviewer, Mathematical Reviews.
Author, High SWR protection for transceivers and
    amplifiers, CQ Magazine, 63-65.
Speaker, National Education Association, New Mexico State
    University student branch, Las Cruces, "Education and
    Freedom."

R. Mines
Member, American Mathematical Society.
Member, Mathematical Association of America.
Referee, Mathematical Reviews.
Referee, Proceedings of the Edinburgh Mathematical Society.
Referee, Communications in Algebra.
Member, University Retrenchment Committee.
Chairman, College of Arts and Sciences Faculty Affairs
    Committee, spring.
Member, departmental committee: Computer, Undergraduate
    Majors.
Co-organizer, Constructive Mathematics Conference.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 120.

S. A. Nett
Member, American Mathematical Society.
Member, Mathematical Association of America.

K. L. Phillips
Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Sigma Xi.
Member. New Mexico Academy of Sciences.
Referee, Rocky Mountain Journal of Mathematics.
Reviewer, Mathematical Reviews.
Editor, Freeman Publishers.

Consultant, White Sands Missile Range, Instrumentation
    Directorate.
Chairman, College of Arts and Sciences Planning Committee.
Member, departmental committees: Advisory, Physical and
    Engineering Sciences, Graduate (chairman).
Chairman, doctoral committees: W. H. Moore, L. H. Jacobs.
Chairman, master's examination committee, mathematics, two.
Course coordinator, MATH 292.

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.
Referee, Proceedings of the American Mathematical Society.
Reviewer, Mathematical Reviews.
Book reviewer, Journal of Symbolic Logic.
Reviewer, Promotion to Professor, Department of Mathematics,
    Montana State University.
Member, Graduate School Committee for Selecting Best
    Dissertation of 1979.
Member, departmental committees: Advisory, Biological and
    Social Sciences.
Chairman, doctoral committee: J. H. Moore.
Co-organizer, Conference on Constructive Mathematics.
Westhafer Award for Excellence in Research, presented in
    April.

G. S. Rogers

Member, Institute of Mathematical Statistics.
Member, American Statistical Association.
Governor, Mathematical Association of American, Southwest
    Section.
Referee, Linear Algebra and its Applications,
    prepublication review for Prentice-Hall, Inc.
Member, University Statistics Center Advisory Committee.
Member, departmental committees: Undergraduate Majors
    (chairman), Undergraduate, Statistics (chairman).
Member, master's examinaton committees, mathematics, three.
Dean's representative, doctoral committee, agronomy.
Advisor, College of Arts and Sciences Advising Center.
Course coordinator, STAT 251.

A. C. Shah

Member, American Statistical Association.
Member, American Statistical Association, Albuquerque
    chapter.

C. C. Sherman
Member, American Mathematical Society.
Member, departmental committee: Library/Reading Room.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 190.

C. W. Swartz
Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, Society for Industrial and Applied Mathematics.
Member, departmental committees: Advisory, Soft Sciences,
    Promotion to Full Professor, Tenure and Promotion to
    Associate Professor, Undergraduate.
Reviewer, Mathematical Reviews.
Reviewer, Zentralblatt Fur Mathematik.
Institutional representative for Rocky Mountain Mathematics
    Consortium.
Referee: Promotion to Full Professor, Department of
    Mathematics, Wake Forest University.
Colloquium speaker, Slovak Academy of Sciences, Bratislava,
    Czechoslovakia.
Course coordinator, MATH 230.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 105, 106.

J. D. Thomas
Member, Society for Industrial and Applied Mathematics.
Member, Association for Computing Machinery.
Member, Mathematical Association of America.
Member, National Council of Teachers of Mathematics.
Member, University Computer Advisory Group, spring.
Member, College of Arts and Sciences Curriculum and
    Educational Policies Committee, spring.
Member, departmental committees: Computer (chairman),
    Undergraduate Majors, spring.
Sponsor, Pi Mu Epsilon, spring.
Speaker, Dundee Numerical Analysis Seminar, fall.

I. E. Vance
Member, National Council of Teachers of Mathematics.
Member, Mathematical Association of America.
Member, New Mexico Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, National Association of Mathematics.
Member, School Science and Mathematics Association, Inc.
Member, departmental committees: Ad Hoc Committee on
    MATH 112 textbook selection, Ad Hoc Committee to
    review and coordinate MATH 111, 112, 311, and 459.

Attended workshop, Columbus, Ohio Public Schools Title I
    Mathematics Teachers.
Member, National Science Foundation Review Panel for the
    Minority Institution Science Improvement Program.
Member, Education Testing Service - Advanced Placement
    Examination in Calculus Reading Group, Rider College,
    Trenton, New Jersey.
Consultant to the Argonne National Laboratory on programs
    in education.
Member, Educational Testing Service Committee of National
    Teacher Examination in Mathematics.
Member, National Science Foundation and National Institute
    of Education Review Panel for the Improvement of
    Mathematics Education Using Information Technology.
Consultant to Reading and Mathematics Center, Atlanta
    Public Schools.
Consultant on model for In-Service Training for Teachers
    in Mathematics, Atlanta University.
Reviewer for Sciences in Developing Countries Program of
    the National Science Foundation, Division of International
    Programs.
Member, Board of Directors, Development of Research and
    Human Services, Inc. (DORAHS).
Member, National Association for the Advancement of
    Colored People.
Co-author, Scott Foresman Mathematics, Grades 7 and 8,
    Pupil Edition, Scott, Foresman & Co., Glenview, Ill.
Co-author, Scott Foresman Mathematics, Grades 7 and 8,
    Teacher's Edition.
Course coordinator, MATH 111.

C. L. Walker
Member, American Mathematical Society.
Member, Association for Women in Mathematics.
Member, Phi Kappa Phi.
Member, departmental committees: Advisory (ex officio),
    Promotion to Associate and Tenure (ex officio),
    Promotion to Professor (ex officio).
Reviewer, Mathematical Reviews
Referee, Pacific Journal of Mathematics.
Member, master's examination committees: education, one;
    mathematics, two.

E. A. Walker
Member, American Mathematical Society.
Member, Mathematical Association of America.
Member, American Statistical Association.
Member, Biometric Society.
Member, Sigma Xi.

Member, Phi Kappa Phi.
Member, university committee: Graduate Council (chairman).
Member, Arts and Sciences Research Affairs Committee.
Member, departmental committees: Promotion to Associate
    and Tenure (chairman), Graduate, Statistics.
Reviewer, Mathematical Reviews.
Referee, Pacific Journal of Mathematics, Proceedings of
    American Mathematical Society.
Member, master's examination committees: mathematics,
    three.

F. D. Williams
Member, American Mathematical Society.
Member, Phi Beta Kappa.
Member, Arts and Sciences Faculty Affairs Committee, fall.
Member, Mathematics-Engineering College Liaison Committee,
    fall and spring.
Member, departmental committees: Undergraduate Majors,
    Hard Sciences, Topology Comprehensive Examination
    Selection of New Textbooks for MATH 191-192, 392.
Crimson Scholar Advisor.
Faculty Sponsor, Sigma Alpha Epsilon.
Course coordinator, MATH 192.
Course coordinator and faculty supervisor for Graduate
    Assistants, MATH 191.

R. J. Wisner
Member, International Congress on Mathematics Education.
Member, National Council of Teachers of Mathematics.
Member, Greater El Paso Council of Teachers of Mathematics.
Member, Associated Members of the Institute for Advanced
    Study.
Member, Mathematical Association of America.
Member, Program Committee for the October 1981 meeting
    of the National Council of Teachers of Mathematics in
    El Paso.
Member, Program Committee for the April 1981 meeting of
    the Southwestern Section of the Mathematical
    Association of America.
Presider, Session on Probability, International Congress
    on Mathematics Education IV, Berkeley, Calif.
Member, university committees: Ad Hoc Committee on Growth,
    Advisory Team to New Mexico Military Institute,
    President's Committee on Teaching.
Member, departmental committees: Mathematics Education
    (chairman), Acting Principal Investigator, National
    Science Foundation In-service Committee, Undergraduate,
    Basic Skills and Placement.

American Statistical Association and Biometric Society
    Annual Meetings, Houston.

E. D. Gaughan

National Council of Teachers of Mathematics Annual Meeting,
    Seattle.
Mathematical Association of America Regional Meeting,
    Flagstaff, Ariz.
National Educational Computer Conference/2, Norfolk,
    Va.
Conference on the Advancement of Mathematics Teaching,
    Austin, Tex.
California Educational Computer Conference, San Diego.

J. B. Giever

American Mathematical Society Annual Meeting, San Antonio.
Frontiers of Applied Geometry, Las Cruces.

R. H. Hunter

Computer Assisted Undergraduate Science Education (CAUSE)
    Advisory Group, Irvine, Calif.
Computer Assisted Undergraduate Science Education (CAUSE)
    Dirctor's Annual Meeting, Augusta, Ga.
American Mathematical Society Summer Meeting, Ann Arbor,
    Mich.

D. G. Johnson

American Mathematical Society and Mathematical Association of
    America Summer Meeting and Section Officers meeting,
    Ann Arbor, Mich.
Rocky Mountain Mathematical Conference on Evaluation of
    College Mathematical Programs, Tempe, Ariz.

W. H. Julian

Conference on Constructive Mathematics, Las Cruces.
Rocky Mountain Educational Research Association, Las Cruces.

D. G. Kabe

Twenty-sixth Conference on the Design of Experiments in Army
    Research, Development and Testing, Las Cruces.

R. A. Knoebel

London Mathematical Society Annual Meeting, London.
"Breadboard '79'," London.
Model Theory Meeting, London.
British Society for the History of Mathematics, Conference on
    William K. Clifford, London.
Frontiers of Applied Geometry, Las Cruces.

Twenty-sixth Conference on the Design of Experiments in Army
Research, Development and Testing, Las Cruces.

A. C. Shah
American Statistical Association Annual Meeting, Houston.
Twenty-sixth Conference on the Design of Experiments in Army
Research, Development and Testing, Las Cruces.

C. C. Sherman
American Mathematical Society and Mathematical Association
of America Annual Meetings, San Antonio, Tex.
Conference on Algebraic K-theory, Evanston, Ill.
Conference on Algebraic K-theory, Oberwolfach, West
Germany.

C. W. Swartz
American Mathematical Society and Mathematical Association
of American Annual Meetings, San Antonio, Tex.
Conference on Convergence Spaces, Polish Academy of
Sciences, Szczyrk, Poland.
Chautauqua Short Course, Albuquerque, N. Mex.

I. E. Vance
Columbus Area Teachers of Mathematics, Columbus, Ohio.
National Council of Teachers of Mathematics, Dallas.
National Council of Teachers of Mathematics, Seattle.
Research Advisory Committee on National Council of Teachers
of Mathematics and Mathematics Education Interest Group
of American Education Research Association, Seattle.
Fourth International Congress of Mathematics Education,
Berkeley, Calif.
Texas Council of Teachers of Mathematics and Texas
Association of Supervisors of Mathematics, Conference
for the Advancement of Mathematics Testing, Austin,
Tex.

E. A. Walker
Institute of Mathematical Statistics, Biometric Society,
and American Statistical Association, Eastern Region
Meetings, Charleston, S. C.
American Statistical Association, Biometric Society Annual
Meeting, Houston.
Society for Industrial and Applied Mathematics, Symposia on
Problems in Energy Production, Mathematical Models in
Medical Sciences, and Advances in Numerical
Optimization, Houston.
Twenty-sixth Annual Conference on the Design of Experiments
in Army Research, Development and Testing, Las Cruces.
American Statistical Society Short Course, Ann Arbor.

R. J. Wisner
American Mathematical Society and Mathematical Association
    of America Annual Meetings, San Antonio.
National Council of Teachers of Mathematics, Dallas.
National Council of Teachers of Mathematics, Seattle.
Mathematical Association of America, Flagstaff, Ariz.
International Congress on Mathematics Education IV,
    Berkeley, Calif.
Colorado Council of Teachers of Mathematics, Denver.
Conference for the Advancement of Mathematics Teaching,
    Austin, Tex.

II. COLLOQUIUM SPEAKERS

Gur Huberman, Yale School of Organization and Management,
    "Khachian's Algorithm for Linear Programming."
Nader G. Zamani, Division of Applied Mathematics, Brown
    University, "Least Squares, Finite Element Method
    Applied to B-Splines."
Bruce W. Atkinson, Department of Mathematics, University of
    California-San Diego, "Commutativity of Projections with
    Respect to a Markov Process."
Arvind C. Shah, Visiting Assistant Professor, New Mexico State
    University, "Computational Algorithms for Statistical
    Estimation in Compartmental Analysis."
Michael Kazlow, Visiting Assistant Professor, New Mexico State
    University, "Totally Real and Totally Indefinite
    Submanifolds of C^n."
Reuben Hersh, University of New Mexico, "Call for a Revival of
    Philosophy for Mathematics."
Ben Noble, Mathematics Research Center, University of
    Wisconsin, Madison, "The Numerical Solution of Large
    Systems of Algebraic Equations."
T. Bryant Moodie, University of Alberta, Edmonton, Canada,
    "Mathematical Models of Pressure Pulse Propagation of
    Arterial Systems."
K. M. Rangaswamy, University of Texas at El Paso, "Separable
    Abelian Groups."
Ray Mines, New Mexico State University, "On a Theorem
    of Le Petit Prince."
David Prys Thomas, Visiting Associate Professor, New Mexico
    State University and University of Dundee, "Diffraction by a
    Circular Aperture - Some Governing Integral Equations and
    Their Numerical Solution."
Shashi P. Arya, University of Delhi, "Sum Theorems Revisited."
Otto Mutzbauer, Mathematisches Institut, Wurzburg, West
    Germany, "Classification Problems of Torsion-free Abelian
    Groups."

Richard L. Epstein, Iowa State University, "Propositional
Logics."
Frank Williams, New Mexico State University, "Two Related
Questions in Topology" (joint work with Professor Allan Calder).
George Trevino, Del Mar College and White Sands Missile Range,
"Recent Developments in the Spectral Theory of
Non-homogeneous Turbulence."
Fred Richman, New Mexico State University, "Constructive
Mathematics."

III. **GRANTS AND PROPOSALS**

PRINCIPAL INVESTIGATOR(S) AND AGENCY	FUNDED	PENDING
J. M. Adams, R. H. Hunter, B. MacKichan;		
National Science Foundation	$72,866	$171,884
New Mexico State University	30,812	213,938
R. J. Bagby; National Science Foundation		24,237
E. D. Gaughan, P. L. Hosford, R. H. Hunter,		
B. MacKichan; National Science		
Foundation, National Institute of		
Education		145,321
D. G. Johnson; President's Teaching		
Improvement, New Mexico State		
University	3,471	
R. A. Knoebel; National Science Foundation		53,000
R. J. Y. McLeod; National Science		
Foundation		101,796
R. J. Y. McLeod; Office of Naval Research		101,000
R. J. Y. McLeod; Air Force Office of		
Scientific Research		101,000
R. J. Y. McLeod; National Aeronautics		
and Space Administration	7,074	
R. J. Y. McLeod; National Science Foundation		1,400
M. Mandelkern; National Science Foundation		22,853
C. C. Sherman; National Science		
Foundation	7,408	
C. C. Sherman, National Science Foundation		31,074
E. A. Walker, D. M. Arnold, R. H. Hunter,		
F. Richman; National Science		
Foundation	45,814	114,000
E. A. Walker, R. H. Hunter;		
National Institutes of Health		35,056

IV. RESEARCH PAPERS PUBLISHED

Arnold, D. M., R. H. Hunter and F. Richman, Global Azumaya
theorems in additive categories, J. Pure Appl. Algebra,
1980, 16, 223-242.

Bagby, R. J., A characterizaton of Riesz potentials, and an
inversion formula, Indiana Univ. Math. J., 1980, 29,
581 595.

Calder, A. C. R., Homotopy and uniform homotopy II, Proc.
Amer. Math. Soc., 1980, 78, 288 290.

Calder, A. C. R., Siegel, J., On the width of homotopies,
Topology, 1980, 19, 209-220.

Chawla, M. M. and C. P. Katti, On Noumerov's method for computing
eigenvalues, BIT, 1980, 20, 107-109.

Chawla, M. M. and C. P. Katti, Finite difference methods for a
class of two-point boundary value problems with mixed
boundary conditions, J. Comput. Appl. Math., 1980, 6,
189-196.

Chawla, M. M. and C. P. Katti, A new fourth order method for
computing eigenvalues of two-point boundary value
problems, BIT, 1980, 20, 511-514.

Gaughan, E. D., An 'Almost' Diaphantine Equation, The
Mathematics Teacher, May 1980, 73(5), 374-376.

Hunter, R. H., cf. Arnold, D. M.

Krueger, W. M., Relation with the Hopf invariant revisited,
Illinois J. Math., 1980, 24(2), 180-191.

McLeod, R. J. Y., The Steiner surface revisited, Proc. Roy. Soc.
London Ser. A, 1979, 369, 157-174.

McLeod, R. J. Y. and J. D. Lambert, Numerical methods for
phase-plane problems in ordinary differential equations,
Proc. Conf. Numer. Anal. Dundee 1979, Springer-Verlag.

Maher, M. A., Positive random walks, Adv. in Appl. Probab.,
1980, 12, 301.

Mandelkern, M., Suprema of located sets, J. London Math. Soc.
1979, 20(2), 161-164.

Richman, F. cf. Arnold, D. M.

Rogers, G. S., Characterization of a normal interclass
covariance matrix, South African Statist. J., 1980, 14,
43-45.

Rogers, G. S., Matrix Derivatives, Marcel Dekker Inc.

Rogers, G. S. and N. S. Urquhart, Testability of linear
hypotheses in normal linear models, Technical Report,
October 1980, New Mexico State University Statistics
Laboratory.

Swartz, C. W., Orlicz-Pettis topologies in function spaces,
Publ. de L'Inst. Math., 1979, 26, 289-292.

Thomas, J. D. and J. D. Zund, A note on the theory of
immanants, Rend. Circ. Mt. Palermo, Ser. II, 1979, 28,
143-150.

Thomas, J. D., M. Sargent III, and W. H. Swantner, Theory of a
   distributed feedback laser, IEEE Quantum Electronics,
   1980, QE-16(4), 465-472.
Zund, J. D. cf. Thomas, J. D.
Zund, J. D. and J. M. Wilkes, Maxwell's equations and Meray's
   theorem, Tensor NS, 1980, 34, 58-62.

V. RESEARCH PAPERS PRESENTED

Calder, A. G. R., "Locating subsets of $\mathbb{R}^n$," Constructive
   Mathematics Conference, Las Cruces.
Chawla, M. M., "Tridiagonal finite difference methods for
   two-point boundary value problems," Computer Society
   of India, Bangalore.
Gaughan, E. D., "An 'almost' Diophantine equation," Conference
   for the Advancement of Mathematics Teaching, Austin.
Johnson, D. G., "Getting started—basic skills courses in
   mathematics," Conference of Western College Reading
   Association, Las Cruces.
Kabe, D. G., "Forecasting with missing values," Twenty-sixth
   Conference on the Design of Experiments in Army Research,
   Development and Testing, Las Cruces.
Kabe, D. G., "MANOVA double linear hypothesis with double
   linear restrictons," Twenty-sixth Conference on the Design
   of Experiments in Army Research, Development and Testing,
   Las Cruces.
Julian, W. H., "ϵ-covering dimension," Conference on Constructive
   Mathematics, Las Cruces.
Krueger, W. M., "Pick's theorem with and without holes,"
   colloquium address, Beloit College, Beloit, Wis.
Knoebel, R. A., "Completeness theorems in algebra and analysis,"
   invited address, American Mathematical Society, Special
   Session on Lattice Theory and General Algebra, Boulder,
   Colo.
Knoebel, R. A., "Equational classes generated by single
   functionally precomplete algebras," invited address,
   Technical University of Vienna, Vienna, Austria, and
   University of Manitoba, Winnepeg.
Knoebel, R. A., "Bunched-up positions and spaced-out
   exponentials," colloquium, Physics Department,
   New Mexico State University, Las Cruces.
Maher, M. A., "Stochastic models for pairs of waiting lines,"
   Twenty-sixth Conference on the Design of Experiments in
   Army Research, Development and Testing, Las Cruces.
Mandelkern, M., "Continuity of monotone functions," Conference
   on Constructive Mathematics, Las Cruces.
Mines, R., "Dedekind domains," Conference on Constructive
   Mathematics, Las Cruces.