

TEXAS TECHNOLOGICAL COLLEGE

LUBBOCK, TEXAS

MINUTES OF BOARD OF DIRECTORS MEETING

1968 - 1969

VOLUME III

MINUTES OF
BOARD OF DIRECTORS MEETING
JANUARY 18, 1969
PART II

PROPOSAL TO OFFER A
DOCTOR OF PHILOSOPHY DEGREE
IN
ANIMAL SCIENCE
June 1968

Department of Animal Science
Texas Technological College

DESCRIPTION OF PROPOSED PROGRAM

1. What is the title and nature of the proposed program?

Doctor of Philosophy in Animal Science.

The degree program will fulfill the need for Ph.D. trained graduates in the science of animal genetics, animal physiology, animal nutrition, and meats. The offering of the degree will strengthen Texas Technological College's role as a major state university. The proposed program is directed toward the needed development of highly trained scientists in one of the nation's major industries.

2. What degree or certificate is contemplated, if any?

Doctor of Philosophy. Animal Science major will be offered in animal breeding, animal physiology, animal nutrition, and meat science through course selection, research conducted and the dissertation.

3. List the course offerings to comprise the program. Which of these courses will be new ones?

The major Courses of the program will be taken from those offered in the Department of Animal Science. These are:

CURRENT ANIMAL SCIENCE COURSES

- A. S. 438. Developmental Growth and Fattening. (3:3:0)

A study of differentiation, development, growth, and fattening of the domestic animal as influenced by hereditary and environmental interactions, and the interrelationships of growth and fattening with the physical and chemical composition of the body.

- A. S. 439. Endocrinology. (3:3:0)

A study of the endocrine glands and their secretions. Special reference is made to the role of hormones in livestock production, including their influence upon metabolism, dietary requirements, growth, reproduction, lactation, and fattening.

- A. S. 511. Seminar (1:1:0)

Analysis of current and significant past research. Oral presentations and discussions. Enrollment in each semester while in graduate school.

- A. S. 532. Environmental Physiology of Domestic Animals. (3:3:0)

The study of animal-environment relationships with particular emphasis upon animal acclimatization to environmental conditions encountered in arid and semi-arid land areas.

- A. S. 533. Techniques in Animal Research. (3:3)

Techniques currently employed in animal research. In-service training in the use and application of these techniques.

- A. S. 534. Research in Animal Science. (3)
In-service research work in animal breeding, physiology, nutrition, or meat science. Problems are done on a semi-independent basis. Design and carrying out of actual experiments, including publication of results. May be repeated for credit.
- A. S. 536. Biometry. (3:2:2)
Analysis of experimental procedures and design for agricultural research. Analysis of variance and least-square analysis, component of variance partitioning. Regression and correlation techniques as used in agricultural research.
- A. S. 537. Advanced Animal Breeding (3:3:0)
Population parameters. Heritability and heterosis. Genetic-environmental interactions. Methods for deriving population statistics. Genetic bases for performance testing programs.
- A. S. 538. Animal Nutrition 1-Ruminant. (3:3:0)
Analysis of nutritional theory. Intermediary metabolism of nitrogen, energy, vitamins and minerals under the conditions of maintenance and various types of production. Ruminal fermentation.
- A. S. 539. Physiology of Reproduction. (3:2:2)
Gross and microscopic anatomy of the reproductive systems; hormonal regulation and reproductive processes; estrus and estrous cycles; ovi-genesis and ovulation; fertilization and embryonic development; pregnancy and pregnancy diagnosis; current research techniques and literature reviews.
- A. S. 5311. Animal Nutrition 2-Monogastric. (3:3:0)
Analysis of monogastric nutritional theory. Utilization of nutrients in various body processes. Effect of environment. Research procedures.
- A. S. 541. The Science of Meat and Meat Products. (4:3:3)
The application of various scientific disciplines in the study of meat and meat products. Histological, chemical, and biological properties of meat. Palatability characteristics, nutritive value and quality factors. Preservation and packaging. Methods of analysis.
- A. S. 631. Master's Thesis. (3)
Enrollment required at least twice.

REQUIRED NEW COURSES

- A. S. 5312. Advanced Studies in Specialized Areas of Animal Science. (3:3:0)
Study and investigation of recent advances and concepts in specialized areas; research techniques; and current problems. May be repeated for credit.
- A. S. 731. Research. (3)
Investigations in areas of current interest. May be repeated for credit.

A. S. 331. Doctors Dissertation. (3)

Enrollment required at least 4 times.

Graduate science courses offered in other departments and schools within the University will be used to supplement and strengthen the Animal Science Doctoral offering as indicated in the curriculum for the proposed program in part four.

COURSE OFFERINGS TO SUPPORT THE PROGRAM

By its very nature a Ph.D. program in Animal Science does not lend itself to a specific listing of supporting courses from other disciplines. Students may select from various disciplines in order to extend the depth and scope of their degree program. A general listing from supporting fields follows in order to show adequacy of support.

Agricultural Engineering

Ag Engr. 539. Bioengineering - Environmental Control (3:3:0)

Agronomy and Range Management

Agron 532. Experimental Design and Analysis (3:2:2)

R. M. 536. Ecology of Arid Lands (3:3:0)

Biology

MBio. 430 Advanced General Bacteriology (3:2:3)

MBio. 431 Problem in Bacteriology (3:0:9)

MBio. 433 Physiology of Bacteria (3:2:3)

MBio. 434 Pathogenic Bacteriology (3:2:3)

Biol. 532 Population Genetics (3:2:3)

Biol. 5312 Cytogenetics (3:2:3)

Biol. 5313 Biochemical Genetics (3:3:0)

Zool. 331 Animal Histology (3:2:4)

Zool. 438 Cellular Physiology (3:2:3)

Zool. 439 Comparative Animal Physiology (3:2:3)

Zool. 537 Physiological Ecology of the Vertebrates (3:3:0)

Zool. 5317 Experimental Embryology (3:2:3)

Zool. 5318 Comparative Endocrinology (3:2:3)

Chemistry

Chem 436. Biological Chemistry I (3:2:3)

Chem 437 Biological Chemistry II (3:2:3)

Chem 4312 Instrumental Analytical Methods (3:2:3)

Chem 5314 Advanced Analytical Chemistry (3)

Food and Nutrition

F & N 534. Advanced Problems in Human Nutrition and Foods (3:3:0)

Mathematics¹

Math 4327. Mathematical Programming (3:3:0)

4. Outline a semester-by-semester curriculum for the proposed program.

The requirements set forth in the catalog of the Graduate School of Texas Technological College will govern the policies of this program.

A minimum of three years of graduate study beyond the Bachelor's Degree is required for the Doctorate. While Doctoral study cannot be calculated solely in terms of credit hours, the program for the Doctorate will normally require the completion of a minimum of 60 semester hours beyond the Bachelor's Degree, exclusive of credit for the dissertation. The total number of hours required above this minimum will depend upon the progress and qualifications of the individual student.

Since the Doctoral program does not lend itself to a standard semester-by-semester curriculum, each Doctoral candidate will be counseled into an individual program depending on his field of study within his major and minor areas. The animal science degree is primarily a research degree, with research problems designed to strengthen the depth and scope of each student's degree program. An example curriculum for the proposed Animal Science program is outlined as follows:

Animal Science Curriculum

First Year

<u>First Semester</u>	<u>Hour</u>	<u>Second Semester</u>	<u>Hour</u>
A.S. 511 Seminar	1	A.S. 511 Seminar	1
Agron 532 Exp. Design and Analysis	3	A.S. 537 Adv. An. Breeding	3
Chem 436 Biol Chem I	3	A.S. 538 An. Nutrition I - Ruminant	3
A.S. 539 Physiol. of Reproduction	3	Chem 437 Biol. Chem. II	3
Minor ^{1/} (or Adv. level A.S. Course)	3	Minor ^{1/} (or Adv. level A.S. course)	3
	<u>13</u>		<u>13</u>

Summer Term

<u>First Term</u>	<u>Hour</u>	<u>Second Term</u>	<u>Hour</u>
A.S. 731 Research	<u>3</u>	A.S. 731 Research	<u>3</u>
	3		3

Second Year

<u>First Semester</u>	<u>Hour</u>	<u>Second Semester</u>	<u>Hour</u>
A.S. 511 Seminar	1	A.S. 511 Seminar	1
A.S. 5311 An. Nutrition II-Monogastric	3	Minor ^{1/} (or Adv. level A.S. course)	6
Minor ^{1/}	3	A.S. 731 Research	3
A.S. 731 Research	3	A.S. 831 Dissertation	3
A.S. 831 Dissertation	3		<u>3</u>
	<u>13</u>		<u>13</u>

Summer Term

<u>First Term</u>	<u>Hour</u>	<u>Second Term</u>	<u>Hour</u>
A.S. 831	$\frac{3}{3}$	A.S. 831	$\frac{3}{3}$

5. What special requirements will be in force? If a graduate degree is contemplated, is a thesis required?

Special requirements

- A. A minimum of three years of graduate study beyond the Bachelor's Degree is required for the Doctorate. Work completed for the Master's Degree is considered one of these years if it forms part of a logical sequence in the entire program.
 - B. Completion of a minimum of 60 semester hours of work beyond the Bachelor's Degree, exclusive of the credit for the dissertation. It is expected that all of the work beyond the Master's Degree (first 30 hours) will be in courses open only to graduate students.
 - C. An applicant for the Doctorate will devote most of his time to his major subject, but his program must include a minor of at least 18 semester hours beyond the Bachelor's Degree in a field other than the major.
 - D. Applicants for the PhD. Degree will be required to have a reading knowledge of two foreign languages, or superior competence in one foreign language or a reading knowledge in one foreign language with at least six hours of course work in an approved non-allied field will be required.
6. Has the proposed program, or one similar to it, been offered in this institution at any time prior to this request?
- No.
7. How many similar programs are offered elsewhere in Texas, and where?
- One at Texas A&M University, College Station, Texas.
8. Justify the need for the proposed program.

Texas Technological College is strategically located as the major university serving one of the most important agricultural areas in the world. The high plains area of Texas, Eastern New Mexico, and the Oklahoma Panhandle is rapidly developing as a major cattle feeding area, with a potential production in excess of three million fed cattle per year. This same area is also rapidly developing as a swine producing area; and is closely aligned to the nation's major sheep and goat production area of Southwest Texas and New Mexico. The economic importance of animal agriculture to this region makes it necessary that Texas Technological College accept responsibility for leadership in this important sector of our agricultural economy.

The approximate distances to major institutions offering Doctoral programs in Animal Science are as follows: Oklahoma State University, 420 miles; Colorado State University, 565 miles; Texas A&M University, 430 miles.

The need for highly trained scientists in research, managerial, and consultant positions is increasing rapidly. The U.S.D.A. has projected their need for 13,000 additional scientists by 1977 and have requested that the output of Ph.Ds be doubled to satisfy the demands for research alone. Candidates orientated in the Animal and Biological Sciences will comprise a good portion of the estimated total needs.

The U. S. Department of Health, Education and Welfare has projected the earned doctoral degrees in the United States to the year 1975-76. These projections are as follows:

Year	Biological Sciences	Agricultural and Forestry
1966-67	2,160	600
1970-71	2,740	740
1975-76	3,820	1,030

Earned Doctoral Degrees conferred in Animal Science have averaged 120 during the past five years. While the number of earned Doctoral Degrees is expected to increase during the next decade, the supply of Doctorates in the Science field is expected to be far below the demands.

The initiation of this program will serve to strengthen the International Center for Arid and Semi-Arid Land Studies. No other institution in Texas or surrounding states has assumed a responsibility of educating Doctoral candidates in the semi-arid environment encountered on the high plains. The doctoral program in such an environment would not only serve the people of Texas and the United States, but would provide a much needed training mechanism for students from arid and semi-arid environments from throughout the world.

9. Is the proposed program approved by the institution's Board of Directors?

The proposed program will be processed through the graduate school, council of deans, Texas Technological College Board of Directors, and forwarded to the Coordinating Board.

PROJECTED ENROLLMENT

10. Project the enrollment for the proposed program for the next five years. Explain the basis for this projection.

The program is expected to initially have an enrollment of 2-5 candidates, with an expected aggregate total of 15-20 within 5 years.

The program will start slow primarily due to acquainting eligible candidates with the availability of the program, screening of candidates, and development of interdisciplinary degree programs encompassing the many areas of specialized studies within major and minor areas. How rapidly the program

will expand will depend in large part on the availability of funds for research assistantships, facilities and expansion of the research program.

11. Explain the likely source of students who will enroll in this program. (Will they come from existing programs or will they be attracted to the institution to enroll in the proposed program?)

The strategic location of Texas Technological College in a major animal industry area, the strength of our present teaching and research program, and the nationally recognized ability of the departmental staff will attract students from many other colleges and universities. More students will be attracted to the Animal Science Department from other colleges and universities after receiving their Bachelor of Science degree when an opportunity to complete both advanced degrees without interruption is open to them. These students will not be drawn from other doctoral programs on the campus.

The observation that other institutions which grant the Doctoral Degree in Animal Science are located at great distances from this major animal agricultural area will make our program even more attractive to potential students.

FACULTY

12. Give the number of persons present on the faculty who will be most directly involved in the proposed program. List for each his name, rank, highest degree, and present course load. (See attachment for complete biographical data on faculty).

<u>Name</u>	<u>Rank</u>	<u>Highest Degree</u>	<u>Course Load</u>	<u>Sem. Hrs.</u>
Zinn, Dale W.	Chairman	Ph.D.	Adm., Research	6
Durham, Ralph M.	Professor	Ph.D.	Research	9
Harbaugh, Fred G.	Professor	D.V.M.	Research	9
Tribble, Leland F.	Professor	Ph.D.	Research	6
Furr, Richard D.	Visiting Professor	Ph.D.	Research	0
Curl, Samuel E.	Assoc. Professor	Ph.D.	Research	10
Hudson, Frank A.	Assoc. Professor	Ph.D.	Research	11
Albin, Robert C.	Assoc. Professor	Ph.D.	Research	10
O'Brien, Coleman A.	Assoc. Professor	Ph.D.	Research	6
Ramsey, C. Boyd	Assoc. Professor	Ph.D.	Research	6
Sherrod, Lloyd B.	Visit. Assoc. Prof.	Ph.D.	Research	0
Ellis, George F., Jr.	Consulting Prof.	Ph.D.	-	
Waldrip, William J.	Adjunct Professor	Ph.D.	Supervise Field	

13. Calculate the present student-faculty ratio in the subject matter field (s) or department (s) in which the proposed program will be offered. (Divide full-time equivalent students by full-time faculty.)

The fall 1967 student-faculty ratio in the Department of Animal Science was 14.95: The student credit hour load was 241 per full-time faculty.

14. Project the need for new faculty required for the proposed program for the next five years. If the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done.

Proposed program will be partially absorbed by present faculty. This will be accomplished by increasing student enrollment in existing graduate courses. New faculty will be required during the next five years as follows:

- A. First year program - one full-time D.V.M./Ph.D. in Animal Physiology.
 - B. Second year program - one full-time Ph.D. in Meat Science.
 - C. Fourth year program - one full-time Ph.D. in Animal Breeding.
15. Will acquisition of new faculty for the program require an unusual outlay of funds or unique recruiting techniques? Explain in detail.

No unusual outlay of funds will be required to acquire additional faculty, other than salary requirements and normal operating expenses such as office equipment, facilities and supplies associated with additional staff member. The cost for each new faculty would be an annual salary of approximately \$15,000.

16. Describe the involvement of the faculty, present and projected, in research, extension correspondence, and other activities. Are teaching loads of faculty reduced if they engage in these activities?

The faculty currently devotes approximately 25% of its time to research and public service activities. As the research program develops, it is anticipated that additional faculty time will be devoted to these areas. Since the proposed program will require greater participation in research and advisory capacities by the faculty members, teaching loads will be reduced accordingly as private grants and contracts, state and federal funds become available to increase the research and public service activities.

LIBRARY

17. Are present library holdings in relevant fields adequate now to begin the proposed program? How will the library have to be improved to meet program needs for the next four years? (Refer to the need for books, periodicals, reference books, primary source material, etc.)

Present library holdings in Animal Science and relevant fields are adequate to initiate the proposed program. Library holdings are complete in the most frequently used domestic and foreign scientific journals and reference materials in Animal Science and related fields.

The Texas Technological College Library is also a regional depository for U. S. Government documents.

Improvements which will be made in future years will be concerned primarily with obtaining new scientific publications and reference materials in Animal Science and related fields, both domestic and foreign.

18. Are there libraries of other institutions which are being used or can be used by faculty and students in the proposed program? Explain in detail.

Texas Technological College is a member of the U.S.D.A. Interlibrary Loan Association. Reference materials may also be obtained from most U. S. universities through the Interlibrary Loan Program.

19. Estimate the total expenditures for the last two fiscal years for library acquisitions in the departments for subject matter fields in which the proposed program will be offered, or in fields which are closely related to the proposed program.

It is estimated that the total expenditures for the last two complete fiscal years has been \$1,000 for library acquisitions in the subject matter fields related to Animal Science. An equal amount is estimated for each of the related areas, i.e., biology, chemistry, zoology, range management, and agricultural economics. Library holdings are adequate for doctoral programs currently offered in biology, chemistry and zoology.

20. Project library expenditures to be budgeted annually for the next five years to meet the needs for this program.

Because of the adequacy of present library holdings, additional library expenditures over the next five years will be of minor nature. These additional expenditures will be needed primarily to acquire new reference materials-periodicals, scientific journals, textbooks, and to cover Interlibrary Loan costs.

Estimated expenditures would be:

Year one - \$1,000
 Year two - 1,250
 Year three- 1,500
 Year four - 1,750
 Year five - 2,000

FACILITIES AND EQUIPMENT

21. Describe existing facilities that are available for the proposed program. Describe the present utilization of these facilities. What new facilities will be needed in the near future? Specify what special facilities and equipment will be needed and estimate their cost. What sources do you anticipate obtaining needed facilities and equipment?

The Department of Animal Science is responsible for the operational management of a 1,300 acre farm at Lubbock. In addition, the 13,800 acre Texas Technological College Research Farm at Pantex, Texas is extensively utilized in the department's teaching and research program. Cooperative research is also being conducted with the Post-Montgomery Estate Ranches, Levelland, Texas, and with MarTop Farms, Frisco, Texas. These facilities are utilized in beef cattle breeding and management research.

Approximately 3,000 acres of college controlled land is utilized in native pasture studies for range cattle and sheep production. The balance of the land is utilized in the production of crops (in cooperation with the Department of Agronomy) for maintaining the departments flocks and herds.

A. Existing Facilities

1. Meat Industries Building. The Meat Industries Building contains a 50 seat classroom, slaughter area for swine, sheep, and cattle, cooler space, a cutting room, packaging area, four offices, a research laboratory, showers, lockers and restrooms. This facility is one of the finest to be found. We have oriented the departmental research program around the concept that the final product of animal production is the edible product available to the consumer. Therefore, the Meat Industries Building is the focal point of many research projects not specifically under the meats option.

Approximately eleven Master's candidates have utilized this facility in one manner or another during the past year. The departmental teaching program in meats is also administered through this facility and approximately 330 students were involved in classwork and laboratory exercises during the fall semester 1967-68.

2. Research Laboratories. There are two nutrition laboratories, one at Lubbock and one at Pantex. The equipment available in these labs allow for proximate analysis of meat and feedstuffs, calcium and phosphorous. Specific equipment includes: nitrogen analyzer, bomb calorimeter, colorimeter, Warburg respirometer, centrifuges, two vacuum ovens, two forced-air drying ovens, two Wiley mills, two Mettler balances and numerous smaller items and glassware.

The meats research laboratory contains a spectrophotometer, ether extraction apparatus, Mettler balance, centrifuge, Warner-Bratzler shear apparatus, and numerous items of glassware.

The physiology of reproduction laboratory includes eight microscopes, Mettler balance, colorimeter, drying ovens, and numerous surgical and analytical instruments.

The environmentally-controlled laboratory is currently under construction. The structure will allow study of all types of livestock and will greatly assist the Doctoral program.

Animal digestion and metabolism laboratories are available at Lubbock and Pantex. Currently, cattle digestion work is being conducted at Lubbock utilizing individual pens for eight animals. Four rumen fistulated steers and four esophageal fistulated steers are being used for digestion studies. Sheep digestion studies are being conducted at Pantex.

A small veterinary and bacteriological laboratory is utilized for veterinary diagnostic work. However, with additional equipment and space, this laboratory could become functional in a doctoral program.

3. Pasture Studies. Native pastures are available for range sheep and cattle studies. At Lubbock, 320 acres of native grass and 50 acres improved pasture grasses are available, with the research farm at Pantex providing an additional 2,600 acres of native rangeland.

4. Large Animal Facilities. Beef cattle nutrition studies are conducted at Lubbock and in a 300 head capacity feedlot at Pantex. In addition, the Killgore Beef Cattle Center at Texas Technological Research Farm provides feedlot space for conducting performance and nutrition research in beef cattle. Construction of additional feedlot facilities will have a combined capacity of 300 head and will be utilized in nutrition studies and in research on the utilization and disposal of organic feedlot wastes. The addition of these facilities will provide a total beef cattle feedlot capacity of over 1,200.

Drylot facilities for beef cattle management and reproduction studies are available at both locations. These have a total capacity of over 300 head.

Dairy facilities are more than adequate for anticipated programs in this area. These facilities will handle over 100 head of milking cows.

Poultry facilities are adequate for any anticipated program in this area. These include a 1,200 head capacity laying house with brooder and growing houses to match.

New facilities for horse management, breeding and nutrition studies are available and adequate to service this area.

Facilities are now under construction for teaching and research in sheep, goat, wool and mohair. The tie-in of these facilities with the recently expanded program in textile research at Texas Tech will enable the development of an outstanding program in wool and mohair research and technology.

Existing swine facilities are temporary, and permanent facilities must be constructed before the swine program can reach the stage of development warranted by its economic significance. These facilities are currently under development by the Campus Planning Committee.

All the previously described facilities are currently utilized in the administration of the Master of Science program. Present facilities are adequate to initiate the proposed PhD. program.

During the 1966-67 academic year, the following numbers of livestock were utilized in the departments teaching and research program.

<u>Class</u>	<u>Campus Farm</u>	<u>TTCRF Pantex</u>	<u>Total</u>
Beef cow breeding herds	136	397	533
Swine breeding herd	218	0	218
Sheep breeding herd	66	0	66
Goat breeding herd	20	0	20
Dairy breeding herd	53	0	53
Horses	24	0	24
Cattle nutrition research	1,063	733	1,796
Swine nutrition research	130	0	130
Sheep nutrition research	378	0	378
Cattle reproduction research	55	0	55
Sheep reproduction research	266	0	266
Poultry nutrition research	2,400	0	2,400

Meat Animal Carcass Evaluation (Meat Lab)

Beef 235

Pork 111

Lamb 56

Additional carcass data was obtained on approximately 600 cattle slaughtered at local packing companies.

B. Additional facilities and equipment needed in the near future.

The proposed program can be initiated with existing facilities and equipment. However, as the program develops, several areas will need to be expanded.

1. Meat Industries Laboratory.

This laboratory is the focal point of the research and teaching program in the department because of our philosophy that the end result of livestock management, breeding and nutrition research is consumer acceptance of the product produced.

While the present facility is modern in every respect, it is taxed to the maximum with existing programs. As the PhD. program is initiated, expansion of this facility is mandatory. Specifically, the following additions will be required.

- a. Cooler space - 500 sq. ft. minimum.
- b. Freezer space - 400 sq. ft. minimum.
- c. Classroom space - 100 students minimum.
- d. Teaching and research laboratory
- e. Processing area - 1,000 sq. ft. minimum.
- f. Storage for supplies and equipment - 400 sq. ft.
- g. Office space for staff, secretary, manager, graduate students.
- h. Equipment - estimated needs for an accelerated program, \$50,000.

A part of the above needs may be incorporated in the facilities expansion of the Animal Science building, see items c, d, f, and g.

2. Swine Facilities.

Permanent facilities will be required before the program production can be developed to its desirable level. The following facilities have been requested of the campus planning committee.

1. Central farrowing house - \$20,000
2. Nursery house - \$11,000
3. Growing-finishing house - \$41,000

Construction of these facilities will provide the most modern teaching and research laboratory available in the area of swine production. This, combined with the outstanding swine specialist on our staff, will provide a program of excellence in this area.

3. Expansion of existing Animal Science building to include:

- a. Office space for additional staff, secretaries, technicians, and graduate students.
- b. Classroom space for 200 students.
- c. Central teaching and research laboratory for nutrition, physiology, and meat science.

It is anticipated that funds for these buildings will be provided through the normal building program for expansion at Texas Tech.

Funds for laboratory equipment will be obtained from private and federal grants and state-appropriated budgeted items.

ADMINISTRATION OF PROPOSED PROGRAM

22. Will the proposed program affect the administrative structure of the institution? If yes, describe how. In what department, division, school or college will the proposed program be administered? If the program is to have interdepartmental or inter-unit administration, explain in detail.

The program will be administered by the Department of Animal Science through the School of Agriculture and the Dean of the Graduate School. This will have no effect on current administrative structure.

ACCREDITATION

23. Describe the requirement for accreditation, if the program is eligible to be accredited. What is the name of the creditive agency? What will be initial cost of creditation and subsequent annual cost of maintaining? Identify basic criteria for accreditation and describe how these will be met.

Accreditation is not required.

SUPPORTING FIELDS

24. Evaluate the subject matter fields at your institution which may be considered as necessary, or valuable, in support of the proposed program. Will these fields need improvement? If so, how, to what extent, at what cost? Be specific.

All supporting departments for the proposed program are well staffed with excellently qualified personnel. Generally, course offerings are more than adequate for support of the Ph.D. in Animal Science. More specifically:

- A. Chemistry and bio-chemistry: present course offerings in this department are more than adequate to meet the needs for the major programs in the proposed degree. No additional course offerings are anticipated.
- B. Biology, microbiology, and zoology: these supporting areas have shown a rapid development in the subject matter fields needed to support the proposed program in Animal Science. Present offerings are quite adequate to initiate the proposed program; however, a graduate course in animal physiology will be necessary as the proposed program develops.
- C. Statistics, mathematics, and data processing and programming: applied and theoretical statistics courses are adequate for present and anticipated future needs. The Mathematics Department has developed a strong core curriculum which is quite adequate for our students majoring in animal breeding. Additional course offerings in the area of data processing and programming would be desirable, and it is anticipated that this program will be developed as the need at Texas Technological College arises.
- D. Research instrumentation: strong training in instrumentation is essential for students working in the major areas of the proposed program. At present introductory courses in instrumentation are available in the Department of Agricultural Engineering and in the Department of Chemistry. It is anticipated that the Department of Biology will offer graduate courses in this area upon completion of the new biology building in the fall of 1969.

In summary, the supporting fields for the proposed degree are adequately staffed and offer the necessary supporting courses for the proposed program.

It is expected that the cost for additional course offerings in any of the supporting fields would be absorbed in the normal expansion program of the particular department.

COST OF THE PROPOSED PROGRAM

25. Estimate the initial (first Year) cost of the proposed program. How much of this will be absorbed in current budgets and how much will be newly appropriated money? If yes, explain in detail.

Current budget will absorb present faculty and operational commitments during the first year of the program.

Additional funds needed are as follows:

A. Additional faculty	\$15,000
B. Graduate assistantships (3)	10,500
C. Operational expenses	1,500
C. Research expansion	<u>30,000</u>
Estimated total cost	\$57,000

Private and federal financial assistance will be sought for the majority of these added expenses during the first year. During the 1966-67 academic year, \$86,300 was obtained from private funds in support of the department's research program. During the current fiscal year we are running about 20% ahead of last year in receipt of private grants.

It is anticipated that not over \$10,000 in appropriated funds will be needed to initiate the program during the first year.

26. Estimate the annual cost of the program for the three years following its first year. Use current formulas in arriving at your estimate. (Explain the rationale of your estimate).

Estimated cost of the program for the second, third and fourth year is based upon the additional faculty, graduate student stipends, increased operational expenses and research requirements. These are aligned by year as follows:

A. Second Year

Faculty (2)	\$30,000
Graduate Assistantships (4)	14,000
Operational expenses	3,000
Research requirements	<u>40,000</u>
Total	\$87,000

B. Third Year

Faculty (3)	\$48,500
Graduate assistantships (5)	17,500
Operational expenses	5,000
Research requirements	<u>50,000</u>
Total	\$121,000

C. Fourth Year

Faculty (3)	\$ 53,500
Graduate assistantships (7)	24,500
Operational expenses	8,000
Research requirements	<u>70,000</u>
Total	\$156,000

The estimated cost in items 25 and 26 reflects the addition of a faculty member of the first, second and third year including merit raises during the four year period, the increase in PhD. graduate students from three to seven, expansion increase in operational expenses and an average of \$10,000 in research requirements for each PhD. candidate. Thus, at the end of the first four years, it is anticipated that three additional staff members will have been added to the staff, and seven PhD. candidates.

27. Departmental Cost.

- (A) Show the departmental operating expenditures for the last two fiscal years for the departments which will contribute significantly to the support of the proposed program.

Animal Science Department operating and research expenditures for two preceeding fiscal years:

<u>Item</u>	<u>1965-66</u>	<u>1966-67</u>
<u>Operational Expenses</u>		
Salaries	\$118,365	\$123,979
ME & T	14,000	14,030
Herds and Flocks	147,760	146,900
	<u>\$280,125</u>	<u>\$284,909</u>

Research Expenses

<u>Item</u>	<u>1965-66</u>	<u>1966-67</u>
State Appropriated Research	\$ 5,800	\$ 11,000
High Plains Feed Research	58,810	58,822
Revolving Fund	149,845	148,480
Private Grants	17,000	67,644
Graduate Assistantships	<u>7,200</u>	<u>12,000</u>
Total	\$237,295	\$297,946

- (B) How will the proposed program affect the allocation or distribution of these funds?

The proposed program will not have an affect on the allocation or distribution of funds.

28. What additional funds for research will be needed to support the proposed program? Explain.

Additional funds for research funds needed to support the proposed program are estimated to be approximately \$13,500 per each additional PhD. candidate. This figure includes cost of a research assistantship at around \$3,500 per year plus an additional \$10,000 to support the research program of the graduate student.

It is expected that the majority of these funds will become available from federal and private grants for research.

29. How many graduate assistantships are considered desirable to begin the program?

Three.

Estimate the amount of funds required for these assistantships over the next four years.

The amount of funds estimated to support graduate assistantships over the next four years is approximately \$66,000.00.

What sources are available to support these assistantships?

It is anticipated that these assistantships will be supported by private and federal research grants.

Will student aid funds be needed for undergraduates other than those provided for all undergraduates?

No.

30. Add any comments which would be helpful to the coordinating board in evaluating this program request.

It is anticipated that administrative expenses for the proposed program can be absorbed into the normally appropriated budget over the next four years. The only additional state appropriated monies needed to implement the program would be those for faculty salaries for additional personnel and to meet normal increases in operational costs. The present facilities are quite adequate to initiate the program, and with the addition of facilities now under construction or in the planning stage, the department will be capable of developing the program to its full strength. The overall cost of the program does not appear to be excessive, and this cost will be small in comparison to the benefits derived from it.

The present Animal Science faculty is highly qualified to administer the program. Each of the staff members involved in the proposed program has earned the Doctorate Degree, and they have received recognition as outstanding scientists in their respective disciplines. Undergraduate enrollment of 325 students in the Department of Animal Science places us in the top ten Animal Science Departments in the country. The proposed Ph.D. program will add strength to the present undergraduate and master's program offered by the Department.

**ATTACHMENT #1
to
A Proposal to Offer a
Doctor of Philosophy Degree
in
Animal Science**

FACULTY BIOGRAPHICAL DATA AND PUBLICATIONS

Dr. Dale W. Zinn - Professor and Chairman. Appointed to staff at Texas Tech in 1961.

B.S. in 1952 West Virginia University

M.S. in 1957 West Virginia University

Ph.D. in 1967 University of Missouri

Departmental administration and research one-half time; teaching one-half time. Specializes in meat science and animal production and management factors associated with quantitative and qualitative aspects of meat production. Has placed special emphasis on the physiology of developmental growth and fattening of domestic animals.

Publications:

Zinn, D. W. and G. C. Anderson. 1955. The antithyrototoxic value of liver residue and fish solubles of the pig. J. Animal Sci. 14:1261.

Zinn, D. W. 1956. The effect of restricting the nutrient allowance on the carcass composition of swine. Masters Thesis, West Virginia University.

Zinn, D. W. 1959. Heritability of carcass traits in beef cattle. Twentieth Annual Feeder's Day, New Mexico State Univ. (Proceedings).

Holland, L. A., J. H. Knox, and D. W. Zinn. 1959. Breeding beef cattle for Southwestern ranges. W-1 Annual Report, New Mexico Agric. Exp. Sta., University Park, New Mexico.

Zinn, D. W., L. A. Holland and P. E. Neale. 1959. Genetic and environmental studies of factors affecting carcass merit in sheep. W-61 Annual Report, New Mexico Agric. Expt. Sta., University Park, New Mexico.

Zinn, D. W., L. A. Holland and P. E. Neale. 1960. Genetic and environmental studies of factors affecting carcass merit in sheep. W-61 Second Annual Report, New Mexico Agric. Expt. Sta., University Park, N. M.

Holland, L. A., J. H. Knox, and D. W. Zinn. 1960. Breeding beef cattle for Southwestern ranges. W-1, Annual Report, New Mexico Agric. Expt. Sta., University Park, N. M.

Zinn, D. W. and W. A. Ljungdahl. 1960. Live animal evaluation factors affecting steer values. Fifth Annual Cattle Breeders' School, New Mexico State University pp. 4-6 (Proceedings).

Zinn, D. W. 1961. The effect of weaning age, breed, and sex on lamb carcass characteristics. Twenty-Second Annual Feeders' Day, New Mexico State University, (Proceedings).

Zinn, D. W. 1961. Cutting methods as related to lamb carcass evaluation. Proc. Reciprocal Meat Conference. 14:177.

Elliott, J., D. W. Zinn, and R. M. Durham. 1961. Streamlined hindquarter for estimating cutout in beef cattle. J. Animal Sci. 20:905 (abstract).

Dr. Dale W. Zinn (continued)

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- Durham, R. M., H. Elliott and D. W. Zinn. 1961. Technique for marbling beef carcasses. *J. Animal Sci.* 20:916 (abstract).
- Zinn, D. W., H. Elliott, D. Burnett and R. M. Durham. 1961. Evaluation of U.S.D.A. beef grading methods. *J. Animal Sci.* 20:922 (abstract).
- Zinn, D. W., R. Stovall, J. E. Miller and R. M. Durham. 1962. The effects of length of time on feed on carcass conformation and grade of beef. *J. Animal Sci.* 21:986 (abstract).
- Zinn, D. W. 1963. Recent advances in meat research as they effect the beef cattle producer. Texas Technological College Animal Husbandry Report No. 1.
- Zinn, D. W. 1963. Meat research as a guide for the production of superior beef. Proceedings Second Annual Coordinated Beef Cattle Improvement Conference, University of Nebraska, Lincoln, Nebraska.
- Zinn, D. W., T. H. Montgomery, Gladys Belcher and W. L. Kent. 1963. Effects of length of feeding period on fat deposition and tenderness in the beef carcass. *J. Animal Sci.*, 22:830 (abstract)
- Zinn, D. W., W. L. Kent, and L. Albin. 1963. Effects of length of feeding period on chemical constituents of beef muscle. *J. Animal Sci.* 22:830 (abstract).
- Zinn, D. W., R. M. Durham, and R. Stovell. 1963. Muscle growth and development in the beef animal during the feeding period. *J. Animal Sci.* 22:829 (abstract).
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- Zinn, D. W. 1963. Effect of age and length of feeding period on muscle growth, fat deposition and tenderness in the beef animal. Livestock and Feeder's Day, Texas Technological College (Proceedings).
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Dr. Dale W. Zinn (continued)

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- Hudson, F. A., R. M. Durham, F. C. Harbaugh, and D. W. Zinn, 1965. Drylot performance of ewes fed an all-concentrate ration. Proc. Western Sect., Am. Soc. Ani. Sci., 16:LXXI.
- McBee, J. L., G. C. Anderson and D. W. Zinn. 1965. Carcass composition and growth performance of swine as affected by restricted nutrient allowance. W. Va. Agric. Expt. Sta. Bul. 513.
- Zinn, Dale W., Robert C. Albin, Sam E. Curl and Charles T. Gaskins. 1966. Growth and fattening of the bovine. II. Post-weaning Composition. Crude Protein and Gross Energy. Proc. Western Sec., Am. Soc. Ani. Sci., 17:151.
- Albin, R. C., D. W. Zinn, S. E. Curl and G. H. Tatsch. 1967. Growth and fattening of the bovine. III. Effect of energy intake upon carcass composition. J. Animal Sci. 26:209. (abstract).
- Zinn, Dale W., Charles T. Gaskins and R. M. Durham. 1967. Effect of time on feed on tissue growth in the bovine. J. Animal Sci. 26:213 (abstract).
- Zinn, D. W. and C. T. Gaskins. 1967. A factor analysis of beef carcass characteristics. J. Animal Sci., 26:213 (abstract).
- Albin, Robert C., Dale W. Zinn and John E. Braden. 1967. Lysine FeSO₄ and cottonseed meal for growing-finishing swine. J. Animal Sci. 26:213 (abstract).
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- Carpenter, J. A., Jr., R. D. Furr, D. W. Zinn and O. D. Butler. 1967. A Comparison of performance of beef cattle selected by four different criteria. International Center for Arid and Semi-Arid Land Studies Special Report No. 1:12.
- Furr, R. D., J. A. Carpenter, Jr., and D. W. Zinn. 1967. Effect of different levels of sulphur, certain trace minerals and stilbestrol for beef cattle receiving high grain sorghum and finishing rations. International Center for Arid and Semi-Arid Land Studies Special Report No. 1:27.
- Curl, S. E., Mary A. Fennell, D. W. Zinn, and R. C. Albin. 1967. Growth and Fattening of the Bovine. IV. Role of the endocrine system. International Center for Arid and Semi-Arid Land Studies Special Report No. 2:12.

Dr. Dale W. Zinn (continued)

- Albin, R. C. and D. W. Zinn. 1967. Three methods of starting cattle on an all-concentrate ration. International Center for Arid and Semi-Arid Land Studies Special Report No. 2:29.
- Zinn, D. W. 1967. Quantitative and qualitative beef carcass characteristics as influenced by time on feed. Ph.D. Dissertation. U. of Mo., Columbia.
- Albin, R. C., F. G. Harbaugh, and D. W. Zinn. 1968. Castor meal of three ricin levels for cattle. J. Animal Sci. 27:288 (abstract).
- Hansen, K. R., R. D. Furr, and D. W. Zinn. 1968. A comparison of performance of beef cattle selected by four different criteria. International Center for Arid and Semi-Arid Land Studies Special Report No. 4:47.
- McClung, J. E., R. C. Albin, J. L. Schuster, R. D. Furr, and D. W. Zinn. 1968. Summer diets of steers on deep hardland sites of the Texas High Plains. International Center for Arid and Semi-Arid Land Studies Special Report No. 4:47.
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- Zinn, D. W., R. M. Durham and H. B. Hedrick. 1968. Feedlot and carcass grade characteristics of steers and heifers as influenced by days on feed. J. Animal Sci. (Submitted) (ICASALS Contribution No. 39).
- Zinn, D. W., C. T. Gaskins, and R. M. Durham. 1968. The growth of carcass tissues of steers and heifers as influenced by days on feed. J. Animal Sci. (Submitted) (ICASALS Contribution No. 41).
- Zinn, D. W. 1968. The influence of animal growth and fattening upon feedlot management. International Center for Arid and Semi-Arid Land Studies Special Report No. 7:1.
- Furr, R. D. and D. W. Zinn. 1968. Maximizing protein from livestock. Proc. Symp. on Increasing Food Production in Arid Lands. International Center for Arid and Semi-Arid Land Studies. (In press).

Dr. Frank A. Hudson - Associate Professor. Appointed to staff at Texas Tech in 1960.

B. S. 1952 Arizona State University

M. S. 1953 New Mexico State University

Ph.D. 1957 Oregon State University

Three-fourths teaching, one-fourth research. Specialist in animal breeding with emphasis on sheep and goat management systems and wool and mohair production and technology.

Publications:

Hudson, Frank A. 1953. Relationship of beef type to yield, percentage of wholesale cuts, and hide areas. M.S. Thesis, New Mexico State University.

Johnston, E. F., F. A. Hudson, R. Bogart, A. W. Oliver and F. F. McKenzie. 1956. The effects of injected testosterone on adult ewes. J. Animal Sci. 15:177.

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Bogart, R., F. Hudson, H. Nicholson, R. W. Mason, and H. Krueger. 1958. Effect of injected testosterone on fertility in female cattle and sheep. Int. Journal Fertility. 3:105.

Hudson, F. A., J. D. Neill, and C. W. Cobb. 1961. Silage-milo rations for fattening lambs. Proc. 1961. Livestock Feeders Day.

Hudson, Frank A. 1962. Feeding lambs in West Texas. West Texas Chamber of Commerce Feeders Forum No. 3.

Hudson, F. A., R. M. Durham, F. G. Harbaugh, and D. W. Zinn. 1963. All-concentrate rations - sheep feeding. Proc. 1963. Livestock Feeders Day.

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Hudson, Frank A. 1964. Intensified sheep management practices. Texas Technological College Research Farm Review.

Nix, L., S. E. Curl, R. M. Durham, F. A. Hudson, and F. G. Harbaugh. 1964. Hormone induced superovulation and subsequent fertility in Rambouillet ewes. J. Animal Sci. 23:911.

Nix, C. L., F. A. Hudson, S. E. Curl, and R. M. Durham. 1964. Lamb birthweight as influenced by ration, sex, and type of birth; and effect of birth weight on early post-natal survival. J. Animal Sci. 23:911.

Curl, S. E., L. Nix, F. A. Hudson, and R. M. Durham. 1965. Hormone induced multiple birth in Rambouillet ewes. Proc. Western Section, Amer. Soc. of Animal Sci. 16:18.

Dr. Frank Hudson (continued)

- Hudson, F. A., R. M. Durham, F. G. Harbaugh, and D. W. Zinn. 1965. Drylot performance of ewes fed an all-concentrate ration. Proc. Western Section, Amer. Soc. of Animal Sci. 16:71.
- Hudson, Frank A. 1965. Cereal pasture versus drylot management of sheep. Texas Technological College Research Farm Review.
- Hudson, F. A., R. M. Durham, and G. F. Ellis. 1966. All-concentrate milo-premix rations versus 70-30 alfalfa-milo pellets. Proc. Western Section, Amer. Soc. of Animal Sci. 17:229.
- Curl, S. E., T. Cockrell, G. Bogard, and F. Hudson. 1966. Use of intravaginal progestin to synchronize estrus in sheep. J. Animal Sci. 25:921.
- Hudson, F. A., R. M. Durham, F. G. Harbaugh, C. T. Gaskins, and D. W. Zinn. 1966. Drylot performance of ewes fed an all-concentrate ration. Proc. 1966. Livestock and Feeders Day. 1966:89.
- Hudson, F. A., R. M. Durham, F. G. Harbaugh, D. W. Zinn, and G. F. Ellis. 1966. Response to all-concentrate rations by feeder lambs. Proc. 1966 Livestock and Feeders Day. 1966:93.
- Hudson, Frank A., S. E. Curl and K. G. Otto. 1967. Ovine pregnancy disease on all-concentrate rations with propylene glycol. J. Animal Sci. 26:921.

Dr. Ralph M. Durham - Professor. Appointed to staff at Texas Tech in 1959.
 B. S. 1948 Colorado State University
 M. S. 1949 University of Wisconsin
 Ph.D. 1951 University of Wisconsin

Three-fourths teaching, one-fourth research. An authority in livestock management and breeding systems. Specialist and consultant in cattle feedlot nutrition and developer of commercial application of all-concentrate beef cattle rations. Former head of the Department of Animal Husbandry at Tech.

Publications:

- Durham, Ralph M., A. B. Chapman and R. H. Grummer. 1952. Inbred versus non-inbred boars used in two sire herds on Wisconsin farms. J. Animal Sci. 11:1.
- Durham, Ralph M. and J. H. Knox. 1953. Correlations between grades and gains of Hereford cattle at different stages of growth and between grades at different times. J. Animal Sci. 12:4.
- Brown, L. O., R. M. Durham, E. Cobb and J. H. Knox. 1954. An analysis of the components of variance in calving intervals in a range herd of beef cattle. J. Animal Sci. 13:511.
- Durham, Ralph M. and John H. Zeller. 1955. Using the probing technique in selecting breeding swine on farms. J. Animal Sci. 14:4.
- Durham, Ralph M. and L. N. Hazel. 1957. Studies of buyer preference in purchasing boars of known merit. J. Animal Sci. 16:1048-1049.
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- Durham, Ralph M., S. Osinska, and L. N. Hazel. 1958. An analysis of swine breed differences in size and shape of loin eye. Proc. Amer. Soc. Ani. Prod. 17:1136.
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- Elliott, Henry, R. C. Mowery, and R. M. Durham. 1960. Whole cottonseed and cottonseed meal in fattening lamb rations. J. Animal Sci. 19:40.
- Koger, Tom, Henry Elliott, F. G. Harbaugh, and R. M. Durham. 1960. Sex effects on carcass productive traits in fattening beef calves. J. Animal Sci. 19:4(1238).
- Powell, Dallas, J. Neill, J. H. Baumgardner, and R. M. Durham. 1960. Supplemental feeding of whole cottonseed and cottonseed meal to beef steers. J. Animal Sci. 19:4(1286).

Dr. Ralph M. Durham (continued)

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- Elliott, R. Henry, Dale W. Zinn and Ralph M. Durham. 1961. Streamlined hind-quarter for cutout in beef cattle. *J. Animal Sci.* 20:905.
- Kent, Wendell, Dallas Powell, Ralph M. Durham and Frank Hudson. 1961. Comparison of different silages with and without implants for fattening cattle. *J. Animal Sci.* 20:938.
- Zinn, D. W., R. Elliott, D. Burnett, and R. M. Durham. 1961. Evaluation of U.S.D.A. grading methods. *J. Animal Sci.* 20:922.
- Durham, R. M., D. W. Zinn, and R. H. Elliott. 1962. Marblizing beef. Texas Tech Feeders Day, May 26, 1962.
- Zinn, D. W., R. Stovell, J. C. Miller and R. M. Durham. 1962. The effects of length of time on feed on carcass conformation and grade of beef. *J. Animal Sci.* 21:4 (986).
- Zinn, D. W., R. Elliott, R. M. Durham, and H. Urban. 1962. The relationship of maturity and time in the feedlot on factors affecting carcass merit and palatability characteristics of the beef animal. Texas Tech Feeders Day, May 26, 1962.
- Durham, R. M., F. G. Harbaugh, Robert Stovell and George F. Ellis, 1963. All-concentrate versus part roughage rations using milo as the grain for fattening cattle. *J. Animal Sci.* 22:3(835).
- Durham, R. M., George F. Ellis and Robert Stovell. 1963. Studies on protein and energy levels in rations for young pregnant heifers in drylot. *J. Animal Sci.* 22:3(835).
- Harbaugh, F. G., George F. Ellis, Ralph M. Durham and Robert Stovell. 1963. The effect of certain drugs and rations on ulcer formation and liver abscesses in fattening cattle. *J. Animal Sci.* 22:3(860).
- Zinn, D. W., R. M. Durham, and R. Stovell. 1963. Muscle growth and development in the beef animal during the feeding period. *J. Animal Sci.* 22:3(829).
- Thomas, Gerald W. and Ralph M. Durham. 1964. Drylot all-concentrate feeding--an approach to flexible ranching. *J. Range Management*, Vol. 17, No. 4, July, 1964.
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Dr. Ralph M. Durham (continued)

- Durham, R. M., G. W. Thomas, R. C. Albin, L. G. Howe, S. E. Curl, and T. W. Box. 1966. Coprophagy and use of animal waste in livestock feeds. *Management of Farm Animal Wastes* (Proceedings National Symposium, May 5, 6, and 7, 1966. pp. 112-114).
- Buchanan-Smith, Jock G., George F. Ellis, Jr., Ralph M. Durham, Robert C. Albin, and Lyle C. Kuhnley, 1966. Investigations of bacteria in the rumen of cattle on an all-concentrate diet compared to cattle on a high-roughage diet. *Texas Tech Feeders Day*, pp. 29-42.
- Curl, Sam E., Stanley Westbrook, Dale W. Zinn, Frank Hudson, and Ralph M. Durham. 1966. Effect of a leg weighting technique on carcass development and feedlot performance of lambs. *Proc. Livestock and Feeders Day*. Texas Technological College. pp. 115-116.
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- Ellis, George F., Jr., James A. Carpenter, Jr., and Ralph M. Durham. 1966. Popped milo in fattening rations for beef cattle. *Proc. Western Sec. American Soc. of Animal Sci.* Vol. 17. pp. 307-309.
- Albin, Robert C., Gary H. Tatsch, Dale W. Zinn, Sam E. Curl, and Ralph M. Durham. 1966. The net energy for production (NEp) of sorghum milo. *Proc. Livestock and Feeders Day*. Texas Technological College. pp. 49-53.
- Cole, H. H., (Editor) et al. Introduction to Livestock Production Including Dairy and Poultry. 1966. 2nd. Ed. W. H. Freeman and Company. San Francisco, U.S.A. and London, England.
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- Durham, Ralph M., and J. B. Pruett. 1966. Effect of early high levels of zinc bacitracin on performance carcass traits and liver abscesses in steer cattle fed an all-concentrate ration. *Proc. Western Sec. American Soc. of Animal Sci.* Vol. 17. pp. 295-297.
- Durham, Ralph M., George F. Ellis, Jr., and Robert C. Albin. 1966. Milo-meal by-product and urea-aureomycin combinations in all-concentrate rations for beef cattle. *Proc. Western Sec. American Soc. of Animal Sci.* Vol. 17. pp. 289-292.
- Durham, Ralph M., Luis Lopez and Robert C. Martin. 1967. Specific rumen inoculations in new feeder cattle being fed a specific all-concentrate ration. *A.S.A.S.* Vol. p. 917. (Abstr.).

Dr. Samuel E. Curl - Associate Professor and Interim Associate Dean of Agriculture. Appointed to staff at Texas Tech in 1963.
 B. S. 1959 Sam Houston State
 M. S. 1961 University of Missouri
 Ph.D. 1963 Texas A&M University

Administration and research, three-fourth time; teaching, one-fourth. Specialist in reproductive physiology and endocrinology with emphasis on reproduction and growth in domestic animals. Is considered an authority on estrus synchronization in domestic animals and has conducted much of the basic research involved in this area.

Publications:

- Curl, Samuel E. 1961 Dwarfism in Beef Cattle and the Influence of the Genes for Dwarfism on the Physiological Response to Hormone-Induced Stress. Master of Science Thesis. University of Missouri.
- Curl, S. E., J. E. Comfort, and J. F. Lasley. 1961. Dwarfism in Beef Cattle and the Influence of Dwarfism Genes on Physiological Response to Hormone-Induced Stress. Missouri Agricultural Experiment Station Research Bull. 764.
- Curl, Sam E. 1961. The Role of Hormones in Livestock Production. Block and Bridle Yearbook. Texas Technological College. pp. 31-32.
- Curl, Sam E. 1961. How Cattle Reproduce. Proc. of 11th Ann. Beef Cattle Short Course. A&M College of Texas. pp. 71-74.
- Curl, S. E., D. C. Kraemer, and A. M. Sorensen. 1963. Influence of Uterine Incubation on Ram Sperm Fertility. J. Animal Sci. 22:855 (Abstr.).
- Curl, Samuel E. 1963. Influence of Uterine Incubation of Ram Spermatozoa on the Fertility of Superovulated Luteal-Phase Ewes. Ph.D. Dissertation. Texas A&M University.
- Curl, Sam E. 1963. Hormones and Reproduction in the Beef Cow. Proc. Livestock and Feeders Day. Texas Technological College.
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- Nix, C. L., Sam E. Curl, Ralph M. Durham, Frank A. Hudson, and F. G. Harbaugh. 1964. Hormone-Induced Superovulation and Subsequent Fertility in Rambouillet Ewes. J. Animal Sci. 23:911 (Abstr.) Proc. of 40th Ann. Meet., Southwestern and Rocky Mt. Div., American Assn. for the Advancement of Science, p. 36.
- Triplett, B. A., Sam E. Curl, Ralph M. Durham, and F. G. Harbaugh. 1964. Hormone-Induced Superovulation and Subsequent Fertility in Beef Heifers Under Drylot Conditions. J. Animal Sci. 23:915. (Abstr.); Proc. of 40th Ann. Meet., Southwestern and Rocky Mt. Div., American Assn. for the Advancement of Science, pp. 36-37.

Dr. Sam E. Curl (continued)

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Dr. Leland F. Tribble - Professor. Appointed to staff at Texas Tech in 1967.
 B. S. 1949 University of Missouri
 M. S. 1950 University of Missouri
 Ph.D. 1956 University of Missouri

Three-fourths teaching, one-fourth research. A nationally respected authority in swine production with special emphasis in the management of the brood sow and growth and development of swine as influenced by genetics and environment.

Publications:

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Dr. George F. Ellis, Jr. - Adjunct Professor. Appointed to Adjunct Professor in 1968.
 B. S. 1955 New Mexico State University
 Ph.D. 1963 Texas A & M University

Former head of Department of Animal Husbandry at Texas Tech. Now a partner in Coronado Cattle Co. Has conducted research in the areas of beef cattle genetics and nutrition.

Publications:

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Dr. Fred G. Harbaugh - DVM and Professor. Appointed to staff at Texas Tech in 1927.

B. S. 1927 Iowa State University

DVM 1927 Iowa State University

Three-fourths teaching, one-fourth research and DVM care of college herds and flocks. Specializes in anatomy, physiology, and disease control in domestic animals.

Publications:

Dennis, Joe and F. G. Harbaugh. 1946. The carbon dioxide content of the blood of dairy cattle. American Journal of Veterinary Research, VII, 37-40.

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John H. Baumgardner - Professor of Animal Husbandry.
 B. S. 1939 Texas Technological College
 M. S. 1940 Texas Technological College

Publications:

- Baumgardner, John H. 1960. Advances in Nutrition. Block and Bridle Club Yearbook, Vol. 1:29-30.
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Dr. Lloyd B. Sherrod - Visiting Associate Professor, and Animal Nutritionist,
 Texas Tech Research Farm. Appointed to staff at Texas Tech in 1967.
 B. S. 1953 South Dakota State University, Brookings
 M. S. 1960 University of Arkansas, Fayetteville
 Ph.D. 1964 Oklahoma State University, Stillwater

Speciality - Animal nutrition, with emphasis on the utilization of nutrients by ruminant animals in both forages and concentrates as affected by such factors as methods of processing, levels of particular nutrients and supplemental nutrients, plant genetic variables and various agronomic treatments, stage of maturity, and levels of different by-products.

Publications:

- Sherrod, L. B. and A. D. Tillman. 1962. Effects of varying the processing temperatures upon the nutritive values for sheep of solvent-extracted soybean and cottonseed meals. *J. Animal Sci.* 21:901.
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Dr. Lloyd B. Sherrod (continued)

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Dr. Robert C. Albin - Associate Professor. Appointed to staff at Texas Tech in 1964.

B. S. 1961 Texas Tech College

M. S. 1962 Texas Tech College

Ph.D. 1965 University of Nebraska

Three-fourths teaching; one-fourth research. Specializes in animal nutrition with emphasis on the interaction of genetics and nutrition in the retention of energy and protein during developmental growth and fattening of domestic animals.

Publications:

- M. S. Thesis. 1962 Some observations on the effect of the diet upon rumen volatile fatty acids, milk free fatty acids and susceptibility of resulting milk to hydrolytic rancidity. Texas Technological College, Lubbock.
- Ph. D. Dissertation. 1965. Factors contributing to the variation of urinary creatinine and creatinine-nitrogen ratios in beef cattle. University of Nebraska, Lincoln.
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Dr. Robert C. Albin (continued)

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Dr. Coleman A. O'Brien - Associate Professor. Appointed to staff at Texas Tech in 1947.
 B. S. 1944 Texas A & M University
 M. S. 1945 Texas A & M University
 Ph.D. 1964 Texas A & M University

Three-fourths teaching; one-fourth research. Specializes in reproductive physiology with emphasis in artificial insemination.

Publications:

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Dr. Coleman A. O'Brien (continued)

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- Patents relating to sire fertility testing (Patents pending, 1966):
 Plastic funnels to facilitate semen collection from rams, bulls, and billies.
 A. Bovine model
 B. Ovine - caprine model.

Dr. C. Boyd Ramsey - Associate Professor. Appointed to staff at Texas Tech in 1968.

B. S. in 1956 University of Tennessee

M. S. in 1957 University of Kentucky

Ph.D. in 1960 University of Kentucky

Director of Meat Industries Laboratory. Research 1/4 time, teaching 3/4 time. Specializes in meat science and carcass evaluation. Research has dealt primarily with relationships of age, muscle fiber diameter, breed and type of cattle and preslaughter fasting of swine to carcass composition and palatability characteristics.

Publications:

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Dr. Richard Dale Furr - Visiting Professor and Superintendent of Texas Tech Research Farm, Appointed to staff at Texas Tech in 1965.
 B. S. 1958 Sam Houston State College
 M. S. 1959 Oklahoma State University
 Ph.D. 1962 Oklahoma State University

Specialities in Nutrition and Beef Cattle Production. Primary areas of experience has included ranch and feedlot research. The range cattle research has included (1) supplemental nutrient evaluations such as energy, specific minerals, protein, vitamin A, stilbestrol, (2) various management techniques, (3) grazing behavior studies, (4) nutritive value of forages as related to cattle requirements, (5) comparison of performance by sex and breeds, and (6) others. The beef cattle feedlot research has included (1) evaluation of by-products, (2) nutrient levels such as minerals and protein, (3) use of non-protein nitrogen, (4) drug additive evaluations, (5) synthetic hormone levels and (6) others.

Publications:

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C O P Y

A Proposal to Offer a
Doctor of Philosophy Degree
in
Agronomy
June 1968

Department of Agronomy and Range Management
Texas Technological College

DESCRIPTION OF PROPOSED PROGRAM

1. What is the title and nature of the proposed program?

The Doctor of Philosophy Degree in Agronomy with emphasis on Crop Science and Soil Science.

2. What degree or certificate is contemplated, if any?

Doctor of Philosophy Degree. Major: Agronomy.

3. List the course offerings to comprise the program. Which of these courses will be new?

The course offerings to be used in the proposed doctoral program will include courses in three areas as indicated below:

- a. Graduate courses in Agronomy now listed in the 1967-68 catalog.

511 Seminar (1:1:0)
 532 Experimental Design and Analysis (3:2:2)
 533 Pedology (3:3:0)
 534 Research (3)
 536 Soil and Plant Relationships (3:3:0)
 537 Methods in Plant Breeding (3:3:0)
 631 Master's Thesis (3)

- b. Courses offered by other departments now in the 1967-68 catalog.

Biology 431 Biological Techniques (3:0:9)
 Biology 5312 Cytogenetics (3:2:3)
 Biology 5313 Biochemical Genetics (3:3:0)
 Botany 5311 Morphogenesis and Plant Growth Regulators (3:2:3)
 Botany 539 Morphology of the Vascular Plants (3:2:3)
 Chemistry 347 Physical Chemistry (4:3:3)
 Chemistry 348 Physical Chemistry (4:3:3)
 Chemistry 4312 Instrumental Analytical Methods (3:2:3)
 Chemistry 436 Biological Chemistry I (3:2:3)
 Chemistry 437 Biological Chemistry II (3:2:3)
 Chemistry 445 Inorganic Chemistry (4:3:3)
 Chemistry 5315 Spectrographic Analysis I (3:2:3)
 Chemistry 5316 Spectrographic Analysis II (3:2:3)
 Geochemistry 4331 Geochemistry I (3:3:0)
 Geology 437 Sedimentation I (3:2:3)
 Geology 531 Advanced Physical Geology (3:3:0)
 Geology 541 X-Ray Diffraction and Analysis (4:3:3)
 Geology 542 X-Ray Crystallography (4:3:3)
 Math 432 Differential Equations II (3:3:0)
 Math 4391 Vector Analysis (3:3:0)
 Physics 338 Introduction to Nuclear Physics (3:3:0)
 Zoology 435 Cytology (3:2:3)

c. New courses to be added in Agronomy at the graduate level.

- Agron. 531 Soil Biochemistry (3:2:3)
Chemical factors in growth processes of micro and macro flora in the soil.
- Agron. 535 Microclimatology and Plant Growth (3:3:0)
Reactions and interactions of plants to microclimate.
- Agron. 538 Advanced Genetics (3:3:0)
Recent advances in genetic theory and practices.
- Agron. 539 Laboratory Methods in Plant Breeding (3:1:6)
Current methods and techniques for hybridization inheritance and improvement of crops plants.
- Agron. 632 Advanced Experimental Design and Analysis (3:2:3)
Designs and methods of analysis for specific researchers.
- Agron. 633 Advanced Soil Chemistry (3:2:3)
Chemical reactions with emphasis on those of a physico-chemical nature.
- Agron. 635 Radioisotopes in Plant Research (3:3:0)
Scope limitations and functions of radioisotopes in plant research.
- Agron. 636 Plant Metabolism (3:3:0)
Kinetics and thermodynamics of metabolic reactions.
- Agron. 637 Advanced Plant Breeding (3:2:3)
Theories and applications of genetics to improvement of plants.
- Agron. 638 Advanced Crop Physiology (3:3:0)
Theories.
- Agron. 639 Plant Tissue Analyses (3:1:6)
Methods and techniques of plant tissue analysis.
- Agron. 731 Research (3)
Individual research problems.
- Agron. 732 Hormones, Herbicides and Plant Growth Regulators (3:3:0)
Functions and reactions of herbicides and growth regulating substances in plants.
- Agron. 733 Advanced Soil Physics (3:2:3)
Principles of unsaturated flow and gaseous diffusion. Derivation of equations and application.
- Agron. 734 Soil Mineralogy (3:3:0)
A study of the mineralogical make-up of soil fractions.
- Agron. 831 Thesis in Agronomy

SPECIAL NOTE: It is anticipated that the above list of courses to be added in Agronomy will be developed and added as the doctoral program develops. The students entering the programs outlined in Item 4 will require all of these courses listed as needed the first year. During the first 3 years the program is in progress it is anticipated that other courses will be needed. Numbers of graduate students in the program and the individual needs of the students will determine the time of initiation of the additional courses.

4. Outline a semester-by-semester curriculum for the proposed program.

A Ph.D. program in Agronomy with emphasis in Crop Science and Soil Science does not lend itself to a standard curriculum. Each doctoral candidate will be counseled into an individual program depending on his educational background and on his field of study within his major and minor areas. Example curricula for both the Crop Science and Soil Science emphases are outlined as follows: Research and dissertation work will be used to give the degree of specialization desired in these two programs.

Suggested Crop Science Curriculum

First Year

<u>First Semester</u>	<u>Hours</u>	<u>Second Semester</u>	<u>Hours</u>
Chem. 436 Biochemistry I	3	Chem. 437 Biochemistry II	3
Bot. 537 Morphology of Vascular Plants	3	Agron. 536 Soil and Plant relationships	3
Agron. ¹ 511 Seminar	1	Agron. 511 Seminar	1
Minor ¹ or Advanced Agron.	6	Agron. 632 Adv. Exp. Design and Analyses	3
	<u>13</u>	Bot. 5311 Morphogenesis and Plant Growth Regulator	<u>3</u>
			<u>13</u>

Summer Term

<u>First Term</u>	<u>Hours</u>	<u>Second Term</u>	<u>Hours</u>
Agron. 731 Research	<u>3</u>	Agron. 731 Research	<u>3</u>
	3		3

Second Year

<u>First Semester</u>	<u>Hours</u>	<u>Second Semester</u>	<u>Hours</u>
Agron. 731 Research	3	Agron. 731 Research	3
Agron. 538 Advanced Genetics or Agron. 636 Plant Metabolism	3	Biol. 5313 Biochemical Genetics	3
Agron. 511 Seminar	1	Agron. 511 Seminar	1
Minor ¹ or Advanced Agron.	3	Minor ¹ or Advanced Agron.	3
Agron. 831 Thesis	<u>3</u>	Agron. 831 Thesis	<u>3</u>
	<u>13</u>		<u>13</u>

¹ Minor or Advanced level Agronomy course.

Courses at advanced level to meet requirement of 18 semester hours in minor department.

Summer Term

<u>First Term</u>	<u>Hours</u>	<u>Second Term</u>	<u>Hours</u>
Agron. 831 Thesis	$\frac{3}{3}$	Agron. 831 Thesis	$\frac{3}{3}$

Suggested Soil Science CurriculumFirst Year

<u>First Semester</u>	<u>Hours</u>	<u>Second Semester</u>	<u>Hours</u>
Chem. 347 Physical Chem.	4	Chem. 348 Physical Chem.	4
Agron. 743 Soil Mineralogy	4	Agron. 743 Soil Mineralogy	4
Agron. 511 Seminar	1	Agron. 511 Seminar	1
Minor ¹ or Adv. Agron.	$\frac{3}{12}$	Minor ¹ or Adv. Agron.	$\frac{3}{12}$

Summer Term

<u>First Term</u>	<u>Hours</u>	<u>Second Term</u>	<u>Hours</u>
Agron. 731 Research	$\frac{3}{3}$	Agron. 731 Research	$\frac{3}{3}$

Second Year

<u>First Semester</u>	<u>Hours</u>	<u>Second Semester</u>	<u>Hours</u>
Agron. 731 Research	3	Agron. 731 Research	3
Agron. 633 Adv. Soil Chem.	3	Agron. 733 Adv. Soil Physics	3
Agron. 511 Seminar	1	Agron. 511 Seminar	1
Minor ¹ or Adv. Agron.	3	Minor ¹ or Adv. Agron.	3
Agron. 831 Thesis	$\frac{3}{13}$	Agron. 831 Thesis	$\frac{3}{13}$

Second Summer

<u>First Term</u>	<u>Hours</u>	<u>Second Term</u>	<u>Hours</u>
Agron. 831 Thesis	$\frac{3}{3}$	Agron. 831 Thesis	$\frac{3}{3}$

¹ Minor or advanced level Agronomy course. Courses at advanced level to meet requirement of 18 semester hours in minor department.

5. What special requirements will be enforced? If a graduate degree is contemplated, is a thesis required? If not, what will be substituted?

A minimum of three years of graduate study beyond the bachelor's degree is required for the doctorate. Work completed for the master's degree is considered one of these years if it forms part of a logical sequence in the entire program.

Doctoral study cannot be calculated solely in terms of credit hours, but the program for the doctorate normally requires the completion of 60 to 80 or more semester hours of work beyond the bachelor's degree, exclusive of credit for the dissertation.

A reading knowledge of two foreign languages or superior competence in one foreign language, or a reading knowledge in one foreign language with at least six hours of course work in an approved non-allied field will be required.

The exact requirements for each student are to be determined by his graduate committee.

A dissertation will be required.

6. Has the proposed program, or one similar to it, been offered in this institution at any time prior to this request?

Neither this proposed program nor a similar one has been offered at Texas Technological College.

7. How many similar programs are offered elsewhere in Texas, and where?

A similar program leading to a Doctor of Philosophy degree is being offered at Texas A&M University.

8. Justify the need for the proposed program. Be precise.

Justification of need for a Doctor of Philosophy Degree in Agronomy:

Many benefits for the State of Texas, Texas Technological College, and the area served by the College would be realized by this doctoral program. This degree is needed to help fulfill the major objectives of the College through developing excellence in programs related to arid and semi-arid lands. This College is the only major institution of higher education located in the arid and semi-arid area of the High Plains. Specific needs which would be met by initiation and development of the doctoral program in Agronomy are listed below:

1. It will provide the only institution of higher education in Texas where specific training in the fundamentals, skills, and techniques necessary for successful food and fiber production under arid and semi-arid conditions can be obtained.

2. The unique location of Texas Technological College in a highly productive area where approximately five million acres of irrigated lands and a greater area of dryland crop production is practiced can best be utilized by making it possible to train research leaders and teachers at the doctoral level. Such trained leadership is needed throughout the world to solve the increasing problems of food and fiber production for the rapidly expanding population.

3. This program, by providing expanding research in the agronomic field, can be of great value in providing information on more efficient use of water, both from irrigation and from rainfall. An advanced research program is needed in crop production for all arid and semi-arid regions of the world. This doctoral program is necessary to develop such training and leadership.

4. This doctoral program is needed to develop greater excellence in the teaching mission of the department at both the graduate and undergraduate level. It will provide a stimulus for the faculty to keep current in their respective fields and at the same time, through research, help solve problems facing the agricultural industry.

5. This doctoral program is needed so that Texas Technological College can help supply some of the approximately 500 soil scientists that are said to be needed in the years just ahead by the Agricultural Research Service of the United States Department of Agriculture in order to provide food and develop the natural resources during the next six years. The same report, given in New York, stated that a like number of trained biologists will also be needed. Most of these biologists will be trained in Plant Breeding and Crop Science.

6. This doctoral program is needed to attract some of the best minds among young scholars in Texas and the Southwestern United States, as well as internationally.

7. The doctoral program in Agronomy is needed to help increase the number of doctoral degree candidates available. In recent years the major agricultural colleges have graduated fewer than 100 doctoral degree candidates in Soil Science and fewer than 200 in Crop Science each year. Those who are graduated are seldom oriented in soil management and crop production under arid and semi-arid land culture of plants.

8. The program is needed to train advanced students so they may participate in guiding food and fiber production in the developing countries which have semi-arid climates and soils. Specialization in problems related to the soils and environmental conditions in these countries is needed. The requested doctoral program will provide training to meet these needs.

9. Is the proposed program approved by the institution's Board of Directors? When?

PROJECTED ENROLLMENT

10. Project the enrollment for the proposed program for the next five years. Explain the basis for the projection.

The initial enrollment in this program would be from five to eight students during the first year while equipment and facilities are being developed. This number is expected to increase each year as facilities, funds and curricula are expanded to care for the additional students. By the end of the first five years of operation of the program it is anticipated that eighteen to twenty doctoral degree candidates would be in the process of completing their requirements for this advanced degree. This prediction is based upon industry, government, and institutional needs. It is, of course, predicted upon adequate financing for the program from state, federal, and private sources.

11. Explain the likely source of students who will enroll in this program. (Will they come from existing programs or will they be attracted to the institution to enroll in the proposed program?)

The students who will enroll in this program are expected to come from the arid and semi-arid sections of Texas, the Southwestern United States and from foreign countries located in the arid and semi-arid regions of the world. Inquiries from the educational institutions and experiment stations located in the arid and semi-arid regions of the world indicate a definite need for trained scientists to serve countries where climate induces limitations on the production of food and fiber. It is anticipated that some of the present Master of Science degree candidates in crop science and soil science will continue on for the Doctor of Philosophy degree. Students from other schools who wish training in this field would be expected to seek enrollment in this program. Students from Australia, Latin America, the African continent, Free China, and other countries with arid and semi-arid areas would be expected to pursue graduate work in this program. As the work under ICASALS develops more students will seek training at this institution in the fields of Soil Science and Crop Science.

FACULTY

12. Give the number of persons presently on the faculty who will be most directly involved in the proposed program. List for each his name, rank, highest degree, and present course load. (See attachment for additional biographical data on faculty.)

Dr. B. L. Allen - Professor of Agronomy. Full-time teaching for 9 months. Research 6 weeks each year.

Mr. Cecil I. Ayers (MS) - Professor of Agronomy. Full-time teaching for 10 1/2 months each year.

Dr. Clark Harvey - Professor of Agronomy. Half-time teaching, half-time research for 12 months.

Dr. A. W. Young - Professor of Agronomy. Half-time teaching, half-time administrative work for 12 months.

Dr. E. A. Coleman - Associate Professor of Agronomy. Three-fourths time teaching, one-fourth time research for 12 months.

Mr. Chester C. Jaynes (MS) - Associate Professor of Agronomy. Half-time teaching, half-time research for 12 months.

Dr. William F. Bennett - Associate Professor of Agronomy. Full-time teaching for nine months and summer research.

Dr. Raymond E. Meyer - Assistant Professor of Agronomy. Full-time teaching and research for 12 months.

Each of these staff members has a full-time load or research and course load combination.

In addition to the above staff members, Dr. Lavon Ray, Dr. Arthur Onkin and Dr. Charles Wendt, of the Agronomy staff at the Texas Agricultural Experiment Station, Dr. Bruce Maunder of the DeKalb Association, Dr. Nick Kramer of the Paymaster Farms, serve in an advisory capacity on the graduate committees for graduate students in Agronomy.

13. Calculate the present student-faculty ratio in the subject matter field(s) or department(s) in which the proposed program will be offered. (Divide full-time equivalent students by full-time equivalent faculty.)

The present student-faculty ratio in the subject matter fields in which the proposed program will be offered was an average of 16.93 for the two long terms (nine months each) for the years 1965-66 and 1966-67.

14. Project the need for new faculty required for the proposed program for the next five years. If the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done.

The initiation and execution of the proposed program will require the addition of a minimum of one new full-time faculty member equivalent each year for the next five years. A part of the new program will be absorbed by the present staff, but where this is done the present staff must be relieved of a part of their present course load by either new staff or graduate teaching assistants.

15. Will acquisition of new faculty for the program require the outlay of sufficient salary funds to employ well trained and competent staff to facilitate the development and teaching of the new courses required. It is estimated that the annual salaries of \$15,000 to \$20,000 per new staff member will be needed. Salary scales are increasing each year.

16. Describe the involvement of the faculty, present and projected, in research, extension, correspondence, and other activities. Are teaching loads of faculty reduced if they engage in these activities?

Five faculty members are now involved in research and have either reduced teaching loads, or will have reduced teaching loads before the end of this fiscal year (August 31, 1968). The present faculty members are involved in research as indicated in question 12 above. They are involved in extension type activities in the area served by the College as they participate in continuing education programs, conferences, symposia, and current agricultural development of the area served by the College. At the present time no reduction in teaching loads have been possible, except where research activities are involved.

LIBRARY

17. Are present library holdings in relevant fields adequate now to begin the proposed program? How will the library have to be improved to meet program needs in the next four years? (Refer to the need for books, periodicals, reference books, primary source materials, etc.).

The library holdings in the relevant fields are adequate to begin the proposed program, but new periodicals must be added and files of older volumes must be completed as rapidly as possible. More foreign publications in the technical fields must be added.

18. Are there libraries of other institutions which are being used or can be used by faculty and students in the proposed program. Explain in detail.

Library facilities of other institutions are only available through the interlibrary loan facilities. The use of microfilm facilities is available.

19. Estimate the total expenditure for the last two complete fiscal years for library acquisitions in the departments or subject matter fields in which the proposed program will be offered, or in fields which are closely related to the proposed program.

The total expenditure for specific periodical references for the present Department of Agronomy and Range Management amounts to approximately \$1,000 per year. This represents only part of the funds actually used to provide library materials for departmental needs since the curricula are largely science oriented. Publications secured for biology, chemistry, geology, physics, entomology, and similar disciplines also serve Agronomy majors at both the undergraduate and graduate level.

20. Project library expenditures to be budgeted for the next five years to meet the need of this program.

It is estimated that, with the initiation of the doctoral program the available funds for library materials should be doubled each year; that is, \$1,000 for crop science and soil science periodicals and references, and a like amount for the range sciences.

FACILITIES AND EQUIPMENT

21. Describe existing facilities that are available for the proposed program. Describe the present utilization of these facilities. What new facilities will be needed in the near future? Specify what special facilities and equipment will be needed and estimate the cost. From what sources do you anticipate obtaining needed facilities and equipment?

a. Existing Facilities - The existing facilities include irrigated and dryland farm areas at Lubbock and at Pantex, Texas, where adequate acreages of arable soils are available for field experiments. Laboratories available for graduate work include one soil chemistry-soil fertility combination laboratory, one soil-microbiology-soil physics laboratory, one small graduate laboratory for clay mineralogy, one seed technology laboratory, and one commercial grain laboratory. These laboratory areas are equipped at present with selected pieces of equipment which can be used for the doctoral degree program. Such equipment includes a day-night germinator, air sterilizer oven, incubator, muffle furnace, constant temperature bath and six-place Kjeldahl apparatus. These facilities are largely utilized by our present Bachelor of Science and Master of Science degree programs.

b. Needed Facilities - Six offices for new staff. One office for additional secretary. Office space for 20 graduate students. The estimated expense for providing these office spaces is not available at this time. These will be needed as the program develops during the first five years of the program. It is planned that these facilities will all be included in the proposed addition to the Plant Science Building. Laboratories - one greenhouse, four compartment with 5,000 square feet under glass and 2,000 square feet in the head house which should contain storage space and laboratory facilities for soil and plant analyses, plant nutrition and plant breeding research and instruction. The estimated cost of the greenhouse structure is \$60,000. One crop physiology laboratory for Herbicide and weed-control research (equipped): \$25,000. One crop-plant metabolism laboratory (equipped): \$40,000. One soil-physics laboratory for 15 students (equipped): \$30,000. One clay-mineralogy and soil genesis laboratory: \$20,000. One soil chemistry and plant tissue analysis laboratory to accommodate 12 students (equipped): \$30,000. One genetics and cytogenetics laboratory (equipped): \$20,000. Total for laboratories and facilities: \$225,000.

c. Needed equipment

One day-night germinator: \$3,500
One 400 cu. ft. plant growth chamber: \$6,000

Radioisotope equipment: \$20,000
 Two calculators with memory for quantitative and advanced genetics
 @ \$5,000 each: \$10,000
 One atomic absorption spectrometer: \$7,500
 One infrared spectrometer: \$4,000
 One differential thermal apparatus: \$2,500
 One x-ray diffraction and fluorescence attachment: \$25,000

Some of this equipment is now available in another department but some problems in scheduling the apparatus to fill the needs of our graduate students is anticipated as enrollments increase in each department.

Total for equipment needs (estimated):	\$ 78,000
Total estimated for facilities and equipment	\$ 303,500

ADMINISTRATION OF PROPOSED PROGRAM

22. Will the proposed program affect the administrative structure of the institution? If yes, describe how. In what department, division, school or college will the proposed program be administered? If the program is to have inter-departmental or inter-unit administration, explain in detail.

This program will fit into the present administrative structure of the institution. It will be administered specifically through the Department of Agronomy, School of Agricultural Sciences and the Graduate School. The department will organize, schedule, and administer the program as approved through the Dean of Agricultural Sciences and the Dean of the Graduate School.

ACCREDITATION

23. Describe the requirements for accreditation, if program is eligible to be accredited. What is the name of the accrediting agency? What will be initial costs of accreditation and subsequent annual costs to maintain it? Identify basic criteria for accreditation and describe how these will be met.

There are no specific accrediting agencies involved. The present regulations under which the Graduate School of Texas Tech functions will govern this program. The curricula and the courses are selected and designed to provide the graduate student with training and academic background equivalent to the same degree offered by the other major agricultural universities of the United States.

SUPPORTING FIELDS

24. Evaluate the subject matter fields at your institution which may be

considered as necessary, or valuable, in support of the proposed program. Will these fields need improvement? If so, how, to what extent, and at what cost? Be specific.

The subject matter fields at Texas Tech which are necessary to support the doctoral programs in soil science and crop science are: biology, botany, microbiology, chemistry, geology, physics, mathematics, and plant physiology and plant pathology. In these supporting disciplines few new courses are needed. (See Question 3 above.)

COSTS OF PROPOSED PROGRAM

25. Estimate the initial (first year) costs of the proposed program. How much of this will be absorbed in current budgets and how much will be newly appropriated money? Will federal or private financial assistance be sought? If yes, explain in detail.

The total cost of the proposed program is estimated as follows:

Total cost, first year for the agronomy program will include facilities and equipment items under Question 21 above which shows an estimated \$303,500 for facilities (space and equipment) and a salary of \$17,500 for one new staff member. To this should be added an item of maintenance, supplies, and travel amounting to \$6,000, and six graduate research assistantships @ \$4,000 or a total of \$24,000.

These figures represent an estimated total of \$351,000 necessary for the first year over and above the present current budget items for the agronomic work. The current budget can be expected to provide the salaries for the present staff. Federal aid and private financial assistance are being sought to secure at least a part of the funds for the greenhouse facilities. Financial assistance is being sought from industry for selected items which are listed above. It is hoped, for example, that the differential thermal apparatus can be secured within a year from the present date from sources of funds which may become available.

26. Estimate the annual cost of the program for the three years following its first year. (Use the current formula in arriving at your estimate). Explain the rationale for your estimate.

The annual cost of the program for the three years following its first year are shown as estimated below: (these items are over and above the present costs of the degree programs now being carried out in agronomy).

First Year

Salaries (staff)	\$ 35,000
Equipment purchases	3,000

Maintenance, supplies and travel	8,000
Graduate research assistantships (12 @ \$4,000)	<u>48,000</u>
	\$ 94,000

Second Year

Salaries (staff)	\$ 42,000
Equipment purchases	5,000
Maintenance, supplies and travel	9,000
Graduate research assistantships (16 @ \$4,000)	<u>64,000</u>
	\$120,000

Third Year

Salaries (staff)	\$ 60,000
Equipment purchases	7,000
Maintenance, supplies and travel	10,000
Graduate research assistantships (20 @ \$4,000)	<u>80,000</u>
	\$157,000

These estimated figures for the three following years after the initial year of the program are based on the assumption that the laboratory facilities and equipment items listed under Question 21 above will be provided for the first year of the program. These figures are also in anticipation of the addition of one new staff member for each of the first four years. The graduate research assistantships are based on an average stipend of \$4,000 per year for each graduate research assistant. This would vary from \$3,600 for the first year graduate student to \$4,400 per year for the last year of the doctoral candidate's program. The equipment items anticipate the purchase of new pieces of equipment needed each year to keep the teaching and research facilities up-to-date with latest items for research. The items anticipated under maintenance, supplies and travel are included to provide for the upkeep on equipment items, expendable supplies and necessary travel for the graduate staff and graduate students.

27. Departmental costs

a. Show the departmental operating costs for the last two fiscal years which will contribute significantly to the support of the proposed program.

Departmental operating costs for the last two fiscal years were as follows:

<u>Departmental Budgeted Items</u>		<u>Other Research Funds Currently Budgeted*</u>	
<u>1965-66</u>			
Department of Agronomy and Range Management			
Departmental Salaries	\$120,613	Salaries	\$18,736
Maintenance, Equipment and Travel	<u>12,883</u>	Maintenance, Equipment and Travel	<u>9,740</u>
TOTAL	\$133,496	TOTAL	\$28,476
Agronomy Farm			
Salaries	\$ 7,633		
Maintenance, Equipment and Travel	<u>9,764</u>		
TOTAL	\$ 17,397		
TOTAL EXPENDITURES	<u>\$150,893</u>		
GRAND TOTAL FOR YEAR 1965-66			<u>\$179,369</u>
<u>1966-67</u>			
Department of Agronomy and Range Management			
Departmental Salaries	\$128,839	Salaries	\$ 19,000
Maintenance, Equipment and Travel	<u>13,550</u>	Maintenance, Equipment and Travel	<u>12,038</u>
TOTAL	\$142,389	TOTAL	\$ 31,038
Agronomy Farm			
Salaries	\$ 7,100		
Maintenance, Equipment and Travel	<u>9,664</u>		
TOTAL	\$ 16,764		
TOTAL EXPENDITURES	<u>\$159,153</u>		
GRAND TOTAL FOR YEAR 1966-67:			<u>\$190,191</u>

* Funds from Experiment Station projects, industry grants, etc.

b. How will the proposed program affect the allocation of distribution of these funds?

It is not anticipated that the proposed program will materially affect the allocation and distribution of the present operating expenditures for the department. The present operating expenditures are near the minimal figure in each of the expenditure areas. The department plans to carry on the present Bachelor's degree and Master's degree programs as at present, with expected increases in enrollment as has occurred in the past.

28. What additional funds for research will be needed to support the proposed program? Explain.

These items have been covered under the Question 2, "Facilities and Equipment", and Item 26 dealing with the annual cost of the program. To recapitulate, the expenses as presented above are:

First Year	\$351,000
Second Year	94,000
Third Year	120,000
Fourth Year	<u>157,000</u>
TOTAL	\$722,000

29. How many graduate assistantships are considered desirable to begin the program? Estimate amount of funds required for these assistantships over the next four years. What sources are available for undergraduates other than those provided for all undergraduates? Explain in detail.

As indicated under Item 25 above, six graduate assistantships are shown as necessary for the first year of the program. Item 26 shows the annual estimated needs for the graduate assistantships during the next three years. It would seem desirable as indicated for the fourth year, to have available a minimum of twenty graduate assistantships per year for this work in order to allow the development of a well-rounded graduate program. Ten graduate assistantships in soil science and ten in crop science would provide an average of about two graduate students for each staff member directing graduate work in these two areas. At this time it is not anticipated that any additional student aid funds will be needed as a result of the initiation of the doctoral program.

30. Add any comments which would be helpful to the Coordinating Board in evaluating this program.

The addition of these programs will permit the Agronomy Department to take a leadership role in meeting crop, soil, and food problems of the future. It is imperative that we educate an increasing number of scientists in these areas to meet the problem of world hunger.

Attachment No. 1
to
A Proposal to Offer a
Doctor of Philosophy Degree
in
Agronomy

FACULTY BIOGRAPHICAL DATA AND PUBLICATIONS

Additional information on the faculty of the Department of Agronomy, Texas Technological College, to supplement Section IV, Item 12, of the Proposal to Offer a Doctor of Philosophy Degree in Agronomy with emphasis in Crop Science and Soil Science.

During the past decade, it has been the purpose of this department to select individuals who had attained a minimum of their Ph.D. degree in the field to be added to this staff. This has been carried out, keeping in mind that at some period in the future the department would be offering a doctoral program in the field of agronomy.

The men who were here prior to the last decade and the men who have been added during the past decade are capable of teaching graduate level courses, and directing graduate students in their research programs. The selection of staff members has been with the idea of providing a staff well balanced in both the soil science area and the crop science area as additions have been made to the staff from year to year.

In general, the staff now employed have capabilities of teaching and directing research in the major problems which are common to the fields of crop science and soil science. We do not have proficiency in every phase of either crop science or soil science, but we do have proficiency in selected areas into which the students who desire to complete their graduate work at this institution would be directed. The information listed on the attached sheets on staff members in agronomy will bear out this fact by their training and interests.

Dr. B. L. Allen, Professor of Agronomy - Educational Qualifications

B.S. 1948 Texas Technological College - Agronomy

M.S. 1951 Michigan State University - Soils

Ph.D. 1960 Michigan State University - Soils

Dr. Allen is especially trained in soil science with his major research interests in clay mineralogy and soil chemistry.

He is recognized nationally for his knowledge and ability in soil morphology and classification. He is frequently called upon as consultant by state and federal agencies to assist in problems in classifying soils in southwestern states. He has carried on research projects in Hawaii, and Mexico, as well as in the southwestern states.

Dr. Allen has taught at Texas Technological College since 1959.

Theses Directed

A Study of Clays from the Lower Part of a Soil Developed on Tertiary Basalt in Southeastern Colorado; Samarn Panichapong, 1961.

A Study of Mineral Transformations and Weathering Processes Occuring During the Genesis of Two Soils Developed from Granite in Llano County, Texas; Don W. Goss, 1964.

A Study of Mineral Transformations and Weathering Processes; Clyde Stahnke, 1965.

Minerology and Genesis of the Pontotoc Soil; Dale W. Brown, 1966.

Minerological and Genetic Study for Serpentine Derived Soils; Hamouda M. Maoui, 1966.

Minerological Investigation of the Castell Soil Clay; James R. Roger, 1966.

A Genetic and Minerological Study of Two Soils; Larry F. Ratliff, 1967.

Publications and Creative Activities

"A Study of Alteration of Basalts in Northwestern New Mexico", Agronomy Abstracts (1962): 17.

"A Thin Section Study of Soils from the Papaloapan Basin, Vera Cruz, Mexico", Agronomy Abstracts (1963):23.

"A Genetic Study of Two Soils Developed on Granite in Llano County, Texas", Agronomy Abstracts, (1964): 41 (with D.W. Goss).

"A Micromorphological Study of Two Soils Developed on Granite in Llano County, Texas", Agronomy Abstracts, (1964): 38 (with D.W. Goss).

Dr. B. L. Allen (continued)

Papers Presented at Meetings and Conferences

A Mineralogical Study of Soils Developed on Basaltic Lavas in Northeastern New Mexico - Soil Sci. Soc. of America, 1960

A Study of Alteration of Tertiary and Recent Basaltic Lavas in Northeastern New Mexico - AAAS (Southwestern Section), 1960.

A Study of Alteration of Basalts in Northeastern New Mexico - Soil Sci. Soc. of America, 1962 (Also Published)

A Thin Section Study of Soils from the Papaloapan Basin, Veracruz, Mexico - Soil Sci. Soc. of America, 1963. (Also Published)

Mineral Transformations Occurring in a Soil Developing from Granite in Llano County, Texas - AAAS (Southwestern Section), 1964. (Paper presented by graduate student. Applicant is junior author of paper)

A Genetic Study of Two Soils Developed on Granite in Llano County, Texas - Soil Sci. Soc. of America, 1964. (Paper presented by graduate student. Applicant is junior author of paper)

A Micromorphological Study of Two Soils Developed on Granite in Llano County, Texas - Soil Sci. Soc. of America, 1964. (Also Published)

Mr. Cecil Ayers, Professor of Agronomy

B.S. 1936 Texas Technological College - Agronomy

M.S. 1944 Texas Technological College - Agronomy

Graduate Study, Minnesota University (major part of degree requirements completed) - Genetics

Registered Plant Breeder, (Texas).

Mr. Ayers completed the major portion of the requirements for the Ph.D. degree in Genetics and Plant Breeding at the University of Minnesota. He is well trained in this area, with special background in seed technology. His primary research interests are concerned with factors influencing the quality of seed from the crop breeding through the harvesting, processing and planting operations.

He is a recognized authority on seed quality, seed treatments, and factors which influence crop quality. He was chosen for the Minnie Stevens Piper Foundation Award, 1962, for outstanding scholarly and academic achievement.

He is a registered plant breeder in Texas.

He has taught at Texas Technological College since 1942 and has directed many graduate students for their M.S. degree work during this period.

Theses Directed

The Effect of Population Density on Certain Agronomic and Morphological Characteristics of Cotton; James Fowler, 1966.

Effect of Seed Treatments on Emergence of Sorghums; Jimmy Barber, 1967.

Heterotic Effects of Dwarf A Lines in Hybrid Sudangrass; Leon Clement, 1967.

Papers Presented at Meetings and Conferences

"Crops Judging, Grading, and Identification Contests", Agronomy Journal, 45, (1953): 424-431.

Effects of Visible Adverse Quality Factors on the Germination of Seed - Presented at January, 1968, Texas Cert. Seed Growers, Inc.

Publications and Creative Activities

"Johnson Grass Eradication", The Progressive Farmer (May, 1945)

"Suggestions for Training Crops Judging Teams for the Annual Texas Technological College Vocational Agriculture Judging Contests", Texas Technological College Bulletin (August, 1948): 22 pp.

Mr. Cecil Ayers (continued)

"Suggestions for Selecting, Preparing, Exhibiting and Judging Field Crops, Fruits and Vegetables", Texas Technological College Bulletin (August, 1948): 26 pp.

"Crops Judging, Grading, and Identification Contests", Agronomy Journal, 45 (1953): 565-566.

"The Effects of Certain Plant Growth Stimulants Used as Seed Treatments of the Yield of Cotton and a Grain Sorghum", Texas Journal of Science, 4 (1953): 424-431.

"Suggestions for Training Vocational Agriculture Crops Judging Teams," Texas Technological College Bulletin (January, 1954): 24pp.

"Johnson Grass Eradication on the South Plains of Texas", Texas Technological College Bulletin (February, 1954): 16 pp. (with A.W. Young and A. H. Leidigh)

"Farm Crops Identification, Grading, and Judging for High School Students", Texas Technological College Bulletin (January, 1961): 24 pp.

"Small Grain Research . . . In Step with Demands of Industry", West Texas Today, 47 (July, 1966): 6,12.

Dr. Clark Harvey, Professor of Agronomy

B.S. 1939 West Texas State University - Agriculture
 B.S. 1940 Texas A & M University - Agronomy
 M.S. 1949 Iowa State University - Agronomy and Plant Physiology
 Ph.D. 1950 Iowa State University - Agronomy and Plant Physiology

Dr. Harvey has his Ph.D. in agronomy and many years of experience in both research and teaching. He has been employed under the Cooperative Agreement with the Texas Agricultural Experiment Station in recent years, with one-half of his time devoted to teaching. He has published articles in professional journals and in the reports of the experiment station.

His major research activities have dealt with cropping systems, herbicides, plant growth regulators and soybean adaptation studies for the Southern States. Dr. Harvey has directed many M.S. research programs and is well qualified to direct the research of the doctoral candidates.

In September and October 1964 Dr. Harvey attended a special training course in the use of radio-active isotopes at the Oakridge Laboratories in Tennessee and is qualified for handling these materials in agronomic research. He has used these materials in studying root development of selected plant species.

Dr. Harvey's major interests include the biogrowth regulators both herbicides and stimulants, soybeans and cotton. His background in crop physiology and chemistry provides necessary tools for these studies. He has taught at Texas Technological College since 1954.

Thesis Studies Directed

Use of Radio-Phosphorus in Measuring Root Growth of Sorghums; Jerry W. McClure, 1962.

Evaluation of Sweetness and its Inheritance in Selected Lines of Sudan-grass, Forage Sorghum and Grain Sorghum Using a Hand Refractometer; Davey Noel Weaver, 1963.

Response of Cotton Grown on the South Plains of Texas to Four Levels of Boron and to Magnesium, with and without Nitrogen, Phosphorus and Potassium; Delmar L. Daniel, 1963.

The Effect of Timing of a Single Summer Irrigation on Yield and Fiber Properties of Four Stormproof Cotton Varieties of Different Maturity; Billy C. Gunter, 1966.

The Effect of Pigweed on the Yield of Irrigated Grain Sorghum; Joe Lee Pafford, 1966.

Dr. Clark Harvey (continued)

The Evaluation of Cotoran, Caparol and G.S. 14260 in Varying Rates as Useful Herbicides in a Cotton-Grain Sorghum Rotation; Norman W. Hopper, 1967.

The Effect of 2,3,5, Triiodobenzoic (TIBA) Acid on Sorghum; David Mayo, 1968.

Papers Presented at Meetings and Conferences

Pafford, Joe and Clark Harvey. The Effect of Pigweed on the Yield of Irrigated Grain Sorghum. Proc. Southern Weed Conf. 1967, p. 36.

Harvey, Clark and Allen Wiese. The Use of Propazine for Weed Control in Grain Sorghum. Paper presented at Southern Weed Conference, New Orleans, 1967.

Harvey, Clark. The Use of Sewage Effluent for Production of Agricultural Crops. Paper presented at the West Texas Water Conference, Lubbock, Texas. 1966.

Harvey, Clark. Mode of Action of Herbicides in Weed Control. Agricultural Chemicals Conference. 1966.

Harvey, Clark. The Use of Growth Regulators in Soybean Production. Agricultural Chemical Conference. 1968.

Publications

Experiments with Guar in Texas. Texas Agricultural Experiment Station Circular 126, June, 1950, pp. 1-7. (Co-author: L. W. Brooks)

Bur-Clover and Related Species at the Brazos River Valley Laboratory. Texas Agricultural Experiment Station Progress Report No. 1278, September, 1950, pp. 1-3. (Co-authors: V.E. Schember and R. C. Potts)

Winter Annual Legumes, Brazos River Valley Laboratory, 1949-1950. Texas Agricultural Experiment Station Progress Report No. 1282, October, 1950, p. 1. (Co-author: R. C. Potts)

Crimson Clover Variety Test on Lufkin Fine Sandy Loam at College Station. Texas Agricultural Experiment Station Progress Report No. 1295, November, 1950, pp. 1-3. (Co-author: R. C. Potts)

"Interactions in Grass - Legume Plantings," Iowa State College Journal of Science, Vol. 25 (March, 1951), pp. 242-43.

"Berseem Clover Shows Promise in Southern Texas Experiments," What's New in Crops and Soils, Vol. 3, No. 7 (April, 1951), p. 31.

Dr. Clark Harvey (continued)

"Bokhara Clover - Weed or Wonder Clover - It's Madrid," Southern Seedsman, Vol. 14, No. 10 (October, 1951), pp. 19-21.

"Alfalfa, Like Trefoil, Wins Texas Favor," Southern Seedsman, Vol. 15 (September, 1952), p. 18.

"Birdsfoot Trefoil," Progressive Farmer, Vol. 67 (October, 1952), p. 92B.

Dryland Crop Rotations on the Southern High Plains of Texas, Texas Agricultural Experiment Station, Miscellaneous Publication No. 544 (November, 1961). 11 pp. (with Don L. Jones and C. E. Fisher)

"Use of Radio-Phosphorus in Measuring Root Growth of Sorghums," Agronomy Journal, 54 (1962): 457-459 (with Jerry W. McClure)

Irrigated Rotations on the South Plains of Texas, Texas Agricultural Experiment Station, Miscellaneous Publication No. 711 (April, 1964). 10 pp. (with Harvey J. Walker, Eli L. Whiteley, and B. W. Hipp).

Use of Sewage Effluent for Production of Agricultural Crops, Report No. 9, Texas Water Development Board. December 1965.

Dr. A. W. Young, Professor of Agronomy and Chairman, Department of Agronomy

B.S. 1929 Iowa State University - Animal Husbandry
 M.S. 1930 Iowa State University - Soil Fertility
 Ph.D. 1932 Iowa State University - Soil Microbiology

Dr. Young has many years of teaching and research experience. Trained in soil science with special interests in soil bacteriology and soil fertility, he has developed curricula, directed research programs of graduate students and carried out research projects over a wide range of agronomic problems.

His specific research interests deal with problems related to soil microbiology and soil fertility. He has directed research problems in these and other areas. During recent years much of his time and efforts have been directed towards organization, staffing and developing courses and curricula for the disciplines and developing training procedures for new staff members as teachers and research workers in the department. He has taught at Texas Technological College since 1935.

During his thirty-three years at Texas Technological College he has had wide experience with formulating and writing federal and international rules and regulations covering the production, processing and distribution of pure seed.

Theses Directed

Barley Investigations on the Southern High Plains of Texas with Particular Emphasis on the Production of Malting Barley; Darrell Dorr Morey, 1938.

A Comparison of the Neubauer, Cunninghamella, and Winogradsky Methods for Estimating the Availability of Soil Nutrients of Some Typical High Plains Soils; Spencer P. Whippo, 1939.

Comparative Herbicidal Value of Selected Chemicals for the Eradication of Johnson Grass on the South Plains of Texas; Joe E. Cole, 1951.

The Effect of Cropping and Erosion on the Content of Organic Matter in Certain Soil Types of West Texas; Earl Burnett, 1949.

The Effect of Certain Dust Type Seed Protectants on Germination and Seedling-Development of Certain Sorghums; James D. Abbott, 1948.

The Toxic Effect of Certain 2,4Dichlorophenoxy Acetic Acid Derivatives and Other Selected Herbicides on Yucca glauca in West Texas; Judd Morrow, 1948.

The Effects of Certain Plant Growth Stimulants as Seed Treatments on the Germination and Yield of Cotton and a Grain Sorghum; Cecil I. Ayers, 1944.

Dr. A. W. Young (continued)

The Relationship of Date of Harvest to Malting Quality of Barley Grown in West Texas; H. James Kern, 1941.

Seed Certification, Its Development and Application; Paul Raymond Revier, 1959.

The Correlation of Soil Test Values with Cotton and Grain Sorghum Yield Response to Nitrogen and Phosphorus on the Southern High Plains of Texas; Joe Tackett Ritchie, 1961.

An Evaluation of Selected Bioassay Techniques for Determining Low Concentrations of Trifluralin in Soils; Joe Floyd Duncan, 1967.

Publications

Ayers, Cecil I. and A. W. Young. 1953. The Effects of Certain Plant Growth Stimulants Used as Seed Treatments on the Yield of Cotton and a Grain Sorghum. Texas Journal of Science 5:424-31.

Ward, Coleman Y. and A. W. Young. 1960. Effect of Inert Coatings on the Germination and Seedling Growth of Cotton. Agron. Jour. 52: 362.

Hessler, L.E. H.C. Lane and A.W. Young. 1959. Cotton Fiber Development Studies at Suboptimum Temperatures. Agron. Jour. 51:125-128.

Young, A. W. 1951. Fifty Years of Arable Soils in Texas. Proc. 24th Annual Meeting of the Tex. Agr. Workers Assoc. pp. 21-23.

Young, A.W. 1951. Fifty Years of Grain Crops in Texas. Proc. 24th Annual Meeting of the Tex. Agr. Workers Assoc. pp. 35-40.

Young, A.W. and Jack Bond. 1953. Anhydrous Ammonia Studies on Medium Textured Soils in West Texas. Tex. Jour. of Sci. 5:391-94.

Ayers, Cecil I., A. H. Leidigh, and A. W. Young. 1954. Johnson Grass Eradication on the South Plains of Texas. Bull. of Tex. Tech. Coll., 16 pp.

Duncan, J. F., A. W. Young, and H. L. Lewis. 1968. Evaluation of Selected Bioassay Techniques for Detecting Low Concentrations of Trifluralin in Soils. (Submitted for Publication Weeds, Weed Society of America.)

Revier, Paul and A. W. Young. 1962. Seed Field Inspectors Handbook, Printed by Texas State Department of Agriculture.

Young, A. W. 1962. Feeding Value of Selected Forage Sorghum Hybrids. Amer. Soc. Agronomy, Program 1962 Annual Meetings (Abstract)

Dr. A. W. Young (continued)

- Davis, Glenn G. and A. W. Young. 1966. "Influence of Organic Matter and Vegetational Growth on Selected Physical Properties of a Relocated Playa Lakebed Soil". 53rd Ann. Meeting of So. Agr. Workers, p. 86. (Abstract)
- Young, A. W. 1941. Significance of Different Methods of Harvesting Cotton. Proc. 14th Ann. Meeting of Texas Agr. Workers Assoc. pp. 159.
- Young, A. W. 1942. Recent Investigations in Sugar Beet Production. 15th Annual Meeting of the Texas Agr. Workers Assoc. pp. 103-108.
- Valliant, James C. and A. W. Young. 1965. Yield and Cotton Quality as Affected by Mechanical Topping on the Texas High Plains. Proc. 62nd Annual Meeting So. Agr. Workers, pp. 53 (Abstract)

Papers and Popular Articles

- Young, A. W. 1954. Pathological Standards for Certified Seed. Thirty-sixth Report of the Internat. Crop Imp. Assoc. pp. 34-36.
- Young, A. W. and B. L. Allen. 1963. Soil Science-Laboratory Manual. Texas Tech. College.
- Young, A. W. 1966. Aids in Training Land Judging Teams. (Mimeographed) Texas Tech. College.
- Young, A. W. 1961. What Seedgrowers Should Do. Crops and Soils. Vol. 13, No. 4, pp. 12-13.
- Young, A. W. 1961. Seed Certification in the United States. FAO World Seed Campaign News. No. 13. pp. 2-3.
- Young, A. W. 1961. What is Your Image of Seed Certification. The Internat. Crop. Imp. Assoc. Skipper. (Mimeographed)
- Young, A. W. 1946. Mechanization of Sugar Beet Production. The Farm Family, Vol. 2, No. 9, p. 6.
- Young, A. W. 1946. Stubble Mulch Tillage. The Farm Family, Vol. 2, No. 10, p. 6.
- Young, A. W. 1946. From Pocket Knife to Self-Propelled Combines. The Farm Family, Vol. 2, No. 11, p. 7.
- Young, A. W. 1946. Weed Control by Flame Cultivators. The Farm Family, Vol. 3, No. 1, p. 7.
- Young, A. W. 1946. Construction of Water Conservation Structures. The Farm Family, Vol. 3, No. 3, p. 8.

Dr. A. W. Young (continued)

Young, A. W. 1946. How Does Crop Spacing Affect Yields. The Farm Family, Vol. 4, No. 5, p. 11.

Young, A. W. 1947. Killing Mesquite with Machines. The Farm Family, Vol. 3, No. 11, pp. 4-5.

Young, A. W. 1947. The Story of Stormproof Cotton. The Farm Family, Vol. 4, No. 7, pp. 10-11.

Young, A. W. 1947. Making Pumped Irrigation Pay its Way. The Farm Family, Vol. 3, No. 12, p. 11.

Young, A. W. 1947. Developing a West Texas Irrigation Well. The Farm Family, Vol. 4, No. 3, pp. 10-11.

Young, A. W. 1947. How Often Should We Irrigate. The Farm Family, Vol. 4, No. 4, pp. 10-11.

Young, A. W. 1948. Evaporation Losses in Irrigation. The Farm Family, Vol. 4, No. 9, pp. 10-11.

Dr. Eugene A. Coleman, Associate Professor of Agronomy

B.S. 1960 Texas Technological College - Agronomy (Ag. Science)
 M.S. Purdue University - Genetics
 Ph.D. 1964 Purdue University - Genetics and Physiology

Dr. Coleman taught one year at this institution following completion of his Ph.D. degree at Purdue University in 1964. He then accepted employment in the agricultural chemical industry where he served in the technical services division working largely with experiment station personnel and with research workers and the technical staff in private research organizations in most of the southern states. He accepted, again, employment with Texas Technological College in September, 1967.

Dr. Coleman's fields of special interest include cytoplasmic identification of genotypes in legumes, electrophoretic and immunological comparisons of root proteins of plants as influenced by variations in ecological factors and plant responses to fertilizer applications and moisture variations. Dr. Coleman is highly trained and capable of directing research for the doctoral candidates.

During his undergraduate period he worked on a part-time basis for the Agricultural Experiment Station. As a part of this experience he has had more than ten years of research experience. His two years experience with the chemical industry has given him an invaluable insight into problems of the agricultural industry. He is expected to make many valuable contributions to research findings in the agronomic field. He has been approved by the Texas Agricultural Experiment Station to participate under the Cooperative Agreement between that organization and Texas Technological College.

Publications

Coleman, E. A., R. J. Bula, and R. L. Davis, "Electrophoretic and Immunological Comparisons of Soluble Root Proteins of Medicago sativa L. Genotypes in the Cold Hardened and Non-Hardened Condition," Plant Physiology, Vol. 41, No. 10, Dec. 1966, pp. 1681-1685.

Coleman, E. A. "Uterotrophic Activity in Lotus corniculatus L." Crop Science, Vol. 5, No. 3, 1966, pp. 276-277.

Papers Presented

Retention of Anhydrous Ammonia by Soils and Resulting Distribution Patterns, J. F. Parr and E. A. Coleman, Texas Plant Food Educational Society - Southern Great Plains Agronomy Symposium, 1967.

Practical Problems in the Use of Phosphorus, E. A. Coleman, Proceedings of West Texas Plant Food Conference, Phosphorus Symposium, 1967.

Mr. Chester C. Jaynes, Associate Professor of Agronomy

B.S. 1949 Texas Technological College - Horticulture

M.S. 1957 Texas Technological College - Agronomy

Mr. Jaynes has been on the staff in the Department of Agronomy since 1951. He has been employed for one-half time research with the Texas Agricultural Experiment Station and one-half time teaching with Texas Technological College since the establishment of the Cooperative Research Agreement between Texas A&M University and Texas Technological College.

Mr. Jaynes' assignment in both teaching and research has dealt primarily with forages and pasture crops. He has had considerable experience in the use of radioactive isotopes in the study of root development and competitive characteristics of grass species.

Mr. Jaynes has proven to be a dedicated and capable researcher as well as an effective teacher.

Theses Directed

Root Development of Plains Bristlegrass; Gary W. Mathis, 1963.

Grass Roots Measured by P^{32} and Soil Block; Russell Dean Pettit, 1965.

Four Native Species of Grass and Their Competitive Effects; Francis Marion Rouquette, Jr., 1967.

Publications

"Root Development of Plains Bristlegrass as Measured by Soil Placement of Radiophosphorus," Journal of Range Management, 18 (1965): 30-32 (with Gerald W. Thomas and Gary W. Mathis.)

"Fertilization of Midland Bermudagrass Pasture" - Chester C. Jaynes and Robert C. Albin. (Mimeograph publication).

"Midland Bermudagrass on the South Plains" - Agronomy Report No. 1, Reports on Agricultural Industry, Texas Technological College. Chester C. Jaynes and John Henry Baumgardner.

"Improved Grasses for West Texas" - Reports on Agricultural Industry, Vol. 1, No. 2, Texas Technological College. Chester C. Jaynes and John R. Hunter.

Papers Presented at Meetings and Conferences

The Extent of Root Development of Plains Bristlegrass (Setaria leucopila) as Measured by Soil Placement of Radiophosphorus - AAAS Meeting, Texas Tech, April 1, 1964.

Vegetational Changes in Root plowed and Reseeded Brush Infested Plots on the Southern High Plains - AAAS Meeting, Texas Tech, April 1, 1964.

Dr. William F. Bennett, Associate Professor of Agronomy

B.S. 1950 Oklahoma State University - Agronomy
 M.S. 1952 Iowa State University - Soil Fertility
 Ph.D. 1958 Iowa State University - Soil Fertility (Economics and
 Plant Physiology - minor)

Dr. Bennett is particularly well trained in soil fertility and testing. He has vast research and administrative experience in the agronomic industry, having served as Chief Agronomist and Vice President, Western Ammonia Corporation, and as Director of Agricultural Services with Elcor Chemical Company. Prior to his industrial employment, he served as Soil Chemist at Texas A&M University, where he was responsible for statewide soil testing. In this capacity, he worked closely with both research and extension personnel. He is nationally recognized as an authority in the field of soil fertility, and is expected to make valuable research contributions to the soils research program at Texas Technological College.

Publications

Scientific Journals

N. P. & K. Content of the Corn Leaf and Grain as Related to N Fertilization and Yield. SSSA Proc. 17:252-254, 1953. (Senior author; co-authors were Drs. Stanford and Dumenil).

Effect of Nitrogen on Phosphorus Absorption by Corn. Agron. Jour. 54:437-442, 1962. (Senior Author; co-authors were Drs. Pesek and Hanway).

Texas Agricultural Progress Articles (A publication of Texas A&M University)

Soil Tests and Fertilizer - Profits. 5:3-4, Jan.-Feb., 1959.

Apply Lime Where Needed. 8:21-22, March-April, 1962.

Salinity Testing Added to Laboratory Services. 8:27-28, Sept.-Oct., 1962.

Economics of Fertilizer Use. 8:33-35, Nov.-Dec., 1962.

Texas A&M University Extension Service Bulletins

Fertilizers and Their Use. B-167.

Know Your Fertilizers. MP-572.

Lime for Texas Soils. M-575

Poultry Manure-Value, Sales, Application. MP-516 (Co-Author with Beanblossom and Miller).

Dr. William F. Bennett (continued)

Texas A&M University Extension Service Leaflets

General Fertilizer Recommendations. L-220-L-228.
Published yearly for each of 9 major Land Resource Areas.

Understanding Soil Tests.

Understanding Soil and Water Salinity Tests.

Iron Chlorosis. L-435

Fertilizer Conversion Tables. L-165

Growing Plants in Water. L-203

There have been other Extension Service publications for which a complete list is not conveniently available, however, such a listing can be obtained.

Chapters in Books

Fertilizer Use on Grain Sorghum. In Changing Patterns in Fertilizer Use. L. B. Nelson. SSSA, 1967. (Co-author with Dr. Billy Tucker).

Anhydrous Ammonia on Grain Sorghum. In Anhydrous Ammonia Agronomy Workshop Publication, AAI, 1966. (Senior author. Co-author was Dr. Billy Tucker).

Company Publications

Thio-Vite - A New Liquid Fertilizer. Technical Bulletin 101A. 1966. Elcor.

Sol-U-Sul. Technical Bulletin, 101B. 1967. Elcor.

Annual Reports of Results of Demonstrations. Western Ammonia Corporation. Mimeo Repts. 1964-1966.

Miscellaneous

Numerous popular articles were prepared for farm magazines including Farm Journal, Progressive Farmer, Farmer Stockman and Irrigation Age. Numerous articles were also prepared for trade magazines such as Agricultural Nitrogen News and Fertilizer Solutions News.

Miscellaneous outlines, mimeograph series and similar types of materials have been prepared for training of County Agents, fertilizer dealers and others.

Dr. Raymond E. Meyer, Assistant Professor of Agronomy

B.S. 1959 Kansas State University - Technical Agronomy

Ph.D. 1963 Oklahoma State University - Soil Physics

Dr. Meyer has taught at Texas Technological College since 1965. Prior to accepting the position at this institution he was employed as a researcher in soil physics at the U. S. Department of Agriculture -- Agricultural Research Laboratory at Starkville, Mississippi.

He is especially interested in research dealing with the osmotic stresses related to absorption, translocation and distribution of herbicidal chemicals in plants, light variables, and their influence on photosyntheses in crop plants, plant stand geometry and light interception as influencing net photosyntheses, herbicide movement in soils, soil physical conditions and their influence on plant development.

He is an effective teacher and highly trained research scientist in soil physics. He is capable of contributing effectively to teaching and research at the doctoral level.

Theses Directed

Plant Physiology (In progress at time of resignation); Willard Weeks (Mississippi State), 1965.

Herbicide . . . in Soils; Larry S. Price, 1968.

Publications and Creative Activities

- 1961 Basley, E., G. W. Todd, R. E. Meyer. Effects of Osmotic Stress on Absorption, Translocation, and Distribution of 2,4 - Dichlorophenoxy-acetic Acid in Bean Plants. Plant Physiology 36(5):573.
- 1963 Meyer, R.E. Effects of Osmotic Stress on Certain Metabolic Components of Wheat Ph.D. Dissertation, Oklahoma State University, University Microfilms, 64-8933.
- 1964 Meyer, R.E., J. R. Gingrich. Osmotic Stress: Effects of its Application to a portion of Wheat Root Systems. Science 144(3625):1463.
- 1965 Baker, D. N., R. E. Meyer. The Light Variable and its Effect on Net Photosynthesis in Cotton. Proc. 19th Cotton Physiology Conference, p. 57.
- 1966 Baker, D. N., R. E. Meyer. The Influence of Stand Geometry on Light Interception and Net Photosynthesis in Cotton. Crop Science 6 (1):15.
- 1965 Meyer, R. E., J. R. Gingrich. Osmotic Stress Effects on Wheat Using a Split-root Solution Culture System. Agron. J. 58(4):377. 1966.

Dr. Raymond E. Meyer (continued)

1965 Baker, D. N., R. E. Meyer. The Light Variable and its Effect on Net Photosynthesis in Cotton. Pro. 19th Cotton Physiology Conference, p. 57.

1965 Baker, D. N., R. E. Meyer. The Influence of Stand Geometry on Light Interception and Net Photosynthesis in Cotton. Presented to Climatology Division, A.S.A., Kansas City, Nov. 1964. Accepted for publication by Crop Science

A Proposal to Offer a
Doctor of Philosophy Degree
in
Park Administration

Department of Park Administration, Horticulture, and Entomology

Texas Technological College

June, 1968

DESCRIPTION OF PROPOSED PROGRAM

1. What is the title and nature of the proposed program?

Development of a Ph.D. Degree in the field of Park Administration.

2. What degree or certificate is contemplated, if any?

Doctor of Philosophy
Major: Park Administration

3. List the course offerings to comprise the program. Which of these courses will be new ones?

The proposed program is designed to provide graduate level understanding of natural resource management and the economic, political and social factors associated with it. The interdisciplinary approach reflects the need for broadly-trained park and recreation administrators and other specialists who have the expertise to deal with both management and policy issues in the field of natural resources.

Park Administration will be basic to the program, but candidates are expected to complete course work in supporting disciplines of Agricultural Economics, Agronomy, Biology, Government, History, Sociology, Anthropology, Business Administration or Economics. In association with his guidance committee, the student will develop a study plan which is tailored to his individual needs. A sample course outline at the doctoral level is shown under #4.

A. Existing Graduate Courses

Listed below are several courses from which the doctoral candidate can select in developing his study plan. College departments contributing to the program offer additional graduate level courses which can serve to broaden the student's knowledge of a particular discipline of his choice.

P.A. 531	Park Administration Research (3)
P.A. 540	Advanced Park Administration. (4:3:2).
P.A. 541	Advanced Park Planning and Design. (4:1:8).
P.A. 542	Advanced Park Planning and Design. (4:1:8).
P.A. 631	Thesis (3).
Ag. Eco. 532	Agriculture and Public Policy. (3:3:0).
Ag. Eco. 538	Natural Resource Economics. (3:3:0).
Ag. Eco. 638	Seminar in Agricultural Policies and Public Welfare. (3:3:0).
R.M. 521	Contemporary Resource Use. (2:2:0).
R.M. 531	Synecology. (3:3:0).
R.M. 536	Ecology of Arid Lands. (3:3:0).
Geology 531	Advanced Physical Geology. (3:3:0).
Geology 532	Advanced Historical Geology. (3:3:0).
Geology 538	Geology of the Southwest. (3:3:0).
Geology 5312	Economic Geology. (3:2:3).

Govt. 531	Readings and Research. (3:3:0).
Govt. 534	Seminar in Public Administration. (3:3:0).
Govt. 535	Seminar in Public Law. (3:3:0).
Govt. 537	Seminar in Comparative Governments and Institutions. (3:3:0).
Hist. 531	Proseminar in Texas History. (3:3:0).
Hist. 5313	Studies in United States Social and Cultural History. (3:3:0).
Hist. 633	Seminar in Southwestern History. (3:3:0).
Soc. 531	Sociological Theory. (3:3:0).
Soc. 536	Seminar in Sociological Uses of Historical Data. (3:3:0).
Soc. 5335	Society and Its Institutions. (3:3:0).
Econ. 531	Economic Research. (3:3:0).
Econ. 5331	Individual Study in Economics. (3:3:0).
Econ. 5335	Human Geography. (3:3:0).
Fin. 531	Current Financial Problems. (3:3:0).
Fin. 5331	Business Finance. (3:3:0).
Fin. 5341	Current Business Financial Practices. (3:3:0).
Fin. 5351	Financial Policies of Business. (3:3:0).
B. Law 5331	Legal Environment of Business. (3:3:0).
Mgt. 536	Management of Human Resources. (3:3:0).
Mgt. 5352	Administrative Organization. (3:3:0).

B. New Courses for Doctoral Program:

The Department has currently several course offerings in its Master's degree program as shown in section 3A of this outline. To develop a broadly-based doctoral program, several additional Park Administration courses will be required. The following courses, with a short description of each, are considered to provide adequate coverage to attain this objective. It is understood that the curriculum will be expanded or adjusted as the need arises.

P.A. 532. Research Methods in Park Administration. (3:3:0). Research methodology in urban planning and development of physical resources, management procedures, and user preferences in predicting recreation demand. Multivariate data analysis techniques and their application to research.

P.A. 533. Federal Assistance Programs for Parks and Recreation. (3:3:0). Federal assistance programs most commonly available to state and local, public and private park and recreation agencies and organizations in the planning, development and administration and parks and recreational programs.

P.A. 534. State, Regional, County and Metropolitan Park Systems of the Country. (3:3:0). A review of the more important systems of the country. Organization, administration, and operation to meet current and future needs for park resources.

P.A. 535. National Park System and other Federal Agencies Administering Federal Lands. (3:3:0).
Organization, administration, and operation of Federal Lands and National Park Systems by various federal agencies. Future needs for federal programs.

P.A. 536. Interpretation Techniques. (3:3:0).
Utilization of historical, ethnic, and cultural aspects of a region to interpret park and recreation resources in order to maximize social benefits in planning and resource usage.

P.A. 537. Resource Ecology. (3:3:0).
Discussion of theoretical principles and practices in the maintenance and preservation of recreational regions. Conservation and protection of watersheds, management of wildlife, recreational use practices considering total ecology.

P.A. 538. Watershed Management. (3:3:0).
Principles and objectives of watershed management; watershed analysis (techniques, sources of information, collection of field data); interdisciplinary cooperation in watershed planning; recreation; fisheries, wildlife; forest and grazing lands; water supply and pollution abatement; public health; history of planning organizations; watershed programs; administration and policies, strategies in river basin planning, experiences in water resources planning; plan formulation and implementation.

P.A. 539. Public Policy in Natural Resource Administration. (3:3:0).
Criteria for allocating public funds for natural resource development (federal and state levels); basic principles of organizational planning; alternative types of administrative structures; public participation in formulating resource management decisions; public education and resource management; administrative problems; budgetary considerations. (To be taught by staff member of Business Administration with joint appointment in the Department of Park Administration.)

P.A. 5331. Legal Principles of Natural Resource Development. (3:3:0).
Review of natural resource laws at federal and state levels; legal practices relative to contracts, property, business organizations; water rights insurance, liability, Workman's Compensation; minimum wage laws; labor unions; governmental regulation of land use (zoning, eminent domain); professional ethics of park administrator. (Could be divided into two courses; to be taught by staff member of Law School or Business Law with joint appointment in the Department of Park Administration.)

P.A. 5332. Graduate Seminar on Contemporary Natural Resource Problems. (3:3:0).
Interdisciplinary graduate student seminar dealing with diverse problems in natural resource; outdoor recreation planning; land

use planning; river basin development; pollution control; preservation of natural beauty; public purposes in river basin development; arid land development for recreational purposes; etc.

P.A. 543. Analysis and Interpretation of Aerial Photographs. (4:3:3).

Elements of photogrammetry (review of techniques and principles); techniques of photo interpretation; stereoscopic analysis of aerial photographs; physical environment evaluation (soils, land use, drainage, etc.); application of photo interpretation to preliminary planning of park, recreation, and related facilities.

P.A. 731. Research. (3)

An outline of a specific problem of specialized study not included in regular course work. May be repeated for credit with approval of major professor.

P.A. 831. Doctor's Dissertation. (3)

Registration required at least four times.

4. Outline a semester-by-semester curriculum for the proposed program.

The basic requirements for a doctor of philosophy degree in Park Administration are the same as those set forth in the Graduate School Bulletin #6, June, 1967.

Depending on the decision of the student's guidance committee, doctoral candidates are expected to take between 60 and 80 hours of course work beyond the bachelor's degree. A minimum of 3 years of residence will be required.

As a general rule, only those students will be considered for admission to the Ph.D. program who have completed, or who are about to complete, the Master's degree program. On this basis, the doctoral program in Park Administration would therefore extend over at least two years. As an example, a Ph.D. degree candidate who chooses to select a general minor could develop the following plan of course work:

<u>Fall Semester:</u>		<u>Spring Semester:</u>		<u>Summer:</u>	
<u>Course</u>	<u>Credit Hours</u>	<u>Course</u>	<u>Credit Hours</u>	<u>Course</u>	<u>Hours</u>
P.A. 532	3	P.A. 539	3	<u>1st Term</u>	
P.A. 533	3	P.A. 5331	3	P.A. 731	3
Govt. 531	3	Mgt. 5352	3	Fin. 5341	3
Mgt. 536	3	Govt. 537	3	<u>2nd Term</u>	
				Govt. 535	3
				Fin. 5351	3
	12		12		12

Fall Semester:		Spring Semester:		Summer:	
<u>Course</u>	<u>Credit Hours</u>	<u>Course</u>	<u>Credit Hours</u>	<u>Course</u>	<u>Credit Hours</u>
P.A. 5332	3	P.A. 539	3	P.A. 831	3
P.A. 537	3	P.A. 831	3		
P.A. 831	3	Fin. 5331	3		
Fin. 531	<u>3</u>	Govt. 534	<u>3</u>	P.A. 831	<u>3</u>
	12		12		6

Summary:

P.A. 36 hours
 Govt. 12 hours
 Fin. 12 hours
 Mgt. 6 hours

Total 66 hours

5. What special requirements will be enforced? If a graduate degree is contemplated, is a thesis required? If not, what will be substituted?
- A. A reading knowledge of two foreign languages, or superior competence in one foreign language, or a reading knowledge in one foreign language with at least six hours of course work in an approved non-allied field will be required.
- B. A dissertation would be required. P.A. 831 must be taken four times for credit.
6. Has the proposed program, or one similar to it, been offered in this institution at any time prior to this request?
- A similar program has not been offered at this institution at any time prior to this request.
7. How many similar programs are offered elsewhere in Texas, and where?
- A similar program to the one proposed here is not offered at any other Texas institution. Other Ph.D. degree programs similar to this one are offered at fewer than five other universities in the United States. These programs have usually been derived from either schools of forestry, resource management, or ornamental horticulture.
8. Justify the need for the proposed program. Be precise.

The massive and extensive developments of the last two decades that have so altered our social and economic modes of living have had similar effect on parks and recreation. Recreation, once looked upon as a diversion from tedious work, has become a way of

life. The use of leisure time has become a major concern of philosopher-statesmen. The need for a much more thoroughly educated administrator of recreation resource development is the concern of present day administrators and educators alike. Items of development in support of these concerns follow:

Educational Development. In a recent survey conducted by the American Institute of Park Executives (now the National Recreation and Park Association), there were 99 curricula in recreation and/or park administration. These curricula are at Michigan State University, Sacramento State College, University of California at Davis, University of Massachusetts and Texas Technological College. A new Department of Recreation and Parks was created at Texas A&M University in February, 1966.

R. E. Geyer, Executive Secretary, Commission on Education in Agriculture and Natural Resources, National Academy of Sciences, noted that enrollment is limited in curricula in outdoor recreation and parks management because most of the curricula are recently developed. Enrollment figures from 12 colleges offer an indication of growth that is taking place. Enrollment during the 1966-1967 academic year was approximately 300, about 3 times the enrollment for the 1964-65 academic year.

Professional education for leaders of park administration has developed along three major subject matter areas: (1) forestry, wildlife, and related natural resources; (2) park planning and design; and (3) organized recreation curricula in park administration has developed along the first two lines. The goals of the curricula vary; however, there is some unity. Basically, the present broad goals could be summarized as follows:

- A. To inculcate students with a knowledge of natural physical recreation resources and how to develop them for human enjoyment without destroying their natural ecology in the face of rapidly mounting attendance. (Commonly called education in outdoor recreation in contrast to urban recreation.)
- B. To develop an understanding of the role of recreation in the life of man; to provide urban recreation facilities and programs in demonstration of the foregoing relationship.

The development of new undergraduate curricula in Park Administration and advanced academic training in this field has evolved for several reasons.

During the 1950's most of the persons employed for the management of natural resources being used for recreation had most of their education oriented to the management of resources and little, if any, orientation to the broad philosophy of recreation. Conversely,

those persons who had received degrees in recreation, although exposed to the philosophy of recreation, and trained in skills for face to face recreation leadership, had virtually no understanding of the management of natural resources.

Modification of curricula in the mid-1950's and the establishment of new programs now being offered resulted in graduates with better balanced preparation in park management and recreation administration.

Development of Recreation Concepts. During the same decade, new municipal and county departments were established with combined park and recreation functions, and many of the separate park and recreation departments were consolidated. These changes emphasized the need for more personnel evaluation and education in both the management of natural resources and the administration of recreation programs and facilities. Recreation for the aged, outdoor education, and group or family camping were on the upswing. Graduates of parks and recreation curricula were moving into administrative positions rapidly after graduation. The demand for professionally trained park and recreation personnel to fill administrative positions in newly created year-round park and recreation departments increased.

By 1960, increased leisure and recreation was stressed by educators, researchers, and the federal government. The Congressionally appointed committee known as the Outdoor Recreation Resource Review Commission rendered its twenty-seven volume report in 1962. This report had a profound effect upon all those involved in recreation in the federal, state, county and urban governments, drawing attention to the fact that recreation was a common function of parks, forests, wildlife and conservation efforts and of the reservoirs of the Army Engineers and the Bureau of Reclamation. Recreation as a primary ingredient of daily living was given further emphasis by the creation of the Bureau of Outdoor Recreation in the Department of the Interior. Under its direction there is presently being prepared a nationwide plan of recreation, which involves all agencies of federal, state, and local governments, as well as private agencies and enterprises that have anything to do with parks and recreation.

Professional organizations were quick to respond to new concepts by seeking out the common element of recreation in a number of diverse organizations involved in one or another phase of recreation. In 1965, five of the larger and more influential national organizations merged into the National Recreation and Park Association with more of the lesser organizations joining since the original merger.

The recreation concept became all inclusive and full blown.

Development of Legislation. Landmark legislation was passed by the 88th Congress which had a significant impact on the park

administration profession. The Land and Water Conservation Fund Act, providing matching fund grants-in-aid to the state and its political subdivisions for planning, acquiring, and developing outdoor recreation areas, gave evidence of the impact of park and recreation development. A second measure, the Wilderness Act, gave permanent wilderness status to 9-1/2 million acres in National Forests and allowed future wilderness additions to the National Parks, Forests, and Wildlife Refuges. The Economic Opportunity Act provided a Job Corps of young men to work in public natural resource areas to develop themselves for careers. Other legislation included the Water Resources Planning Act, and the establishment of the Department of Housing and Urban Development.

The enactment of this legislation is further evidence of the impact of the park and recreation movement on the nation. Unprecedented interest and the need for action in the provision of adequate parks and recreation opportunities are being voiced by the top leaders of this country.

Federal action and emphasis on recreation has significantly increased since 1961. The wider scope of federal interest is evident in the fact that there are now 72 federal agencies which conduct recreation functions serving the general public. Coordination is accomplished through the Bureau of Outdoor Recreation. There are three presidential committees, nine cabinet level departments and eleven independent agencies or commissions.

Increased emphasis on recreation has been noted by state agencies' programs. These agencies include the state park, forest, fish and wildlife, historic preservation, highway and other agencies at the state level. A total outdoor park and recreation attendance was 232 million in 1955 and 421 million in 1964. Total capital operations and maintenance expenditures were \$87 million in 1955 and \$247 million in 1964.

Increasing public interest in acquiring potential park and recreation areas was evident from 1960 to 1966 when eleven states approved bond issues totaling \$856.9 million for outdoor recreation. The park and recreation movement has come of age, and the profession now, more than ever before, has a responsibility to demonstrate its maturity and ability to lead the movement.

Texas has made significant strides in the improvement of the recreation environment not only for its residents but also for tourists. Improvements have been made through increases in budgets of parks and recreation departments, of metropolitan areas, small cities, and increases in the budget of the Texas Parks and Wildlife Department. These increased budgets in the past few years have allowed these administering agencies to improve the quality and quantity of services through land acquisition programs and more efficient management of physical facilities through the employment

of highly qualified personnel. A \$75 million bond issue was recently approved by the citizens of the state for the acquisition of additional state park lands.

The Kind of Administrator Needed as Reflected by these PhD requirements. The primary objectives of the proposed curriculum for a PhD degree program at Texas Technological College would be unique; however, the objectives of the program would be similar to the objectives outlined by Southern Illinois University in Park Management. The objectives included are:

- A. An understanding of the urban complex, including function of recreation areas and facilities as a part of total city development and the demand of an urban population in a changing society.
- B. An understanding of ecology, including conservation and the relationship of man to his natural environment.
- C. An understanding of the concept of multiple use and maximum utilization of natural resources.
- D. An understanding of the inter-relatedness and uniqueness, including technical contributions, of disciplines related to outdoor recreation, e.g. forestry, parks, recreation, wildlife management, etc.
- E. An understanding of the philosophic orientation to the role of recreation, and specifically outdoor recreation, in the life of man, including the impact of leisure and technology on the recreational habits of people; the values of recreation to man; the responsibilities of all levels of public agencies, municipal to federal, semi-public agencies, and private enterprises; and, the need for educating for leisure, specifically the skills of outdoor recreation and the use of natural resources and facilities.
- F. An understanding of the basic principles of area and facility design and layout as they relate to resource management and recreational use.
- G. An understanding of the management of people in outdoor settings and activities.
- H. An understanding of programming for outdoor recreation, including functions of organized and unorganized activity; types of activities and the requirements (areas and facilities, leadership, finance, etc.) of each; interpretive services, etc.

In summary, the graduate of these curricula is prepared to be an administrator of recreation resource development manipulating the resources

of natural physical environment including its ecology, human resources of talent in many fields, financial resources -- all to the benefit of mankind. This is truly a multi-discipline degree program using subject matter extensively from related disciplines on the campus.

9. Is the proposed program approved by the institution's Board of Directors? When?

This proposal is submitted for approval by the Board of Directors of Texas Technological College.

PROJECTED ENROLLMENT

10. Project the enrollment for the proposed program for the next five years. Explain the basis for this projection.

At the present time this department has seven full-time graduate students working towards a M.S. in Park Administration. Five full-time graduate students are minoring in Park Administration. A number of recent graduates have gone to other institutions to continue working on advanced degrees in Park Administration or related fields.

Based upon the number of our own graduates who have expressed a desire to continue work on an advanced degree; in addition to the requests from students of other institutions, the number of students who would be enrolled for the next five years would be:

<u>Year</u>	<u>Aggregate Enrollment</u>
1	3-5
2	10
3	10-12
4	13-15
5	15-20

11. Explain the likely source of students who will enroll in this program. (Will they come from existing programs or will they be attracted to the institution to enroll in the proposed program?)

The likely source of students who would enroll in this program should be those who are attracted to the institution to enroll in this specific program and those who would enroll from the existing Master's program.

FACULTY

12. Give the number of persons presently on the faculty who will be most directly involved in the proposed program. List for each his name, rank, highest degree, and present course load.

<u>Name</u>	<u>Rank</u>	<u>Highest Degree</u>	<u>Present Course Load</u>
Elo J. Urbanovsky	Professor, Chairman	B.S.	Administration, 6 hrs.
James W. Kitchen	Associate Professor	Ph.D.	Administration, 9 hrs.
Emmanuel T. VanNierop	Associate Professor	Ph.D.	Research, 9 hrs.
Charles E. Doell	Visiting Professor	M.S.	Research

13. Calculate the present student-faculty ratio in the subject matter field(s) or department(s) in which the proposed program will be offered. (Divide full-time equivalent students by full-time equivalent faculty.)

The fall 1967 student-faculty ratio in the Department of Park Administration, Horticulture, and Entomology was 17.75 to 1.0.

14. Project the need for new faculty required for the proposed program for the next five years. If the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done.

It is not assumed that this program can or will be absorbed by the present faculty. It is anticipated that an addition of three full-time faculty members will be required during the initial development of the program.

15. Will acquisition of new faculty for the program require an unusual outlay of funds or unique recruiting techniques? Explain in detail.

The acquisition of new faculty for this program will not require an unusual outlay of funds. One of the difficulties of implementing this program will be to find qualified personnel whose academic backgrounds and experience will make a significant contribution to the program.

16. Describe the involvement of the faculty, present and projected, in research, extension, correspondence, and other activities. Are teaching loads of faculty reduced if they engage in these activities?

Graduate level courses in park administration are currently taught by E. J. Urbanovsky, J. W. Kitchen, and Emmanuel T. Van Nierop. Charles E. Doell, a visiting professor, serves as consultant on research projects and as student advisor. Currently, supporting courses for graduate work in park administration are in the areas of range management, agricultural economics, economics, and history. Use of courses in these related areas gives the multi-discipline aspects of this program its uniqueness. Outstanding teachers and researchers in these related areas greatly strengthen and extend the depth and scope of this degree program. Teaching loads are reduced in order that the current research programs and graduate

classes can be given adequate direction.

It is proposed that new faculty members will be employed not only as teaching staff, but also as principal investigators on research projects. Thus, teaching loads would be assigned in proportion to the time actually spent on teaching and conducting research, respectively.

LIBRARY

17. Are present library holdings in relevant fields adequate now to begin the proposed program? How will the library have to be improved to meet program needs in the next four years? (Refer to the need for books, periodicals, reference books, primary source materials, etc.)

Library holdings in the field of park administration, government, economics, and related fields are adequate to begin the proposed program. There would be need to obtain additional documents and to keep library holdings updated.

18. Are there libraries of other institutions which are being used or can be used by faculty and students in the proposed program? Explain in detail.

With few exceptions the nature of the proposed program does not necessarily demand the use of other libraries. The state archives in Austin can be used by faculty members. This program will not demand unique or unusual documents. This proposal would require published current studies in metropolitan, regional, and state planning, which are usually sent as complimentary copies. In a few cases charges are made for these studies. Inter-library loans are also available.

19. Estimate the total expenditure for the last two complete fiscal years for library acquisitions in the departments or subject matter fields in which the proposed program will be offered, or in fields which are closely related to the proposed program.

Library Acquisitions in Park Administration:

1965-1966 Annual Department Allocation	\$ 500.00
1966-1967 Annual Department Allocation	500.00
1965-1966 Amount Expended from Projects	420.25
1966-1967 Amount Expended from Projects	<u>314.76</u>

\$1,735.01

20. Project library expenditures to be budgeted annually for the next five years to meet the need of this program.

<u>Year</u>	<u>Anticipated Expenditures:</u>
1	\$1,000.00
2	\$1,500.00
3	\$2,000.00
4	\$2,500.00
5	\$3,000.00

FACILITIES AND EQUIPMENT

21. Describe existing facilities that are available for the proposed program. Describe the present utilization of these facilities. What new facilities will be needed in the near future? Specify what special facilities and equipment will be needed and estimate their cost. From what sources do you anticipate obtaining needed facilities and equipment?

Present:

This department occupies the first floor of the Agricultural Plant Science Building. Included in these facilities are office spaces for the faculty, laboratory space, lecture rooms and store-rooms. Additional space has been made available to the department in a 30 x 80 foot single story structure of which a portion is used as a classroom and a portion is divided in study carels for graduate students. The space and facilities are adequate for the existing graduate and undergraduate program in Park Administration in this department.

Additional Facilities:

Should this proposal be developed, additional facilities would be required. Plans to include classroom and laboratory space in an addition to the plant sicence building will be used, and office space for three new professors, study carels for the anticipated increase in the number of graduate students and storage space would be needed.

Office Space

3 professors - 10 x 12 360 square feet

Study Carels for Graduate Students

15 Graduate Students - 5' x 8'	600 square feet
1 Secretary - Space 5' x 8'	40 square feet
1 Graduate Seminar Room & Classroom	
Space - 30' x 40'	1,200 square feet
1 Sound Proof Room for Recording	
& Developing Slide Presentations	
Space - 10' x 10'	100 square feet
Storage space - 5' x 10'	50 square feet
Total Specialized Space Required	<u>2,350 square feet</u>

Additional funds for the increased activity level of the Department of Park Administration would be required in the over-all maintenance, equipment, and travel budget. It is estimated that for three additional teaching personnel and one secretary, approximately \$1,500 would be needed to finance increased needs in maintenance, equipment and travel.

Additional office furniture and office equipment for additional personnel would be required. Estimated cost -- \$2,500 -- from capital outlay.

Anticipated sources for expenditure would be requested from annual departmental budget request.

ADMINISTRATION OF PROPOSED PROGRAM

22. Will the proposed program affect the administrative structure of the institution? If yes, describe how. In what department, division, school or college will the proposed program be administered? If the program is to have inter-departmental or inter-unit administration, explain in detail.

This program should not affect the administrative structure of the institution. New faculty members will become members of the graduate faculty. Policies and regulations in effect regarding administration of the graduate program would be continued under the present Graduate School.

This department has historically conducted interdisciplinary research programs. Research has been conducted cooperatively with the Departments of History, Biology, Economics, and Finance at Texas Tech, the Department of Sociology at Southern Methodist University, and the Department of Statistics at Texas Christian University. The synergistic effects of cooperative research has yielded more significant results than those of independent research efforts.

It is anticipated that this department will continue to conduct research on an interdisciplinary basis.

ACCREDITATION

23. Describe the requirements for accreditation, if program is eligible to be accredited. What is the name of the accrediting agency? What will be initial costs of accreditation and subsequent annual costs to maintain it? Identify basic criteria for accreditation and describe how these will be met.

At the present time there is no national accreditation for Park Administration; however, the National Recreation and Park Association in conjunction with several branch organizations is developing criteria for accreditation for universities offering similar programs.

SUPPORTING FIELDS

24. Evaluate the subject matter fields at your institution which may be considered as necessary, or valuable, in support of the proposed program. Will these fields need improvement? If so, how, to what extent, and at what cost? Be specific.

Supporting academic fields to park administration include history, economics, sociology, biology, range management, and agricultural economics. Current doctoral programs exist in history, sufficient graduate level courses are available in the above fields to support minor programs at the graduate level. Doubtlessly, any improvement in the above fields would strengthen the proposed program.

COST OF PROPOSED PROGRAM

25. Estimate the initial (first year) costs of the proposed program. How much of this will be absorbed in current budgets and how much will be newly appropriated money? Will Federal or private financial assistance be sought? If yes, explain in detail.

<u>Initial First Year Costs</u>	<u>Item No.</u>	<u>Institutional</u>	<u>Other Financial Assistance</u>
3 Assoc. Prof. - 9 months	1	\$42,000.00	
3 Assoc. Prof. - 3 months			\$14,000.00
Secretary III	2		4,740.00
Library	3		500.00
Office Space, Teaching and Associated Space - 2,350 square feet	4	---	
Office Equipment	5	2,500.00	
Maintenance, Equipment, & Travel	6	---	1,500.00
TOTAL		\$44,500.00	\$20,740.00

The above budget request indicated three additional Associate Professors. A portion of funds indicated from "other financial assistance" are available from existing research projects. Other research projects can be developed to support summer employment, secretarial assistance, library acquisitions, and maintenance, equipment and travel. Subject to approval of this program at the State Coordinating Board Level, an application can be submitted

for supporting funds through National Defense Graduate Fellowship under Title IV of the National Defense Education Act of 1958, as amended.

26. Estimate the annual cost of the program for the three years following its first year. (Use current formulas in arriving at your estimate.) Explain the rationale for your estimate.

<u>Year</u>	<u>Institutional</u>	<u>Other Financial Assistance</u>
1	\$44,500.00	\$20,740.00
2	\$48,000.00	\$23,000.00
3	\$50,000.00	\$25,500.00
4	\$55,000.00	\$30,000.00

Considering annual increase in salary, expenditures for library acquisitions and increased budget allowances for maintenance, equipment and travel, the above funds should enable the proposed program to operate efficiently and effectively for three consecutive years following the initial year of operation.

27. Departmental Costs

- A. Show the departmental operating expenditures for the last two fiscal years for the departments which will contribute significantly to the support of the proposed program.

Park Administration, Horticulture and Entomology:

1966-67

Staff Salaries	\$99,147.00
Maintenance, Equipment & Travel	19,705.00
Greenhouses	9,400.00
State Park Research	25,000.00
Other Research Grants	<u>94,755.00</u>
Total	<u>\$248,007.00</u>

1967-1968

Staff Salaries	\$143,398.00
Maintenance, Equipment & Travel	15,200.00
Greenhouses	8,780.00
State Park Research	37,000.00
Other Research Grants	<u>8,100.00</u>
	<u>\$212,478.00</u>

- B. How will the proposed program affect the allocation or distribution of these funds?

The proposed program should not alter the distribution of these funds. The Department of Park Administration has contributed to the support of these two Departments in the form of assistantships for graduate students who have majored in history and economics and minored in park administration. Under current projects two history majors, three economics majors, and one agricultural economics major are being supported through assistantships allocated by the Department of Park Administration.

28. What additional funds for research will be needed to support the proposed program? Explain.

Additional support in the form of allowances for secretarial assistance, travel for graduate students and professors, publications, and graduate assistantships will be needed.

29. How many graduate assistantships are considered desirable to begin the program? Estimate the amount of funds required for these assistantships over the next four years. What sources are available to support these assistantships? Will student aid funds be needed for undergraduates other than those provided for all undergraduates? Explain in detail.

Five assistantships would be desirable initially to begin the program. These should be at the minimum rate of \$3,200.00 for twelve months. Estimated funds required for assistantships are:

<u>Year</u>	<u>Number of Graduate Students</u>	<u>Funds Required</u>
1	5	\$16,000.00
2	10	\$32,000.00
3	12	\$38,400.00
4	15	\$48,000.00

Sources of funds proposed to support the assistantships are from sources which are supporting current research projects. These include cities in the state, private industry, and government agencies.

Research funds for Park Administration have been made available by the Coordinating Board through the Continuing Education Program and Community Services Program of Title I of the Higher Education Act of 1965. The Legislature has made funds available yearly through line item approval for research on State Parks and Texas History since 1962.

Other sources of funds could include the Ford Foundation, the many programs of Housing and Urban Development and through National Defense Graduate Fellowships.

Student aid funds which are currently provided should meet the needs of undergraduate students.

30. Add any comments which would be helpful to the Coordinating Board in evaluating this program request.

This is a new and developing subject matter discipline. Texas Technological College, through experience, is in a unique position to develop new approaches to this degree program through a judicious curriculum program that draws on the best talents in a multi-discipline approach rather than through a highly specialized curriculum.

ATTACHMENT #1
to
A Proposal to Offer a
Doctor of Philosophy Degree
in
Park Administration

FACULTY BIOGRAPHICAL DATA AND PUBLICATIONS

Mr. E. J. Urbanovsky, Chairman, Professor of Park Administration.

B. S. 1931 A&M University

Departmental administration, research and teaching are academic responsibilities. Additional responsibilities include College Landscape Architect and Campus Planner. Developed a dynamic research program in Park Administration.

Publications:

Research on Parks; neighborhood, city, county, state and national parks

Texas State Parks - A General Report of Functions, Space Requirements, Financial Considerations and Policies for the Future. Director of project. Aug. 1963. p. 1-34.

A.S.L.A. Bulletin subjects 1965

Papers on planning, park organization, educational requirements, professional requirements, ethics, 1959-1963.

"The Social and Economic Impact of Open Space on the Land It Serves" paper given at Brighton, England to the 3rd World Congress of the Institute of Park and Recreation Administration. May 1967.

The Sociological and Economic Impact of Urban Parks in Dallas, Texas. Director of project. 1966.

Directed Thesis:

Charles Eatherly 1963

Grady Manis 1963

Paul Schlimper 1963

Elner Thompson 1963

Pat Bardley 1963

Dan Kamp 1966

Alden Sievers 1967

Don Stence 1967

Dr. James W. Kitchen, Associate Professor

B. S. 1951 Texas Technological College

M. S. 1952 Texas Technological College

Ph.D. 1964 A&M University

Three-fourths time teaching in the department for nine months. Assists in the development and administration of research and teaching programs. Additional responsibility as Director of Grounds Maintenance Department.

Publications:

Some Factors Affecting the Oxalate Content of Spinach. Proceedings of Southern Agricultural Workers. p. 216. (J. W. Kitchen with E. E. Burns) 1964.

Calcium Oxalate Content of Spinach (*Spinacia Oleracea* L.) Proceedings American Society Horticultural Science 84:441. (J. W. Kitchen, E. E. Burns, and B. A. Perry.) 1964.

The Effects of Light Temperature and Ionic Balance on Oxalate Formation in Spinach. Proceedings American Society Horticultural Science. 85:465. (J. W. Kitchen, E. E. Burns, and R. Langston.) 1964.

The Effect of Maturity on the Oxalate Content of Spinach (*Spinacia oleracea* L.) Paper presented at 1964 National Institute of Food Technologists in April by Dr. Burns. Journal of Food Science. 30: 589-593. (J. W. Kitchen and E. E. Burns) 1965.

The Effect of Nutrition of the Plant on the Oxalate Content of Spinach (*Spinacia oleracea* L.) Abstracts of American Society of Horticultural Science. 61st Annual Meeting, No. 117. (J. W. Kitchen and E. E. Burns) 1964

Sanitary Landfill Development. Parks and Recreation, p. 205. (J. W. Kitchen and D. Kamp) 1965.

Sanitary Landfills, Proceedings 19th Texas Turfgrass Conference p. 39-42.

Sewage Effluent for Recreational Use. Park Maintenance, p. 18. February, 1966. (J. W. Kitchen and M. Z. Carter).

Sewage Effluent for Turf Irrigation, Proceedings 1966 Technical Conference of the Sprinkler Irrigation Association. 1966.

Land Values Adjacent to an Urban Neighborhood Park. Land Economics. p. 357. (J. W. Kitchen and W. S. Hendon) 1967.

The Social and Economic Impact of Urban Parks in Dallas, Texas in 1966. Research Report. 1967 (W. S. Hendon, J. W. Kitchen and B. M. Pringle).

Dallas Parks Survey - A Pilot Project Proceedings - Southwest Park and Recreation Training Institute. 1967. p. 87. (W. S. Hendon, J. W. Kitchen and B. M. Pringle).

Dr. Emmanuel T. Van Nierop, Associate Professor.

Diploma	1947	State College of Tropical Agriculture, Netherlands
B. S.	1953	University of Toronto
M. S.	1956	State College of Forestry, Syracuse, New York
Ph.D.	1963	Cornell University

Dr. Van Nierop joined the staff in February, 1968. Full-time teaching and will assist in developing research program in Resource Management with special emphasis in hydrology and ecology.

Publications:

"Evaluation of Several Organic Mulches on a Sandy Loam Forest Nursery Soil", J. of Forestry, Vol. 56, No. 1, 1958.

"A County Natural Resources Survey-Water Resources", Rep. of the New York State Joint Legislative Com. on Revision of the Conservation Law, Leg. Doc., No. 11, pp. 32-46 (1961)

"Maple River Watershed", pamphlet published by Maple River Watershed Steering Com. (1965)

"Inventory-Private Outdoor Recreation Enterprises in Michigan", Summary of an Inventory completed by the State Soil Conservation Com. 1965.

"Water-Our Heritage" pamphlet prepared for public distribution at the request of State Committee for Michigan Week. 1966.

"Should We Fish and Boat on Our Reservoirs", The Conservationist, N. Y. Conservation Department, Vol. 20, No. 2, 1965.

Potential for Outdoor Recreation Development in Clinton County, Michigan
 Authored several chapters and served as member of Advisory Committee. A pilot project under direction of Soil Conservation Service, U. S. Department of Agriculture with assistance from Cooperative Extension Service, Michigan State University Clinton County Soil Conservation District and other public agencies, 1967.

Potential for Outdoor Recreation Development in Ottawa County, Michigan

Idem.

"A Framework for the Multiple Use of Municipal Water Supply Areas", Water Resources Center, Ithaca, N. Y. 1967.

"Water Pollution - A National Disgrace", Prepared for Water Resources Com., Michigan Soil Conservation Districts.

"Catapult or Catalyst - Role of the Cooperative Extension Service in Michigan's Watershed Program", Paper presented at Extension Summer School in Natural Resources, Boyne Falls, Mich. July 25-29, 1967.

Mr. C. E. Doell, Visiting Professor

B. S. 1916 University of Minnesota
 M. S. 1917 University of Minnesota
 Diploma 1922 Alexander Hamilton

Part-time teaching of Graduate Students. Supt. Emeritus of the Minneapolis Park Department. Brings a good practical and working knowledge of park supervision to the students.

Publications:

Parks, Vo. II, Chapter IX, (L. H. Weir, editor). New York: A. S. Barnes & Co. 1928.

Public Park Policies. (Co-authored with Paul J. Thompson) Privately published 1932.

A Brief History of Parks and Recreation in the United States. (Co-authored with Gerald B. Fitzgerald), Chicago: Athletic Institute, 1954.

Elements of Park and Recreation Administration, Minneapolis: Burgess Publishing Company, 1963.

"The Preservation of Lakes and Streams in Metropolitan Areas" paper presented at annual national convention, the Izaak Walton League, Minneapolis, June 17, 1960.

"Programming for Leisure in the Sixties" Presented at 33rd annual conference of Illinois Association of Park Districts and the Illinois Recreation Association, Joliet, Oct. 19, 1960. Published in Illinois Parks, Nov-Dec. 1960.

Park and Recreation Studies for Cities and Villages in Minnesota since 1960 in collaboration with Robert Corwine of Minneapolis and others: Columbia Heights, 1960; Hopkins, 1960, St. Louis Park, 1960; Robbinsdale, 1960; Bloomington, 1963; St. Cloud, 1963.

Texas State Parks - A General Report of Functions, Space Requirements, Financial Considerations and Policies for the Future. Consultant for the research project conducted at Texas Technological College in cooperation with the Texas State Parks Board, August 1963.

Atlanta Metropolitan Region Comprehensive Plan, Nature Preserve Report, Recreation Consultant to Atlanta, Ga. Region Metropolitan Planning Commission, Dec. 1963.

"Broadening the Horizon" Keynote address, Southwest District Conference, National Recreation Association, Dallas, Texas, April 1, 1964.

"A Continuing Education Course in Parks and Recreation as a Government Recreation Service", An approach to a unified national service at all levels of government. Prepared at request of American Institute of Park Executives, Dec. 1964.

Mr. C. E. Doell (Continued)

"Recreation as a Resource", paper prepared from lectures at Michigan State Univ. and Texas Technological College. 1966.

The Sociological and Economic Impact of Urban Parks in Dallas, Texas
Consultant to Texas Technological College, research group, 1966.

"Elements of Land Acquisition", paper prepared from lectures at Michigan State Univ. Fall 1966.

Texas State Parkway Study. Consultant to the Texas Technological College research group, 1967.

Five Year Plan: Hennepin County (Minn.) Park Reserve District. Consultant to the District since 1959.

"The Significance of Real Estate Appraisals in Determining Price of Park Reserve Lands", Consultant to Hennepin County Park Reserve District (Minnesota). Paper prepared to clarify the District's position in acquisition of park properties.

C O P Y

Board Minutes
December 14, 1968
Attachment No. 42
Account No. 391-1398

U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION
Washington, D.C. 20210

AIR MAIL

Dr. Grover E. Murray
President
Texas Technological College
Lubbock, Texas 79409

Nov. 8, 1968

Dear Dr. Murray:

I am pleased to forward to you the enclosed three copies of the Notice of Grant Award (No. 91-46-69-21) in support of the Doctoral Dissertation of Albert S. King, entitled "Managerial Relations with Disadvantaged Work Groups: Supervisory Expectations of the Underprivileged Worker."

As indicated in Howard Rosen's letter to you of September 19, 1968, this grant was originally approved subject to clarification of some provisional elements concerning measures to be used in the study. Mr. King has responded in a statement forwarded to us on October 15, 1968, by his sponsor, Dr. Carlton J. Whitehead. In addition, Dr. Robert Foster of our Social Psychology Group has discussed the statement with Mr. King, and it is our understanding in approving this grant award that Mr. King has agreed that the criteria measure to be used in the study will be independent of supervisors' evaluations. This, of course, is to prevent the criteria from being contaminated by bias resulting from advance information given supervisors that an employee has high potential. A copy of this letter is being sent to Dr. Whitehead and Mr. King. If Mr. King has any further questions on this matter, he might call Dr. Foster on Area Code 202/961-3015.

Please have the Notice of Grant Award signed by the proper official of the University and return two copies, with attachments, as soon as possible.

Sincerely yours,

/s/ W. H. Kolberg

William H. Kolberg
Associate Manpower Administrator

Enclosures

C O P Y

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A101

STANDARD FORM OF AGREEMENT BETWEEN
OWNER AND CONTRACTOR

where the basis of payment is a
STIPULATED SUM

AGREEMENT

made this 25th day of November in the year of Nineteen Hundred and Sixty-eight

BETWEEN the Board of Directors, Texas Technological College, Lubbock, Lubbock County, Texas, acting herein by and through Retha R. Martin, Lubbock, Lubbock County, Texas, Chairman of the Board of Directors hereinafter called----- the Owner, and

W. G. McMillan Construction Company, Inc. the Contractor.

The Owner and the Contractor agree as set forth below.

ARTICLE 1

THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda issued prior to execution of this Agreement and all Modifications issued subsequent thereto. These form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in Article 8.

ARTICLE 2

THE WORK

The Contractor shall perform all the Work required by the Contract Documents for

Broadway Entrance Marker - Phase 1
Texas Technological College
Lubbock, Texas

ARTICLE 7

FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor Thirty days after Substantial Completion of the Work unless otherwise stipulated in the Certificate of Substantial Completion, provided the Work has then been completed, the Contract fully performed, and a final Certificate for Payment has been issued by the Architect.

ARTICLE 8

MISCELLANEOUS PROVISIONS

8.1 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

8.2 The Contract Documents, which constitute the entire agreement between the Owner and the Contractor, are listed in Article 1 and, except for Modifications issued after execution of this Agreement, are enumerated as follows:

Bound Specifications dated September 1968 including

Instructions to Bidders

Proposal Form

General Conditions

Supplementary General Conditions

Technical Specifications - Divisions 0220, 0260, 0330, 0420, 0710 and 0910 and Addendum No. One dated September 23, 1968, Addendum No. Two dated September 25, 1968, and Addendum No. Three dated September 26, 1968.

Drawings as Follows:

Sheet 1 dated September, 1968

Sheets 2, 3, 4 & 5 (Attachments to Change Order No. 2) dated September 25, 1968

8.3 FINAL ACCEPTANCE OF THE WORK. When the Work is completed, the Contractor shall notify the Architect/Engineer in writing that the Work will be ready for final inspection on a definite date. Upon verification by the Architect/Engineer that the Work is ready for final inspection and acceptance, the Owner will within ten (10) calendar days make a final inspection and, when the Work is found acceptable under the Contract Documents and the Contract is fully performed, make a final payment to the Contractor.

It should be understood that for the contract sum of \$36,783.00, \$4,341.00 is included for labor and \$32,442.00 is included for materials.

This Agreement executed the day and year first written above.

OWNER Texas Technological College CONTRACTOR W. G. McMillan Construction
Co., Inc.

By /s/ Retha R. Martin BY /s/ W. G. McMillan, Jr.
Retha R. Martin, Chairman
Board of Directors

Attest:

/s/ J. Roy Wells
J. Roy Wells, Secretary

TEXAS TECHNOLOGICAL COLLEGE
Department of Psychology
Social and Rehabilitation Services
For the period September 1, 1968, through August 31, 1969

Individuals receiving traineeships and allowance for tuition and fees for the 1969 Spring Semester from Grant Funds (Account No. 391-1267). This list is a supplement to Attachment No. 10, Board Minutes, September 28, 1968.

<u>Name and Address</u>	<u>Level</u>	<u>Tuition and Fees 1969 Spring Semester</u>	<u>Stipend 4 Months(a)</u>
Mr. John Martin Beeson Huntsville, Texas	I	\$103.00	\$ 800.00
Mr. Ronald Ralph Hart 3011 - 20th Street Lubbock, Texas	I	103.00	800.00
Mr. Donald Moody Logan Lamesa, Texas	II	103.00	1,244.44

-
- (a) The stipend is to be paid from Grant Funds and will be distributed over the period February 1, 1969, through May 31, 1969, and payable in equal monthly installments.

Board Minutes
December 14, 1968
Attachment No. 45

A Proposal to Offer a
Bachelor of Science Degree
in
Wildlife Management

Department of Agronomy and Range Management
Texas Technological College

ADDENDUM

Since preparing the final draft of this proposal, the Department of Agronomy and Range Management has been formally separated into:

Department of Agronomy

Department of Range and Wildlife Management

This separation marks the continuing development of the range and wildlife management program at Texas Technological College. The degree submitted here for approval is still another extension of this growth and development.

Certain aspects of the degree proposal outlined here are thus superseded. Administrative duties, for example, will now be the automatic responsibility of the Chairman, Department of Range and Wildlife Management. Faculty, staff, and facilities related to the range-wildlife program will be administered by the new department. The departmental separation has in fact permitted a needed and desired emphasis on the vital program described in the following pages.

I. DESCRIPTION OF PROPOSED PROGRAM

1. What is the title and nature of the proposed program?

A Bachelor of Science Degree in Wildlife Management at Texas Technological College, Lubbock, Texas, is proposed. This degree program will fulfill the need for trained and certified graduates in the area of Wildlife Management and strengthen Texas Technological College's major objective: To develop excellence in programs relating to arid and semi-arid lands. The program is geared to the management and renewability of wildlife populations and their habitats.

2. What degree or certificate is contemplated, if any?

Bachelor of Science Major: Wildlife Management

3. List the course offerings to comprise the program. Which of these courses will be new ones?

Existing courses include:

RM 231 Introductory Wildlife (3:3:0)
 RM 430 Wildlife Problems (3)
 RM 431 Big Game Management (3:2:3)
 RM 433 Waterfowl and Wetland Ecology (3:2:3)
 RM 434 Upland Game Ecology (3:2:3)

New courses include:

Wildlife Seminar
 Wildlife Habitat Management
 Population Ecology

Supporting courses include:

RM 435 Range Improvement Practices (3:2:3)
 RM 438 Range Analysis and Planning (3:2:3)
 RM 332 Range Ecology (3:2:3)
 RM 337 Principles of Range Management (3:2:3)
 RM 333 Range Plants (3:2:3)
 Bot 334 Taxonomy of the Flowering Plants (3:2:3)
 Bot 331 Plant Physiology (3:2:3)
 Zoo 241 Comparative Vertebrate Anatomy (4:3:3)
 Zoo 333 Parasitology (3:2:3)
 Zoo 337 Ornithology (3:2:3)
 Zoo 437 Natural History of the Vertebrates (3:2:3)
 Bio 141 Botany (4:3:3)
 Bio 142 Zoology (4:3:3)
 Bio 333 Bio-ecology (3:2:3)

4. Outline a semester-by-semester curriculum for the proposed program.

An outline of the Wildlife Management curriculum for the program includes classwork which simultaneously meets and/or exceeds the respective minimum training requirements of both The Wildlife Society and The American Society of Range Management.

FRESHMAN YEAR-Uniform curriculum for all Agriculture studentsFall Semester

Ag. Ed. 111	The Ag. Industry	1
Agron. 131	Fund. of Agronomy	3
A. S. 131	Gen. Anim. Science	3
Biol. 141	Botany	4
Math 137	Intro. Math. Anal. or	
Math 133	Coll. Algebra	3
Eng. 131	Coll. Rhet.	3
P.E., Band, or Basic ROTC		<u>1</u>
		18

Spring Semester

Ag. Eco. 235	Fund. of Ag. Eco.	3
Chem. 141	Gen. Chem.	4
English 132	Coll. Rhet.	3
DI 131	Prin. of Dairy Ind.	3
Hort. 131	Prin. of Hort.	3
P.E., Band, or Basic ROTC		<u>1-2</u>
		17-18

SOPHOMORE YEAR

Zool. 142	Zoology	4
Govt. 231	Amer. Govt. Org.	3
Agron. 241	Soils	4
Chem. 142	Gen. Chem.	4
P.E., Band or Basic ROTC		<u>1-2</u>
		18-19

RM 231	Intro. Wildlife	3
Govt. 232	Amer. Govt. Fun.	3
RM 333	Range Plants	3
Bot. 334	Taxonomy	3
Chem. 341	Intro. Org. Chem.	4
P.E., Band or Basic ROTC		<u>1-2</u>
		17-18

JUNIOR YEAR

Hist. 231	Hist. of U.S. to 1877	3
RM 337	Prin. of Range Mgt.	3
Zool. 241	Compar. Anat.	4
Biol. 333	Bioecology	3
Math 131	Trigonometry	3
Elective		<u>2-3</u>
		18-19

Bot. 331	Plant Phys.	3
RM 332	Range Ecology	3
Hist. 232	Hist. of U.S. since 1877	3
Zool. 337	Gen. Ornithology	3
A.S. 336	Physiology	3
Elective		<u>2-3</u>
		17-18

SENIOR YEAR

RM 410	Seminar	1
Zool. 333	Parasitology	3
RM 430	Wildlife Problems	3
RM 435	Range Improvement	
RM 433	Waterfowl Ecology or Upland Game	3
Electives		<u>4-5</u>
		17-18

RM 439	Wildlife Habitat Mgt.	3
Ag. Eco. 341	Ag. Statistics	4
A.S. 337	Animal Diseases	3
Zool. 437	Nat. Hist. Vert.	3
Electives		<u>4-5</u>
		17-18

5. What special requirements will be enforced? If a graduate degree is contemplated, is a thesis required?

Special Requirements: Candidates for the Wildlife Management degree will meet professional and educational standards of The Wildlife Society. Additionally, all candidates will simultaneously fulfill the professional requirements of The American Society of Range Management. Graduates of this program will thus meet today's growing demand for natural resource managers.

6. Has the proposed program, or one similar to it, been offered in this institution at any time prior to this request?

No.

7. How many similar programs are offered elsewhere in Texas, and where?

One at Texas A&M University, College Station, Texas. However, the program considered here maintains focus on wildlife habitat. As such it welds the many facets of land-use, particularly in arid and semi-arid environments, into the emerging discipline of natural resource management. The program is unique and lacks duplication in Texas or educational systems elsewhere.

8. Justify the need for the proposed program.

The Coordinating Board of the Texas College and University System charged each of the state's leading institutions with development of a major role in education. The scope of these endeavors was to be inclusive of public service, general welfare, and, above all, of significance to the people of Texas. Texas Technological College met this challenge and on October 31, 1967, announced its International Center for Arid and Semi-arid Land Studies (ICASALS). The Wildlife Management program considered here proposes to fulfill a segment of this mission. This mandate is particularly appropriate for an institution located in a vast semi-arid region of the western United States. Its scope, however, is not necessarily limited to regional or even national problems; peoples of dry areas throughout the world look with increasing hope to the western world for solutions to many of their resource problems.

Discoveries and implementation of techniques for resource management have not kept pace with the needs of a burgeoning human population. Grazing, timber, watershed, and wildlife resources must often be integrated on a single, common-use area. Recreational needs contribute to the pressures for space. Competent and resourceful management personnel are needed to bear the responsibilities of meeting these commitments.

Specifically, the problem is one of habitat management. Our program will provide Texas and the world with graduates whose capabilities

embrace development of maximum wildlife populations for human enjoyment while maintaining or improving the vitality of the environment. The wildlife manager, then, must view the prairie or desert as an environment capable of sustaining both itself and useful populations of healthy animals. This requires assessment of the habitat's potential and a concomitant knowledge of the tools and techniques for measurement. The Wildlife Management program at Texas Technological College is designed to provide this training.

Enrollment data in recent years well reflect the interest in wildlife management among the student body at Texas Technological College. An introductory course, Wildlife Management, was first offered in 1961-62. Enrollment that year totaled 62 students. By 1965-66, 210 students enrolled - a 296% increase in five years. This trend is continuing; 250 students enrolled for this course in 1966-67 and 278 in 1967-68. Advanced courses showed similar increases in enrollment percentages. It is also important to note that as new wildlife courses were developed, enrollments did not diminish elsewhere in the range-wildlife curriculum.

The combination of factors outlined above stresses the need for a degree program in Wildlife Management. Recognition of Texas Technological College as a leading educational institution in Texas and the United States demands that programs making significant contributions terminate with bachelor's degrees. Moreover, professional recognition, job placement, and student achievement and recruitment are each enhanced when specific degrees are granted by the parent institution. The wildlife program at Texas Technological College warrants a Bachelor of Science Degree in Wildlife Management for its students.

9. Is the proposed program approved by the institution's Board of Directors? When?

II. PROJECTED ENROLLMENT

10. Project the enrollment for the proposed program for the next five years. Explain the basis for this projection.

The enrollment from an historical viewpoint has already been described in Section 8 of this proposal. Projected enrollments for Introductory Wildlife Management for the years 1968-69 through 1972-73 are as follows: 280, 285, 290, 300, and 300, respectively. Each advanced course would have an enrollment projected as follows for these same years: 22, 25, 28, 30, 30. These projections are based on the enrollment history of wildlife courses presently taught at Texas Technological College.

11. Explain the likely source of students who will enroll in this program. (Will they come from existing programs or will they be attracted to the institution to enroll in the proposed program?)

A Wildlife Management program at Texas Technological College will attract many students now leaving Texas for wildlife training elsewhere. It is not difficult to understand that students seek schools where a bachelor's degree in their field is granted, concomitant with the professional opportunities available following graduation. As proposed, a suitable description of the Wildlife Management curriculum in the Texas Technological College catalog will inform prospective students of the program's availability within Texas.

A degree program, geared to competence, maintains itself. National as well as state-wide recognition insures future enrollments. The ICASALS Program will proclaim additional recognition for a Wildlife Management program founded on arid-land ecology.

III. FACULTY

12. Give the number of persons presently on the faculty who will be most directly involved in the proposed program. List for each his name, rank, highest degree, and present course load.

NAME	RANK	HIGHEST DEGREE	PRESENT TEACHING LOAD - HRS.
Gerald W. Thomas	Prof. & Dean of Agriculture	Ph.D.	Admin.: 3
Thadis W. Box	Prof. & Director ICASALS	Ph.D.	Admin.: 3
Joseph L. Schuster	Assoc. Prof.	Ph.D.	Research: 6
Billie E. Dahl	Assoc. Prof.	Ph.D.	Research: 6
John R. Hunter	Assoc. Prof.	M.S.	12
Eric G. Bolen	Asst. Prof.	Ph.D.	Research: 6
Henry A. Wright	Asst. Prof.	Ph.D.	Research: 6
Donald A. Klebenow	Asst. Prof.	Ph.D.	Research: 6
Robert A. Darrow	Consulting Prof.	Ph.D.	-----
William J. Waldrip	Adjunct Prof.	Ph.D.	-----
Robert Gonzales	Consulting Prof.	Ph.D.	-----
Clarence Cottam	Adjunct Prof.	Ph.D.	-----
Caleb Glazener	Adjunct Prof.	M.S.	-----

13. Calculate the present student-faculty ratio in the subject matter field(s) or department(s) in which the proposed program will be offered. (Divide full-time equivalent students by full-time equivalent faculty.)

The fall 1967 student-faculty ratio in the Range Management Section of the Agronomy and Range Management Department was 27.3:1; the student credit hour load was 173 per full-time faculty.

14. Project the need for new faculty required for the proposed program for the next five years. If the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done.

Projected faculty requirements for the program will not exceed the normal expansion anticipated during the next five years. Teaching responsibilities for the wildlife program will be absorbed by the present staff. Drs. Bolen and Klebenow will assume the major portion of the advanced instruction, supported by Drs. Box, Schuster and Thomas. The introductory coursework will be divided among the staff each semester.

Absorption of the teaching load has largely been accomplished. Four new staff members have been added to the existing range-wildlife staff in the past 18 months. An additional one-half time equivalent was added in the fall of 1967. Selected courses will be taught on an alternate year basis; this allows maintenance of a full curriculum without additional staff requirements.

An additional Ph.D. will nonetheless be needed before 1972-73 to meet the projected enrollments of the existing range-wildlife program.

15. Will acquisition of new faculty for the program require an unusual outlay of funds or unique recruiting techniques? Explain in detail.

Acquisition of the additional staff member before 1972-73 will not require funding beyond that anticipated for normal expansion. Projected enrollments dictate additional staffing regardless of the wildlife program's future status. No unique recruiting techniques will be required to fill teaching positions.

16. Describe the involvement of the faculty, present and projected, in research, extension, correspondence, and other activities. Are teaching loads of faculty reduced if they engage in these activities?

Five of the present eight resident faculty members are actively engaged in research. With approximately one-half time for each of the faculty members devoted to research. At the present, there is no extension, correspondence, or other activities, except those for public service depending on the desires of the faculty members. Teaching loads of the faculty members are reduced in proportion to the time they are required to devote to research activities.

IV. LIBRARY

17. Are present library holdings in relevant fields adequate now to begin the proposed program? How will the library have to be improved to meet program needs in the next four years? (Refer to the need for books, periodicals, reference books, primary source materials, etc.).

Library facilities are adequate for a Wildlife Management program. The collections of the College's Library are intended to meet the research and teaching needs of faculty and students; about 850,000 documents are currently housed in an open stack, air-conditioned facility completed in 1962. These materials are commensurate with requirements for the degree program in Wildlife Management as well as those of supporting fields. The doctorate degree, for example, is offered in biology and master's degree in range management, park administration and other departments in the School of Agriculture. Additionally, the College's library is a regional depository for U. S. Government documents.

18. Are there libraries of other institutions which are being used or can be used by faculty and students in the proposed program? Explain in detail.

Because of fairly adequate library holdings no further library facilities are being used at the present time, except for occasional inter-library exchange of some materials not found in the Texas Technological College Library. There has been little difficulty in obtaining needed publications with inter-library exchanges of micro-films and publications.

19. Estimate the total expenditure for the last two complete fiscal years for library acquisitions in the departments or subject matter fields in which the proposed program will be offered, or in fields which are closely related to the proposed program.

It is estimated that the total expenditures for the last two complete fiscal years has been \$1,000 for library acquisitions in the subject matter fields related to range management. An equal amount is estimated for each of the fields of agronomy, plant physiology, animal science and agricultural economics. All are relevant fields to the field of range management.

20. Project library expenditures to be budgeted annually for the next five years to meet the need of this program.

Projected library expenditures budgeted for each of the next five years for the wildlife program are as follows: (Note: figures shown here represent costs for wildlife publications only and do not represent the overall departmental library budget):

1968-69:	\$300.00
1969-70:	\$325.00
1970-71:	\$350.00
1971-72:	\$375.00
1972-73:	\$400.00

V. FACILITIES AND EQUIPMENT

21. Describe existing facilities that are available for the proposed program. Describe the present utilization of these facilities. What new facilities will be needed in the near future? Specify what special facilities and equipment will be needed and estimate their cost. From what sources do you anticipate obtaining needed facilities and equipment?

Existing facilities for wildlife classes include:

- 6 classroom hours per semester for lectures
- 6 classroom hours per semester for laboratories

Additional facilities include the need for a wildlife autopsy laboratory and specimen room. Both will be located for the present in a temporary building and, later, as part of the Range-Wildlife wing proposed for the Plant Science Building. These facilities will be needed as part of the existing program's normal growth; hence, there will be no additional cost for space as a result of granting a specific degree in Wildlife Management.

Equipment needs (dissecting scopes, preservative materials, demonstration specimens, etc.) will also be obtained during the course of the existing program. Some items are already on hand and in use; specimen storage cases were purchased in 1967. Equipment not yet available will be obtained through (a) normal budget expenditures and (b) research grants. The last named source is already providing equipment; binoculars, a freezer, and other equipment has been purchased through grant monies.

VI. ADMINISTRATION OF PROPOSED PROGRAM

22. Will the proposed program affect the administrative structure of the institution? No. In what department, division, school or college will the proposed program be administered? If the program is to have inter-departmental or inter-unit administration, explain in detail.

The program will be administered in the present Agronomy and Range Management Department. It has been proposed to split the Agronomy and Range Management Department into individual departments. In this case the B.S. program in Wildlife Management will be offered in the Range and Wildlife Management Department. There will be no inter-departmental or inter-unit administration.

VII. ACCREDITATION

23. Describe the requirements for accreditation, if program is eligible to be accredited.

Degree accreditation will follow those standards set, respectively, by the Wildlife Society and The American Society of Range Management. Students presently electing the wildlife option already meet these standards (1968-69 catalog). There are and were no costs associated with accreditation by either of these societies.

Graduates under the program will be fully qualified wildlife biologists and range management scientists meeting the respective requirements of state, federal, and professional organizations.

24. Evaluate the subject matter fields at your institution which may be considered necessary, or valuable, in support of the proposed program. Will these fields need improvement? If so, how, to what extent, and at what cost? Be specific.

Supporting disciplines needed to meet all requirements specified in the curriculum (Section 4) and professional accreditation (Section 23) are already in existence at Texas Technological College; each is incorporated in the program. Major use is made of the staff and facilities of the (a) Biology Department, and (b) Animal Husbandry Department. Students take, for example, over 25 hours of coursework in biology. Interdepartmental coordination of curriculum materials is maintained.

IX. COSTS OF PROPOSED PROGRAM

25. Estimate the initial (first year) costs of the proposed program. How much of this will be absorbed in current budgets and how much will be newly appropriated money? Will federal or private financial assistance be sought? If yes, explain in detail.

The initial cost of the proposed degree program will not burden the existing and future budgets for the Range-Wildlife Section of the Department of Agronomy and Range Management. Present staffing, for example, is adequate with no future personnel requirements beyond that needed for normal growth. No newly appropriated monies are needed to initiate this proposal.

26. Estimate the annual cost of the program for the three years following the first year. (Use current formulas in arriving at your estimate.) Explain the rationale for your estimate.

The annual cost of the program for each of the three years following the first year are estimated as follows:

1969-70: \$ 500-750
 1970-71: \$ 750-1000
 1971-72: \$ 1000-1250

These estimates are based on projected maintenance costs. The proposed wildlife program is currently fully staffed and additional salaries are not required at this time.

27. Departmental Costs.

- A. Show the departmental operating expenditures for the last two fiscal years for the departments which will contribute significantly to the support of the proposed program.

Agronomy and Range Management expenditures for two preceeding fiscal years:

1965-66

Staff Salaries	\$120,613
Maintenance, Equipment and Travel	12,883
Agronomy Farm	<u>17,397</u>
TOTAL	\$150,893

1966-67

Staff Salaries	\$128,839
Maintenance, Equipment and Travel	13,550
Agronomy Farm	<u>16,764</u>
TOTAL	\$159,183

- B. Staffing has already been completed in response to enrollment growth experienced during the past five years. Hence, no changes in the allocation or distribution of departmental funds is anticipated.
28. What additional funds for research will be needed to support the proposed program? Explain.
- No additional research funds will be needed to support the wildlife program. Continued activities with research by staff members will in fact defray many salary and equipment expenses from the departmental budget.
29. How many graduate assistantships are considered desirable to begin the program?

This proposal requests an undergraduate degree in Wildlife Management. No graduate assistantships are considered in this proposal.

Will student aid funds be needed for undergraduates other than those provided for all undergraduates?

No.

30. Add any comments which would be helpful to the Coordinating Board in evaluating this program request.

At the present time, the wildlife program at Texas Technological College consists of a Range Management degree with student options in either (a) range management or (b) wildlife management. There is no Wildlife Management degree conferred to students completing the wildlife option. This proposal stresses that baccalaureate recognition be given to those students preparing for professional wildlife management careers.

The movement in the wildlife program at Texas Technological College has already increased to the point where students desire professional recognition in their degree program. Fully 25 percent of the current enrollment have selected the wildlife option; these students will immediately become candidates for the Wildlife Management degree specified in this proposal. Present and future recognition in the wildlife management field for students at Texas Technological College requires that such a degree be granted by this institution.

Attachments: January 18, 1969 (and/or February 8, 1969)

1. Memorandum of Agreement, The Jenkins Research Foundation; Account No. 391-3689; Mr. Cecil I. Ayers; Item H213.
2. Letter from Mr. Louis Levin; National Science Foundation; Summer Institute in Biology; Account No. 391-1243; Dr. Paul V. Prior, Item H189.
3. Supplement to contract with Pierce and Pierce, Houston, Architect for the Biology Facilities; Item H195.
4. U.S.A. vs. Texas Technological College, Parcel 8 Condemnation; Stipulation for Final Judgement; Item H195.
5. Change Order No. G-19 to the contract with J. J. Fritch, Business Administration Building; Item H244.
6. Gifts through Texas Technological College Foundation; \$19,442.35; Item H231.
- 6A. Gifts through Texas Technological College Foundation; \$129,761.50; Item H232.
7. Change Order No. 1 to the contract with Area Builders, Inc.; Texas Technological College Museum; Item H247.
8. Graduate Fellowships and/or Scholarships, Account No. 191-8010; Dr. L. L. Graves; Item H214.
9. Change Order No. 6 to the contract with H. A. Lott, Inc.; Biology Facilities; Item H243.
10. Contract with H. A. Lott, Inc.; Architecture and Art Facilities; Item H245.
11. Change Order No. 1 to the contract with H. A. Lott, Inc; Architecture and Art Facilities; Item H246.
12. Grant Agreement; Coordinating Board; Sub-Grant Number 69 830 510; Section 10(b) of Public Law 89-182; Dr. Vincent P. Luchsinger; Account No. 391-1380; Item H250.

MEMORANDUM OF AGREEMENT

Between

The Department of Agronomy

a part of the

Texas Technological College, Lubbock, Texas

and

The Jenkins Foundation for Research

I General

The Jenkins Foundation for Research, a non-profit Foundation registered in California (hereinafter called Foundation) desires to make a grant to the Department of Agronomy (hereinafter called Agronomy) for providing facilities for planting and maintenance of a winter grain research nursery. The research plots will include breeding populations of triticale wheat and rye and a yield trial to determine the potential of triticales in the areas of West Texas.

The attached project poposal entitled, Winter Grain Research Nursery, provides the details of investigations to be accomplished from such grant of monies and materials.

The Department of Agronomy of Texas Technological College is to use such funds and materials to provide services, equipment, and field plots to carry out such investigations as per attached, and to provide a report on the results of such investigations. The benefits of which may be freely used in the teaching mission of Texas Technological College.

II Specific Agreement

The Foundation and Agronomy mutually agree as follows:

1. The Foundation will provide a grant in the amount of \$500.00 to Agronomy to meet the expenditures involved in their responsibilities with the project, \$250.00 payable on or before December 1, 1968, and the balance of \$250.00 payable on or before March 31st, 1969.
2. Agronomy will provide land (approximately three-fourths (3/4) acre) facilities for planting, growing, and maintenance of the experimental plots such as irrigation, fertilizer, weed control, etc. as is necessary. Agronomy will make available any facilities and equipment that it may have, during the harvesting of materials. All monies and material are to be used in support of this investigation. Agronomy will take necessary precaution for safety of the materials.
3. The Texas Technological College reserves the right to publish the results of the investigations supported by this grant as it may deem desirable in the public interest. Contributions by the sponsor are to be duly acknowledged in any publications resulting from this project.
4. The Foundation will provide seed material ready for planting, the experimental layouts and planting plans, and will be responsible for harvesting the plots when ready in the spring of 1969. All the material from these plots is the property of the Foundation and Agronomy will not use or give away any material to a third party without prior written consent of the Foundation.

5. Any advertising referring to the results of these investigations shall be so worded as not to imply the endorsement of any product or procedures by Agronomy.
6. This agreement to be effective for one crop season (1968-69) and may be renewed upon written consent of both parties. It is understood that final acceptance of this agreement is subject to the approval of the Board of Directors of Texas Technological College.

III Approval Signatures

The afore terms are mutually agreed upon and verified by the following signatures.

Approved

/s/ B. Charles Jenkins
The Jenkins Foundation for Research

/s/ N. C. Sisodia
Field Technical Specialist

11-18-68
Date

Approved

/s/ Cecil Ayers
Texas Technological College
Project Leader

/s/ A. W. Young
Chairman, Department of Agronomy

11-16-68
Date

/s/ Gerald W. Thomas
Dean, School of Agricultural Sciences

11-27-68
Date

12-4-68

/s/ M. L. Pennington
Vice President for Business Affairs

C O P Y

Board Minutes
February 8, 1969
Attachment No. 2
Account No. 391-1243

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D. C. 20550

Dr. Glenn E. Barnett, Executive Vice-President
Texas Technological College
Lubbock, Texas 79409

GW-3876

Dear Dr. Barnett:

It is a pleasure to inform you that a grant of \$66,548 is awarded to the Texas Technological College for support of a "1969 Summer Institute in Biology for Secondary School Teachers," described in your Proposal 9/232-0244. This grant is under the direction of Paul V. Prior, Department of Biology, and terminates on September 30, 1969.

Any expenditures on this project in fiscal year 1969 must be made within the expenditure ceiling already established by the Foundation for your institution. In developing your plans for operating the project, you may wish to further recognize that (1) significant project costs under this grant will be incurred in the following fiscal year, (2) the Foundation believes it will be necessary to establish an expenditure ceiling for your institution for fiscal year 1970, and (3) expenditures placed against this grant during the period July 1, 1969 to June 30, 1970 would be considered to be incurred against the possible 1970 ceiling.

The Foundation requires administration of this grant in accordance with the attached budget summary, Grants for Education in Science (NSF 68-3), and Summer Institutes for Secondary School Teachers of Science and Mathematics-1969 Guide (E 68-P-2), copies of which were forwarded to your Business Office and to the Project Director.

Please acknowledge acceptance of this grant under the above terms and include in your acknowledgment a reference to the grant number.

Sincerely yours,

Louis Levin
Executive Associate
Director

Enclosures

C O P Y

SUPPLEMENT TO CONTRACT

STATE OF TEXAS X

COUNTY OF LUBBOCK X

THIS SUPPLEMENT, made the 22nd day of November 1968, to the agreement dated 18th day of October 1965 by and between the Board of Directors, Texas Technological College, Lubbock, Lubbock, County, Texas, hereinafter called the Owner, and The Office of George Pierce - Abel B. Pierce, Houston, Harris County, Texas, hereinafter called the Architects.

ARTICLE 4. INSPECTION OF THE WORK: Delete the second paragraph and substitute the following: The Owner hereby authorizes a full time Project Representative, employed and directed by the Architect. The Architect will be reimbursed for the entire cost of such representative at the weekly rate of Two Hundred Thirty Four and 91/100 Dollars (\$234.91), or Twelve Thousand Two Hundred Fifteen and 32/100 Dollars (\$12,215.32) per year. Through the on-site observations by Full-time Project Representatives of the Work in progress, the Architect shall endeavor to provide further protections for the Owner against defects in the Work, but the furnishing of such project representation shall not make the Architect responsible for the Contractor's failure to perform the Work in accordance with the Contract Documents. Employment of the Project Representative shall commence 22 November 1968 and may be terminated at any time mutually agreed upon by the Owner and the Architect.

OWNER:
BOARD OF DIRECTORS
TEXAS TECHNOLOGICAL COLLEGE

ATTEST:

/s/ J. Roy Wells
J. Roy Wells, Secretary

BY: /s/ Retha R. Martin
Retha R. Martin, Chairman

ARCHITECTS:
The Office of GEORGE PIERCE-ABEL B. PIERCE

BY: /s/ George F. Pierce Jr.
Partner

Board Minutes
January 18, 1969
Attachment No. 4

Texas Technological College
P.O. Box 4610
Lubbock, Texas 79409

Office of the Vice President
for Business Affairs

November 27, 1968

Mr. Joe V. Boerner, Jr.
Crenshaw, Dupree & Milam
Attorneys At Law
Great Plains Building
Lubbock, Texas 79408

Dear Mr. Boerner:

U.S.A. vs. Texas Technological College
Parcel 8 Condemnation

Enclosed, as requested in your letter of November 25, 1968,
are the signed original and one copy of the stipulation.

I am happy that you have been able to make progress toward
concluding the sale.

Best Wishes,

/s/ M. L. Pennington
M. L. Pennington
Vice President for
Business Affairs

MLP:g
Enclosure
cc: Dr. Glenn E. Barnett
Mr. J. Roy Wells
Mr. Hollis Smith
Mr. John G. Taylor

C O P Y

CRENSHAW, DUPREE & MILAM
Attorneys at Law
Great Plains Building
Lubbock, Texas 79403

November 25, 1968

Mr. M. L. Pennington
Vice-President for Business Affairs
Texas Technological College
P. O. Box 4610
Lubbock, Texas 79409

RE: U.S.A. vs. Texas Technological College, Parcel 8 Condemnation

Dear Mr. Pennington:

The above suit has been finally settled with the U. S. Attorney General's office for the agreed sum of \$19,500.00. I am enclosing herewith original and one copy of stipulation. I ask that you please sign both of these instruments in the space provided and return same to me. Upon receipt thereof I will forward them to the U. S. Attorney General's Office along with the proposed judgment, and we will then receive a draft for \$6,500.00.

I have been informed that it will take approximately three weeks to process these papers; but, based on past experiences with the government, it may be longer.

I appreciate this opportunity to have been of service and with kindest regards, I am

Yours very truly,

CRENSHAW, DUPREE & MILAM

By /s/ Joe V. Boerner, Jr.

Joe V. Boerner, Jr.

JVB:vb
Encl.

C O P Y

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
LUBBOCK DIVISION

UNITED STATES OF AMERICA,)	CIVIL ACTION NO. 5-364
)	
Plaintiff,)	
)	
vs.)	STIPULATION FOR FINAL JUDGMENT
)	AS TO PARCEL NO. 8
CERTAIN LAND IN THE CITY OF)	
LUBBOCK, COUNTY OF LUBBOCK,)	
STATE OF TEXAS, AND VOYE)	
TOWNSEND MORGAN, ET AL.,)	
)	
Defendants.)	

COME NOW the United States of America, plaintiff, and the defendant, Texas Technological College, and waives service of process and enters its appearance; and the defendant named above, hereinafter called the Stipulating Defendant, represents that on the date of taking the full fee simple title to the property, designated as Parcel 8 herein, was owned by Texas Technological College.

It is STIPULATED AND AGREED by and between the parties hereto as follows:

1. The full, fair, and just compensation payable by plaintiff, United States of America, for the taking of the title to Parcel 8, shall be the sum of \$ 19,500.00, inclusive of interest, which sum shall be payable to Texas Technological College.
2. The said sum shall be subject to all liens, encumbrances, charges or lawful claims of title of whatsoever nature existing at the time of the taking of the title to said parcel; and any and all awards of just compensation ascertained and awarded in this proceeding as to Parcel 8, and established

by judgment herein to any and all parties now or subsequently named as defendants herein, shall be payable and deductible from such sum.

3. The parties hereby consent to the entering of all orders and judgments necessary to effectuate this stipulation and agreement.

4. No costs shall be taxed against any of the parties hereto.

UNITED STATES OF AMERICA

ELDON B. MAHON
UNITED STATES ATTORNEY

CLAUDE D. BROWN, ASSISTANT
UNITED STATES ATTORNEY

STIPULATING DEFENDANT:

TEXAS TECHNOLOGICAL COLLEGE

APPROVED:

CRENSHAW, DUPREE & MILAM,
ATTORNEYS FOR THE DEFENDANT,
TEXAS TECHNOLOGICAL COLLEGE

By /s/ M. L. Pennington

M. L. Pennington
Vice-President for Business
Affairs

By /s/ Joe V. Boerner, Jr.
OF COUSEL

C O P Y

M E M O R A N D U M
FROM
OFFICE OF THE VICE PRESIDENT
FOR BUSINESS AFFAIRS

TO: Mr. J. Roy Wells

DATE: January 2, 1969

SUBJECT: DOCKET ITEM

Business Administration Building

Will you please include an item in the Agenda for the Board of Directors to approve Change Order No. G-19 to the contract with J. J. Fritch for the construction of the Business Administration Building as follows:

	<u>Add</u>
1. Per letter of October 23, 1968, install three (3) strap hangers on each of the projector screen hoods -----	\$1,130.00
2. Per letter of October 23, 1968, install pressed steel shelf brackets between existing brackets on the coat and hat shelves in 20 classrooms --	252.73
3. Per letter of November 1, 1968, install acoustical tile and molding in rooms 42, 46 and 48 --	2,297.00
4. Per letter of November 1, 1968, revisions to trash enclosure -----	<u>1,249.00</u>
Total -----	<u>\$4,928.73</u>

This has been approved by all hands.

/s/ MLP
M. L. Pennington
Vice President for
Business Affairs

MLP:g

cc: Dr. Glenn E. Barnett
Mr. John G. Taylor
Mr. Hollis Smith
Miss Jerry Kirkwood
Mr. Howard Schmidt

C O P Y

TEXAS TECHNOLOGICAL COLLEGE
Gifts to the College through
Texas Technological College Foundation

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4369 11/20/68	Ben E. Keith Company 212 - 23 Street Lubbock, Texas	Christmas Lighting Account No. 391-2620	\$ 25.00
4370 11/20/68	T.I.M.E. Freight, Inc. Post Office Box 1120 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	250.00
4371 11/20/68	Mr. Jack Dunn, Jr., M.D. 3601 - 21 Street Lubbock, Texas 79410	Library Enrichment Fund Account No. 391-2055	25.00
4372 11/21/68	A and J Developers, Inc. 206 Myrick Building Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4373 11/21/68	Mr. J. B. Clendenin Main Lafrentz and Company 1305 Great Plains Building Lubbock, Texas 79401	Memorial for David Kritser	5.00
4374 11/21/68	KCBD Radio-Television Lubbock Texas	Institutional Planning & Development Fund Account No. 991-0090	1,000.00
4375 11/21/68	Lois A. Hart 3318 - 30 Street Lubbock, Texas 79410	Speech Clinic Account No. 391-1230	25.00
4376 11/21/68	Mrs. Mickey Andress 5110 - 47 Street Lubbock, Texas	Speech Clinic Account No. 391-1230	10.00
4377 11/21/68	Derald Walling 5417 - 14 Street Lubbock, Texas 79416	Speech Clinic Account No. 391-1230	15.00
4378 11/21/68	Mrs. R. W. Tucker 3014 - 24 Street Lubbock, Texas	Library Enrichment Fund Account No. 391-2055	10.00
4379 11/21/68	Union Oil Company of California Foundation 461 South Boylston Street Los Angeles, California 90017	Geosciences Cost of Education Account No. 391-1150	500.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4380 11/21/68	Mrs. Edwin B. Hopkins 3310 Fairmount Dallas, Texas 75201	Art Cost of Education Grant Account No. 391-1100	\$ 500.00
4381 11/22/68	Wall Hall Association Texas Technological College Lubbock, Texas	Texas Tech Entrance Marker Account No. 391-2685	35.35
4382 11/25/68	Avalanche-Journal Publishing .Co. 710 Avenue J Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	6,250.00
4383 11/25/68	William D. Armstrong 3012 - 25 Street Lubbock, Texas 79410	Memorial Fund honoring David Kritser	10.00
4384 11/25/68	Joe Ben Hudgens 1776 North Sycamore Avenue Apartment 133 Los Angeles, California 90028	General Unrestricted Gifts and Grants Account No. 391-2650	8.00
4385 11/25/68	Phillips Petroleum Company Bartlesville Oklahoma 74003	General Unrestricted Gifts & Grants Account No. 391-2650	25.00
4386 11/25/68	Western Pavers, Inc. 2811 Texas Avenue Lubbock, Texas 79401	Fund for Institutional Planning & Development Account No. 991-0090	100.00
4387 11/25/68	Dr. S. C. Arnett, Jr. 2609 - 19 Street Lubbock, Texas	Clabber Hill Ranch Scholarship Account No. 391-6430	600.00
4388 11/25/68	International Business Machines Corporation Lubbock Branch Office Account 1201 - 13 Street Lubbock, Texas	Christmas Lighting Account No. 391-2620	15.00
4389 11/25/68	College Avenue Cafe 1629 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	1.00
4390 11/25/68	Campus Beauty Shop 1629 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	2.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4391 11/25/68	L. V. Littrell Gulf Service Station 1601 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	\$ 2.00
4392 11/25/68	Campus Camera Center 1607 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	5.00
4393 11/25/68	Bridges Woodcraft 1609 University Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	5.00
4394 11/25/68	George A. Canon 3060 - 34 Street Lubbock, Texas 79410	Christmas Lighting Account No. 391-2620	10.00
4395 11/25/68	Ron's 1211 College Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	15.00
4396 11/25/68	Dom's Ltd. 2420 Broadway Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4397 11/25/68	Tessie Frank Dickeson Koen Studios 1311 University Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	3.00
4398 11/25/68	Tech Drug Store 1101 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4399 11/25/68	Brown's Varsity Shop 1201 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	20.00
4400 11/25/68	Clyde Briley Drug 1015 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4401 11/25/68	William Randolph Hearst Foundation 959 Eighth Avenue New York, New York 10019	Journalism Cost of Education Grant Account No. 391-1175	50.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4402 11/25/68	Barron and Company 3060 - 34 Street Post Office Box 6307 Lubbock, Texas 79413	Christmas Lighting Account No. 391-2620	\$ 25.00
4403 11/25/68	Jerry Aker, Real Estate 3060 - 34 Street Lubbock, Texas 79410	Christmas Lighting Account No. 391-2620	10.00
4404 11/25/68	Lubbock Business Services 3060 - 34 Street Lubbock, Texas 79410	Christmas Lighting Account No. 391-2620	10.00
4405 11/26/68	Book & Stationery Center 1103 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	25.00
4406 11/26/68	Varsity Cleaners 1109 University Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00
4407 11/26/68	Cates Beauty Bar 2421-A Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	1.00
4408 11/26/68	Avalon Studio 2414 Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	3.00
4409 11/26/68	Allen's Alteration Shop 2421-B Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	5.00
4410 11/26/68	Professional Pharmacy 2419 Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	5.00
4411 11/26/68	K L B K - AM - FM - TV 7400 University Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	25.00
4412 11/26/68	Allen F. Baker Esso Standard Libya Inc. Post Office Box 385 Tripoli, Libya	Fund for Institutional Planning & Development Account No. 991-0090	50.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4413 11/26/68	Plains Seed Company, Inc. c/o Arthur J. Foster 1610 Erskine Lubbock, Texas	Fund for Institutional Planning & Development Account No. 991-0090	\$ 500.00
4414 11/26/68	Clyde Campbell Clothing Main and University Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4415 11/26/68	Talco Laundry 2416 Main Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00
4416 11/26/68	The Borden Company Post Office Box 1560 Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	25.00
4417 11/26/68	Nancy McGinnis Brown 4012 Flint Avenue Lubbock, Texas 79413	Library Enrichment Fund Account No. 391-2055	10.00
4418 11/27/68	Combustion Service Company Post Office Box 873 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	15.00
4419 11/26/68	Harlan Engineering Company Post Office Box 151 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	35.00
4420 11/27/68	Snook & Aderton, Inc. Drawer 2665 Lubbock, Texas 79408	Miscellaneous Travel Account No. 391-2680	10.00
4421 12/2/68	Thatcher Printing Company 1106 Main Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	5.00
4422 12/2/68	Stenocall Post Office Box 875 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	20.00
4423 12/2/68	Thomas Brothers Company Post Office Box 1537 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	25.00
4424 12/2/68	Spears Furniture Company 2710 Avenue Q Lubbock, Texas 79405	Christmas Lighting Account No. 391-2620	20.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4425 12/2/68	Judge and Mrs. Howard C. Davison 2416 - 16 Street Lubbock, Texas 79401	ICASALS & Museum Development Fund Account No. 391-2485	\$ 25.00
4426 12/2/68	Price Waterhouse Foundation 60 Broad Street New York, New York 10004	Price Waterhouse Foundation Grant to Accounting Education	1,000.00
4427 12/2/68	Mrs. V. F. Adams 6403 Avenue W Lubbock, Texas 79412	Speech Clinic Account No. 391-1230	10.00
4428 12/2/68	S. P. Boling 416 Lubbock National Bank Bldg. Lubbock, Texas 79401	Speech Clinic Account No. 391-1230	25.00
4429 12/2/68	Perry E. Pyles 1509 - 46 Street Lubbock, Texas 79412	Speech Clinic Account No. 391-1230	15.00
4430 12/2/68	Edward F. Houser, Jr. 5408 - 29 Street Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	8.50
4431 12/2/68	Pinkie's Inc. Post Office Box 2067 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	140.00
4432 12/3/68	Howard and Tucker 1515 Avenue J Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	25.00
4433 12/3/68	Service Abstract & Title Co. 1502 Texas Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	25.00
4434 12/3/68	Guarantee Abstract & Title Co. Lubbock, Texas	Account No. 391-2620 Christmas Lighting	25.00
4435 12/3/68	Mr. Hulen J. Penney 3105 - 40 Street Lubbock, Texas 79413	Christmas Lighting Account No. 391-2620	10.00
4436 12/3/68	Western Title Company 2002 - 34 Street Lubbock, Texas 79411	Christmas Lighting Account No. 391-2620	25.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4437 12/3/68	Lubbock Abstract & Title Co. 1216 Texas Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	\$ 25.00
4438 12/3/68	L and H Pharmacies, Inc. 5120 - 34 Street Lubbock, Texas 79414	Christmas Lighting Account No. 391-2620	20.00
4439 12/3/68	Radio Lab 1501 Avenue Q Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4440 12/3/68	Montgomery Ward Lubbock, Texas	Christmas Lighting Account No. 391-2620	25.00
4441 12/3/68	Town & Country Barber Shop 340 College Avenue Lubbock, Texas	Christmas Lighting Account No. 391-2620	5.00
4442 12/3/68	Jim Turner Enterprises 5602 Avenue P Lubbock, Texas	Christmas Lighting Account No. 391-2620	25.00
4443 12/3/68	Dr. and Mrs. Fred D. Rigby 3822 - 53 Street Lubbock, Texas 79413	Christmas Lighting Account No. 391-2620	5.00
4444 12/3/68	Leroy Land Company, Inc. 3004 - 50 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4445 12/3/68	Lubbock Body Works 1609 - 19 Street Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	15.00
4446 12/3/68	Farmer's Exchange, Inc. 1914 Avenue G Lubbock, Texas	Christmas Lighting Account No. 391-2620	10.00
4447 12/3/68	Pioneer Lincoln-Mercury 901 Avenue H Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	25.00
4448 12/3/68	Furr's Cafeteria #7 Town & Country Center Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4449 12/3/68	Furr's Food Town & Country Center Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	\$ 10.00
4450 12/3/68	Zales Jewelers Town & Country Shopping Center Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4451 12/3/68	Bud's Men's Shop Town & Country Shopping Center Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4452 12/3/68	House of Flowers Town & Country Shopping Center Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	4.00
4453	VOID		
4454 12/3/68	Shook Tire Company 1505 Avenue H Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	25.00
4455 12/3/68	Chris' Rexall Drug 4th and College Lubbock, Texas 79415	Miscellaneous Travel Account No. 391-2680	25.00
4456 12/3/68	Key Personnel 324 College Avenue Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	5.00
4457 12/3/68	Latham's of Lubbock, Inc. 3111 - 34 Street Lubbock, Texas 79410	Miscellaneous Travel Account No. 391-2680	10.00
4458 12/4/68	Miss Dorothy Rylander 1808 - 14 Street Lubbock, Texas	Southwest Collection Account No. 391-2085	25.00
4459 12/4/68	Mrs. Helen DeVitt Jones 430 Lubbock National Building Lubbock, Texas 79401	Library Enrichment Fund Account No. 391-2055	10.00
4460 12/4/68	Broadway Drug Store 1117 University Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	7.50

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4461 12/4/68	McBride's Hair Designers 2415 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	\$ 5.00
4462 12/4/68	Sam Ribble Florist 2422 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4464 12/4/68	White Star Linen Supply 2243 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4463 12/4/68	Sparkman's Pastry Shop 1820 Avenue M Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4465 12/4/68	Dunkin Donuts 317 University Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	25.00
4466 12/4/68	Mr. H. M. Hill 2245 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4467 12/4/68	American Laundry & Cleaners 2224 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4468 12/4/68	Dennis Bros. Printing Co. 2331 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4469 12/4/68	Cabana Motel & Restaurant 2311 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4470 12/4/68	Tate Service Station 2402 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4471 12/4/68	Reliable Pharmacy 2316 - 19 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4472 12/4/68	Mrs. Arch Underwood 3107 - 19 Street Lubbock, Texas	Christmas Lighting Account No. 391-2620	25.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4473 12/4/68	Holt Sporting Goods Company 601 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	\$ 15.00
4474 12/4/68	Fields University Shop 1215 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	25.00
4475 12/4/68	The Upper Room 1203 University Avenue Suite 205 Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	7.50
4476 12/4/68	Snell Drug 1221 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	25.00
4477 12/4/68	Goodart Candy Company 2239 - 19 Street Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	5.00
4478 12/4/68	Aztec Inn 2227 - 19 Street Lubbock, Texas	Christmas Lighting Account No. 391-2620	15.00
4479 12/4/68	Texas, New Mexico & Oklahoma Coaches, Inc. 1313 - 13 Street Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	750.00
4480 12/4/68	Southwestern Public Service Co. Amarillo, Texas	Electrical Engineering Scholarship - \$750 Account No. 391-8380 Mechanical Engineering Scholarship - \$750 Account No. 391-8385	1,500.00
4481 12/4/68	Mr. N. H. Longley Tech Union Texas Technological College Lubbock, Texas	Lisa Ann and Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	25.00
4482 12/4/68	Mr. Lee J. Phillips, Jr. 4619 - 27 Street Lubbock, Texas 79410	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4483 12/4/68	William H. Duvall 6713-B Hartford Avenue Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	15.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4484 12/4/68	Andy Wilson Post Office Box 4144 Lubbock, Texas 79409	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	\$ 15.00
4485 12/4/68	Dr. B. J. Marshall 2514 - 47 Street Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4486 12/4/68	Furr Foundation Post Office Box 1650 Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	250.00
4487 12/4/68	Dr. and Mrs. Eric G. Bolen Dept. of Range and Wildlife Mgmt. Texas Tech College Lubbock, Texas 79409	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4488 12/6/68	Mr. Arthur M. Elliot Department of Biology Texas Technological College Lubbock, Texas	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4489 12/6/68	Mr. and Mrs. Frank M. Temple 5420 West Seventh Street Lubbock, Texas 79416	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4490 12/6/68	Dr. and Mrs. Fred D. Rigby 3822 - 53 Street Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4491 12/6/68	Mr. and Mrs. Vestal Yeats 2802 - 23 Street Lubbock, Texas 79410	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4492 12/6/68	Mr. and Mrs. Jack S. Broadhurst 6222 Lynnhaven Drive Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	20.00
4493 12/6/68	Col. and Mrs. John W. Ault 3523 - 57 Street Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4494 12/6/68	C. W. Eicher 3131 Cedar Avenue Lincoln, Nebraska 68502	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	20.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4495 12/6/68	Mr. and Mrs. J. R. Wall 4302 - 44 Street Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	\$ 10.00
4496 12/6/68	Dr. C. A. Rosebrough 3716 - 21 Street Lubbock, Texas 79410	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4497 12/6/68	American State Bank Post Office Box 1401 Lubbock, Texas 79408	American State Bank Alpha Zeta Scholarship Account No. 391-6070	150.00
4498 12/6/68	Mr. William F. Sandy 1121 Lyndon, Apt. 19 Houston, Texas 77025	Band Scholarships Account No. 391-6160	10.00
4499 12/6/68	Earl Ray Music Company 1502 Avenue Q Lubbock, Texas 79401	Band Scholarships Account No. 391-6160	50.00
4500 12/6/68	Mrs. George C. Miller 3213 - 43 Street Lubbock, Texas 79413	Christmas Lighting in Memory of Mrs. Myrtle Martin Account No. 391-2620	5.00
4501 12/6/68	Mrs. N. A. Cox Hi-D-Ho Drive-In Restaurants 3308 - 27 Street Lubbock, Texas 79410	Christmas Lighting Account No. 391-2620	25.00
4502 12/6/68	Joe Wood Market & Lockers 305 University Lubbock, Texas	Christmas Lighting Account No. 391-2620	25.00
4503 12/9/68	Gaston Hall Association Texas Technological College Lubbock, Texas 79409	Gaston Hall Association Scholarship Account No. 991-3660	100.00
4504 12/9/68	Matador Barber Shop 1205 University Lubbock, Texas	Christmas Lighting Account No. 391-2620	10.00
4505 12/9/68	Thomas Jewelry 1207 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	12.50
4506 12/9/68	Mr. James C. Edwards, Jr. 2417 - 27 Street Lubbock, Texas 79408	Christmas Lighting Account No. 391-2620	10.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4507 12/9/68	Mrs. Jo G. Curtin 3511 - 42 Street Lubbock, Texas 79413	Christmas Lighting Account No. 391-2620	\$ 5.00
4508 12/9/68	McMurtry & Craig 3014 - 50 Street Lubbock, Texas 79413	Christmas Lighting Account No. 391-2620	10.00
4509 12/9/68	Herald Photo 1405 University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4510 12/9/68	Zoology 142 Honors Class Taught by Dr. Robert Packard Texas Technological College Lubbock, Texas 79409	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	20.00
4511 12/9/68	Music Bar 1217 University Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4512 12/9/68	Milner Pontiac, Inc. c/o Bill Johnson 1014 Avenue Q Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	2.00
4513 12/9/68	Refrigeration Supply and Electric Company Wholesale 1617 Avenue G Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00
4514 12/9/68	American Transfer & Storage Co. Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	5.00
4515 12/9/68	H. V. Bigham and Sons, Inc. Post Office Box 862 Lubbock, Texas 79408	Miscellaneous Travel Account No. 391-2680	10.00
4516 12/9/68	M. B. McKee Company, Inc. 2205 Avenue E Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	15.00
4517 12/9/68	Montgomery Motor Company 4101 Avenue Q Post Office Box 2486 Lubbock, Texas 79412	Miscellaneous Travel Account No. 391-2680	25.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4518 12/9/68	Armstrong Warehouse and Transfer, Inc. 500 East 50 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	\$ 20.00
4519 12/9/68	Seagraves Music Club Seagraves, Texas	Seagraves Music Club Scholarship Account No. 391-8060	30.00
4520 12/9/68	H. A. Lott, Inc. Post Office Box 36303 Houston, Texas 77036	ICASALS & Museum Development Fund Account No. 391-2485	1,500.00
4521 12/9/68	Bigham Industrial and Gin Supply, Inc. Post Office Box 1438 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4522 12/9/68	Mr. W. S. Posey 3223 - 20 Street Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	1,000.00
4523 12/9/68	Mrs. E. K. Hufstedler 3203 - 44 Street Lubbock, Texas 79413	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4524 12/9/68	Hamilton Acoustical Co. Post Office Box 602 Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	250.00
4525 12/9/68	Hamilton Roofing Company 710 Tenth Street Lubbock, Texas 79401	ICASALS & Museum Development Fund Account No. 391-2485	250.00
4526 12/9/68	Mrs. Frances G. McMillan 4901 - 19 Street Lubbock, Texas 79407	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4527 12/9/68	Dr. Donald W. Andress 3716 - 21 Street Suite 202 Lubbock, Texas 79410	ICASALS & Museum Development Fund Account No. 391-2485	100.00
4528	VOID		
4529	VOID		

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4530 12/9/68	Mrs. Floyce Taylor Masterson 722 Citizens Tower Lubbock, Texas 79401	Institutional Planning & Development Fund Account No. 991-0090	\$ 500.00
4531 12/9/68	Mrs. J. E. Blakey, Jr. 3202 - 23 Street Lubbock, Texas 79410	Institutional Planning & Development Fund Account No. 991-0090	100.00
4532 12/9/68	Costume Studio 2422-A Broadway Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4533 12/9/68	McMurtry & Craig 3014 - 50 Street Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	10.00
4534 12/9/68	Robinson Cleaners 1615-B College Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00

TEXAS TECHNOLOGICAL COLLEGE
Gifts to the College through
Texas Technological College Foundation

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4535 12/9/68	Mrs. Howard Hampton 3320 - 23 Street Lubbock, Texas	Library Enrichment Fund Account No. 391-2055	\$ 10.00
4536 12/9/68	Lubbock Legal Secretaries Assn. Lubbock, Texas	Law Library Account No. 391-2090	10.00
4537 12/9/68	Lubbock Kiwanis Foundation, Inc. Post Office Box 1064 Lubbock, Texas	Sophomore Scholarship in Agriculture Account No. 391-7360	150.00
4538 12/9/68	Dr. and Mrs. Vernon W. Proctor Dept. of Biology Lubbock, Texas 79409	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	25.00
4539 12/9/68	Frank M. Ryburn, Jr. 3621 - 21 Street Lubbock, Texas	Library Enrichment Fund Account No. 391-2055	10.00
4540 12/9/68	Mr. and Mrs. Max E. Roper 3232 South 39 Street Lincoln, Nebraska 68506	Lisa Ann & Lori Sue Packard Scholarship Fund Account No. 391-7785	10.00
4541 12/9/68	Jenkins Foundation for Research 12 Clay Street Salinas, California 93901	Winter Grain Research Nursery	250.00
4542 12/9/68	Dr. and Mrs. Robert N. Arnold 2706 - 56 Street Lubbock, Texas 79413	Institutional Planning & Development Fund Account No. 991-0090	125.00
4543 12/10/68	Daniel R. Womochel 2514 Amherst Lubbock, Texas 79415	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4544 12/10/68	Ula G. Maher 1665 Van Dorn Street Lincoln, Nebraska 68502	Account No. 391-7785 Lisa Ann & Lori Sue Packard Memorial Scholarship Fund	5.00
4545 12/10/68	Mr. and Mrs. H. W. Croskary 315 South Maple Avenue Millard, Nebraska 68137	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	20.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4546 12/10/68	Thos. B. Duggan, Jr. 18 Briercroft Office Park Lubbock, Texas 79412	ICASALS & Museum Development Fund Account No. 391-2485	\$1,000.00
4547 12/12/68	Mrs. Jonnie McCrery Michie 5314 Swiss Dallas, Texas 75214	James N. Michie Scholarship in Mathematics Account No. 391-7620	400.00
4548 12/12/68	Mrs. Jonnie McCrery Michie 5314 Swiss Dallas, Texas 75214	Jonnie McCrery Michie Scholarship in Nutrition Account No. 391-7621	400.00
4549 12/12/68	Elizabeth Skidmore Sasser 2512 - 46 Street Lubbock, Texas 79413	Library Enrichment Fund Account No. 391-2055	10.00
4550 12/12/68	Texas Tech Faculty Flower Fund Texas Technological College Lubbock, Texas 79409	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	11.98
4551 12/12/68	Mrs. Avery E. Forke 2645 Woodscrest Avenue Lincoln, Nebraska 68502	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4552 12/12/68	Mr. H. W. Wylie 2811 - 22 Street Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4553 12/12/68	Mr. Curtis J. Sterling Rauscher Pierce Securities Corp. Lubbock, Texas 79416	ICASALS & Museum Development Fund Account No. 391-2485	144.40
4554 12/12/68	Howard Schmidt and Associates 1619 University Avenue Lubbock, Texas 79401	Fund for Institutional Planning & Development Account No. 991-0090	10.00
4555 12/12/68	Shop Rite Foods, Inc. 2222 Avenue A Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	250.00
4556 12/12/68	Cagle Bros. Furniture 2202 Avenue Q Lubbock, Texas 79405	Miscellaneous Travel Acct. No. 391-2680	20.00
4557 12/12/68	Mrs. Harry Jung, Jr. 6218 Lynnhaven Drive Lubbock, Texas 79413	Lisa & Lori Packard Memorial Scholarship Fund Account No. 391-7785	3.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4558 12/12/68	W. B. Agee 1401 Erskine Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	\$ 100.00
4559 12/12/68	Mrs. James E. Marshall 3412 - 54 Street Lubbock, Texas 79413	ICASALS & Museum Development Fund Account No. 391-2485	20.00
4560 12/12/68	Joe Birdwell Post Office Box 1401 Lubbock, Texas 79408	Institutional Planning & Development Fund Account No. 991-0090	100.00
4561 12/12/68	W. B. and Mozelle Rushing Foundation #21 Briercroft Center Lubbock, Texas	Institutional Planning & Development Fund Account No. 991-0090	100.00
4562 12/12/68	Student Union Program Committee Texas Technological College Lubbock, Texas 79409	Texas Tech Entrance Marker Account No. 391-2685	3.77
4563 12/12/68	Plainview Jr. Service League c/o Ivan Jean West Post Office Box 384 Plainview, Texas	Plainview Jr. Service League Texas Tech Symphony Orchestra Fund Account No. 391-7850	400.00
4564 12/12/68	W. O. Satterwhite 800 Wilco Building Midland, Texas 79701	General Unrestricted Gifts & Grants Account No. 391-2650	50.00
4565 12/12/68	Womack's 328 University Lubbock, Texas 79415	Christmas Lighting Account No. 391-2620	5.00
4566 12/12/68	John B. Malouf, Inc. 1207 - 13 Street Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	25.00
4567 12/12/68	State Savings and Loan Assoc. 1617 Broadway Lubbock, Texas	Miscellaneous Travel Account No. 391-2680	20.00
4568 12/13/68	Biology Department Texas Technological College Lubbock, Texas	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	22.25

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4569 12/16/68	Mrs. Jonnie McCreary Michie 5314 Swiss Dallas, Texas 75214	Fund for Institutional Planning & Development Account No. 991-0090	\$ 500.00
4570 12/18/68	Atcheson, Atkinson & Cartwright 1214 - 14 Street Lubbock, Texas 79401	Institutional Planning & Development Fund Account No. 991-0090	100.00
4571 12/18/68	Chitwood Hall Association Freshman Section c/o Margaret Applegate, Sponsor Texas Technological College Lubbock, Texas	Texas Tech Entrance Marker Account No. 391-2685	30.00
4572 12/18/68	Chitwood Hall Association Upper Class Section c/o Margaret Applegate, Sponsor Texas Technological College Lubbock, Texas	Texas Tech Entrance Marker Account No. 391-2685	20.00
4573 12/18/68	Howard Schmidt and Associates 1619 University Avenue Lubbock, Texas 79401	Institutional Planning & Development Fund Account No. 991-0090	10.00
4574 12/18/68	Howard Schmidt and Associates 1619 University Avenue Lubbock, Texas 79401	Fund for Institutional Planning & Development Account No. 991-0090	150.00
4575 12/18/68	Mrs. Roscoe Wilson 4710 - 21 Street Lubbock, Texas 79407	ICASALS & Museum Development Fund Account No. 391-2485	2,500.00
4576 12/18/68	Dr. Lawrence L. Graves 4906 - 15 Street Lubbock, Texas 79416	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4577 12/18/68	Mr. and Mrs. Wallace Boys 225 West Brokaw Road No. 463 San Jose, California 95110	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	2.00
4578 12/18/68	Hazel S. Reed 419 Turner Terrace, No. 5 San Mateo, California 94401	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4579 12/18/68	William Whittington 6213 Lynnhaven Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	25.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4580 12/18/68	Mr. and Mrs. D. I. Parker 3023 Georgian Court Lincoln, Nebraska 68502	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	\$ 25.00
4581 12/18/68	Thomas P. Stover 4118 - 62 Drive Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	35.00
4582 12/18/68	Dr. and Mrs. Robert Packard 6215 Lynnhaven Drive Lubbock, Texas 79413	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	54.00
4583 12/18/68	Mr. and Mrs. Walter McKinney 6216 Ballard Avenue Lincoln, Nebraska 68507	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4584 12/18/68	Harriett E. Hogue 2365 Meyers Drive Santa Rosa, California 95401	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4585 12/18/68	Valeria Halliday 1041 North 41 Street Lincoln, Nebraska 68503	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	3.00
4586 12/18/68	Anna M. Rustermier Millard Nebraska	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	13.10
4587 12/18/68	John R. Hunter 4914 - 44 Street Lubbock, Texas	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4588 12/18/68	George S. Robbert 6115 Louisville Drive Lubbock, Texas 79413	ICASALS & Museum Development Fund Account No. 391-2485	25.00
4589 12/18/68	Anthony Mechanical, Inc. Post Office Box 745 Lubbock, Texas 79408	Fund for Institutional Planning & Development Account No. 991-0090	100.00
4590 12/18/68	Mr. Lawrence Melcher 1418 Avenue Q Lubbock, Texas 79401	Fund for Institutional Planning & Development Account No. 991-0090	100.00
4591 12/18/68	Harvest Queen Mill and Elevator Company Post Office Box 1000 Plainview, Texas	Fund for Institutional Planning & Development Account No. 991-0090	500.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4592 12/18/68	The Lubbock National Bank Post Office Box 421 Lubbock, Texas 79408	Fund for Institutional Planning & Development Account No. 991-0090	\$1,500.00
4593	VOID		
4594 12/18/68	Read and Company Drawer 1710 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	325.00
4595 12/18/68	New Mexico Electric Service Co. c/o Mr. Jack F. Maddox Post Office Box 920 Hobbs, New Mexico 88240	ICASALS & Museum Development Fund Account No. 391-2485	1,000.00
4596 12/18/68	Arthur L. Draper 4718 - 43 Street Lubbock, Texas 79414	Library Enrichment Fund Account No. 391-2055	10.00
4597 12/18/68	Dr. Clifford Ashby 2711 - 24 Street Lubbock, Texas 79410	Library Enrichment Fund Account No. 391-2055	10.00
4598 12/18/68	Alan Henry 3806 - 62 Drive Lubbock, Texas 79413	Library Enrichment Fund Account No. 391-2055	10.00
4599 12/18/68	Everett A. Gillis 3209 - 26 Street Lubbock, Texas 79410	Library Enrichment Fund Account No. 391-2055	10.00
4600 12/18/68	Mrs. Phillip M. Mathis 3513 - 33 Street Lubbock, Texas 79410	Speech Clinic Account No. 391-1230	15.00
4601 12/18/68	Mrs. Don E. Gillespie 6005 Avenue W Lubbock, Texas 79412	Speech Clinic Account No. 391-1230	15.00
4602 12/18/68	Mrs. Michael B. Phillips 508 S. W. 16 Seminole, Texas 79360	Speech Clinic Account No. 391-1230	15.00
4603 12/18/68	Norma Robinson Rusk, Texas	Speech Clinic Account No. 391-1230	15.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4604 12/18/68	Waters Bros. Cattle Account c/o L. M. Waters, Jr. Route No. 4 Brownfield, Texas	Speech Clinic Account No. 391-1230	\$ 45.00
4605 12/18/68	Kathy's 2420 Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00
4606 12/8/68	Bray's Sports Wear 2418 Broadway Lubbock, Texas 79401	Miscellaneous Travel Account No. 391-2680	10.00
4607 12/18/68	T and D Sporting Goods 2410 Broadway Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4608 12/18/68	Snowwhite Bakery - Town and Country 304 University Avenue Lubbock, Texas 79415	Christmas Lighting Account No. 391-2620	25.00
4609 12/18/68	The American Society of Mechanical Engineers 345 East 47 Street New York, New York 10017	Department of Mechanical Engineering Cost of Education Account No. 391-1450	100.00
4610 12/18/68	Mr. George W. Weiss 502 East Buckley Brownfield, Texas 79316	Institutional Planning & Development Fund Account No. 991-0090	500.00
4611 12/19/68	Dr. Wayne E. Spangler 2321 - 10 Street Lubbock, Texas 79401	Library Enrichment Fund Account No. 391-2055	10.00
4612 12/19/68	Mrs. Inez Carter 412 Combs-Worley Building Pampa, Texas 79065	Inez Carter Scholarships Account No. 391-6340	600.00
4613 12/19/68	Standard Oil (Indiana) Foundation, Inc. 910 South Michigan Avenue Chicago, Illinois 60680	Distinguished Teaching Award Account No. 391-6555 - \$3,000 Institutional Planning & Development Account No. 991-0090 - \$2,000	5,000.00
4614 12/19/68	Post-Montgomery 921 Austin Street Levelland, Texas	Post-Montgomery Co-operative Research in Range Management Account No. 391-3380	3,000.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4615 12/19/68	Intimate Apparel Shop 1401-A University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	\$ 10.00
4616 12/19/68	Tomken Investments 1401-A University Avenue Lubbock, Texas 79401	Christmas Lighting Account No. 391-2620	10.00
4617 12/19/68	Houston Livestock Show & Rodeo 2000 South Loop West Post Office Box 20070 Houston, Texas 77025	Houston Livestock Show & Rodeo Scholarships for Spring 1969	1,000.00
4618 12/19/68	The Sears-Roebuck Foundation 1409 South Lamar Street Dallas, Texas 75202	Young Homemakers of Texas Program Service Account No. 391-1594	1,580.00
4619 12/19/68	Helen DeVitt Jones 430 Lubbock National Building Lubbock, Texas 79401	Theatre Arts under the direction of Ronald Schultz	500.00
4620 12/19/68	Helen DeVitt Jones 430 Lubbock National Building Lubbock, Texas 79401	Development of the Dance under the direction of Mrs. Suzanne Aker	250.00
4621 12/20/68	The George and Jennie Collins Foundation c/o Pat W. McNamara, Jr. P. O. Box 1048 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	500.00
4622 12/20/68	Mr. and Mrs. Paul F. Brunzell 830 Dale Drive Lincoln, Nebraska 68510	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4623 12/20/68	Dr. Earl Camp 3704 - 46 Street Lubbock, Texas 79413	Account No. 391-7785 Lisa Ann & Lori Sue Packard Memorial Scholarship Fund	50.00
4624 12/20/68	Zale Corporation Box 2219 Dallas, Texas 75221	ICASALS & Museum Development Fund Account No. 391-2485	250.00
4625 12/20/68	Frito-Lay Foundation c/o Mr. William B. Oliver 301 Frito-Lay Building Dallas, Texas	ICASALS & Museum Development Fund Account No. 391-2485	1,000.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4626 12/20/68	The Plains National Bank of Lubbock c/o Jim Ed Waller Post Office Box 271 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	\$1,164.00
4627 12/20/68	Clem B. Boverie 3210 - 23 Street Lubbock, Texas	ICASALS & Museum Development Fund Account No. 391-2485	50.00
4628 12/20/68	Eunice C. Mowery 2901 - 20 Street Lubbock, Texas 79410	Linda M. Speech Scholarship Fund Account No. 691-0240	500.00
4629 12/20/68	Eunice C. Mowery 2901 - 20 Street Lubbock, Texas 79410	Linda M. Speech Scholarship Fund Account No. 691-0240	15.00
4630 12/20/68	R. S. Tapp & Company Post Office Box 2429 Lubbock, Texas 79408	Fund for Institutional Planning & Development Account No. 991-0090	500.00
4631 12/20/68	Pioneer Natural Gas Company Post Office Box 511 Amarillo, Texas 79105	Fund for Institutional Planning & Development Account No. 991-0090	500.00
4632 12/20/68	Reta F. Hull Lubbock, Texas	Speech Scholarship Fund Account No. 391-8400	20.00
4633 12/20/68	Mrs. Bobby G. Waddle 1603 - 56 Street Lubbock, Texas 79412	Speech Scholarship Fund Account No. 391-8400	15.00
4634 12/20/68	The Barsh X-Ray and Radium Clinic 2010 Broadway Lubbock, Texas 79401	West Texas Water Institute Account No. 391-1085	10.00
4635 12/20/68	Russell Bean 2806 - 21 Street Lubbock, Texas 79410	West Texas Water Institute Account No. 391-1085	10.00
4636 12/20/68	S. E. Curry Post Office Box 759 Plainview, Texas 79072	West Texas Water Institute Account No. 391-1085	10.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4637 12/20/68	Deaf Smith County Chamber of Commerce Post Office Box 192 Hereford, Texas 79045	West Texas Water Institute Account No. 391-1085	\$ 25.00
4638 12/20/68	First National Bank at Lubbock Post Office Box 1241 Lubbock, Texas 79408	West Texas Water Institute Account No. 391-1085	25.00
4639 12/20/68	Edwin L. Forrest Drawer 30 Lubbock, Texas 79408	West Texas Water Institute Account No. 391-1085	10.00
4640 12/20/68	Ground Water Conservation District No. 3 Post Office Box 637 White Deer, Texas 79097	West Texas Water Institute Account No. 391-1085	25.00
4641 12/20/68	Roy Hickman Box 846 Morton, Texas 79346	West Texas Water Institute Account No. 391-1085	10.00
4642 12/20/68	John A. Hughes 3306 - 43 Street Lubbock, Texas 79413	West Texas Water Institute Account No. 391-1085	10.00
4643 12/20/68	John R. Hunter 4914 - 44 Street Lubbock, Texas	West Texas Water Institute Account No. 391-1085	10.00
4644 12/20/68	Irrigation Age, Inc. 303 McKinley Hereford, Texas 79045	West Texas Water Institute Account No. 391-1085	25.00
4645 12/20/68	J. Keith Jones Box 778 Canyon, Texas 79015	West Texas Water Institute Account No. 391-1085	10.00
4646 12/20/68	Roy E. Jones Box 111 Abernathy, Texas 79311	West Texas Water Institute Account No. 391-1085	10.00
4647 12/20/68	Layne Pumps, Inc. 5716 Brownfield Highway Lubbock, Texas	West Texas Water Institute Account No. 391-1085	25.00
4648 12/20/68	Dr. Raymond E. Meyer 2319 - 60 Street Lubbock, Texas 79412	West Texas Water Institute Account No. 391-1085	10.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4649 12/20/68	G. H. Nelson 1900 Great Plains Building Lubbock, Texas	West Texas Water Institute Account No. 391-1085	\$ 10.00
4650 12/20/68	Plains Cooperative Oil Mill, Inc. Post Office Box 509 Lubbock, Texas 79408	West Texas Water Institute Account No. 391-1085	25.00
4651 12/20/68	Marvin Shurbet Petersburg, Texas 79250	West Texas Water Institute Account No. 391-1085	10.00
4652 12/20/68	Dr. Arthur W. Young 3305 - 45 Street Lubbock, Texas 79413	West Texas Water Institute Account No. 391-1085	10.00
4653 12/30/68	Mrs. Robert N. Arnold 2706 - 56 Street Lubbock, Texas 79413	Willson Lecture Fund Account No. 391-2710	750.00
4654 12/30/68	O. V. Adams 2905 - 20 Street Lubbock, Texas 79410	Otto V. Adams Scholarship in Civil Engineering	2,000.00
4655 12/30/68	Montgomery Motor Company Post Office Box 2486 Lubbock, Texas 79412	ICASALS & Museum Development Fund Account No. 391-2485	600.00
4656 12/30/68	Westerburg, Farley and Company Armstrong Warehouse Building Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	250.00
4657 12/30/68	B. E. Rushing, Jr. Post Office Box 981 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	100.00
4658 12/30/68	J. E. Waller Post Office Box 271 Lubbock, Texas 79408	Institutional Planning & Development Fund Account No. 991-0090	500.00
4659 12/30/68	Brown-McKee, Inc. c/o Paul M. Furr 2205 Avenue E Lubbock, Texas 79404	ICASALS & Museum Development Fund Account No. 391-2485	750.00
4660 12/30/68	The Citizens National Bank Post Office Box 841 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	4,230.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4661 12/30/68	Stiles, Roberts & Messersmith 3307 Avenue X Lubbock, Texas 79412	ICASALS & Museum Development Fund Account No. 391-2485	\$ 300.00
4662 12/30/68	Brownfield State Bank and Trust Company c/o J. O. Gillham Chairman of the Board Post Office Box 1112 Brownfield, Texas 79316	Brownfield State Bank and Trust Company Scholarships Account No. 391-6240	600.00
4663 12/30/68	Ethan A. Smith 7624 Russell Road Overland Park, Kansas	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	5.00
4664 12/30/68	Richard Wilde 5412 - 15 Street Lubbock, Texas 79416	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4665 12/30/68	Richard G. Van Gelder Central Park West at 79 Street New York, New York 10024	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4666 12/30/68	Fritz Thompson Box 1205 Borger, Texas 79007	Fund for Institutional Planning & Development Account No. 991-0090	50.00
4667 12/30/68	Diamond Alkali Co. Foundation Diamond Shamrock Corporation 300 Union Commerce Building Cleveland, Ohio 44115	Fund for Institutional Planning & Development Account No. 991-0090	100.00
4668 12/30/68	Dr. Hollis A. Askey 715 Sharp Building Lincoln, Nebraska 68508	Lisa Ann & Lori Sue Packard Memorial Scholarship Fund Account No. 391-7785	10.00
4669 12/30/68	South Plains Monument Company Post Office Box 2456 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	25.00
4670 12/30/68	Mr. Bob Pittman University of Houston Houston, Texas	Library Enrichment Fund Account No. 391-2055	10.00

<u>No. and Date</u>	<u>Donor</u>	<u>Purpose</u>	<u>Amount</u>
4671 12/31/68	Ethel Foster, Estate Mrs. Fay M. Hildebrand, Executrix c/o H. L. Hildebrand The First National Bank Sterling City, Texas	Ethel Foster Scholarship Fund Account No. 391-6800	\$1,000.00
4672 12/31/68	Helen DeVitt Jones Post Office Box 724 Lubbock, Texas 79408	ICASALS & Museum Development Fund Account No. 391-2485	90,000.00

MEMORANDUM
FROM
OFFICE OF THE VICE PRESIDENT
FOR BUSINESS AFFAIRS

TO: Mr. J. Roy Wells

DATE: January 2, 1969

SUBJECT: DOCKET ITEM

New Museum

Will you please include an item in the Agenda for the Board of Directors to approve Change Order No. 1 as follows to the contract with Area Builders, Inc., for the construction of the Museum:

	<u>Deduct</u>	<u>Add</u>
1. Provide finish hardware as scheduled by the Project Architect and bid publicly on October 24, 1968 -----	\$ -0-	\$11,577.00
2. Modify aluminum doors, frames and hardware for better operation and lower maintenance costs -----	-0-	1,120.00
3. Deduct the specified amount of the allowance for hardware -----	23,000.00	-0-
4. Substitute a polished brass roof drain at the planetarium for the one specified in order to be compatible with the roof system -----	-0-	46.00
Totals -----	<u>\$23,000.00</u>	<u>\$12,743.00</u>

The specifications and bids have been checked by Mr. Downing, the consulting architect, the project architect and the Campus Planning Committee and are recommended by all.

/s/ MLP

M. L. Pennington
Vice President for
Business Affairs

MLP:g

cc: Dr. Glenn E. Barnett
Miss Jerry Kirkwood
Mr. John G. Taylor
Mr. Hollis Smith
Mr. Howard Schmidt

C O P Y

TEXAS TECHNOLOGICAL COLLEGE
 Graduate Fellowships and/or Scholarships
 For the Fiscal Year 1968-1969

<u>Name</u>	<u>Department</u>	<u>Amount of Fellowship</u>	<u>Period of Award</u>
Mr. Richard Edward Davis	Health, P.E., & Rec. for Men	\$ 100.00	Fall 1968
Mr. Jesse Lynn Marsh	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. Larry Don May	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. Swayne Eric McCauley	Health, P.E., & Rec. for Men	200.00	Fall 1968
Mr. Tommy Ray Oehrlein	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. David William Rogers	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. James Lee Wilkerson	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. Michael James Williamson	Health, P.E., & Rec. for Men	100.00	Fall 1968
Mr. Jasper E. Adams	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Jyoti Prakas Basu	Mathematics	200.00	Fall 1968
Mr. William A. Donnell	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. John C. Drummond	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Dennis A. Johnston	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Gerald V. McWilliams	Mathematics	600.00	1st & 2nd Sum. Terms

<u>Name</u>	<u>Department</u>	<u>Amount of Fellowship</u>	<u>Period of Award</u>
Mr. Charles G. Moment	Mathematics	\$ 600.00	1st & 2nd Sum. Terms
Mr. James L. Poirot	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Robert L. Sartain	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. David D. Shoemaker	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Joe B. Thrash, Jr.	Mathematics	600.00	1st & 2nd Sum. Terms
Mr. Everette Don Williams	Mathematics	600.00	1st & 2nd Sum. Terms
Miss Dorothy A. Ettl	Clothing & Textiles	100.00	Spring 1969
Mrs. Betty J. Mills	Clothing & Textiles	150.00	Spring 1969
Mr. James S. Fickle	Agronomy & Range Mgt.	200.00	Spring 1969
Mr. Robert L. Crooks	Psychology	200.00	Spring 1969
Mr. Howard D. Helwig	Psychology	200.00	Spring 1969

M E M O R A N D U M
FROM
OFFICE OF THE VICE PRESIDENT
FOR BUSINESS AFFAIRS

TO: Mr. J. Roy Wells

DATE: January 2, 1969

SUBJECT: DOCKET ITEM

Biology Building

Will you please include an item in the Agenda for the Board of Directors to approve Change Order No. 6 to the contract with H. A. Lott, Inc., for the construction of the Biology Building as follows:

Add

Revise sink and fittings in Darkroom 058 for particular requirements undetermined during the planning of the space. This provides for close temperature control of the liquids and a sink large enough to accommodate plate development and resistive to the chemicals which will be used. -----\$ 419.00

Revise wiring to put each compartment of the greenhouse on a separate circuit and add a time clock and switch to each circuit. This will allow closely controlled supplemental lighting for varying requirements of the operations in each compartment. -----\$2,492.00

Total -----\$2,911.00

The net addition of \$2,911.00 increases the total cost to \$3,990,974.03.

The changes have been requested by Dr. Camp and approval has been recommended by him, the project architects, the consulting architect and the Campus Planning Committee.

/s/ MLP
M. L. Pennington
Vice President for
Business Affairs

MLP:g

cc: Dr. Glenn E. Barnett
Mr. John G. Taylor
Mr. Hollis Smith
Miss Jerry Kirkwood
Mr. Howard Schmidt

C O P Y

OE 8020 (7/67)
(Formerly HUD 4233 F)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
Washington, D. C. 20202

C O N T R A C T

THIS AGREEMENT, made this 29th day of November, 1968, by and between Texas Technological College, herein called "Owner," acting herein through its Board of Directors, and H. A. Lott, Inc., Contractors and Engineers of Houston, Texas, County of Harris, and State of Texas, hereinafter called "Contractor."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

Architecture and Art Facility
Texas Technological College
Lubbock, Texas
Project No. 4-7-00079-0

hereinafter called the project, for the sum of four million, two hundred sixty thousand, seven hundred eighteen and no cents Dollars (\$4,260,718)* and all extra work in connection herewith, under the terms as stated in the General and Special Conditions of the Contract; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and Special Conditions of the Contract, the plans, which include all maps, plats, blue prints, and other drawings and printed or written explanatory matter thereof, the specifications and contract documents therefor as prepared by Ford, Powell and Carson, herein entitled the Architect/Engineer, and as enumerated in Paragraph 1 of the Supplemental General Conditions, all of which are made a part hereof and collectively evidence and constitute the contract.

*CONTRACT AMOUNT DERIVATION

1. General Construction

Base Bid	\$3,398,000.00
Less All Alternates	- 169,850.00

Adjusted Amount..... \$3,228,150.00

2. Elevator Work

Base Bid	\$ 285,409.00
Less All Alternates	- 74,110.00
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Adjusted Amount.....	\$ 211,299.00

3. Electrical Work

Base Bid	\$ 375,000.00
Less All Alternates	- 17,681.00
<hr/>	
Adjusted Amount.....	\$ 357,319.00

4. Mechanical Work

Base Bid	\$ 808,000.00
Less All Alternates	- 30,600.00
<hr/>	
Adjusted Amount.....	\$ 777,400.00

TOTAL ADJUSTED AMOUNT
WITH ALL ALTERNATES ACCEPTED..... \$4,574,168.00

5. List of negotiated items
identified as Addendum
No. 7, attached to and made a
part of this contract.

Deduct..... \$ 313,450.00

TOTAL CONTRACT AWARD AMOUNT..... \$4,260,718.00

It should be understood that Alternate No. 7 in the amount of \$33,286.00, Alternate No. 5 (mechanical and electrical portions) in the amount of \$20,086.00 and Alternate No. 8 in the amount of \$1,706.00 are being reinstated in the project as Change Order No. 1 and issued to the Contractor concurrent with this Contract, but are not included as a part of the contract award amount of \$4,260,718.00.

Of the Contract sum of \$4,260,718.00, \$1,660,718.00 is included for labor and \$2,600,000.00 is included for material.

The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within 608 consecutive calendar days thereafter. The Contractor further agrees to pay, as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter as hereinafter provided in Paragraph 19 of the General Conditions.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Paragraph 25, "Payments to Contractor" of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal)
ATTEST:

Texas Technological College
(Owner)

/s/ J. Roy Wells
Mr. J. Roy Wells-(Secretary)

By /s/ Retha R. Martin
Mr. Retha R. Martin

Chairman, Board of Directors
(Title)

(Witness)

(Seal)

H. A. Lott, Inc.
(Contractor)

/s/ R. L. Goodale
(Secretary)

By /s/ Alan C. Farnsworth
Alan C. Farnsworth

President
(Title)
6315 Gulfton, Box 36303
Houston, Texas 77036
(Address)

(Witness)

NOTE: Secretary of the Owner should attest. If Contractor is a corporation, Secretary should attest.

C O P Y

M E M O R A N D U M
FROM
OFFICE OF THE VICE PRESIDENT
FOR BUSINESS AFFAIRS

TO: Mr. J. Roy Wells

DATE: December 30, 1968

SUBJECT: DOCKET ITEM

Architecture and Art Facility

Will you please include an item in the Agenda for the Board of Directors to approve Change Order No. 1 to the contract with H. A. Lott, Inc., for the construction of the Architecture and Art Facility as follows:

	<u>Deduct</u>	<u>Add</u>
1. Reinstate Alternate #7 (which had eliminated the subbasement from the Art Building) as described in the contract documents. -----	\$ -0-	\$33,286.00
2. Reinstate Items (7), (8) and (9) of Alternate #5 (which had eliminated plumbing; heating, ventilating and air conditioning; and, electrical equipment from the subbasement of the Art Building) as described in the contract documents. -----	-0-	20,086.00
3. Reinstate Alternate #8 (which had substituted manually operated screens for motor operated by H.E.W. procedural requirements) as described in the contract documents. -----	-0-	1,706.00
4. Reinstate Alternate #9 (which has substituted exposed aggregate concrete paving for brick pavers) as described in the contract documents. -0-	-0-	<u>-0-</u>
Total -----	\$ -0-	<u>\$55,078.00</u>

The change order is a part of the contract award which was approved by the Board of Directors. It is necessary to have a docket item as the reinstatement of the alternates is not included in the contract award amount.

/s/ MLP
M. L. Pennington
Vice President for
Business Affairs

MLP:g
cc: Dr. Glenn E. Barnett
Mr. John G. Taylor
Mr. Hollis Smith
Miss Jerry Kirkwood

C O P Y

COORDINATING BOARD
TEXAS COLLEGE AND UNIVERSITY SYSTEM
SAM HOUSTON STATE OFFICE BUILDING
AUSTIN, TEXAS 78701

FOURTH ANNUAL STATE TECHNICAL SERVICES PROJECT MATCHING GRANT
FOR FISCAL YEAR 1969

GRANT PERIOD July 1, 1968 TO June 30, 1970

SUB-GRANT (PROJECT) NUMBER 69 830 510

TO THE SUB-GRANTEE: Texas Technological College

THIS MATCHING GRANT, AUTHORIZED UNDER SECTION 10(b) OF PUBLIC LAW 89-182, IS FOR THE CONDUCT OF THE TEXAS STATE TECHNICAL SERVICES PROJECT IDENTIFIED BELOW AND AS SET FORTH IN REFERENCED DOCUMENTS WHICH BECOME A PART OF THIS GRANT BY REFERENCE.

TITLE OF PROJECT

Management Science for the Businessman

TOTAL AMOUNT OF GRANT
NOT TO EXCEED

\$1,600

By accepting this grant, the sub-grantee affirms that the "Assurances of Compliance with the Department of Commerce Regulations under Title VI of the Civil Rights Act of 1964" is fully applicable to this grant and to any program assisted thereby.

It is agreed and understood that the project will be carried out in accordance with the provisions of the following documents:

1. Proposal for work to be carried out, submitted by Dr. Vincent P. Luchsinger on May 1, 1968. The sub-grantee also agrees to conduct the project within the approved attached budget. Prior approval must be obtained for expenditures exceeding by more than 25% the amount of an approved budget line item of \$1,000 or more.
2. Public Law 89-182, The State Technical Services Act of 1965.
3. Office of State Technical Services General Regulations (printed in Federal Register, April 19, 1966, Vol. 31, No. 75).
4. Rules established under Section 5(c) of Public Law 89-182 to Prevent Dual Compensation and Conflicts of Interest.

5. OSTIS Memorandum No. 5, dated August 10, 1966, setting forth policy as to allowable expenses for Participants in State Technical Services Programs.

ACCEPTED:

FOR Texas Technological College
(Participating Qualified Institution)

BY /s/ Grover E. Murray
Grover E. Murray

NAME/TITLE President

DATE December 16, 1968

STATE OF TEXAS - STSA DESIGNATED
AGENCY: COORDINATING BOARD, TEXAS
COLLEGE AND UNIVERSITY SYSTEM

BY /s/ Bevington Reed
Bevington Reed

TITLE Commissioner of Higher Education

DATE 12-31-68

C O P Y

REPORT TO THE BOARD OF DIRECTORS
OF
TEXAS TECHNOLOGICAL COLLEGE

18 January 1969

RESEARCH REPORT NUMBER ONE

by

Dr. Monty E. Davenport
Associate Vice President for Research and Special Programs

RESEARCH REPORT NUMBER ONE
TO THE BOARD OF DIRECTORS OF
TEXAS TECHNOLOGICAL COLLEGE
by Monty E. Davenport

INTRODUCTION

Research is a major responsibility of a university. The discovery of new knowledge and the teaching and learning of existing knowledge are complementary activities. Universities possess a substantial part of society's intellectual talents; therefore, universities are obligated to meet a substantial part of the research needs of our society.

The quality of education is enhanced by well-conceived research efforts. Only through significant graduate research programs can Texas Tech gain recognition from the academic community and thus attract the quality faculty necessary for excellence in higher education.

Although research is a relatively new dimension at Texas Tech, it is an extremely important one and is growing rapidly in quality, size and scope. The growth of research has paralleled the growth of the graduate studies as would be expected. In fact, research should not be considered an activity separate and apart from our education and public service roles, but rather an integral part of the whole educational process.

To give an indication of the growth, expenditures for research at Texas Tech were \$768,000 in 1966 and \$1,582,000 in 1968. As of the first of December we have a nominal annual figure of \$2,029,956 from the following sources:

State	\$750,444
Federal	\$841,260
Private	\$483,252

1. FUNDING PATTERNS

Funding of university research is complex, consisting of various sources of support, including institutional (largely state in state supported institutions), private, industrial, and federal. By examining funding patterns of several state universities at various stages of development over the country, we should be able to gain considerable insight. Historical data are presented to illustrate the major points. Substantial federal support of university research is a post World War II phenomenon. The increase in federal funding of research at the end of World War II was very substantial, and it has been extremely difficult for those universities that did not participate in the initial increase in federal funding to achieve large federally funded research programs.

1.1. Sponsored Research at Selected Universities

The first example is a well-developed, prestige state university. The data are for only one school and for some individual departments. The charts, Exhibits A, B, C, and D, show the expenditures from 1941 through 1965 of a single school and three different departments within that school. With the exception of Department One, Exhibit B, it is observable that very substantial increases in sponsored research occurred in 1947. The bulk of this support was federal. For the school as a whole, expenditures in 1946 were less than \$200,000 and in 1947, exceeded \$1,200,000. This initial increase provided the base for future development of research at this university. The large increase in 1952 over 1951 expenditures is attributable to the Korean

War. The results of Sputnik and the subsequent NASA support of research is evidenced in the early sixties. The large increase in 1965 is attributable to the establishment of a large, multidisciplinary research laboratory. Exhibit B indicates a relatively weak department within this school. Notice that the large increase in 1947 did not occur and that the subsequent development has not kept pace with the other two example departments. Departments Two and Three exhibit the dramatic increase in support in 1947. The funding for this institution has leveled off somewhat since 1965.

The second example is for a university that is well established, but not as well developed as the first example. Expenditures for 1940 through 1967 are shown in Exhibit E, indicated as University A. Although the initial increase in 1947 is not as pronounced as in the first example, observe the rather substantial base established during the late forties and early fifties. Also notice the significant jump attributable to the Korean War, the similar rate of increase after Sputnik, and the increase in the very late sixties attributable to geographic redistribution.

The third example, Exhibit B, is an institution that is smaller than the previous two, although still an important state university, yet is less well developed in research than the other two. The very large increase in 1947 is apparent. The establishment of a research base in the late forties and early fifties was not as firm, and the later increases are not so pronounced as in the two previous examples.

In summary, two primary points are to be drawn from this discussion. Relatively large amounts of federal funding became available

immediately after World War II, and the well-established research institutions, or well-established universities in research developed a strong research base during the late forties and early fifties which has perpetuated itself. Since 1965, the trend of geographic redistribution is apparent.

1.2. Sponsored Research at Texas Tech

Exhibit G shows expenditures for sponsored research at Texas Tech from 1942 through 1967. Notice that there was no sponsored research at Texas Tech until 1952. In other words, the substantial base for research programs was not established during the first period of large expenditures from federal sources. The growth of research at Texas Tech, however, parallels the growth at the other example institutions once the base was established. The geographic redistribution of federal funds is also reflected in the growth pattern at Texas Tech. As stated in the Introduction, expenditures for research at Texas Tech were \$768,000 in 1966 and \$1,582,000 in 1968. As of the first of December we have a nominal annual figure of \$2,029,956 from the following sources:

State	\$750,444
Federal	\$841,260
Private	\$483,252

Exhibit H shows total funds for grants and contracts from all sources by school or research unit in effect as of December 1, 1968.

1.3. Role of State Supported Research

Exhibit I shows funding for research at Texas Tech from 1955 projected through 1969, exclusive of special line item appropriations for research. The role of the organized research from state funds is

evident from this exhibit. Each increase in state support has resulted in a subsequent substantial increase in sponsored research, indicated on the exhibit as restricted funds. This is primarily the result of two factors: one is that research projects generally require preliminary investigations. If institutional resources are available for these preliminary investigations, frequently proposals to outside agencies result and are subsequently funded. The other factor is that virtually all federally funded research requires institutional matching funds, so that resources under the control of the institution are required in the development of significant amounts of outside funding. DuBridge has said of outside funds, "They may assist in the support of research where it is already underway: where there is a commitment on the part of the institution to a research program, where a start has been made and competence demonstrated. The institution that only tolerates research, that does not expect to use its own funds but depends solely on government or other grants to support research, is treading a precarious path, and is probably due for a disillusionment. Under those circumstances, government grants are hard to find, and if they come, they will not in the long run pay all the costs."¹

In 1965-66, the University of Georgia had a research budget of \$15,000,000 of which \$6,450,000 were internal funds, and \$8,550,000

¹ DuBridge, Lee A., "Research and Academic Policy," Sponsored Research in American Universities and Colleges, ed., Stephen Strickland, American Council on Education, Washington, D. C., p. 9.

were outside funds.² Quoting DuBridge again, "The first essential question is: what kind of research program is consistent with the aims, objectives and potential capabilities of the institution? After it has been decided what kind of research program on what total scale is appropriate, the subsequent essential question is: how is it to be financed?"

One of the integral parts of graduate education is the research experience for the graduate student. Although Texas Tech has experienced some rapid growth in funding for research as indicated in Exhibit I, the expenditures per graduate student for research have not been as dramatic (Exhibit J). In fact, during 1968 expenditures per student were not as great as in 1961. The projected expenditures for 1969 per student reflect a somewhat more optimistic position.

The distribution of organized research from state funds among schools is shown in Exhibit K. Exhibits L, M, and N are listings of organized research projects from state funds for 1967, 1968 and 1969, by department, by school, and by special items.

2. CURRENT FEDERAL FUNDING OF RESEARCH

The two most apparent recent trends in federal sponsorship of university research are the leveling off of expenditures, actually a decrease this year, and the geographic redistribution of federal support as previously indicated. The reasons for the relative decrease are quite complex; however, the primary causes appear to be the financial demands of the Viet-

² Anderson, Robert C., and Robert A. McRorie, "Sponsored Research, Graduate Training, and Academic Growth," Sponsored Research in American Universities and Colleges, ed., Stephen Strickland, American Council on Education, Washington, D. C., p. 26.

nam War, the disenchantment brought on by campus unrest, and the perceived failure of researchers to adequately relate their work to the national goals and priorities.

2.1. Limitation of Federal Funding

The example of the limitation of expenditures from National Science Foundation support will serve to illustrate the problems associated with the current federal reduction in support of research. Texas Tech had budgeted expenditures under approved grants for federal fiscal year 1969 of \$496,975. It was necessary for the National Science Foundation to impose a limitation of expenditures during this period of \$316,000. Fortunately this limitation was raised to \$375,000 after a request from Texas Tech to the National Science Foundation was submitted. This request was based on a careful analysis of the problem, involving a great deal of help from the faculty. The faculty is to be commended for their professionalism and dedication in helping to meet this problem.

2.2. Matching Requirements

In recent years universities have been required by executive order to the agencies to contribute nonfederal funds to virtually all sponsored research projects. The rationale for this requirement is that the universities benefit from the research as well as the agencies sponsoring the research. Although there is no uniformly applicable percentage contribution from the university, the general competitive figure is approximately fifteen percent. However, there are numerous programs that require the institution to bear a full fifty percent of the cost of the program. These matching requirements obviously have a major impact on our funding of research.

3. PROPOSALS FROM TEXAS TECH

Virtually all grants and contracts result from proposals, formal or informal. In addition, the proposal may be unsolicited or solicited by the sponsoring agency. Among the most important criteria for selecting projects to support are qualifications and visibility of the principal investigator, confidence in the institution, quality of the proposal, and relevance of the proposed research to the mission of the agency. Not all first-rate proposals are successful. Thus, proposal writing is a major part of a well-funded research program.

3.1. Volume of Proposals

Exhibit O shows the number volume of proposals submitted by Texas Tech in the past four years. The annual rate of submission of proposals approximately doubled from 1965 to 1968, with approximately 150 proposals being submitted in 1968. Of course, the number of proposals is not the only measure of proposal activity. In addition, the scope, quality, and size of project represented are also important considerations. In these respects, also, proposal activity at Texas Tech has increased rapidly. For example, in the past two weeks four of the proposals submitted requested funds of \$963,000. The percentage of proposals which have been successful has not yet been measured, although this is being done and will be available in the future on a continuing basis.

3.2. Faculty Needs in Proposal Preparation

Since the preparation of quality proposals is a necessary requisite of sponsored research, a large effort in proposal preparation is required to be most effective. Texas Tech must provide maximum support to the faculty in this regard. Services should be provided which reduce the

nonproductive demands on the faculty members to a minimum. Of direct consequence in proposal preparation are the following services: budget preparation, typing, editing, preparation of technical illustrations, format considerations, and reproduction services. Of perhaps greater importance is the establishment of a central repository of information pertaining to research. Such a repository should include the brochures of the various agencies, their current objectives, types of research that are favorably considered at each agency, the particular style and format required by the agency, appropriate individuals to contact, and any other pertinent information. This information should not be passively available, but every effort should be made to disseminate it to the appropriate faculty members. Every effort should be made to provide funds for travel of our faculty members to the various agency headquarters in the pursuit of research. Program directors and the principal investigators can best discuss their mutual research needs and objectives. Provision of adequate services, administrative support, opportunity to discuss research problems with colleagues and program directors of agencies, and encouragement will greatly increase the number of quality proposals submitted by Texas Tech and result in substantial increases in outside funding for research.

4. RESEARCH RESULTS

A serious problem of the research community is the measurement of research results and the presentation of these results in a meaningful way to the supporting public.

4.1. Measure of Research Productivity

There are several measures of research productivity; one measure of success of a university research program is the recognition indicated by increases in the level of outside support for research and related activities during a period of time. Another relevant measure is the dissemination of knowledge, including research results to the community and to the society for which institutions perform their service roles. Other measures of research productivity are the number of advanced degrees and the number of publications, particularly the number of publications in reputable journals. Certainly if there is a large graduate program, then there must be considerable research being carried out if these graduate programs have quality. The number of publications is a yardstick for measuring research productivity. It is through publications that the researcher conveys his findings to his colleagues and to the users of research results. This measure can be refined if significant contributions in a particular field can be identified. The ability of the university to attract outstanding talent, faculty and students, is a significant measure of a quality research program. In addition to these measures, efforts are currently under way to trace research results at Texas Tech from specific results into economic, social, and cultural benefit to the State of Texas and to society at large. Research results from applied research are much more easily recognizable by the nonspecialist than are results from basic research. Typically applied research may lead to immediate results or immediate economic gain. Basic research results, on the other hand, are immediately apparent only to specialists within the field through increased fundamental understanding or increased knowledge and have no immediate apparent significance to the nonspecialists.

In spite of that fact, enormous impacts frequently result in a period of time.

4.2. Research Results at Texas Tech

One project alone has returned more to the economy of the State of Texas than the total cumulative support of research at Texas Tech in its entire existence. The result in that case was the proof that light-spotted cotton had more desirable characteristics than were once thought. There are numerous other less dramatic results to the credit of researchers at Texas Tech. In addition, basic discoveries have been made, and additions to knowledge have been made. An exhaustive list of research results and subsequent benefit is not currently available. We are trying various means of obtaining more information and more reliable information on this topic.

5. RESEARCH AND INSTRUCTION

Research is an integral part of a quality academic program. Ideally, the search for new knowledge, the application of existing knowledge to new problems, and teaching and learning go hand in hand.

5.1. Role of Research in Graduate Education

Research training and experience comprise approximately one-half of the effort of the doctoral program in most fields. The ability to seek new knowledge including new interpretation and new insights is one of the prime objectives of graduate education. The contribution to the body of knowledge within his field is a goal of each student's graduate education.

5.2. Research in Undergraduate Programs

It is often said that research programs proceed at the expense of undergraduate education. All too frequently this does occur. In my opinion, if the research program is separated from the educational including undergraduate, objectives in a university, this sacrificing of the undergraduate quality is likely to occur. On the other hand, if properly handled, great benefit can accrue to each undergraduate student as a result of research. Research programs should involve undergraduate students directly working with graduate students and faculty. In addition, if the efforts are not separated, the undergraduate student should benefit from the research by having access to the most up-to-date and latest interpretations of knowledge presented in the classroom by the faculty members engaged in research.

5.3. Student Support

The majority of graduate students require some kind of support other than family support. Most of this is provided through the universities. Teaching assistantships, fellowships, scholarships, and research assistantships are quite common. The research program provides research assistantships to students. The students are generally actively pursuing research and are gainfully employed on research projects, to the benefit of both the student and the project. This mode of support has the distinct advantage of providing research training and employment for the student.

6. RESOURCE REQUIREMENTS AND UTILIZATION

6.1. Variability of Requirements by Fields of Investigation

The resource requirements for research vary immensely between fields. Some investigators need only office space, pencil and paper, and library facilities. Others need vast experimental facilities, including expensive equipment and large amounts of laboratory space. If we relate research costs to graduate students, the research costs per full-time graduate student in the research phase of his studies may vary from approximately \$3,000 per year per student to \$35,000 per year per student. The resource requirements vary by category of resource, including faculty, supporting staff, experimental equipment, building facilities, computers, libraries, fabrication facilities, etc. The cost figures given above are derived from actual data at other universities and are not mere guesses.

6.2. Duplication of Facilities

A great opportunity exists for significant true economies and increased effective value in the area of sound management of research facilities because mismanagement in this area is traditional at universities. For example, it is not uncommon for a particular research apparatus belonging to a department, or worse yet to an individual professor, costing \$20,000 or more to be used only a few hours per year while the same equipment is desperately needed for a small amount of time in another department. The result is for the second department to do without or purchase the equipment. This is the worst kind of duplication. Then there is the matter of shop and other fabrication facilities being duplicated over and over on the same campus. Each shop is extremely expensive and is idle a great deal of the time.

Two extreme solutions to this complex problem are obvious: a) simply do not allow the purchase of the equipment if the purchase duplicates underused equipment already on campus; b) admit the problem has no solution and encourage proliferation of duplicate facilities among user departments. Neither of these alternatives is acceptable. The first would preclude the advancement of have not departments which in turn would limit the development of already established departments. The second alternative would continue one of the most wasteful practices in higher education. This duplication problem is a common problem among universities and is not peculiar to Texas Tech.

6.3. Facilities by Function Concept

Every effort should be made to develop our physical resources in a facilities by function mode. The operations of the library and the computer center provide examples of the facilities by function concept, supportive of the primary mission of the university. A serious effort should be mounted to combine other resources into centralized, separately funded service units. Examples are shops, instrument laboratories, certain kinds of research laboratories, facilities for audio-visual materials preparation, etc. In addition, the services to the investigators suggested previously should be provided. Extreme care must be exercised in centralizing facilities. If improperly done or inadequately funded, an attempt to centralize, for example, the shop facilities could disrupt the research and educational programs and do irreparable damage to the research effort.

7. FUTURE RESEARCH CLIMATE

7.1. Interdisciplinary Research

Today's more important scientific problems as well as those in the technical-sociological areas are much less likely to be solved by individuals working alone in their libraries or laboratories.³ For one thing, the growth of knowledge, which is reflected in the immense amounts of published literature, is proceeding at such a pace that the scientists cannot be expected to stay abreast of all the new advancements in his field. He certainly cannot be expected to assimilate all the new developments in other specialized fields. Today's problems are so diversified and complex that they require a multi-disciplinary approach--team effort.

As pointed out in the third progress report of the Subcommittee on Science Research and Development, ". . . The big issues of the future will require two special attributes: (1) An ability on the part of the Government, and particularly the Congress, to see and cope with each problem in its entirety--to deal with each as a complete system and to treat the entire syndrome rather than isolated phases of it. A current example is the environment, a large ecological systems problem, which must depend for its solution not only on science and technology, but on political considerations, judicial and legal situations, economic and tax factors, public relations, interstate and international cooperation and industrial evolution, together with the involvement of social scientists in preliminary stages of planning. (2) A willingness

³ Strickland, Stephen (Editor), Sponsored Research in American Universities and Colleges, American Council on Education, Washington, D. C.

to encourage and support approaches to the problems of the future which will join the social sciences with the physical sciences and engineering, and which make use of their combined powers. The necessity for this appears obvious when one looks closely at the difficulties facing modern society . . ."⁴

It is clear that investigations across departmental lines that involve various specialties--interdisciplinary research--will be required to meet these complex questions. There are great opportunities and great difficulties in interdisciplinary research. The process is not well understood, nor is there a great deal of accumulated experience in successful interdisciplinary programs. The communication problem is significant because each specialty has evolved its own particular language. The opportunities for real advancements, however, far outweigh the difficulties.

7.2. Research as a Problem Solving Activity

It is clear that society currently demands that universities contribute to the solution of its pressing problems in return for the continued support of research. This is not a new phenomenon; it is just that the universities are having difficulty in adjusting to today's problems. The same demands were made during and at the end of World War II. At that time, however, great potential existed for individual project, specialized research. Today, however, we must make a concerted effort to solve complex problems in a systematic, goal directed

⁴ . Policy Issues in Service and Technology, Review and Forecast, 3rd Progress Report of the Subcommittee on Science, Research, and Development, U. S. Government Printing Office, Washington, D. C., 1968.

manner. This applied research is not in conflict with basic research; on the contrary, it offers great promise for the renewed support of basic research. As we proceed into the major problem areas, significant voids in existing knowledge will be uncovered, recognized, and defined, pointing the way toward basic research in such a way that we can reasonably expect the support and confidence of our supporting public.

7.3. Probable Future Nature of Federal Support

It is impossible to predict with certainty the exact nature of the future of federal support. Certain trends are apparent, however. There will be a change in the type of funding. Until fairly recently, virtually all the support for research was provided on an individual project basis. There is currently a trend toward supporting research programs on a sustaining basis. This type of support is directed more toward the institution than toward the individual investigator. The THEMIS program of the Department of Defense is an example of this kind of funding, which has the objective of strengthening the institution in a particular problem area, as well as having specific research objectives. Extending this trend still further is the idea of some kind of formula funding for graduate education and research. This idea has wide support among the various associations of higher education and has attracted considerable Congressional attention. Project support will continue to be one component of the federal support picture. The trend toward institutional support is well defined and will probably continue.

The priorities on the type of problems to be investigated will probably change. During the past decade much attention and large capital

outlays have been directed toward our technological advancement (space programs, development in electronics, etc.) with little concern for environmental quality and urban problems. Today the city is characterized by such unsolved problems as educational needs, crime, traffic, urban blight, recreation shortages, air pollution, water supply, and other characteristics of immediate concern.⁵ It seems probable that the new focus on research will be directed toward our neglected domestic environment and toward urban problems, with such things as pollution control, faster and better transportation, better housing, and crime control being among first priority. Finally, the applied research or problem solving activity as discussed above will probably receive the greatest priority and the greatest support.

8. FUTURE OF RESEARCH AT TEXAS TECH--COMMENTS

Texas Tech is in a threshold position in regard to research: a base has been established, and a commitment has been made.

It is of vital importance that we now identify the major thrusts and goals of this university. We should then design a strategy for achieving these goals and seek the required support.

The study of the arid and semi-arid lands of the world is a major thrust. It is now time to focus on a particular approach in order to accelerate this effort and obtain concrete results. More narrow but significant programs in textile research, brush control, plasma physics, and human performance have demonstrated great potential. There are major core areas which have to be

⁵Strickland, Stephen (Editor). Sponsored Research in American Universities and Colleges, American Council on Education, Washington, D. C.

developed in order that basic university quality be established and continuity and quality be maintained in the applied interdisciplinary research program.

After establishing a goal structure and priority system, a funding strategy must be established. These tasks must involve extensive faculty participation and support if any hope of subsequent success is entertained. Although the funding strategy must wait for its complete definition until the goals and priorities are set, certain general considerations are apparent:

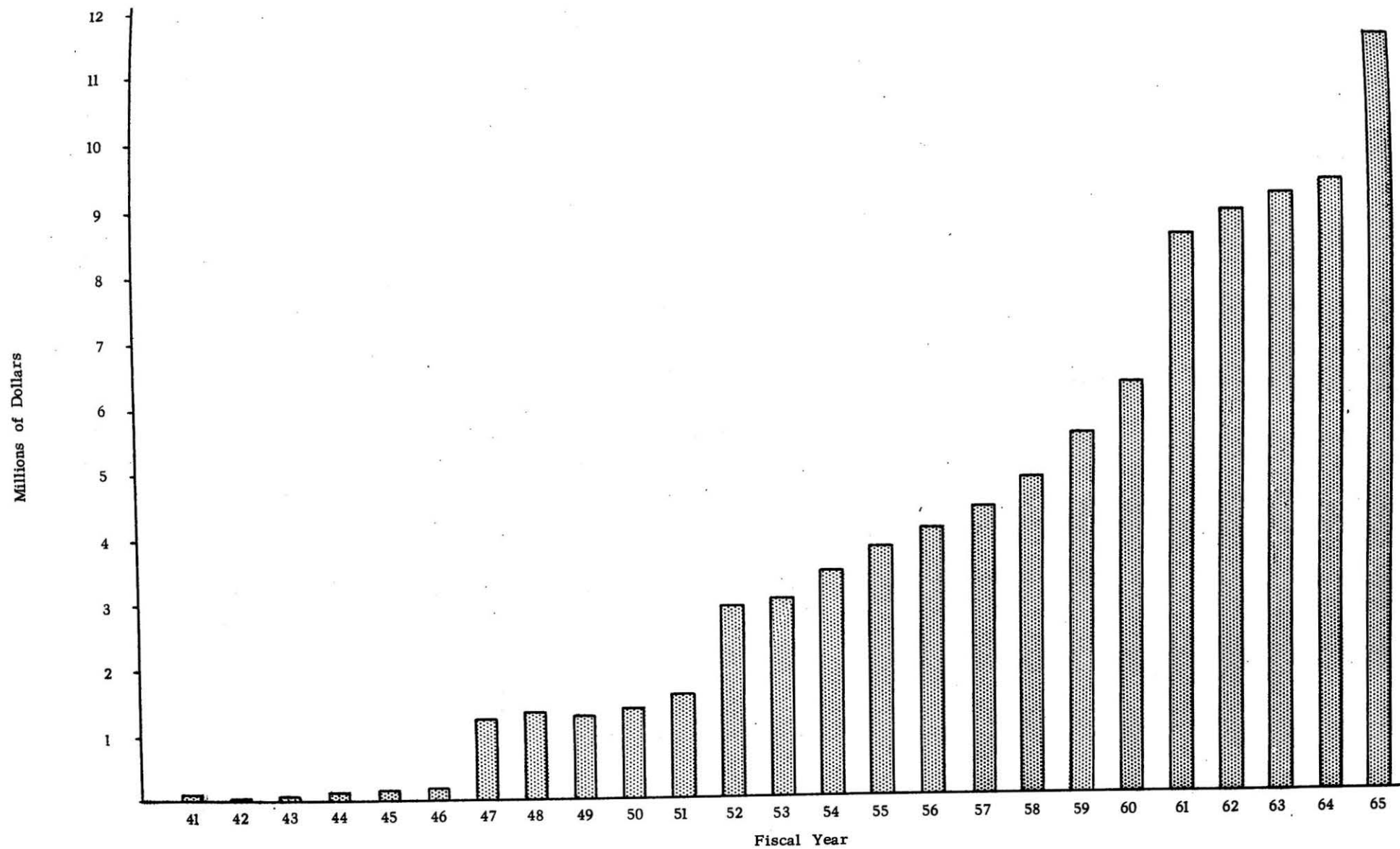
1. Eliminate the very small state grants, especially the ones which provide only some clerical help, student help, and small amount of office materials by providing central research services.
2. Eliminate the slightly larger but also small grants which provide a small amount of research assistant help and a small amount of equipment by an allocation to the deans for that purpose if they request it.
3. Work to the elimination of state organized research funds for summer salaries. It is recognized that the summer is frequently the best time to do the research, and it is not intended by this that summer salary support be eliminated if the research program is enhanced, but rather it is intended that organized research funds not be simply a means of providing summer salaries.
4. On the matter of indirect cost or overhead, we are constrained by the state law and the interpretation of that law on the part of the legislative budget board as to the disposition of funds recovered as indirect cost. However, we are not constrained, except in some instances, on the internal allocation of our total funding. The motivational and morale benefits of supplementary allocations to the

units generating indirect cost, to say nothing of the actual cost to these departments, would be substantial.

5. Increase the allocation of matching funds to encourage departments to seek additional support.

These actions do not constitute a complete list, and other actions will become necessary once the goal structure is set.

EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "C" FOR A SINGLE SCHOOL



EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "C", DEPARTMENT ONE

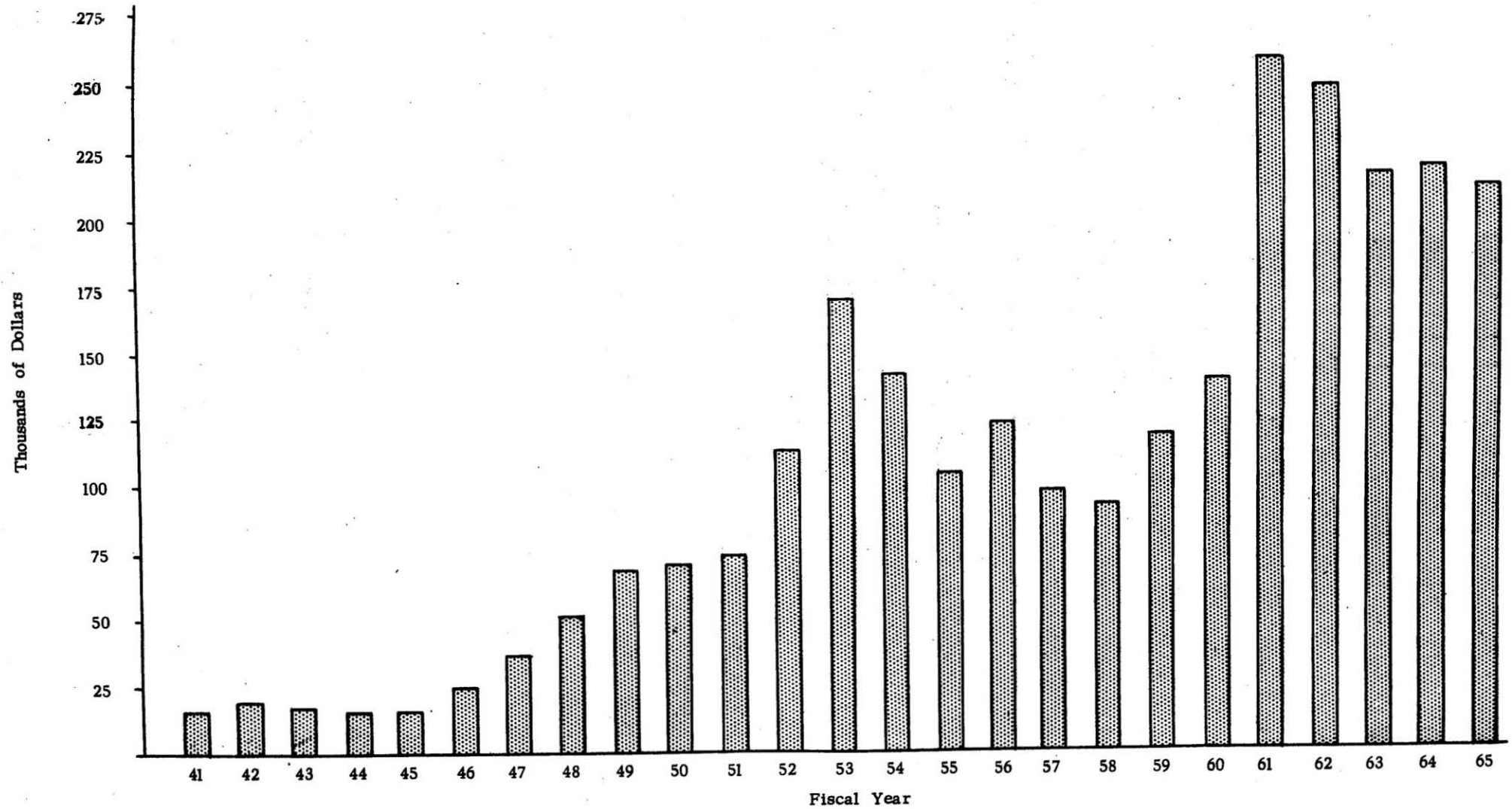


Exhibit C
EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "C", DEPARTMENT TWO

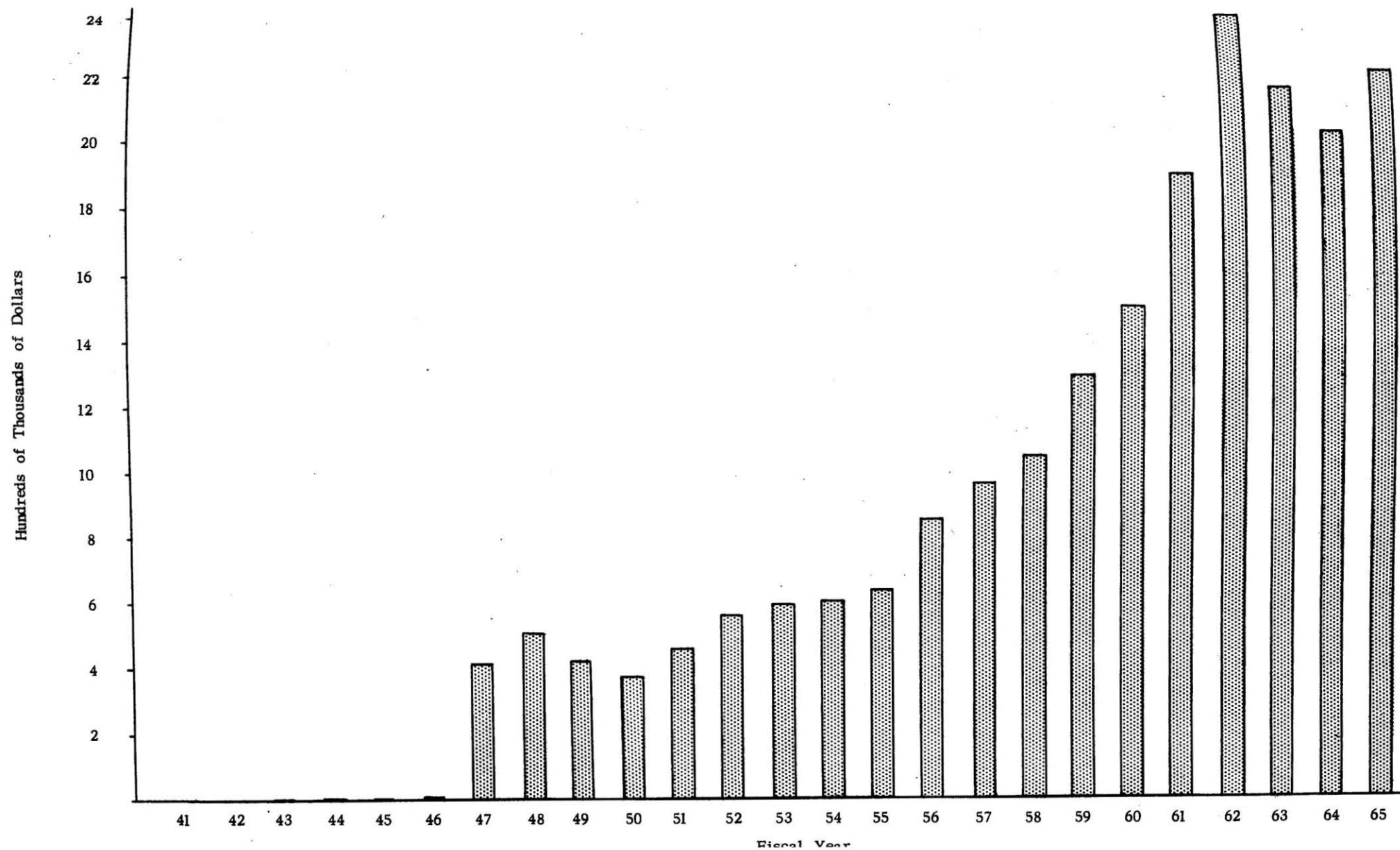


Exhibit D
EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "C", DEPARTMENT THREE

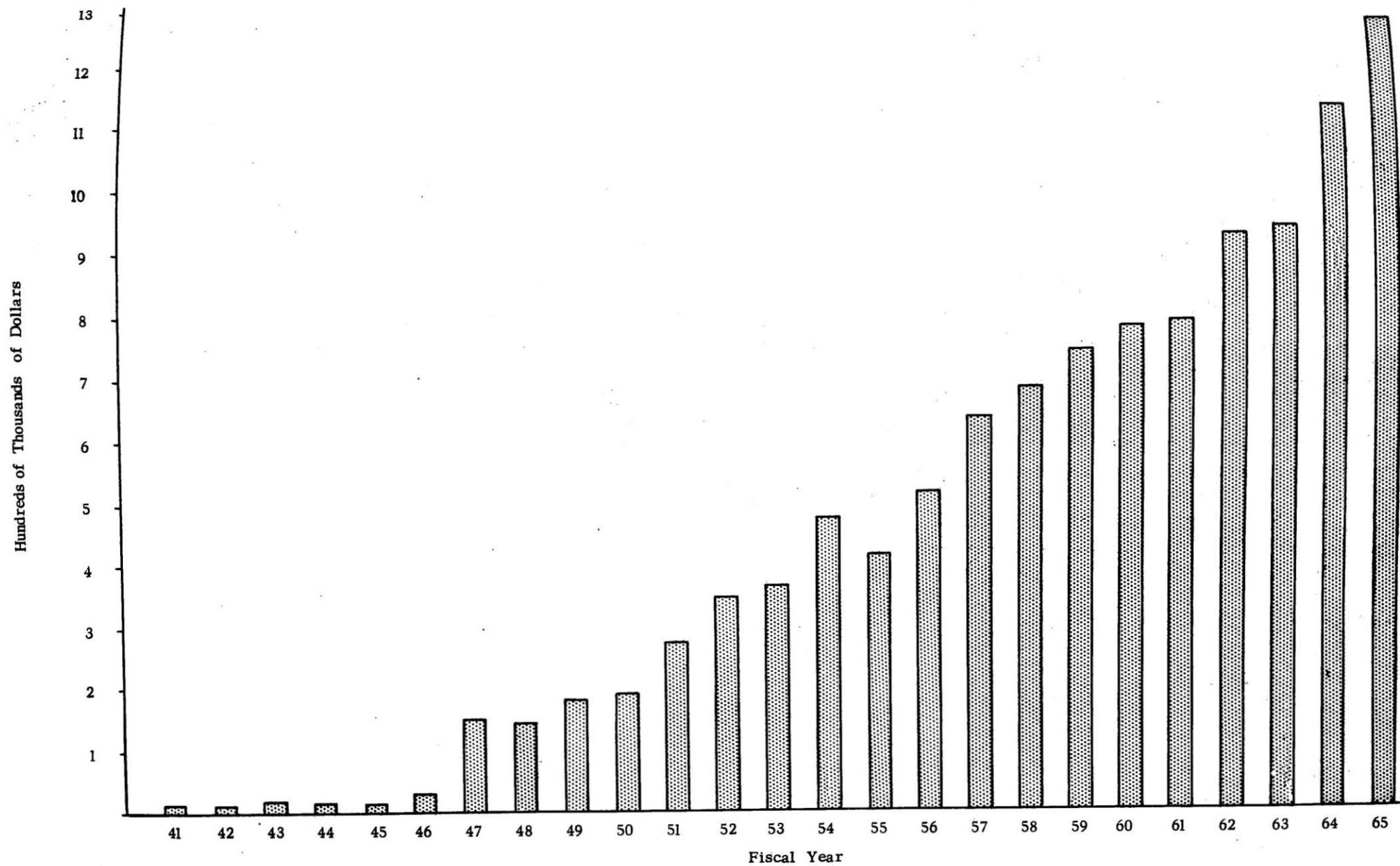


Exhibit B
EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "A"

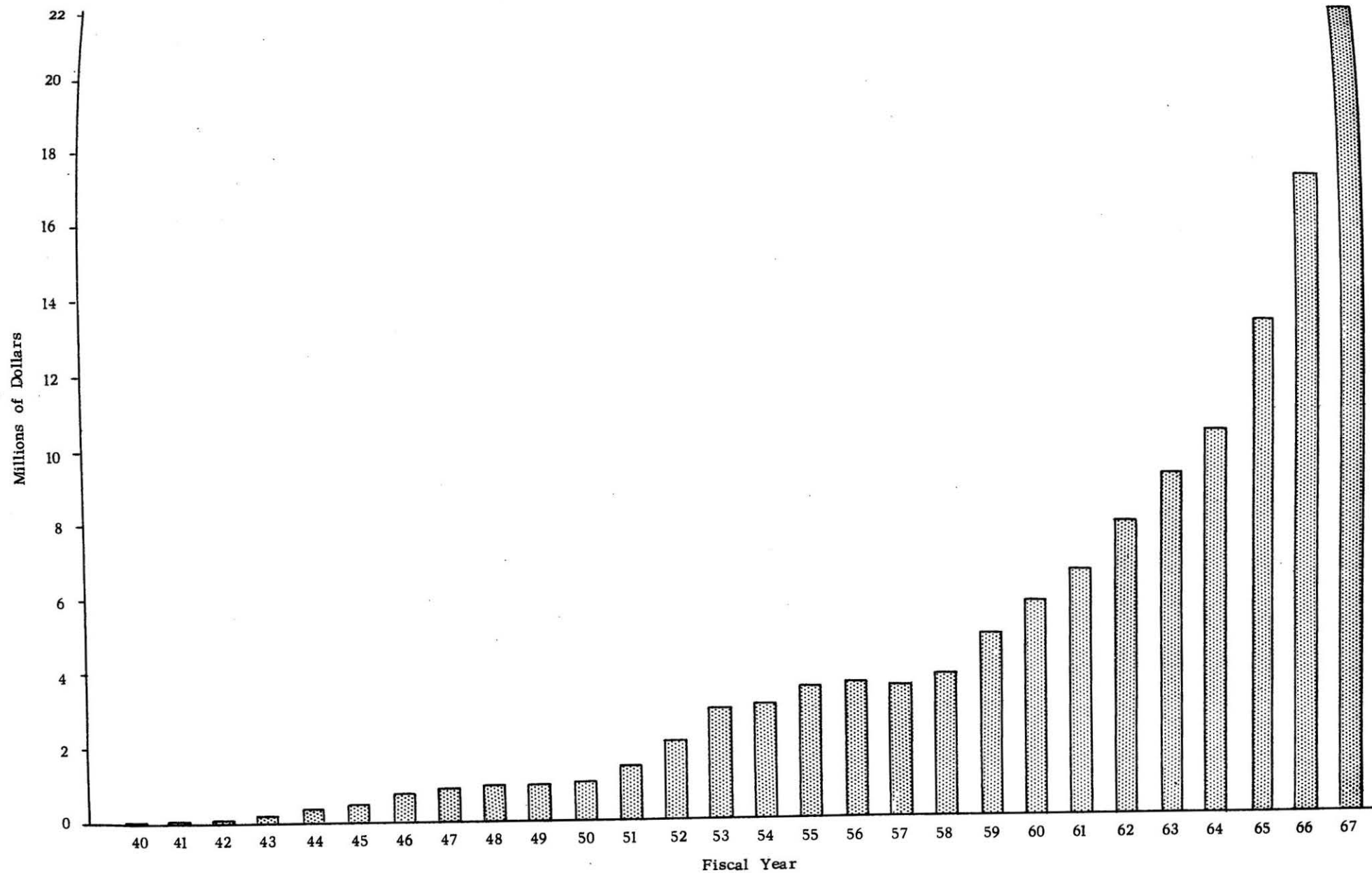


Exhibit F
EXPENDITURES FOR SPONSORED RESEARCH AT UNIVERSITY "B"

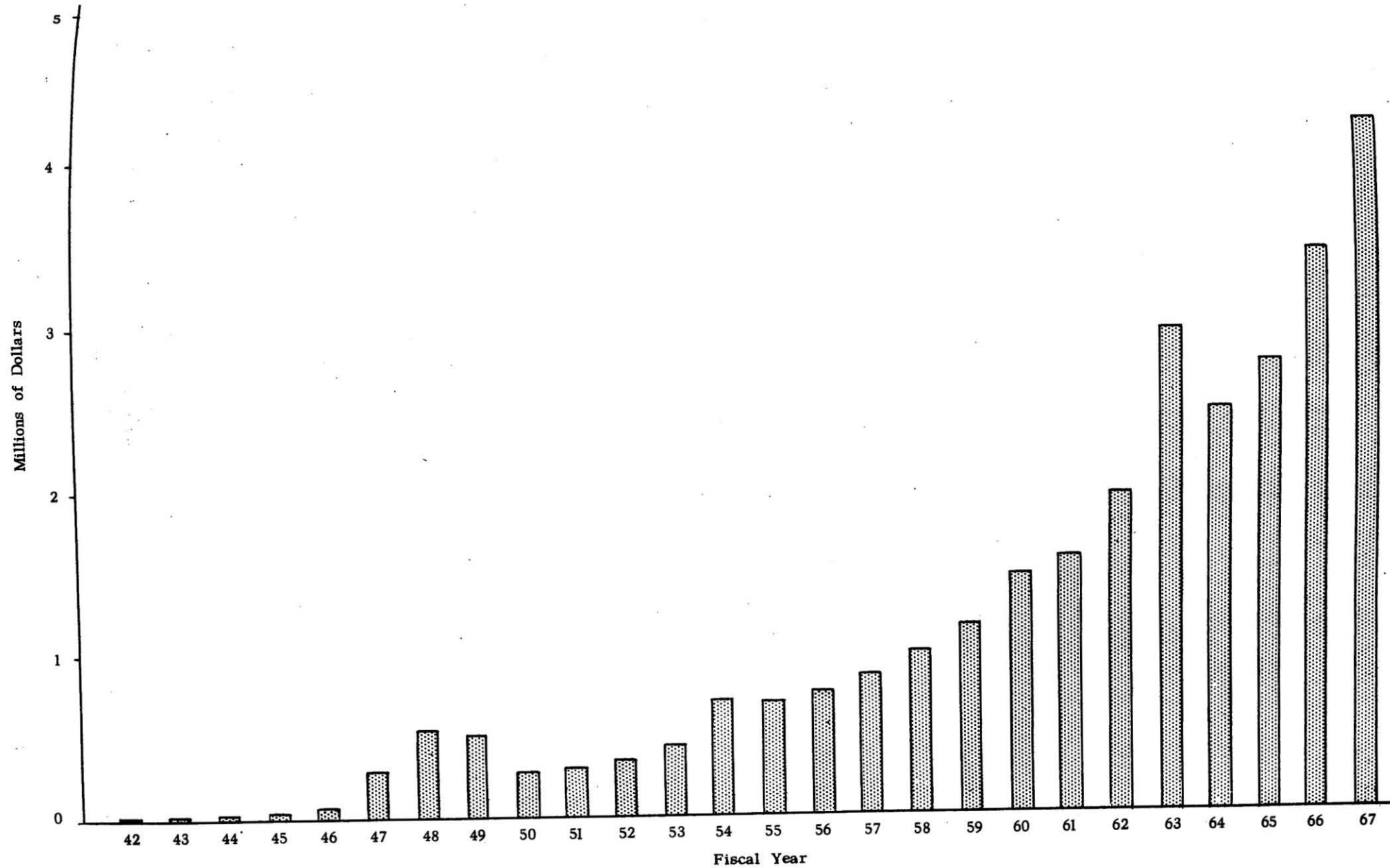


Exhibit G
EXPENDITURES FOR SPONSORED RESEARCH AT TEXAS TECH

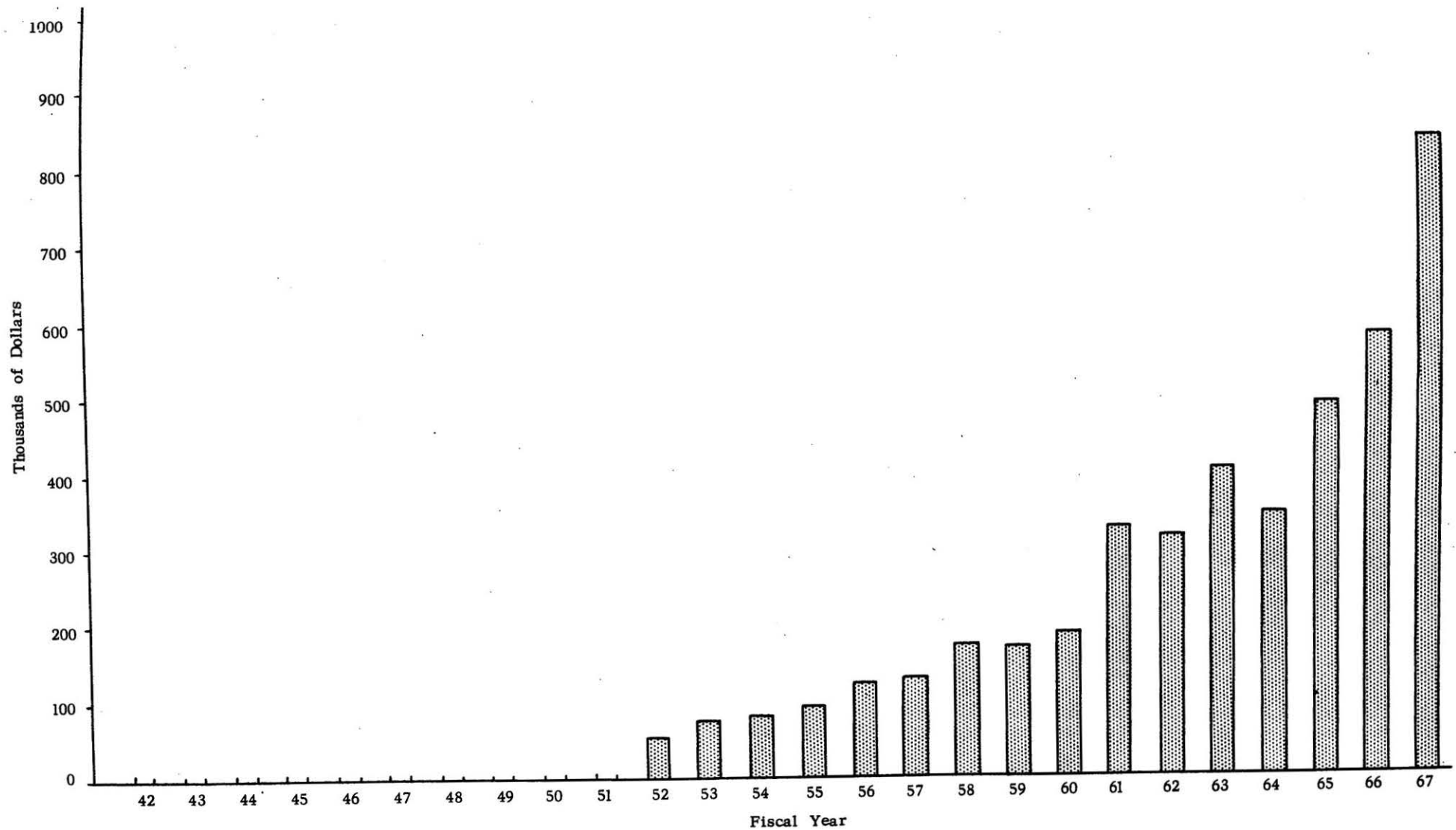


EXHIBIT H

COLLEGE TOTALS

<u>School</u>	<u>Grant Amount</u>
Agricultural Sciences -----	\$ 302,334.60
Arts and Sciences -----	1,127,405.62
Business Administration -----	14,519.00
Engineering -----	675,199.79
Home Economics -----	6,353.06
Computer Center -----	100,000.00
ICASALS -----	32,565.00
Textile Research -----	200,324.00
Water Research -----	<u>125,273.00</u>
Total -----	<u>\$2,583,974.07</u>

Exhibit T
ORGANIZED RESEARCH FUNDING

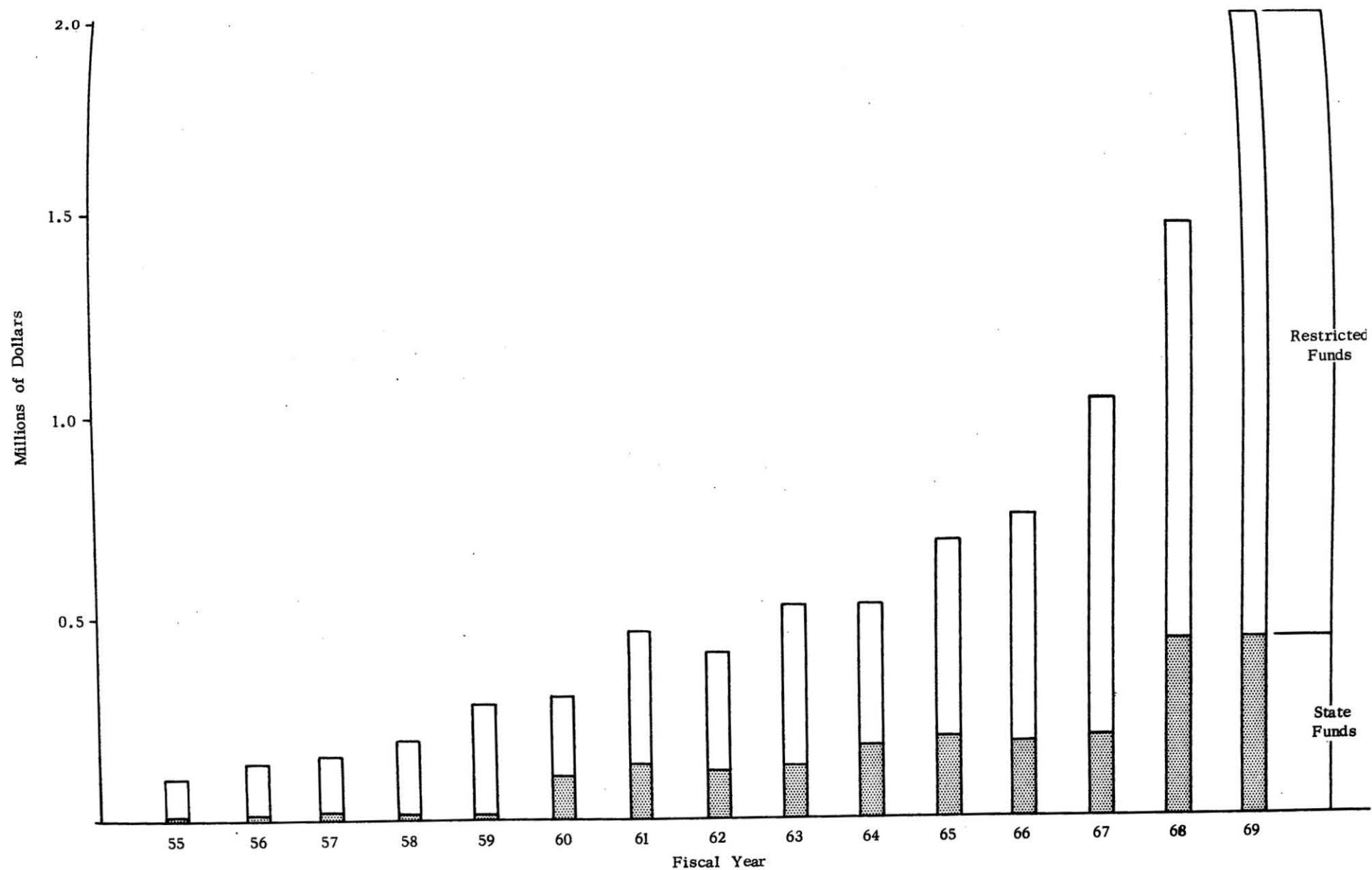


Exhibit 1
RESEARCH FUNDING PER GRADUATE STUDENT

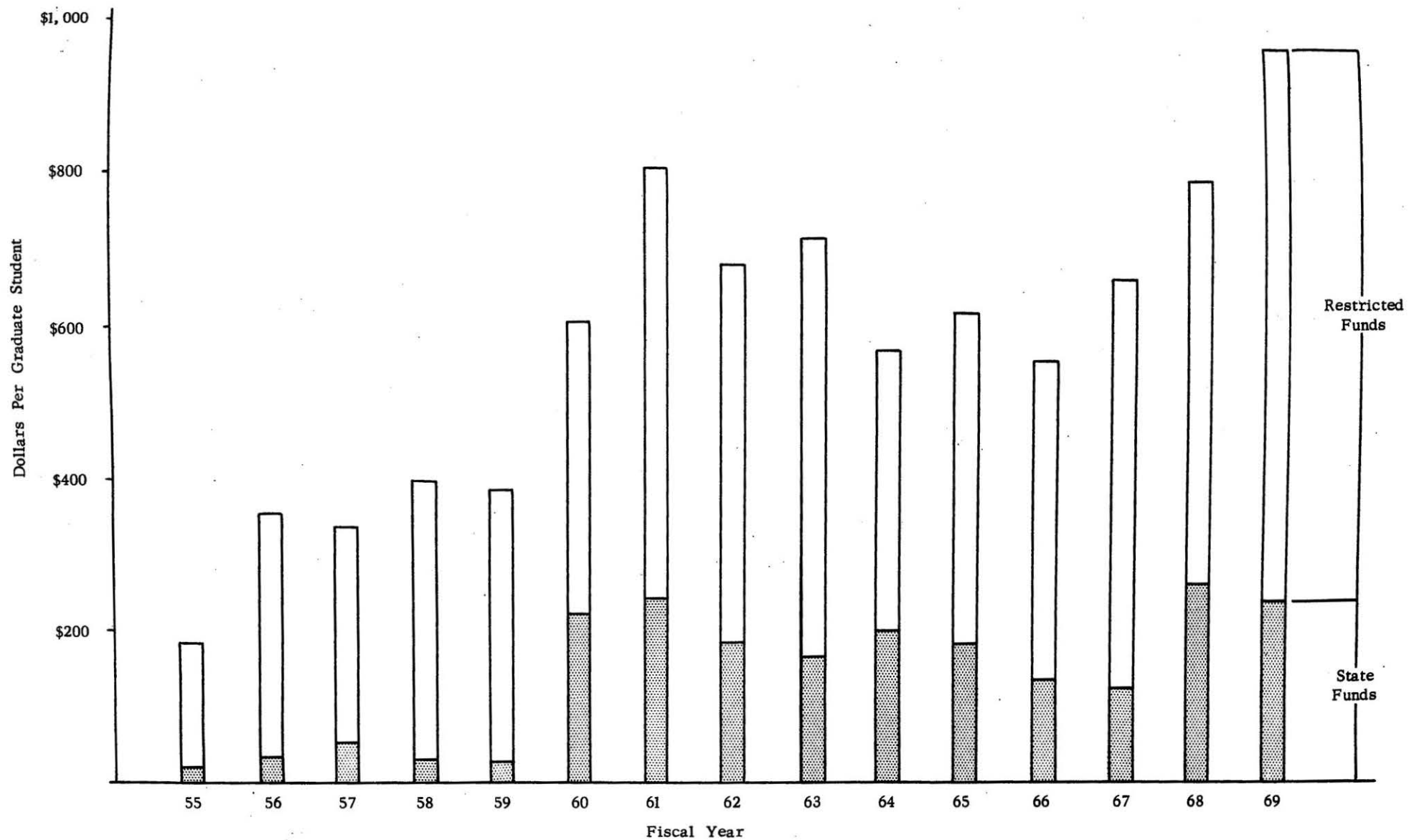


Exhibit K
ORGANIZED RESEARCH, STATE FUNDS
(1968 - 69)
TEXAS TECH

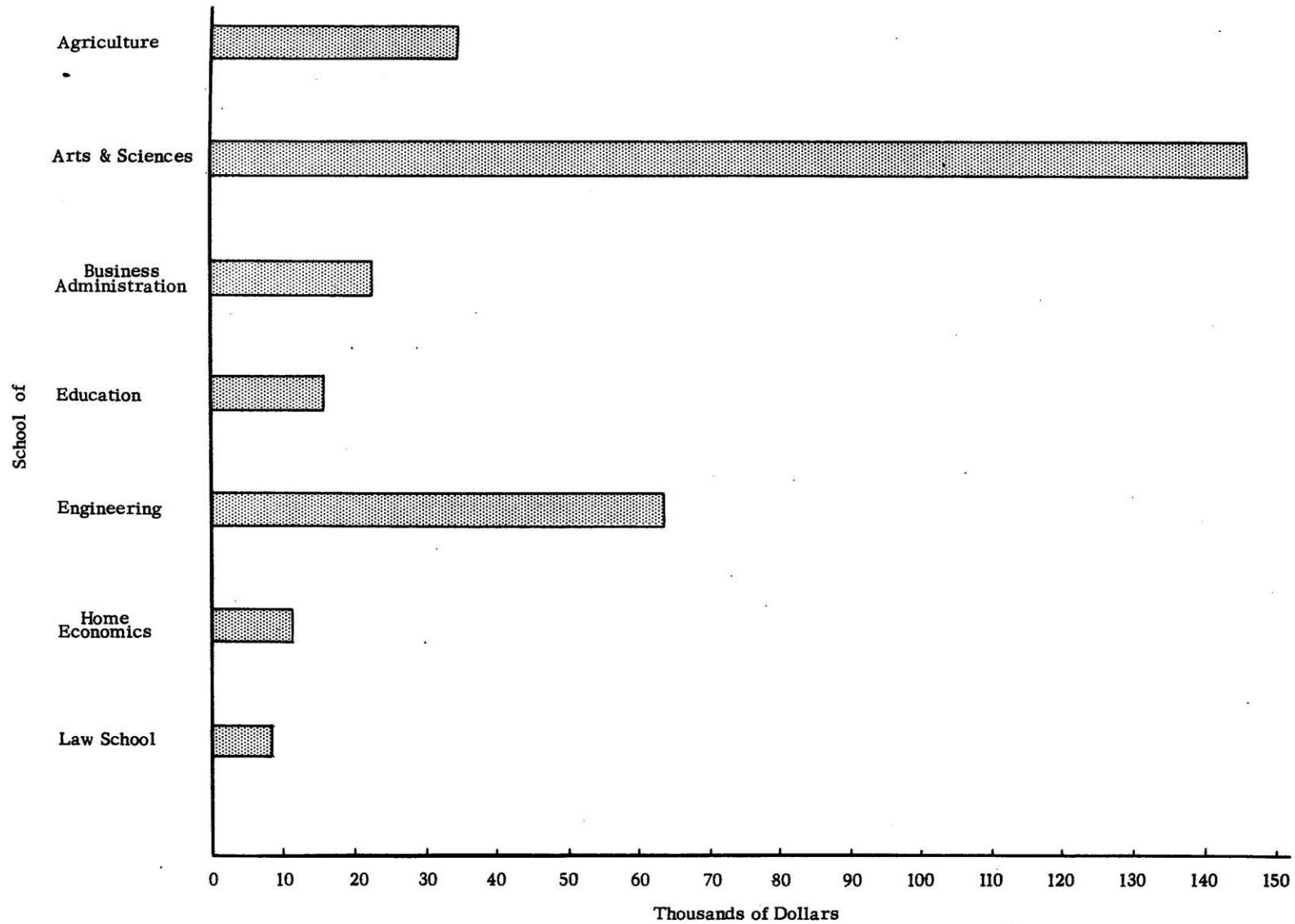


EXHIBIT L

ORGANIZED RESEARCH, STATE FUNDS

Fiscal Year Ending August 31, 1967

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF AGRICULTURAL SCIENCES</u>		
Agricultural Economics	Economic Evaluation of Factors Affecting Prices of Feeder Cattle -----	\$ 450
	The Competitive Marketing Structure for Vegetables on the High Plains of Texas -----	1,491
Agricultural Education	Analysis of Agricultural Industries in West Texas with Emphasis on Educational Needs -----	711
Agricultural Engineering	Studies of the Engineering Aspects of Cotton Handling and Conveyance During the Ginning Process -----	2,967
	Evaluation of Systems for Well Recharge into the Ogallala Formation -----	2,800
	Feasibility of a Constructed Pit as a Ground Water Recharge Facility -----	400
Agronomy and Range Management	A Study of Mineral Transformations and Weathering Processes During Soil Development on Crystalline Rocks in the Southwest -----	4,555
	Ecological Studies of the Rangelands of Texas -----	2,433
	Water Use Efficiency of Cotton as Influenced by Anti-transpirants -----	1,303
	Investigations of Cropping Systems for Maximum Efficiency of the Use of Water and Light Energy -----	1,000
	Techniques of Evaluating Vegetation -----	900

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Animal Husbandry	Studies of Increased Fertility in Sheep and Cattle through Gonadotropic Hormone Administration -----	\$ 1,323
	Standard Versus Intensified Management Practice of Range Type Sheep for Optimum Wool and Fat-lamb Production ---	450
	Factors Affecting Carcass Merit and Palatability Characteristics of the Meat Animal -----	1,800
	Seasonal Diets of Beef Cattle on Native Range -----	1,000
Dairy Industry	Relationship of Trace Mineral Contents to Susceptibility of Milk to Hydrolytic Rancidity -----	861
Park Adminis- tration, Horticul- ture, and Entomology	Biology and Control of the Sorghum Midge -----	1,431
	Anatomical and Physiological Studies of the Stem and Aerole of Opuntia -----	400
	Evaluation and Adaptation of Cotton Insect Control Materials and Methods for the South Plains of Texas ---	1,564
	Breeding and Evaluation of Chrysanthemums and Other Plants for Ornamental Plant Usage for the Southwest ---	2,500
	Turf Grass Evaluation and Selection for South Plains --	400
	Evaluation of Vegetable Varieties for the High Plains of Texas -----	<u>1,995</u>
	Total, School of Agricultural Sciences -----	<u>\$ 32,734</u>

SCHOOL OF ARTS AND SCIENCES

Biology	The Genetic Basis and Evolutionary Significance of Polymorphism in Natural Populations of the Ground Snake Sonora Episcopa -----	\$ 2,718
	Study of the Adreno-Stress Syndrome in a Natural Population of Mammals -----	2,575
	Fatty Acid Metabolism and Membrane Transport in Filamentous Fungi -----	900
	Intrapopulational Distribution Patterns of Terrestrial Arthropods -----	3,288
	A Generic Revision of the Family Scolopacidae, the Sandpiper -----	1,850

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Chemistry	Tryptophan Metabolism of the Ergot Fungus -----	\$ 1,220
	Photochemical Oxidations of Indole Acetic Acid and Dihydrocoumarin by Flavins -----	1,470
Education and Philosophy	Patterns of Personal Resources -----	1,800
	A Study of Personality Changes as Correlates of Physical Ability Changes in Emotionally Disturbed Preadolescent Boys -----	1,937
English	Twentieth-Century Short Story Explication, Second Edition -----	1,750
	Mark Twain's Political and Social Ideas and Their Sources -----	1,193
	A Biography of Thomas Randolph -----	1,050
	Plant Lore with Emphasis Upon that Which was Important to the Greeks, Hebrews, and Romans -----	1,181
	Translations of the Tarikh as Soudan and Tarikh El Fettach -----	883
Foreign Languages	A Study of Common National Themes in Borges and Sabato -	2,038
	The Dramatic Art of De Filippo -----	1,775
	Trends in the Novel of the Brazilian Northwest Since 1950 -----	1,485
	The Authenticity of the Appendix of Claudian-Peder ----	1,300
Geosciences	Origin of Laramide Porphyry Plugs in the Southwestern United States -----	2,650
	Study of Bryozoans in the Upper Paleozoic of the Permian Basin, Texas -----	2,275
	Geochemistry of West Texas Pluvial Lake Brine -----	2,885
	Abandoned Shoreline of Pluvial Lake Palomas, Northern Chihuahua, Mexico, and El Paso, Texas, Area -----	2,426
Government	Texas Constitutional Revision -----	2,025

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Health, P.E., Rec.--Men	The Effect of Creative Rhythmic Movements on Creativity -----	\$ 1,562
Health, P.E., Rec.--Women	The "Clown" as a Social Critic -----	1,035
History	Texas: A History of the Longhorn State -----	1,200
	The Legislative Assembly in the New England and Middle American Colonies, 1689-1775 -----	1,250
Mathematics	Research on the Uniformization of Certain M-tuply Connected Riemann Surfaces -----	1,500
	Applications of Number-Theoretic Identities -----	1,500
	Least Favorable Density Functions -----	1,375
Physics	Competing Reaction Channels in the Coulomb Scattering of Nuclear Particles -----	2,150
	Nuclear Structure -----	1,563
	Magnetic Properties of Crystals -----	3,190
	Paramagnetic Properties of Ti^{3+} in Trigonal Crystalline Fields -----	3,900
Psychology	The Validation of Psychometric Measures of Defense Mechanisms -----	2,238
	Skin Temperature: A Possible Prediction of Monitoring Behavior -----	3,100
	An Evaluation of Time Interests and Item Order in the Recognition Method of Short Term Memory Tasks -----	2,650
Sociology & Anthropology	Family Solidarity and Social Deviance: A Study in Retroactive Prediction -----	<u>2,765</u>
	Total, School of Arts and Sciences -----	<u>\$ 73,652</u>

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF BUSINESS ADMINISTRATION</u>		
Accounting	Criteria for Effective Use of Footnotes in Corporate Annual Reports -----	\$ 70
	Exploration for the Philosophy of Individual Income Taxation as Revealed through Historical Development of the Law -----	3,388
	Preparation of an Annotated Bibliography on College and University Teaching of Accounting -----	581
Business Ed. and Sec. Admin.	A Study of the Means and Techniques Designed to Implement the Teaching of Economics in Texas High Schools -----	1,950
Economics	The Interlocking Directorate as a Barrier to Entry ----	1,550
Finance	Utility of Financial Ratios in the Analysis of Internal Risk of Business -----	3,853
Marketing	Seasonal Prediction of Common Stock Security Prices ---	2,425
	Retail Sales Personnel and Policies from the Customers' Viewpoint -----	<u>2,550</u>
	Total, School of Business Administration -----	<u>\$ 16,367</u>

SCHOOL OF ENGINEERING

Chemical Engineering	Development of Mathematical Models of Reaction Systems Using Adiabatic Methods -----	\$ 3,500
	Determination of Equilibrium Data on Ternary Systems: Water-Miscible Organic Liquids-Salts-Water -----	1,838
	Activation Analysis in Fluid Flow -----	5,861
Civil Engineering	A Study of Intense Storm Precipitation and Runoff in a Selected Area of the City of Lubbock -----	1,820
Electrical Engineering	Laser Applications -----	6,884
	Investigation in Solid-State and Electrochemical Devices	6,884

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Industrial Engineering	The Functional Relationship of the Physiological Optimum and the Moment of Inertia of a Moving Limb in an Industrial Task -----	\$ 12,122
Mechanical Engineering	Dynamic Analysis of Fluid-Thermodynamic System -----	7,687
	Nonequilibrium Thermodynamic Processes - Gas Flows ----	11,359
Petroleum Engineering	An Investigation of the Effect on the Mechanism of Hydraulic Formation Fracturing in Water Injection of a Sand-face Filter Cake Deposited from Waters Carrying High Colloidal and Solid Suspensions of Organic and/or Inorganic Origins -----	<u>7,514</u>
	Total, School of Engineering -----	<u>\$ 65,469</u>

SCHOOL OF HOME ECONOMICS

Applied Arts	The Effects of Creative Performance Regarding Success Factors in College -----	\$ 1,750
	The Uses of West Texas Clays and Gin Ashes in Small Scale Production and the Teaching of Ceramics -----	1,325
Clothing and Textiles	Factors Related to the Selection, Utilization, and Maintenance of Stretch Cotton Fabrics -----	2,412
	To Study the Relationship of Clothing, Grooming, and Personality Adjustment of a Group of College Girls to that of Their Mothers -----	1,438
Food and Nutrition	Cost in Relation to Nutritional Content of Convenience Foods Purchased by Lubbock Area Families in 1965 -----	1,281
	A Further Study of Food Aversions of Teenaged Youth with Emphasis on Techniques to Motivate a Change in Behavior -----	700
	The Construction and Application of Evaluation Devices to be Used in Testing Areas of Learning Prior to and After the Elementary Food and Nutrition Course -----	1,750
Home Economics Education	Predicting Academic Success in Home Economics -----	2,805
	The Effects of Pre-Student Teaching Experiences Regarding Success Factors in Student Teaching -----	1,000

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Home and Family Life	The Prediction of Children's Conscience Orientation from Three Dimensions of Parental Attitudes: Independence Granting, Achievement Inducement, and Affection -----	\$ <u>1,900</u>
	Total, School of Home Economics -----	\$ <u>16,367</u>

SPECIAL LINE ITEM APPROPRIATIONS

Park Admin., Hort., & Ento.	State Park Study and Research in Texas History -----	\$ <u>25,000</u>
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Grand Total for the Fiscal Year Ending August 31, 1967 - \$229,589

EXHIBIT M

ORGANIZED RESEARCH, STATE FUNDS

Fiscal Year Ending August 31, 1968

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF AGRICULTURAL SCIENCES</u>		
Agricultural Economics	Economic Evaluation of Factors Affecting Prices of Feeder Cattle -----	\$ 450
	The Competitive Market Structure for Vegetables on the High Plains of Texas -----	2,107
Agricultural Education	Analysis of Agricultural Industries in West Texas with Emphasis on Educational Needs -----	711
Agricultural Engineering	Studies of the Engineering Aspects of Seed Cotton Handling and Conveyance During the Ginning Process ----	3,300
	Evaluation of Systems for Ground Water Recharge into the Ogallala Formation -----	3,441
Agronomy and Range Management	A Study of Mineral Transformations and Weathering Processes Occurring During Soil Development on Crystalline Rocks in the Southwest -----	5,813
	Ecological Studies of the Rangelands of Texas -----	733
	Effects of Fertilizer Placement with the Seed on the Yield and the Occurrence of Iron Chlorosis of Grain Sorghum -----	1,817
	Investigations of Cropping Systems for Maximum Efficiency of the Use of Water and Light Energy: Soil Physical Properties -----	1,000
	The Influence of Vegetation of Arid and Semi-Arid Zones on Its Microclimate -----	900
Animal Husbandry	Factors Affecting Carcass Merit and Palatability Characteristics of the Meat Animal -----	1,000

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Animal Husbandry (Continued)	A Study of Drylot Management of Beef Cattle -----	\$ 400
	Studies of Increased Fertility in Sheep and Cattle through Gonadotropic Hormone Administration -----	1,323
	Seasonal Diets of Beef Cattle on Native Range -----	1,000
	Solubility of Sarcoplasmic and Myofibrillar Protein of Beef and Swine Influenced by Age and Body Weight -----	200
Dairy Industry	Relationship of Trace Mineral Contents to Susceptibility of Milk to Hydrolytic Rancidity -----	861
Park Adminis- tration, Horticul- ture, and Entomology	Evaluation and Adaptation of Cotton Insect Control Materials and Methods for the South Plains of Texas ---	2,280
	Breeding and Evaluation of Chrysanthemums and Other Plants for Ornamental Plant Usage for the Southwest ---	3,100
	An Evaluation of Vegetable Varieties Adapted to the High Plains of Texas -----	1,400
	An Evaluation of Peach, Plum and Grape Cultivars for Adaptation to the High Plains of Texas -----	400
	Biology and Control of the Sorghum Midge -----	<u>1,783</u>
	Total, School of Agricultural Sciences -----	<u>\$ 34,019</u>

SCHOOL OF ARTS AND SCIENCES

Art	The Effect of Two Methods of Instruction and Two Methods of Motivation Upon the Expressive Strategies of Elementary Education Majors -----	\$ 4,380
	The Uses of West Texas Clays and Gin Ashes in Small Scale Production and the Teaching of Ceramics -----	2,175
Biology	Studies on Systematics and Evolutionary Relationships Within the Rana Pipiens Complex -----	4,500
	Recombination and Introgression in the Genus Phaseolus -	2,617
	An Analysis of the Submandibular Glands of the Land Tortoises Belonging to the Genus Gopherus -----	3,453

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Chemistry	New Synthetic Routes to Cyclic and Bicyclic Organic Compounds -----	\$ 3,750
	Thermodynamics of Oxidation-Reduction in Quinone-Hydroquinone Systems -----	2,512
Classical and Romance Languages	The Alarconian Formula -----	2,333
	An Index of Greek Verb Forms -----	2,050
English	The Theme of Initiation in the Works of Larry McMurtry and Tom Mayer -----	2,417
	The Treatment of Old Age in Medieval Literature -----	2,242
Geosciences	Research in Evaporite Studies -----	4,000
	Institute of Evaporite Studies -----	20,000
	Ground Water Geology in Dawson County, Texas -----	4,745
Germanic and Slavonic Languages	A Comparative Study of the Technique of the Inner Monologue in Arthur Schnitzler's Lieutenant Gustl (1900) and Edouard Dujardin's Les Lauriers Sont Coupes (1887) -	2,283
Government	Texas Constitutional Revision: State-Local Relations -	2,750
	United States Army Administration of Okinawa: 1945-1966 A Case Study in Nation Building -----	1,917
	Metropolitan Planning: Acceptance and Implementation of City and Regional Plans -----	1,970
Health, P.E., Rec.--Men	Effect of the Neuro-psychological Approach in Remedial Reading -----	2,390
Health, P.E., Rec.--Women	The Effects of Lateral Dominance on the Tracing of Archery and Golf -----	1,800
	Labyrinthe Dance Forms -----	1,535
History	Aridity as a Facet in the History of the U.S.-Mexican Boundary -----	2,314
	Texas: A History of the Longhorn State -----	1,800

<u>Department</u>	<u>Title</u>	<u>Amount</u>
History (Continued)	The Scottish Episcopacy 1596-1638 -----	\$ 1,912
	Southwestern Agriculture and New Deal Farm Policies ---	1,633
	The Legislative Assembly in the New England and Middle American Colonies, 1689-1775 -----	1,717
Mathematics	Generalizations of Integral Transforms to Distribution Theory and an Aspect of the Multiplication Problem for Distributions -----	2,250
	A Space of Connectivity Functions -----	2,250
	Biased Estimators and Truncated Observations -----	2,083
Music	Indigenous Folk Music of the Tarahuamara Indian Tribe: Chihuahua, Mexico -----	2,021
Physics	The Determination of Conversion Coefficients of Gamma Rays in the Decay of Re 186-188 -----	4,000
	Electron State of Solids by Compton-Raman Scattering --	12,133
	Paramagnetic Properties of Ti^{3+} in Triagonal Crystalline Fields -----	4,067
	Beta Spectrum of In^{114} -----	6,316
	Magnetic Properties of Crystals -----	6,290
Psychology	The Effect of Group Psychotherapy on the Academic Success of College Underachievers -----	2,200
	Evoked Potentials During Compound Conditioning -----	2,859
	The Effects of Post Reward Delay Training Upon Learning Under Consistent and Inconsistent Reward Conditions ---	2,450
Sociology & Anthropology	Survey of Needs and Resources Among Aged Latin Americans -----	780
Speech	Foreign Visitors View the American Stage -----	2,033
	Unallocated Research Projects -----	<u>9,000</u>
	Total, School of Arts and Sciences -----	<u>\$145,927</u>

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF BUSINESS ADMINISTRATION</u>		
Accounting	Conservation of Farm and Ranch Resources through Appropriate Federal Income Tax Planning Techniques ----	\$ 4,800
Economics	Survey and Evaluation of the Economically Significant Publications and Available Unpublished Records -----	3,983
	A Comparative Analysis of the Amplitude and Duration of Business Cycles in the United States and Southwest Region -----	7,166
Finance	A Comparative Study of the Utility of Marginal Cost of Capital, Average Cost of Capital and Stock Value Models in Making Capital Budgeting Decisions -----	3,793
Management	Further Applications of Quantitative Methods of Management Decision Making Areas -----	2,310
	Total, School of Business Administration -----	<u>\$ 22,052</u>

SCHOOL OF EDUCATION

Education	Adaptation of the Gesell Readiness Test for Spanish American Children -----	\$ 2,400
	Unallocated Research Projects -----	12,600
	Total, School of Education -----	<u>\$ 15,000</u>

SCHOOL OF ENGINEERING

Architecture	Research Project for the Urban Design of a City with a Population Range of 100,000 to 300,000 -----	\$ 1,400
Electrical Engineering	Investigations of a Plasma Gun -----	8,737
	Investigations of Piezoelectric Crystals -----	9,500
Industrial Engineering	Dynamics of the Center of Mass of the Arm Tool Aggregate for Three Dimensional Moves -----	8,700

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Mechanical Engineering	Nonequilibrium Thermodynamic Processes - Gas Flows ----	\$ 13,967
	Climatic Conditioning of the Existing Buildings in the Texas College and University System -----	16,960
	Development of Analog Computer Slaving Mechanism -----	<u>4,000</u>
	Total, School of Engineering -----	<u>\$ 63,264</u>

SCHOOL OF HOME ECONOMICS

Clothing and Textiles	A Comparative Study of the Relationship of Clothing, Grooming, and Personality Adjustment of a Group of Mothers and Their Daughters -----	\$ 2,938
Home and Family Life	Predicting Academic Success in Home Economics: Factor Analysis of Criteria Related to Academic Success -----	<u>6,361</u>
	Total, School of Home Economics -----	<u>\$ 9,299</u>

GRADUATE SCHOOL

Chemistry	Photochemical Oxidations of 2-Furaldehyde and Synkavite by Flavins -----	\$ 700
	Adsorption on Plate-Like Materials -----	400
Law School	The Preparation of a Casebook in Law -----	2,000
	Unallocated Research Projects -----	<u>4,400</u>
	Total, Graduate School -----	<u>\$ 7,500</u>

COLLEGE MATCHING FUNDS

Geosciences	The Geology of Marie Byrd Land Antarctica -----	\$ 11,396
Chemistry	Infrared Studies of Matrix-Impurity Interactions -----	8,000
Physics	Optical and Magnetic Properties of Crystals -----	8,750
Biology	Analysis of the Chin Glands of Gopherus Berlanderi ----	752
Physics	The Effects of Radiation on the Properties of Solids --	900

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Biology	Relationships of Gibberellin to Endogenous Rhythms and Flowering of Photoperiodic Plants -----	\$ 432
Biology	Systematics and Evolutionary Relationships within the Rana Pipiens Complex -----	200
Physics	Electron State of Solids by Compton-Raman Scattering --	20,818
	Unallocated Research Projects -----	<u>20,691</u>
	Total, College Matching Funds -----	<u>\$ 71,939</u>

ICASALS

The Physiological Effects of Low Levels of Air Moisture on Livestock -----	\$ 1,000
Establishment of a Collection of Insects of Arid Lands -	720
Study of Linguistics of Arid Lands -----	150
Neutron Activation as a Method of Prospecting in Arid Lands -----	2,291
Surface Resistivity Measurements in the High Plains of Texas -----	1,000
Studies in Environmental Kinesiology: Central Nervous System Involvement in Kinesiological Performance -----	1,250
Translation of Arabic Historical Documents from Arid African Areas -----	500
Studies in Modern Balkan History -----	1,667
Introduction to J. L. Hill, The End of the Cattle Trail	50
Studies in Electronic Composition of Music of Arid Lands	175
Drought as a Social Factor in Arid Southwest -----	250
Simulation of Plant Growth -----	100
Investigations into Indexing Methods, Including Editing and Retrieval from KWIK Index -----	489
Institute for Evaporite Studies -----	<u>1,860</u>
Total, ICASALS -----	<u>\$ 11,502</u>

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SPECIAL LINE ITEM APPROPRIATIONS</u>		
	Computer Computations -----	\$100,000
	Noxious Brush and Weed Control -----	100,000
	State Park Study and Research in Texas History -----	37,000
	Research in Agriculture -----	50,000
	Research in Business -----	50,000
	Research in Engineering -----	50,000
	Research in Home Economics -----	50,000
	Water Resources Center -----	<u>50,000</u>
	Total, Special Line Item Appropriations -----	<u>\$487,000</u>
	Grand Total for Fiscal Year Ending August 31, 1968 ----	<u><u>\$867,502</u></u>

EXHIBIT N

ORGANIZED RESEARCH, STATE FUNDS

Fiscal Year Ending August 31, 1969

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF AGRICULTURAL SCIENCES</u>		
Agricultural Economics	Economic Evaluation of Factors Affecting Prices of Feeder Cattle -----	\$ 500
Agricultural Education	Determine the Needs and Educational Activities for a Continuing Educational Center at Texas Tech -----	1,000
Agricultural Engineering	Studies of the Engineering Aspects of Seedcotton Handling and Conveyance During the Ginning Process --	3,087
	Evaluation of Systems for Ground Water Recharge into the Ogallala Formation -----	2,575
Agronomy and Range Management	A Study of Mineral Transformations and Weathering Processes Occurring During Soil Development on Crystalline Rocks in the Southwest -----	6,080
	The Long-Time Effects of Sewage Effluent on Crops and Soils on the Texas Tech Farm -----	2,158
	The Influences of Vegetation of Arid and Semi-Arid Zones on Its Microclimate -----	1,000
	Abundance and Availability of Invertebrate Populations in Waterfowl Foods in the Playa Lakes of the Texas High Plains -----	400
	Investigations of Cropping Systems for Maximum Efficiency of the Use of Water and Light Energy -----	1,250
Animal Science	Factors Affecting Carcass Merit and Palatability Characteristics of the Meat Animal -----	1,000
	A Study of Drylot Management of Beef Cattle -----	400
	Seasonal Diets of Beef Cattle on Native Range -----	1,750

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Animal Science (Continued)	Solubility of Sarcoplasmic and Myofibrillar Protein of Beef and Swine Influenced by Age and Body Weight -----	\$ 1,000
Dairy & Food Industry	Relationship of Trace Mineral Contents to Susceptibility of Milk to Hydrolytic Rancidity -----	1,000
Park Admin- tration, Horticulture, & Entomology	Biology and Control of the Sorghum Midge -----	2,700
	Evaluation and Adaptation of Cotton Insect Control Materials and Methods for the South Plains of Texas -	2,600
	Breeding and Evaluation of Chrysanthemums and Other Plants for Ornamental Plant Usage for the Southwest -	3,100
	Investigations of the Parasites and Predators of Mosquito Larvae in Playa Lakes -----	<u>2,400</u>
	Total, School of Agricultural Sciences -----	<u>\$ 34,000</u>

SCHOOL OF ARTS AND SCIENCES

Art	General Creativity Research: Its Implications for Learning and Instructional Practices in Art Education	\$ 2,509
	Effects of Vision Control Patterns Upon Creative and Noncreative Test Subjects -----	1,667
Biology	Regulation of Gibberellin Synthesis in Photoperiodic Plants -----	3,150
	Electrophoretic Variation in Enzymes in the Genus Phaseolus I -----	3,227
	Karyotypes and Karyotypic Variation of Small Mammals of the Texas Plains -----	3,991
	Ecology of Mammalian Extoparasites in a Playa Lake Ecosystem -----	3,683
	Microbial Ecology of Playa Lake Ecosystems with Emphasis on the Function of Heterotrophic Bacteria --	3,300
	Otogenetic Analysis of Endogenous Gibberellins and Auxins in the Alaska Pea (Pisum sativum L.) -----	3,558
	Temperature Responses of Cave-Adapted Animals -----	4,450

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Biology (Continued)	Lipid Metabolism During Vitellogenesis in Paedogenic Ambystoma Tigrinum -----	\$ 3,367
Chemistry	The Wallach and Related Reactions of Aromatic Azoxy Compounds -----	1,200
	Pathway of Clavine Alkaloid Synthesis -----	3,100
	New Synthetic Routes to Cyclic and Bicyclic Organic Compounds -----	1,800
	Electronic Structure and Photochemistry of Flavins ----	1,900
	A Proposed Synthesis of the Sisquiterpene Tetrahydrosambosin (Dihydrodambosin) and Related Compounds -----	2,000
	Measurement of Selective Solvation -----	2,200
Classical and Romance Languages	Eternal Rome in 400 AD -----	2,067
	The Commos of the Choephori -----	1,916
English	A Critical Study of Walt Whitman's <u>Song of Myself</u> ---	2,917
	Unequivocal Justice: Recurrence of the Clink-of-the Coin Motif in Literature and Cultures of Asia, Africa, and Europe -----	2,916
	Field Collecting and Analysis of Folk Narratives Currently in the Oral Tradition in Turkey -----	2,916
	A Study of Marriage in the Middle Ages -----	2,216
Geosciences	Institute of Evaporite Studies -----	5,000
	Study of the Structural and Metamorphic History of the Western Sierra Nevada Metamorphic Belt -----	3,790
	Application of Ultrasound in the Attainment of Equilibrium in Ore Mineral Studies -----	2,400
	Clay Mineralogy of Hydrothermally Altered Volcanic Rocks, Silverton Mining District, Colorado -----	2,540
Government	Congressional Attitudes Toward Latin America -----	2,583
	National-State Relations in Regulatory Administration	2,167

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Health, Physical Education, & Recreation for Women	Analysis of Mechanical Factors Involved in Expert Performances of Tennis Skill -----	\$ 2,500
	Proposed Motor Development Program for Children with Specific Learning Disabilities -----	1,980
	The Dance in Shakespeare -----	1,650
History	Political Separatism in Northern Mexico -----	3,083
	Science and Politics: The Allison Commission and the Investigation of Government Science, 1884-1886 -----	1,867
	Texas: A History of the Longhorn State -----	1,000
	Social and Economic Position of the Wage Earner in Nineteenth Century Texas -----	1,833
	The Military Reform in the Viceroyalty of New Granada, 1773-1796 -----	1,633
Mathematics	The Convergence of Distribution Difference Equations to Distribution Difference Equations -----	4,934
	Non-linear Transformation Related to the Problem of Summing Infinite Series and Integrals -----	5,708
	A Study on Effects of Digital Approximation in Statistical Estimation -----	2,291
	Summing Infinite Series -----	2,367
	Minimal Conditions in the Calculus of Variations ----	5,550
Philosophy	The Philosophical Works of Lady Victoria Welby -----	2,000
Physics	Lifetime Measurements of Low Energy Nuclear States --	4,122
	Study of Beta Spectra Shapes in Allowed Beta Transitions -----	4,410
	Internal Rotation -----	3,400
Psychology	Predicting Academic Achievement with Nonintellectual Variables -----	2,550
	Skin Temperature: An Organic Indicator of Personality	2,380

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Psychology (Continued)	Electrical Stimulation of the Brainstem of the Blacktailed Prairie Dog -----	\$ 1,955
	Evoked Potentials During Compound Conditioning -----	(600)
	Survey of Leadership Qualities of the Small Business Executive-Entrepreneur -----	2,087
	Memory and Transformations in Concept Learning -----	1,950
	An Exploration of Skin Temperature as a Correlate of Attention in Infants -----	2,153
Sociology & Anthropology	The Man-Land Confrontation in Western America -----	850
	Development of Prehistoric Archaic Cultures in West Texas -----	<u>2,217</u>
	Total, School of Arts and Sciences -----	<u>\$ 145,000</u>

SCHOOL OF BUSINESS ADMINISTRATION

Accounting	Production Budgeting with Changing Capacity Constraints -----	\$ 75
	The Implications of Linear vs. Curvilinear Total Costs on Cost-Volume-Profit Analysis -----	100
	The Role and Program of the Accounting Fraternity ---	110
Economics	The History, Philosophy, and Methodology of Institutionalism -----	3,310
	Theory of the Firm, a Synthesis -----	3,044
	A Study of Disarmament Economics -----	2,483
Finance	A Study of the Effect of the Element of Control on the Financing Decision -----	4,133
Management	Management of Culturally Deprived Minority Groups ---	5,677
Marketing	Philosophy of American Advertising Agencies Operating in Foreign Countries -----	<u>3,068</u>
	Total, School of Business Administration -----	<u>\$ 22,000</u>

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF EDUCATION</u>		
Education	Adaptation of the Gesell Readiness Test for Spanish American Children -----	\$ (2,289)
	A Study of the Utilization and Effectiveness of the State Provisions for Merit Salary Increments in Texas	(50)
	Undergraduate Factors Predictive of Teaching Success	1,700
	Consistency of Educational, Occupational, and Personal Values of Undergraduate Education Majors -----	2,200
	Developmental Planning for Automated Media Laboratory for Pre-Service Teachers Education -----	1,035
Elementary Education	A Continuing Study of Creative Characteristics of Students Majoring in Elementary Education, Secondary Education, All-level and Secondary Art and Music Education -----	1,295
Secondary Education	The Relationship of Identified Personality Characteristics and Attitudes of Students Enrolled in the School of Education and Their Success in Student Teaching -----	2,342
	An Experimental Project to Improve the Teaching of Social Studies and Language Arts to Disadvantaged Anglo and Negro Seventh Grade Pupils through the Use of a Teaching Team and a Core Curriculum -----	5,500
	Total, School of Education -----	\$ <u>14,072</u>
<u>SCHOOL OF ENGINEERING</u>		
Chemical Engineering	Determination of Phases Equilibrium Data of Salts, Water and Organic Solvents Applied on Desalination of Sea Water -----	\$ 2,483
	Determination of Contaminant Production Rates and Mechanisms for Manned Spacecraft Materials -----	5,650
Civil Engineering	Experimental Stress Analysis of a Full-Size Building -	7,400
	Effect of Unlined Sewage Storage Ponds on Water Quality in the Ogallala -----	(3,840)

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Electrical Engineering	Theoretical and Experimental Investigations of Plasma Heating -----	\$ 11,501
	Specialized Research Equipment in Physical Electronics -----	(7,700)
	Rectifying Metal-Semiconductor Contracts -----	13,240
Industrial Engineering	Evaluation of Electromyography as a Criterion for Work Design -----	14,917
	Dynamics of the Center of Mass of the Arm Tool Aggregate for Three Dimensional Moves -----	(1,042)
	Investigation of Pulling and Pushing Tasks to Determine the Optimal Skeletal Configuration -----	(7,692)
	Probabilistic Tool Life Equations -----	(7,225)
Mechanical Engineering	Nonequilibrium Thermodynamic Processes - Gas Flows --	(13,967)
Petroleum Engineering	Application of Well Stimulation and Water Treatment to Assist Water Recharge in the Ogallala Formation ----	<u>7,809</u>
	Total, School of Engineering -----	<u>\$ 63,000</u>

SCHOOL OF HOME ECONOMICS

Clothing and Textiles	Development of an Instrument for Student Self-Evaluation as an Indicator of Personality Adjustment for the Use of Teachers in the School of Home Economics -----	1,960
Home Econ. Education	An Experimental Study of Teaching Occupational Courses Related to Home Economics -----	2,041
Home and Family Life	Predicting Academic Success of Home Economics Students -----	5,691
	Unallocated Research Projects -----	<u>1,308</u>
	Total, School of Home Economics -----	<u>\$ 11,000</u>

<u>Department</u>	<u>Title</u>	<u>Amount</u>
<u>SCHOOL OF LAW</u>		
	Total, School of Law -----	\$ <u>8,000</u>
<u>GRADUATE SCHOOL</u>		
	Unallocated Research Projects, Graduate School -----	\$ <u>10,000</u>
<u>MATCHING FUNDS</u>		
Agricultural Engineering	Development of Systems for Ground Water Recharge into the Ogallala Formation -----	\$ 5,254
Agronomy and Range Mgt.	The Mineralogy and Chemistry of Soils and Sediments in High Plains Playa Lakes -----	2,600
Civil Engineering	Effect of Unlined Sewage Storage Ponds on Water Quality in the Ogallala -----	3,840
Biology	Karyotypic Studies of Phyllostomatidae -----	1,200
Chemistry	Infrared Studies of Matrix-Impurity Interactions ----	3,000
Geosciences	Geology of Marie Byrd Land -----	5,000
Physics	Optical and Magnetic Properties of Crystals -----	5,919
	Paramagnetic Properties of Ions in Solids -----	5,092
	Electron State of Solids -----	10,818
	Unallocated Research Projects -----	<u>29,277</u>
	Total, Matching Funds -----	\$ <u>72,000</u>
<u>ICASALS</u>		
Law	The Legal Aspects for Food Distribution for the World	\$ 2,000
Architecture	A Prototype City Design on the U.S.-Mexico Border ---	2,000

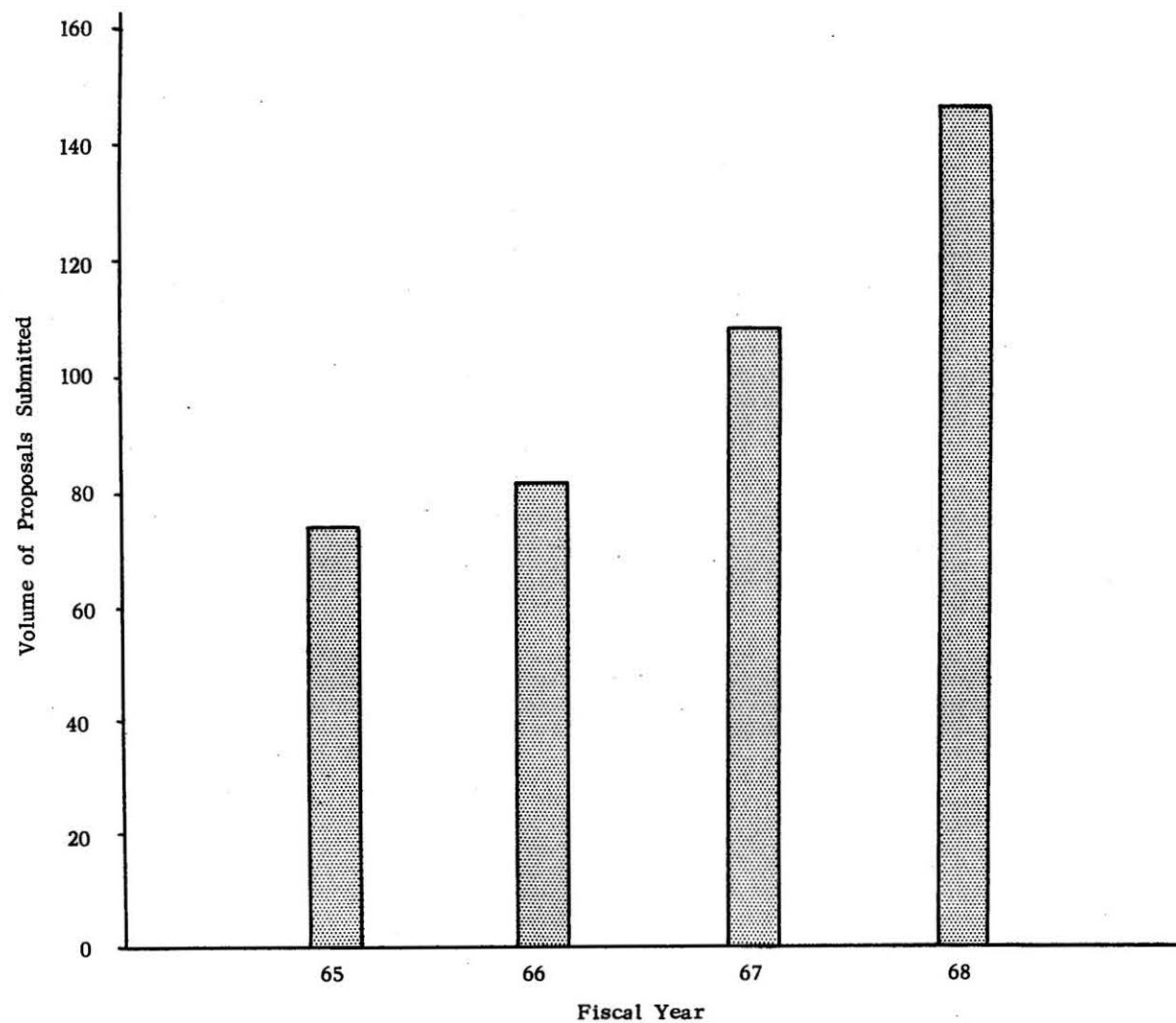
<u>Department</u>	<u>Title</u>	<u>Amount</u>
Classical and Romance Languages	The Development of Techniques for the Teaching of English as a Second Language to Mexican-American Inhabitants of the Southwest -----	\$ 2,500
Economics	Economic Development in Arid Lands -----	2,000
Range Management	A Study of the Woody Phreatophytes Along Brazos River Upstream from Possum Kingdom Lake to the Confluence of the Salt and Double Mountain Forks -----	1,950
	A Study of the Ecology of the Carmen Whitetailed Deer in Arid Environments -----	700
English	A Study of the Writings of Mary Hunter Austin: Essayist, Poet, Novelist, and Dramatist of the American Southwest -----	500
	Plant Lore of Arid Areas--Hebrew Plant Lore -----	250
Electrical Engineering	Electrical Theory of Tornadoes - Mechanism and Control (A Feasibility Study) -----	2,500
	Modeling Extra-High Voltage Transmission Lines for Arid Lands -----	2,500
Chemical Engineering	The Use of Naturally Occurring Lipids as Water Conservation Agents -----	2,500
Biology	Mammals of the Llano Estacado: Their Distribution and Taxonomy -----	1,800
	Ecology and Behavior of the Endemic Mexican Desert Tortoise -----	1,600
	Charophytes of Israel -----	1,450
	Electron Microscopy of a Fungus (<u>Erysiphe</u> <u>cichoracearum</u>) Indigenous to Arid and Semi-Arid Lands	2,000
	A Survey of Cavern Development and Cave Faunas in the Sierra del Abra, Mexico -----	1,500
Geosciences	Geophysical Investigations: Prospecting for Water Using Electrical Methods -----	2,500

<u>Department</u>	<u>Title</u>	<u>Amount</u>
Geosciences (Continued)	Water Quality of the Santa Rosa Formation, Southern High Plains, Texas -----	1,700
	Relation of Caliche and Playa Lake Basins, Southern High Plains, Texas -----	1,500
Agronomy	A Clay Mineralogical Investigation of Shore Deposits of Ancient Lake Palomas, Chihuahua, Mexico -----	600
	Selection of Crop Plants for Efficiency of Water Usage -----	2,000
Animal Science	The Physiological Effects of Low Levels of Air Moisture on Livestock -----	2,000
Southwest Collection	Aridity as a Social Factor in Western America -----	1,800
	Unallocated Research Projects -----	<u>26,150</u>
	Total, ICASALS -----	<u>\$ 66,000</u>
	Research Administration -----	\$ 26,735
	To Be Assigned (\$5,907; Education \$928) -----	\$ 6,835

SPECIAL LINE ITEM APPROPRIATIONS

Noxious Brush and Weed Control -----	\$ 100,000
State Park Study and Research in Texas History -----	37,000
Research in Agriculture -----	50,000
Research in Business Administration -----	50,000
Research in Engineering -----	50,000
Research in Home Economics -----	50,000
Water Resources Center -----	50,000
Research on Wool, Cotton, and Mohair -----	200,000
Research in Swine -----	30,000
Research in Vegetables -----	<u>30,000</u>
Total, Special Line Item Appropriations -----	<u>\$ 647,000</u>
Grand Total for Fiscal Year Ending August 31, 1969 --	<u>\$1,125,642</u>

Exhibit O
APPROXIMATE VOLUME OF PROPOSALS SUBMITTED
FOR SPONSORED RESEARCH



RESOLUTION

WHEREAS Miss Margaret W. Weeks served with great distinction as Professor and Dean of the School of Home Economics, and

WHEREAS Her services may best be memorialized in the lives of the faculty to whom she provided leadership and inspiration,

THEREFORE, BE IT RESOLVED THAT The Board of Directors of Texas Technological College does establish the Margaret W. Weeks Professorship, with the following stipulations:

The appointment shall be for a period of three years and shall be subject to renewal

The appointment shall not be awarded concurrently with a department chairmanship or other administrative position

Recipients shall be recommended by a committee of the faculty to the Dean of the School of Home Economics

Factors and qualifications to be considered in selecting the recipient shall include such items as:

Rank of Associate Professor or Professor

Member of the Graduate Faculty

Lengthy teaching service in Home Economics at Texas Technological College

Widely known on the campus, in the community, and in the nation

Participation in national organizations in Home Economics

Public speaking ability and experience

Active in seeking research grants and support.

BID TABULATIONHOWARD SCHMIDT AND ASSOCIATES
A R C H I T E C T STRACK DRESSING ROOM FACILITIES
TEXAS TECHNOLOGICAL COLLEGE
LUBBOCK, TEXAS

2:00 p.m. Wednesday, November 27, 1968

COMBINED GENERAL, MECHANICAL AND ELECTRICAL CONSTRUCTION

BIDDER	BID BOND	BASE BID	NO. DAYS	ALTERNATE	ACKNOWLEDGE THREE ADDENDA
DIPPLE AND MONTGOMERY		NO BID			
H. A. PADGETT, JR.	X	\$53,900	140	-500	X
PHARR CONSTRUCTION	X	\$49,777	120	-650	X
M. W. TURNER CONSTRUCTION	X	\$43,919	100	-645	X

ALTERNATE - TO ELIMINATE EPOXY PAINT AT SHOWERS

C O P YBoard Minutes
January 18, 1969
Attachment No. 15

BID TABULATION

TRAFFIC AND PARKING COUNSELOR'S OFFICE
TEXAS TECHNOLOGICAL COLLEGE
LUBBOCK, TEXAS

DAVIS, FOSTER, THORPE & ASSOCIATES, INC.
A R C H I T E C T

33 Interested Parties Attended

4:00 p.m. Wednesday, January 15, 1969

COMBINED GENERAL, MECHANICAL AND ELECTRICAL CONSTRUCTION

BIDDER	BID BOND	BASE BID
H. R. BUNDOCK	X	\$38,600.00
JERRY GAILEY	X	\$41,699.00
CLAUDE MARTIN AND SONS	X	\$39,200.00
CECIL PHARR CONSTRUCTION COMPANY	X	\$40,400.00
TEINERT CONSTRUCTION COMPANY	X	\$41,737.00
M. W. TURNER CONSTRUCTION COMPANY	X	\$43,989.00

C O P Y

Board Minutes
January 18, 1969
Attachment No. 16

ARCHITECTURE AND ART FACILITY

BID TABULATION

October 25, 1968

TEXAS TECHNOLOGICAL COLLEGE

PROJECT NO. 4-7-00079-0

60 Attended

4-7-00079-1

ELECTRICAL CONSTRUCTION

CONTRACTOR	BID SEC.	ACK. ADD.	ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9	ALT. 10	BASE BID
Amco Electric Co.	X	X	N.C.	-312	N.C.	N.C.	- 7,990	- 912	-3,114	-298	N.C.	N.C.	412,250
Clark Electric	X	X	N.C.	-218	N.C.	N.C.	- 8,396	- 870	-3,228	-275	N.C.	N.C.	408,326
Tarver Electric	X	X	N.C.	-150	N.C.	N.C.	-10,000	-1,100	-4,300	N.C.	N.C.	N.C.	397,711
Watco Electric	X	X	-140	-164	N.C.	N.C.	- 9,086	- 699	-7,386	-206	N.C.	N.C.	375,000
John C. Pickett													NO BID
Nelson Electric	X	X	N.C.	-180	N.C.	N.C.	- 9,100	-1,090	-2,790	N.C.	N.C.	N.C.	379,000
Fischbach & Moore	X	X	N.C.	-150	N.C.	N.C.	-22,400	-1,500	- 350	-170	N.C.	N.C.	456,500
Watts Inc.													NO BID
Rowan-Wallace	X	X	N.C.	-120	N.C.	N.C.	-10,101	-1,120	-2,894	N.C.	N.C.	N.C.	397,850

Alternate #1 Delete noted cabinets at Art Bldg.
 Alternate #2 Eliminate freight elev. at Art Bldg.
 Alternate #3 Eliminate certain plumbing risers
 Alternate #4 Eliminate polyester terrazzo flooring
 provide vinyl asbestos flooring
 Alternate #5 Eliminate finishes sub-basement
 Alternate #6 Change elevator speed

Alternate #7 Eliminate sub-basement
 Alternate #8 Manual operated screen in lieu of
 motorized projection screens
 Alternate #9 Pebble finish concrete in lieu of
 brick pavers
 Alternate #10 Vinyl asbestos tile floor in lieu of
 Teak wood

N.C. = Not applicable under this bid
 N.B. = Not applicable under this bid
 N.A. = Not applicable under this bid

C O P Y

Board Minutes
 January 18, 1969
 Attachment No. 17

ARCHITECTURE AND ART FACILITY
TEXAS TECHNOLOGICAL COLLEGE
 PROJECT NO. 4-7-00079-0
 4-7-00079-1

Meeting No. 434
 Attachment No. 4184A
 Item No. 4240
 Page 4380

October 25, 1968

60 Attended

BID TABULATION

PLUMBING, HEATING, VENTILATING, AND AIR CONDITIONING CONSTRUCTION

CONTRACTOR	BID SEC.	ACK. ADD.	ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9	ALT. 10	BASE BID
George Linskie Co., Inc.	X	X	-1,300	N.A.	-13,000	N.A.	-10,000	N.A.	-14,000	N.A.	N.A.	N.A.	777,777 +45,000*
Anthony Mechanical, Inc.	X	X	-1,800	N.C.	-11,800	N.C.	- 9,800	N.C.	- 6,000	N.C.	N.C.	N.C.	823,000
O. W. Chisum & Co.			NO BID										
Plains Plumbing Co., Inc.	X	X	-1,535	N.B.	- 6,644	N.B.	-10,397	N.B.	- 5,964	N.B.	N.B.	N.B.	824,700
Rountree Company	X	X	-1,700	N.C.	-12,000	N.C.	-11,000	N.C.	- 5,900	N.C.	N.C.	N.C.	808,000
Drew Woods, Inc.	X	X	-1,840	N.B.	-11,800	N.B.	-14,100	N.B.	- 1,100	N.B.	N.B.	N.B.	816,000
Todd-Ford, Inc.			NO BID										
Kash Bros., Inc.	X	X	-2,500	N.C.	- 8,000	N.C.	-10,700	N.C.	- 5,500	N.C.	N.C.	N.C.	953,000

Alternate #1 Delete noted cabinets at Art Bldg.
 Alternate #2 Eliminate freight elev. at Art Bldg.
 Alternate #3 Eliminate certain plumbing risers
 Alternate #4 Eliminate polyester terrazzo flooring
 Alternate #5 Eliminate finishes sub-basement
 Alternate #6 Change elevator speed
 Alternate #7 Eliminate sub-basement
 Alternate #8 Manual operated screen in lieu of
 motorized project screens

Alternate #9 Pebble finish concrete in lieu of
 brick pavers
 Alternate #10 Vinyl asbestos tile floor in lieu of
 teak wood

*Added by telegram

N.C. = Not applicable under this bid
 N.B. = Not applicable under this bid
 N.A. = Not applicable under this bid

C O P Y

Board Minutes
 January 18, 1969
 Attachment No. 18

ARCHITECTURE AND ART FACILITY
TEXAS TECHNOLOGICAL COLLEGE
PROJECT NO. 4-7-00079-0
4-7-00079-1

Meeting No. 434
Attachment No. 4184C
Item No. 4240
Page 4382

October 25, 1968

60 Attended

BID TABULATION

ELEVATOR CONSTRUCTION

CONTRACTOR	BID SEC.	ACK. ADD.	ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9	ALT. 10	BASE BID
Hunter-Hayes	X	X	N.C.	-11,700	N.B.	N.B.	N.B.	-37,292	N.B.	N.B.	N.B.	N.B.	264,955
Otis Elevators	X	X	N.B.	-12,369	N.B.	N.B.	N.B.	-30,094	N.B.	N.B.	N.B.	N.B.	256,095
Westinghouse	X	X	N.C.	-16,726	N.B.	N.B.	N.B.	-57,384	N.B.	N.B.	N.B.	N.B.	285,409

Alternate #1 Delete noted cabinets at Art Bldg.
Alternate #2 Eliminate freight elev. at Art Bldg.
Alternate #3 Eliminate certain plumbing risers
Alternate #4 Eliminate polyester terrazzo flooring
provide vinyl asbestos flooring
Alternate #5 Eliminate finishes sub-basement
Alternate #6 Change elevator speed
Alternate #7 Eliminate Sub-basement
Alternate #8 Manual operated screen in lieu of
motorized projection screens

Alternate #9 Pebble finish concrete in lieu of
brick pavers
Alternate #10 Vinyl asbestos tile floor in lieu of
teak wood

N.C. = Not applicable under this bid
N.B. = Not applicable under this bid
N.A. = Not applicable under this bid

C O P Y

Board Minutes
January 18, 1969
Attachment No. 19

ARCHITECTURE AND ART FACILITY
TEXAS TECHNOLOGICAL COLLEGE
PROJECT NO. 4-7-00079-0
4-7-00079-1

Meeting No. 434
Attachment No. 4184
Item 4240
Page 4379

October 29, 1968
63 Attended

BID TABULATION
GENERAL CONSTRUCTION

CONTRACTOR	BID SEC.	ACK. ADD.	BASE BID	ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9	ALT. 10
H. A. LOTT, INC.	X	X	3,398,000	-39,000	N.C.	N.C.	-71,000	-30,000	-1,000	-20,000	-1,500	N.C.	-7,350
BROWNING CONST.	X	X	3,614,000	-44,000	N.B.	N.B.	-73,500	-27,000	N.B.	-30,500	-1,400	-2,100	-6,000
KASCH BROS., INC.	X	X	3,997,000	-40,000	-300	-100	-30,000	-15,000	- 800	-40,000	-1,600	-2,000	-6,500
MANHATTAN CONST.	X	X	3,770,000	-34,000	-200	-120	-70,000	-45,000	- 500	-59,000	-1,400	-8,000	-6,200
PAGE & WIRTZ	X	6	3,869,000	-37,000	-400	-400	-67,000	-42,000	- 900	-35,000	-1,000	-1,000	-7,000
AREA BUILDERS			N.B.										

Alternate #1 Delete noted cabinets at Art Bldg.
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Alternate #4 Eliminate polyester terrazzo flooring
provide vinyl asbestos flooring
Alternate #5 Eliminate finishes sub-basement
Alternate #6 Change elevator speed
Alternate #7 Eliminate sub-basement

Alternate #8 Manual operated screen in lieu of
motorized projection screens
Alternate #9 Pebble finish concrete in lieu of
brick pavers
Alternate #10 Vinyl asbestos tile floor in lieu of
teak wood

N.C. = No change
N.B. = No bid

C O P Y

Board Minutes
January 18, 1969
Attachment No. 20

TEXAS TECHNOLOGICAL COLLEGE
P.O. Box 4109
Lubbock, Texas 79409

Office of the
Executive Vice President

December 2, 1968

Mr. Elmer D. Cain
Regional Engineer
Office of Construction Service
Department of Health, Education and Welfare
1114 Commerce Street
Dallas, Texas 75222

Subject: Project No. 4-7-00079-0
Architecture-Art Facility
Texas Technological College

Dear Mr. Cain:

The attached recommendation was forwarded to the members of the Texas Tech Board of Directors on November 21, 1968.

The following action is recorded as the result of the poll by telephone on November 25, 1968 and November 26, 1968.

Mr. Retha Martin, Chairman of the Board	"Aye"
Mr. Alvin R. Allison*	"Aye"
Mr. C. A. Cash*	"Aye"
Mr. Marshall Formby	"Aye"
Mr. Roy Furr	"Aye"
Mr. Harold Hinn, Chairman*	"Aye"
Mr. Carl Reistle*	"Aye"
Dr. Fladger Tannery	"Aye"

*Campus and Building Committee

Mr. Herbert Allen was out of the country and could not be reached.

Sincerely yours,

/s/ Glenn E. Barnett

Glenn E. Barnett
Executive Vice President

cc: Campus Planning Committee

C O P Y

Budget Attachments (December 14, 1968)

1. Budget; Organized Research Account No. 191-5203; \$2,288.61; Dr. Owen Laverne Caskey; Item E371.
2. Budget; Traineeships in Speech Pathology and Audiology, Account No. 391-1119; \$14,500.00; Dr. William Keith Ickes; Item E372.
3. Budget; Organized Research Account No. 391-1129; \$24,200.00; Dr. William Keith Ickes; Item E373.
4. Budget; Organized Research Account No. 391-3540; \$7,406.87; Dr. James Ezra Osborn; Item E374.
5. Budget; Organized Research Account No. 391-3253; \$6,300.00; Dr. Russell Holland Seacat, Jr.; Item E375.
6. Budget; Organized Research Account No. 191-8208; \$2,000.00; Dr. Ulrich Lewis Eggenberger; Item E376.
7. Budget; Organized Research Account No. 391-3267; \$1,000.00; Dr. Leland Floyd Tribble; Item E377.
8. Budget; Organized Research Account No. 391-1128; \$33,600.00; Dr. Bruce Douglas Mattson; Item E378.
9. Budget; Organized Research Account No. 191-5448; \$3,840.00; Dr. Dan Moody Wells; Item E379.
10. Budget; Organized Research Account No. 191-8170; \$1,600.00; Dr. Raymond Erwin Meyer; Item E380.'
11. Budget; Organized Research Account No. 191-8172; \$2,500.00; Dr. George Arthur Whetstone; Item E381.
12. Budget; Organized Research Account No. 191-8177; \$1,000.00; Dr. Charles Richard Ward; Item E382.
13. Budget; Organized Research Account No. 191-8178; \$2,250.00; Dr. Robert Wayne Gorden; Item E383.
14. Budget; Organized Research Account No. 391-3345; \$8,615.00; Dr. Pill Soon Song; Item E384.
15. Budget; Organized Research Account No. 191-8223; \$5,500.00; Dr. Willard Forest Williams; Item E385.
16. Budget; Organized Research Account No. 191-8179; \$3,100.00; Dr. Corwin C. Reeves, Jr.; Item E386.
17. Budget; Organized Research Account No. 391-3302; \$4,565.00; Dr. Arnold Jarvis Gully; Item E387.

18. Budget; Organized Research Account No. 191-8851; \$18,000.00; Dr. Robert Rentoul Reed; Item E388.
19. Budget; Organized Research Account No. 391-3301; \$15,061.00; Dr. Henry Luther Gray; Item E389.
20. Budget; Future Data Processors Course, Account No. 491-0155; Mrs. Luta Pelham Eaves; Item E390.
21. Budget; Organized Research Account No. 391-3305; \$33,033.00; Dr. Billie Eugene Dahl; Item E391.
22. Budget; Organized Research Account No. 191-8174; \$1,200.00; Dr. Dan Moody Wells; Item E392.
23. Budget; Organized Research Account No. 191-8180; \$2,200.00; Dr. Robert Wetsel Mitchell; Item E393.
24. Budget; Organized Research Account No. 191-8224; \$1,500.00; Dr. Joseph Lawrence Schuster; Item E394.
25. Budget; Organized Research Account No. 391-1397; \$6,597.00; Dr. Vincent Peter Luchsinger; Item E395.
26. Budget; Organized Research Account No. 391-3513; \$2,121.96; Dr. Eric George Bolen; Item E396.
27. Budget; Organized Research Account No. 391-3385; \$4,764.00; Dr. Dan Moody Wells; Item E397.
28. Budget; Organized Research Account No. 191-4786; \$1,200.00; Dr. Robert James Baker; Item E398.
29. Budget; Organized Research Account No. 391-3318; \$10,728.78; Dr. Robert James Baker; Item E399.
30. Budget; Organized Research Account No. 391-3109; \$43,224.00; Dr. Raymond William Mires; Item E400.
31. Budget; Organized Research Account No. 191-4703; \$5,919.00; Dr. Raymond William Mires; Item E401.
32. Budget; Head Start Child Development Center; Account No. 391-1575; \$18,655.49; Mrs. Dorothy Estelle Hays Wallace; Item E402.
33. Budget; Veterans Counseling Contract; Account No. 391-1291; \$33,991.18; Dr. Theodore Andreychuk; Item E403.
34. Budget; Organized Research Account No. 391-3410; \$21,864.55; Dr. Paul Gene Griffith; Item E404.
35. Budget; Organized Research Account No. 191-8225; \$1,500.00; Dr. Willard Forest Williams; Item E405.
36. Budget; Organized Research Account No. 391-3153; \$232,500.00; Dr. Richard Albert Dudek; Item E406.

37. Budget; Organized Research Account No. 191-8226; \$750.00; Dr. James William Kitchen; Item E407.
38. Budget; Organized Research Account No. 191-8227; \$1,500.00; Dr. Robert Rentoul Reed; Item E408.
39. Budget; Gulf Universities Research Corporation; Account No. 391-2651; \$15,343.20; Dr. Daniel Edwards Feray; Item E409.
40. Budget; Organized Research Account No. 391-3380; \$4,500.00; Dr. Joseph Lawrence Schuster; Item E410.
41. Budget; Organized Research Account No. 191-8132; \$1,950.00; Dr. Joseph Lawrence Schuster; Item E411.
42. Budget; Organized Research Account No. 191-8181; \$1,950.00; Dr. Joseph Lawrence Schuster; Item E412.
43. Budget; Organized Research Account No. 191-8419; \$2,100.00; Dr. Lewis Edgar Hill; Item E413.
44. Budget; Organized Research Account No. 191-8420; \$2,500.00; Dr. William Parks Dukes; Item E414.
45. Budget; Organized Research Account No. 191-8421; \$2,600.00; Dr. Wayne Ralph Chapin; Item E415.
46. Budget; Organized Research Account No. 191-8422; \$3,650.00; Dr. Frank James Imke; Item E416.
47. Budget; Organized Research Account No. 191-8423; \$2,920.00; Dr. Louis David Ponthieu; Item E417.
48. Budget; Organized Research Account No. 191-8424; \$2,750.00; Dr. Charles Ernest Wade; Item E418.
49. Budget; Organized Research Account No. 191-8425; \$3,083.00; Dr. Philip Warren Ljungdahl; Item E419.
50. Budget; Organized Research Account No. 191-8426; \$990.00; Dr. George William Berry; Item E420.
51. Budget; Organized Research Account No. 191-8427; \$2,558.00; Dr. John Charles Gilliam; Item E421.
52. Budget; Organized Research Account No. 191-8428; \$2,155.00; Dr. Robert Lyle Rouse; Item E422.
53. Budget; Organized Research Account No. 191-8429; \$3,168.00; Dr. Belverd Earl Needles, Jr.; Item E423.
54. Budget; Organized Research Account No. 191-8430; \$1,800.00; Dr. Vincent Peter Luchsinger; Item E424.
55. Budget; Organized Research Account No. 191-8431; \$3,458.00; Dr. Robert Lester Bonnington; Item E425.

56. Budget; Organized Research Account No. 191-8432; \$4,660.00; Dr. Vernon Thomas Clover; Item E426.
57. Budget; Organized Research Account No. 191-8182; \$1,200.00; Dr. Alfred Eugene Coleman; Item E427.
58. Budget; Organized Research Account No. 391-3688; \$10,458.77; Dr. William Barnett Guerrant, Jr.; Item E428.
59. Budget; Organized Research Account No. 391-3171; \$10,325.00; Dr. Marvin John Dvoracek; Item E429.
60. Budget; Organized Research Account No. 191-4158; \$5,254.00; Dr. Marvin John Dvoracek; Item E430.
61. Budget; Organized Research Account No. 191-8801; \$25,000.00; Dr. Leland Floyd Tribble; Item E431.
62. Budget; Organized Research Account No. 191-8852; \$10,757.00; Dr. James Ezra Osborn; Item E432.
63. Budget; Organized Research Account No. 191-4702; \$3,000.00; Dr. Richard Lee Redington; Item E433.
64. Budget; Organized Research Account No. 391-3104; \$33,222.00; Dr. Richard Lee Redington; Item E434.
65. Budget; Organized Research Account No. 191-8437; \$2,711.67; Mrs. Ernestine Dolores Kilchenstein; Item E435.
66. Budget; Organized Research Account No. 191-8433; \$3,165.00; Mr. Roger Monroe Troub; Item E436.
67. Budget; Organized Research Account No. 191-8436; \$1,000.00; Dr. Elick Neal Maledon, Jr.; Item E437.
68. Budget; Organized Research Account No. 191-8435; \$490.00; Dr. Robert Daniel Amason; Item E438.
69. Budget; Organized Research Account No. 191-8439; \$2,241.33; Dr. Howard Lloyd Balsley; Item E439.
70. Budget; Organized Research Account No. 191-8438; \$2,000.00; Dr. Billy Irvan Ross; Item E440.
71. Budget; Tech Tips and Topics; Account No. 391-1580; \$26,697.09; Miss Billie Frances Williamson; Item E441.
72. Budget; Organized Research Account No. 191-5202; \$50.00; Dr. Weldon Earnest Beckner; Item E442.
73. Budget; Organized Research Account No. 391-3108; \$23,514.00; Dr. Charles Richard Quade; Item E443.
74. Budget; Organized Research Account No. 191-4787; \$5,092.00; Dr. Charles Richard Quade; Item E444.

75. Budget; Organized Research Account No. 191-8615; \$12,000.00; Dr. John R. Bradford; Item E445.
76. Budget; Organized Research Account No. 391-3089; \$6,353.06; Mrs. Margarette Lucile Leggitt Harden; Item E446.
77. Budget; Organized Research Account No. 391-3253; \$20,000.00; Dr. Russell Holland Seacat, Jr.; Item E447.
78. Budget; Organized Research Account No. 191-8802; \$5,000.00; Mr. Walter Grub; Item E448.
79. Budget; Organized Research Account No. 191-8228; \$2,100.00; Dr. Raymond Erwin Meyer; Item E449.
80. Budget; Organized Research Account No. 191-8229; \$2,205.00; Dr. Eugene Alfred Coleman; Item E450.
81. Budget; Organized Research Account No. 191-8230; \$1,440.00; Dr. Eugene Alfred Coleman; Item E451.
82. Budget; Organized Research Account No. 191-8231; \$2,500.00; Dr. Eric George Bolen; Item E452.
83. Budget; Organized Research Account No. 191-8232; \$4,000.00; Dr. Willie Lee Ulich; Item E453.
84. Budget; Organized Research Account No. 391-1398; \$6,822.00; Dr. Carlton James Whitehead; Item E454.
85. Budget; ICASALS Focus on the Arts; Account No. 391-2652; \$20,225.00; Dr. Idris Rhea Traylor, Jr.; Item E455.
86. Budget; ICASALS-Sasser Textbook; Account No. 491-0030; \$900.00; Dr. Idris Rhea Traylor, Jr.; Item E456.

TEXAS TECHNOLOGICAL COLLEGE
Department of Education

Project: "Adaptation of the Gesell Readiness Test
for Spanish American Children"

For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Appropriate from the Unappropriated Balance -----	1	\$2,288.61
Total -----	2	<u>\$2,288.61</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Associate Dean		
Donald McDonald -----	3	\$ -0-
Principal Investigator		
Owen Laverne Caskey -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	1,800.00
Travel -----	7	-0-
Maintenance and Operation -----	8	488.61
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,288.61</u>

TEXAS TECHNOLOGICAL COLLEGE

Department of Speech

Project: "Traineeships in Speech Pathology and Audiology"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the Department of Health, Education, and Welfare, Social and Rehabilitation Service No. 590-T-69 -----	1	\$13,500.00
Supplementary Grant VRA Grant No. 590-T-69 -----	2	<u>1,000.00</u>
Total -----	3	<u>\$14,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Paul Merville Larson -----	4	\$ -0-
Professor and Project Director		
William Keith Ickes -----	5	-0-
Traineeship		
Janna Kay Calhoun, Mineral Wells, Texas -----	6	2,400.00(a)
Mrs. Anne Mary Gray Campbell, Lubbock, Texas -----	7	2,400.00(a)
Mrs. Dorothy Dale Geeslin Doyle, Lubbock, Texas ---	8	2,400.00(a)
Mrs. Edith Irene Davis Jones, Clovis, New Mexico --	9	2,400.00(a)
George Lee Wadley III, Enid, Oklahoma -----	10	2,400.00(a)
Tuition and Fees -----	11	2,500.00(b)
Travel -----	12	-0-
Maintenance and Operation -----	13	-0-
Capital Outlay -----	14	-0-
Indirect Cost (Overhead) -----	15	-0-
Total Estimated Expenses -----	16	<u>\$14,500.00</u>

- (a) The stipend is to be paid at the rate of \$200.00 per month from September 1, 1968, through August 31, 1969.
- (b) Estimated tuition and fees for three resident and two non-resident trainees for the 12 months, September 1, 1968, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE

Department of Speech

Project: "Preparation of Professional Personnel
in the Education of Handicapped"

For the Period June 1, 1968, through August 31, 1969

(This budget supersedes Budget Attachment No. 52, April 20, 1968)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the Department of Health, Education, and Welfare, Office of Education (OEG-4-6-00180-0180) ---	1	\$21,200.00
Estimated Supplementary Grant, Spring 1969 -----	2	<u>3,000.00(a)</u>
Total -----	3	<u>\$24,200.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Paul Merville Larson -----	4	\$ -0-
Professor and Project Director		
William Keith Ickes -----	5	-0-
Traineeship		
Terri Claudine Coffey -----	6	2,200.00(b)
Mark Lynn Hutton -----	7	2,200.00(b)
Jeffrey Clair Morrill -----	8	2,200.00(b)
Glenn Alan Valentine -----	9	2,200.00(b)
Student Assistants and/or Part-time Help -----	10	300.00

- (a) A supplementary request for grant funds for dependency allowance will be filed during the 1969 Spring Semester.
- (b) This stipend for 12 months and will be paid in 12 equal installments. This traineeship is contingent upon admission to and satisfactory progress in the Graduate School by the trainee and may be terminated by either party by giving two weeks notice.

Estimated Expenses (Continued):

	<u>Item</u>	<u>1968-1969</u>
Secretary I (115; 12 Months)		
Mrs. Betty Lou Vincent -----	11	\$ 1,950.00(a)
OASI -----	12	78.00
Dependency Allowance -----	13	5,400.00(b)
Tuition and Fees -----	14	2,446.00
Travel -----	15	1,000.00
Maintenance and Operation -----	16	2,530.00
Capital Outlay -----	17	-0-
Indirect Cost (Overhead) -----	18	<u>1,696.00</u>
Total Estimated Expenses -----	19	<u>\$24,200.00</u>

(a). Also part time in Speech. Total salary for 12 months, \$3,900.00.

(b) The dependency allowance to be paid over a period of 12 months (\$50.00 per dependent per month).

TEXAS TECHNOLOGICAL COLLEGE
Department of Agricultural Economics
Project: "Recharge Ground Water Resources"
For the Period September 1, 1968, through June 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
United States Department of Agriculture, Economic Research Service, Agreement No. 12-17-04-2-377 -----	1	<u>\$7,406.87</u>
Total -----	2	<u>\$7,406.87</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Willard Forest Williams -----	3	\$ -0-
Principal Investigator		
James Ezra Osborn -----	4	5,000.00
Student Assistants and/or Part-time Help -----	5	800.00
OASI -----	6	261.00
Maintenance, Equipment and Travel -----	7	234.84
Indirect Cost (Overhead) -----	8	<u>1,111.03</u>
Total Estimated Expenses -----	9	<u>\$7,406.87</u>

(a) Approximately 37 percent time for 9 months. Total salary for 9 months,
\$14,025.00.

TEXAS TECHNOLOGICAL COLLEGE
Department of Electrical Engineering
Project: "The Effects of Control Parameters on ASM Terminal Guidance Testing"
For the Period September 1, 1968, through October 31, 1968

<u>Source of Funds:</u>	<u>Item</u>	<u>1968</u>
Balance from AF 29(600)-5590 Contract -----	1	<u>\$6,300.00</u>
Total -----	2	<u>\$6,300.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968</u>
Professor and Chairman		
Russell Holland Seacat, Jr. -----	3	\$ -0-
Principal Investigator		
Russell Holland Seacat, Jr. -----	4	-0-
Research Associate		
Larrie Fred Judd -----	5	1,600.00(a)
Research Assistant		
David Ronald Fannin -----	6	1,000.00(b)
Ronald James Kuhler -----	7	1,000.00(b)
Student Assistants and/or Part-time Help -----	8	300.00
OASI -----	9	172.00
Travel -----	10	880.00
Maintenance and Operation -----	11	-0-
Capital Outlay -----	12	-0-
Indirect Cost (Overhead) -----	13	<u>1,348.00</u>
Total Estimated Expenses -----	14	<u>\$6,300.00</u>

(a) Full time September 1, 1968, through October 31, 1968.

(b) Three-fifths time September 1, 1968, through October 31, 1968.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agricultural Education
 Project: "The Occupational Status and Educational Needs
 of Agricultural Graduates of Texas Technological College"
 For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted lump sum appropriation for research in Agriculture, Budget page 415, Item 2 -----	1	\$2,000.00
Total -----	2	<u>\$2,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Thomas Luther Leach -----	3	\$ -0-
Principal Investigator		
Ulrich Lewis Eggenberger -----	4	-0-
Research Associate		
-----	5	-0-
Research Assistant		
Vernon Roy Long -----	6	1,500.00
Student Assistants and/or Part-time Help -----	7	-0-
Travel -----	8	-0-
Maintenance and Operation -----	9	500.00
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 Department of Animal Science

Project: "The Interrelationship of Swine Certification Standards
 with Genetic and Phenotypic Variabilities of Carcass Characteristics"
 For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Funds from the Certification Program of the Purebred Swine Association -----	1	\$1,000.00
Total -----	2	<u>\$1,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Dale Wendel Zinn -----	3	\$ -0-
Principal Investigator		
Leland Floyd Tribble -----	4	-0-
Co-Investigator		
Clovis Boyd Ramsey -----	5	-0-
Student Assistants and/or Part-time Help -----	6	600.00
Travel -----	7	-0-
Maintenance and Operation -----	8	400.00
Capital Outlay -----	9	-0-
Indirect Charges (Overhead) -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$1,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Special Education
Project: "Preparation of Professional Personnel
in the Education of Handicapped Children"
For the Period June 1, 1968, through August 31, 1969
(This budget supersedes the one dated April 20, 1968, Attachment No. 60.)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the Department of Health, Education, and Welfare, Washington, D. C., Grant No. OEG- 0-8-003208-3208 -----	1	<u>\$33,600.00</u>
Total -----	2	<u>\$33,600.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Bruce Douglas Mattson -----	3	\$ -0-
Professor and Project Director		
Bruce Douglas Mattson -----	4	-0-
Instructor (Part-time)		
Joe Wayne Burks -----	5	3,250.00(a)
Pre-Master's Fellowship		
Mrs. Linda Kay Anderson (c) -----	6	2,200.00(b)
Mrs. Catherine Payne Moore (c) (d) -----	7	2,200.00(b)
Mrs. Betty Trammell Snyder (c) -----	8	2,200.00(b)
Graduate Fellowship		
Joe Wayne Burks -----	9	2,000.00(b)

- (a) Contract for one-half time September 1, 1968, through May 31, 1969.
(b) The stipend is to be paid in equal monthly installments September 1, 1968, through May 31, 1969.
(c) Tuition and fees to be paid from Item 27.
(d) Dependency allowance \$600.00 for 9 months; to be paid from Item 28.

Estimated Expenses (Continued):

	<u>Item</u>	<u>1968-1969</u>
Traineeship (Senior Year)		
Karen Palmer Bearden (b) -----	10	\$ 800.00(a)
James Roger Fagan -----	11	800.00(a)
Joseph Michael James -----	12	800.00(a)
Mrs. Wanda Beth Jennings (b) -----	13	800.00(a)
Mrs. Barbara Lee Moran (b) -----	14	800.00(a)
Robbie Gene Van Stavern (b) -----	15	800.00(a)
Ann Hart Wilds (b) -----	16	800.00(a)
Paula Jane Tripp (b) -----	17	800.00(a)
Traineeship (Junior Year)		
Beth Irene McCallum -----	18	300.00(a)
Carla LaVerne Meyers -----	19	300.00(a)
Mrs. Barbara Janette Norman -----	20	300.00(a)
Patricia Ann O'Neill -----	21	300.00(a)
Mary Jo Price -----	22	300.00(a)
Donna Kay Tucker -----	23	300.00(a)
Student Assistants and/or Part-time Help -----	24	500.00
OASI -----	25	165.00
Consultants -----	26	800.00
Tuition and Fees -----	27	1,989.00
Dependency Allowance -----	28	600.00

- (a) The stipend is to be paid in equal monthly installments, September 1, 1968, through May 31, 1969.
(b) Tuition and fees to be paid from Item 27.

<u>Estimated Expenses (Continued):</u>	<u>Item</u>	<u>1968-1969</u>
Maintenance, Operation and Equipment -----	29	\$ 3,946.00
Travel -----	30	3,000.00
Indirect Cost (Overhead) -----	31	<u>2,550.00</u>
Total Estimated Expenses -----	32	<u>\$33,600.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 Department of Civil Engineering
 Project: "Effect of Unlined Sewage Storage Ponds
 on Water Quality in the Ogallala"

For the Period September 1, 1968, through August 31, 1969
 (This budget supersedes Attachment 15, Board Minutes September 28, 1968.)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from Organized Research Funds, Matching Funds, Budget page 406, Item 3 -----	1	\$3,840.00
Total -----	2	<u>\$3,840.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Principal Investigator		
Dan Moody Wells -----	3	\$3,840.00(a)
Research Assistant		
-----	4	-0-
Student Assistants and/or Part-time Help -----	5	-0-
Maintenance, Equipment and Travel -----	6	-0-
Total Estimated Expenses -----	7	<u>\$3,840.00(b)</u>

(a) Approximately 1/5 time from September 1, 1968, through May 31, 1969 (\$2,880.00), and 2/5 time from June 1, 1969, through August 31, 1969 (\$960.00).

(b) The College will contribute an estimated amount of \$480.00 in fringe benefits and an estimated overhead cost of \$3,435.00 to this project.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: Herbicide Movement in Soils as Affected by
Various Ions in the Leaching Water"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation for Research Projects, Water Resources Center, p. 430, Item 3 ----	1	<u>\$1,600.00</u>
Total -----	2	<u>\$1,600.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Director		
Dan Moody Wells -----	3	\$ -0-
Principal Investigator		
Raymond Erwin Meyer -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	900.00
Travel -----	7	150.00
Maintenance and Operation -----	8	350.00
Capital Outlay -----	9	<u>200.00</u>
Total Estimated Expenses -----	10	<u>\$1,600.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Civil Engineering
Project: "Interbasin Diversions: An Annotated Bibliography"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted Allocation for Research Projects, Water Resources Center, p. 430, Item 3 ----	1	\$2,500.00
Total -----	2	<u>\$2,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Acting Chairman		
George Arthur Whetstone -----	3	\$ -0-
Principal Investigator		
George Arthur Whetstone -----	4	2,500.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$2,500.00</u>

(a) One-half time for the period June 1, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Park Administration, Horticulture and Entomology
Project: Investigations of the Parasites
and Predators of Mosquito Larvae in Playa Lakes"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted Allocation for Research Projects, Water Resources Center, p. 430, Item 3 ---	1	<u>\$1,000.00</u>
Total -----	2	<u>\$1,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Elo Joe Urbanovsky -----	3	\$ -0-
Principal Investigator		
Charles Richard Ward -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	700.00
Travel -----	7	200.00
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$1,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE

Department of Biology

Project: "Investigations of the Ecological Importance of Fatty
Acids in the Regulations of Aquatic Ecosystems"

For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation for Research Projects, Water Resources Center, p. 430, Item 3 -----	1	\$2,250.00
Total -----	2	<u>\$2,250.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert Wayne Gorden -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	750.00
Travel -----	7	200.00
Maintenance and Operation -----	8	500.00
Capital Outlay -----	9	<u>800.00</u>
Total Estimated Expenses -----	10	<u>\$2,250.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Electronic Structure and Photo-Chemistry
of Flavins"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
National Science Foundation, Washington, D. C., Grant No. GB-8055 -----	1	\$8,615.00
Total -----	2	<u>\$8,615.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
Pill-Soon Song -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
OASI -----	7	-0-
Travel -----	8	-0-
Maintenance and Operation -----	9	1,100.00
Capital Outlay -----	10	7,100.00
Indirect Charges (overhead) -----	11	<u>415.00(a)</u>
Total Estimated Expenses -----	12	<u>\$8,615.00</u>

(a) Texas Technological College will contribute approximately \$307.00 in overhead toward this project in 1968-1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agricultural Economics
Project: "A Structural Analysis of the High Plains Grain Sorghum Market"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation for research in Agriculture, Budget page 415, Item 2 -----	1	\$5,500.00
Total -----	2	<u>\$5,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Dean		
Gerald Waylett Thomas -----	3	\$ -0-
Professor and Chairman		
Willard Forest Williams -----	4	-0-
Principal Investigator		
James Wilton Graves -----	5	1,775.00
Research Assistant		
Jesse Carter Snodgrass -----	6	3,000.00(a)
Student Assistants and/or Part-time Help -----	7	225.00
Travel -----	8	350.00
Maintenance and Operation -----	9	150.00
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$5,500.00</u>

(a) Contract for the period September 1, 1968, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Geosciences
Project: "Location, Flow, and Water Quality
of West Texas Playa Lake Springs"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted lump sum allocation for research projects, Water Resources Center, Budget page 430,		
Item 3 -----	1	<u>\$3,100.00</u>
Total -----	2	<u>\$3,100.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Richard Benjamin Mattox -----	3	\$ -0-
Principal Investigator		
Corwin C. Reeves, Jr. -----	4	1,800.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	600.00
Travel -----	7	400.00
Maintenance and Operation -----	8	200.00
Capital Outlay -----	9	<u>100.00</u>
Total Estimated Expenses -----	10	<u>\$3,100.00</u>

(a) Contract from noon July 16, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemical Engineering
Project: "Removal of Acid Gases and Oxides
of Nitrogen from Spacecraft Atmospheres"
For the Period September 1, 1968, through March 15, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
National Aeronautics and Space Administration Research Contract No. NAS1-7584, Carryover Balance -----	1	\$4,565.00
Total -----	2	<u>\$4,565.00</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arnold Jarvis Gully -----	3	\$ -0-
Principal Investigator		
Arnold Jarvis Gully -----	4	-0-
Research Associate		
Robert Morrison Bethea -----	5	-0-
Roy Russell Graham -----	6	2,100.00(a)
Research Assistant		
-----	7	-0-
Student Assistants and/or Part-time Help -----	8	250.00
OASI and Workmen's Compensation -----	9	147.00
Travel -----	10	500.00
Maintenance and Supplies -----	11	800.00
Capital Equipment -----	12	-0-
Indirect Charges (Overhead) -----	13	<u>768.00</u>
Total Estimated Expenses -----	14	<u>\$4,565.00</u>

(a) One-half time September 1, 1968, through noon January 16, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Park Administration, Horticulture, and Entomology
 Project: "Vegetable Production in West Texas"
 For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation for Vegetable Research, School of Agricultural Sciences, Budget page 433, Item 2 -----	1	\$18,000.00
Total -----	2	\$18,000.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Dean		
Gerald Waylett Thomas -----	3	\$ -0-
Professor and Chairman		
Elo Joe Urbanovsky -----	4	-0-
Principal Investigator		
Robert Rentoul Reed -----	5	2,000.00(a)
Horticultural Specialist		
George Tereshkovich -----	6	4,257.00(b)
Vegetable Specialist		
Joe Douglas Tidwell -----	7	8,500.00(c)
Travel -----	8	743.00
Maintenance and Operation -----	9	2,000.00
Capital Outlay -----	10	500.00
Total Estimated Expenses -----	11	\$18,000.00

- (a) Contract for the period June 1, 1969, through July 31, 1969.
 (b) Contract for the period June 1, 1969, through August 31, 1969.
 (c) Contract for the period September 1, 1968, through August 31, 1969.

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TEXAS TECHNOLOGICAL COLLEGE
Department of Mathematics
Project: "A Study on Effects of Digital
Approximation in Statistical Estimation"
For the Period July 16, 1968, through July 15, 1969
(This budget supersedes Attachment No. 64, Board Minutes of August 24, 1968.)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the National Aeronautic and Space Administration, Grant No. NAS 9-8463 -----	1	<u>\$15,061.00</u>
Total -----	2	<u>\$15,061.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Patrick Lowry Odell -----	3	\$ -0-
Principal Investigator		
Henry Luther Gray -----	4	5,335.00
Truman Orville Lewis -----	5	4,165.00(a)
Research Assistant		
-----	6	-0-
Student Assistants and/or Part-time Help -----	7	1,200.00
OASI -----	8	492.00
Travel -----	9	-0-
Maintenance and Operation -----	10	170.00
Capital Outlay -----	11	-0-
Indirect Cost (Overhead) -----	12	<u>3,699.00</u>
Total Estimated Expenses -----	13	<u>\$15,061.00(b)</u>

(a) Contract noon July 16, 1968, through August 31, 1968, for \$2,083.00, and
June 1, 1969, through July 15, 1969, for \$2,082.00.

(b) Texas Technological College will contribute computer time estimated at
\$1,000.00 to the project.

Note: This revision changes the account number from 391-3300 to 391-3301.

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Budget Attachment 20
Account No. 491-0155
First Revision

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "Future Data Processors Course"
For the Period September 1, 1968, through Noon January 16, 1969
(This budget supersedes Budget Attachment 12, September 28, 1968)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Fees (44 Students at \$20.00 each) -----	1	\$ \$880.00(a)
From Grant Funds (Balances 1967-1968) -----	2	<u>302.50</u>
Total -----	3	<u>\$1,182.50</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	4	\$ -0-
Assistant Professor and Director		
Mrs. Luta Pelham Eaves -----	5	900.00(b)
Student Assistants and/or Part-time Help -----	6	-0-
Maintenance, Equipment and Travel -----	7	46.00
Indirect Charges (Overhead) -----	8	<u>236.50</u>
Total Estimated Expenses -----	9	<u>\$1,182.50</u>

- (a) Should the income from fees fail to reach the budget estimate, the additional funds required for this budget will be charged against grant funds.
(b) Contract to be dated September 1, 1968, through noon January 16, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "The Use of Grasses for Dune Stabilization Along
the Gulf Coast with Initial Emphasis on the Texas Coast"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Gulf Universities Research Corporation (GURC), Houston, Texas -----	1	\$33,033.00
Total -----	2	\$33,033.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Billie Eugene Dahl -----	4	2,230.00(a)
Co-Investigator		
Chester Cartwright Jaynes -----	5	584.00(b)
Thadis Wayne Box -----	6	917.00(c)
Research Associate		
-----	7	9,000.00(d)
Research Assistant		
-----	8	3,000.00(e)
Unallocated salaries -----	9	1,000.00

- (a) Part-time from June 1, 1969, through August 31, 1969. Also Part-time on Account No. 191-8150 at a salary of \$1,503.00. Total salary for 3 months, \$3,733.00.
- (b) Part-time September 1, 1968, through February 28, 1969. Also Assistant Professor of Agronomy.
- (c) Part-time from June 1, 1969, through August 31, 1969. Also Part-time Research June 1, 1969, through August 31, 1969.
- (d) For approximately 10 months, November 1, 1968, through August 31, 1969.
- (e) Approximately 2/5 time for 12 months.

<u>Estimated Expenses:</u> (Continued)	<u>Item</u>	<u>1968-1969</u>
Student Assistants and/or Part-time Help -----	10	\$ 1,300.00
OASI -----	11	830.00
Travel -----	12	1,900.00
Maintenance and Operation -----	13	3,300.00
Capital Outlay -----	14	1,000.00
Indirect Cost (overhead) -----	15	<u>7,972.00</u>
Total Estimated Expenses -----	16	<u>\$33,033.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Water Resources Center
Project: "Potential Pollution of the Ogallala by
Recharging Playa Lake Water"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from Water Resources Center Projects, Budget page 430, Item No. 3 -----	1	\$1,200.00
Total -----	2	<u>\$1,200.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Director		
Dan Moody Wells -----	3	\$ -0-
Principal Investigator		
Dan Moody Wells -----	4	-0-
Research Associate		
Ellis Wright Huddleston -----	5	-0-
Raymond Erwin Meyer -----	6	-0-
Robert George Rekers -----	7	-0-
Student Assistants and/or Part-time Help -----	8	1,000.00
Equipment -----	9	-0-
Maintenance and Operation -----	10	200.00
Travel -----	11	-0-
Total Estimated Expenses -----	12	<u>\$1,200.00</u>

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TEXAS TECHNOLOGICAL COLLEGE

Department of Biology

Project: "Studies on the Subterranean Aquatic
Fauna of Texas"

For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for research, Water Resources Center, Budget page 430, Item 3 -----	1	\$2,200.00
Total -----	2	<u>\$2,200.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert Wetsel Mitchell -----	4	-0-
Research Assistant		
-----	5	300.00(a)
Student Assistants and/or Part-time Help -----	6	1,200.00
Travel -----	7	200.00
Maintenance and Operation -----	8	500.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$2,200.00</u>

(a) Full time for the period June 1, 1969, through June 30, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agronomy and Range Management
 Project: "Research in Range Improvement at Texas
 Technological College Research Farm"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$1,500.00
Total -----	2	\$1,500.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Dean of Agricultural Sciences		
Gerald Waylett Thomas -----	3	\$ -0-
Principal Investigator		
Joseph Lawrence Schuster -----	4	-0-
Research Assistant		
Wamon Ellis Klett -----	5	1,441.67(a)
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	58.33
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$1,500.00

(a) Also one-half time on the budget for Texas Technological College Research Farm. Annual salary rate \$3,000.00. Contract to be dated September 15, 1968, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Management
Project: "An Analysis of Manpower Migration
Patterns in the South Plains Region of Texas"
For the period October 1, 1968, through September 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the United States Department of Labor, Under the provisions of Title I of the Manpower Development and Training Act, PL 87-415, as amended, Grant Award (No. 91-46-69-15) -----	1	\$6,597.00
Total -----	2	\$6,597.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Vincent Peter Luchsinger -----	3	\$ -0- (a)
Doctoral Candidate		
Richard Coston Stapleton -----	4	2,500.00(b)
Student Assistants and/or Part-time Help -----	5	500.00
OASI -----	6	24.00
Tuition and Fees -----	7	275.00
Travel -----	8	100.00
Maintenance and Operation -----	9	3,025.00
Capital Outlay -----	10	-0-
Indirect Cost (Overhead) -----	11	173.00
Total Estimated Expenses -----	12	\$6,597.00

- (a) Also Sponsor. The College will contribute an estimated \$1,050.00 in salaries for the Sponsor toward this project.
- (b) This stipend is to be paid \$1,500.00 for 9 months (October 1, 1968, through June 30, 1969) and \$1,000.00 for 3 months (July 1, 1969, through September 30, 1969).
- (c) The College will provide an estimated amount of \$50.00 in supplies, materials, etc. through the budget for the Department of Management for this project.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "A Study of Jack Rabbit Populations in Relation
of Habitat Preferences in the Southern High Plains of Texas"
For the period July 1, 1968, through January 31, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Contract No. 14-16-0008-911 with the Bureau of Sport Fisheries and Wildlife, Department of Interior -	1	\$2,121.96
Total -----	2	<u>\$2,121.96</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Director-at-Large of ICASALS		
Thadis Wayne Box -----	3	\$ -0-
Principal Investigator		
Eric George Bolen -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
OASI -----	7	-0-
Travel -----	8	-0-
Maintenance and Operation -----	9	2,121.96
Capital Outlay -----	10	-0-
Indirect Cost (overhead) -----	11	(a)
Total Estimated Expenses -----	12	<u>\$2,121.96</u>

(a) Overhead in the amount of \$540.00 was approved on February 10, 1968.
(Budget Attachment No. 27).

TEXAS TECHNOLOGICAL COLLEGE
Water Resources Center
Project: "Potential Pollution of the Ogallala by Recharging
Playa Lake Water"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Texas Water Quality Board, Austin, Texas (Interagency Contract) -----	1	<u>\$4,764.00</u>
Total -----	2	<u>\$4,764.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Director		
Dan Moody Wells -----	3	\$ -0-
Principal Investigator		
Dan Moody Wells -----	4	-0-
Research Associates		
Ellis Wright Huddleston -----	5	-0-
Robert George Rekers -----	6	-0-
Research Assistant		
-----	7	3,600.00(a)
Student Assistants and/or Part-time Help -----	8	-0-
OASI -----	9	169.00
Travel -----	10	-0-
Maintenance and Operation -----	11	-0-
Capital Outlay -----	12	-0-
Indirect Charges (overhead) -----	13	<u>995.00</u>
Total Estimated Expenses -----	14	<u>\$4,764.00</u>

(a) Approximately one-half time for 12 months.

TEXAS TECHNOLOGICAL COLLEGE
Department of Biology
Project: "Karyotypic Studies of Phyllostomatidae"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for College Matching Funds, Budget page 406, Item 3 -----	1	<u>\$1,200.00</u>
Total -----	2	<u>\$1,200.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert James Baker -----	4	-0-
Research Assistant		
-----	5	1,200.00(a)
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$1,200.00(b)</u>

- (a) Full-time for 3 months, June 1, 1969, through August 31, 1969.
(b) The College will contribute approximately \$57.60 in staff benefits; approximately \$4,200.00 for equipment and \$300.00 for supplies from the Department of Biology; and approximately \$280.00 for equipment from Organized Research Account No. 191-4730 and/or 191-4704.

TEXAS TECHNOLOGICAL COLLEGE
Department of Biology
Project: "Karyotypic Studies of Phyllostomatidae"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant (No. GB-8120) from the National Science Foundation (Account No. 391-3318) -----	1	\$10,728.78
Total -----	2	<u>\$10,728.78</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert James Baker -----	4	2,267.00(a)
Research Assistant		
-----	5	-0-
OASI -----	6	105.60
Travel -----	7	5,400.00
Maintenance and Operation -----	8	1,271.64
Capital Outlay -----	9	924.00
Indirect Charges (Overhead) -----	10	<u>760.54</u>
Total Estimated Expenses -----	11	<u>\$10,728.78</u>

(a) Contract for 2 months; June 1, 1969 through July 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Physics
Project: "Optical and Magnetic Properties of Crystals"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Department of Army, Defense Supply Service -----	1	\$43,224.00
Total -----	2	\$43,224.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Henry Coffman Thomas -----	3	\$ -0-
Principal Investigator		
Raymond William Mires -----	4	3,177.00(c)
Research Assistant		
-----	5	4,360.00(t)
Donald Jene Arnold -----	6	4,800.00(c)
Alfred Richard Smith -----	7	4,800.00(c)
-----	8	3,000.00(c)
Student Assistants and/or Part-time Help -----	9	-0-
OASI -----	10	939.00
Travel -----	11	700.00
Maintenance and Operation -----	12	4,100.00
Capital Outlay -----	13	8,065.00
Indirect Charges (Overhead) -----	14	9,283.00(c)
Total Estimated Expenses -----	15	\$43,224.00

- (a) Contract for the period June 1, 1969, through July 31, 1969.
(b) Approximately eleven months.
(c) Salary rate \$400.00 per month for approximately 3/5 time. Contract for 9 months dated September 1, 1968, through May 31, 1969. Contract for 3 months dated June 1, 1969, through August 31, 1969.
(d) Salary for 12 months.
(e) The College will contribute an estimated \$630.00 for overhead.

TEXAS TECHNOLOGICAL COLLEGE

Department of Physics

Project: "Optical and Magnetic Properties of Crystals"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for College Matching Funds, Budget page 406, Item 3 -----	1	\$5,919.00
Total -----	2	\$5,919.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Henry Coffman Thomas -----	3	\$ -0-
Principal Investigator		
Raymond William Mires -----	4	1,589.00 (a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	4,330.00
Indirect Cost (Overhead) -----	10	-0- (b)
Total Estimated Expenses -----	11	\$5,919.00

- (a) Contract for one month, August 1, 1969, through August 31, 1969.
(b) The College will contribute overhead estimated at \$630.00 to this project.

TEXAS TECHNOLOGICAL COLLEGE
Department of Home and Family Life
Project: "Head Start Child Development Center"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Balance on September 1, 1968, Grant from the United States of America, Office of Economic Opportunity, Washington, D. C. -----	1	\$18,655.49
Total -----	2	\$18,655.49

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Mrs. Dorothy Estelle Hays Wallace -----	3	\$ 2,750.00(a)
Student Assistants and/or Part-time Help -----	4	4,000.00
OASI -----	5	320.80
Travel -----	6	1,000.00
Maintenance and Operation -----	7	5,584.69
Capital Outlay -----	8	5,000.00
Indirect Cost (overhead) -----	9	-0-
Total Estimated Expenses -----	10	\$18,655.49

(a) Contract from noon July 16, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Psychology
Veterans Counseling Contract
For the period October 1, 1968, through September 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Veterans Administration Counseling Contract -----	1	<u>\$33,991.18</u>
Total -----	2	<u>\$33,991.18</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Theodore Andreychuk -----	3	\$ 500.00(a)
Counselors -----	4	16,800.00
Psychometrist II (534)		
Vivian Mae Clemens -----	5	6,000.00(b)
Secretary I (115)		
Mrs. Donna Rae Lissarrague -----	6	3,360.00(b)
Mrs. Mary Winifred Heard -----	7	4,260.00(b)
Fringe Benefits -----	8	1,452.55
Travel -----	9	-0-
Maintenance and Operation -----	10	-0-
Capital Outlay -----	11	-0-
Indirect Cost (overhead) -----	12	<u>1,618.63</u>
Total Estimated Expenses -----	13	<u>\$33,991.18(c)</u>

- (a) Contract through August 31, 1969.
(b) For 12 months; contract for eleven months, October 1, 1968, through August 31, 1969. This contract is contingent upon the approval of a new contract by Office of Veterans Administration.
(c) This budget is contingent upon the approval of a new contract with the Veterans Administration.

TEXAS TECHNOLOGICAL COLLEGE
School of Engineering
Project: "Research in Magneto-Tellurics"
For the period September 1, 1968, through May 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Mobil Research and Development Corporation, Dallas, Texas -----	1	\$21,864.55
Total -----	2	<u>\$21,864.55</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Dean of Engineering		
John R. Bradford -----	3	\$ -0-
Principal Investigator		
Paul Gene Griffith -----	4	12,300.00(a)
Research Assistant		
-----	5	3,375.00(b)
Student Assistants and/or Part-time Help -----	6	1,000.00
OASI -----	7	438.30
Maintenance, Operations and Travel -----	8	2,400.00(c)
Indirect Charges (overhead) -----	9	<u>2,351.25</u>
Total Estimated Expenses -----	10	<u>\$21,864.55</u>

- (a) Three-fourths time for 9 months. Also Professor Engineering Analysis and Design.
(b) Part-time for 9 months.
(c) Travel provides for reimbursement based on actual expenses incurred for visits to the Field Research Laboratory.

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Account No. 191-8225

TEXAS TECHNOLOGICAL COLLEGE
Department of Agricultural Economics
Project: "An Analysis of Substitution Relationships
Among Different Staple Lengths of Cotton"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	<u>\$1,500.00</u>
Total -----	2	<u>\$1,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Dean		
Gerald Waylett Thomas -----	3	\$ -0-
Professor and Chairman		
Willard Forest Williams -----	4	-0-
Principal Investigator		
Marquis Lyndon Fowler -----	5	-0-
Research Assistant		
-----	6	-0-
Student Assistants and/or Part-time Help -----	7	1,300.00(a)
Travel -----	8	-0-
Maintenance and Operation -----	9	200.00
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$1,500.00</u>

(a) The hourly rate for Student Assistants and/or Part-time Help Account should be approved in advance by the Personnel Office.

TEXAS TECHNOLOGICAL COLLEGE
Department of Industrial Engineering
Project: "Operations Under Stressful Situations
Based on Individual Performance and Training"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Income:</u>	<u>Item</u>	<u>1968-1969</u>
Themis Research Contract -----	1	\$232,500.00
Total -----	2	<u>\$232,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Program Director		
Richard Albert Dudek -----	3	\$ 5,834.00(a)
Research Associate		
Mohamed Mohamed Ayoub -----	4	11,000.00(b)
Jerry Dwain Ramsey -----	5	5,708.00(c)
Mrs. Mina Wolf Lamb -----	6	3,333.00(d)
Margaret Kassouny -----	7	5,417.00(e)
Clay Edwin George -----	8	8,667.00(f)
Charles Grover Halcomb -----	9	5,000.00(g)
Joe Wincik Darnall -----	10	4,167.00(h)
Richard Fleming Barton -----	11	3,906.00(i)
Vincent Peter Luchsinger -----	12	3,750.00(j)

- (a) One-eighth time academic year--\$2,500.00; one-half time summer--\$3,334.00.
 (b) One-half time academic year--\$8,250.00; one-half time summer--\$2,750.00.
 (c) One-fourth time academic year--\$3,425.00; one-half time summer--\$2,283.00.
 (d) One-eighth time academic year--\$2,060.00; one-fourth time summer--\$1,333.00.
 (e) One-fourth time academic year--\$3,250.00; one-half time summer--\$2,167.00.
 (f) One-half time academic year--\$6,500.00; one-half time summer--\$2,167.00.
 (g) One-fourth time academic year--\$3,000.00; one-half time summer--\$2,000.00.
 (h) One-fourth time academic year--\$2,500.00; one-half time summer--\$1,667.00.
 (i) One-eighth time academic year--\$2,344.00; one-fourth time summer--\$1,562.00.
 (j) One-eighth time academic year--\$2,250.00; one-fourth time summer--\$1,500.00.

Estimated Expenses (Continued):

	<u>Item</u>	<u>1968-1969</u>
Research Assistant		
Peggy Janice Blackwell (Psychology) -----	13	\$ 2,800.00(a)
Douglas Irving Blom II (Psychology) -----	14	2,800.00(a)
Charles Melvin Deardorff (Psychology) -----	15	2,600.00(a)
Wayne Leslie Waag (Psychology) -----	16	2,800.00(a)
Mrs. Loretta White Hoover (Food and Nutrition) ----	17	1,067.00(b)
_____ (Food and Nutrition) ---	18	_____
Waymon Layton Johnston (Industrial Engineering) ---	19	3,500.00(a)
Tarek Mohammed Khalil (Industrial Engineering) -----	20	2,600.00(a)
Gary Don Luker (Industrial Engineering) -----	21	2,400.00(a)
_____ (Industrial Management) -	22	_____
Unallocated Salaries (Research Assistants) -----	23	11,660.00
Technician (Mechanical-Electronic--12 Months)		
_____ -----	24	7,200.00
Technician (Medical--12 Months)		
_____ -----	25	1,800.00(c)
Secretary I (115; 12 Months)		
_____ -----	26	3,540.00
Computer Programmer (Part-time)		
_____ -----	27	2,500.00(d)
Student Assistants and/or Part-time Help -----	28	5,500.00

- (a) Contract for the period September 1, 1968, through May 31, 1969.
(b) Contract for the period October 1, 1968, through May 31, 1969.
(c) One-fourth time for 12 months.
(d) One-fourth time for 12 months.

<u>Estimated Expenses (Continued):</u>	<u>Item</u>	<u>1968-1969</u>
OASI and Workmen's Compensation -----	29	\$ 5,608.00
Consultants -----	30	8,000.00
Capital Outlay -----	31	38,630.00
Travel -----	32	4,800.00
Maintenance and Operation -----	33	10,420.00
Unallocated Funds -----	34	17,623.00
Indirect Cost (Overhead) -----	35	<u>37,870.00</u>
Total Estimated Expenses -----	36	<u>\$232,500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Park Administration, Horticulture and Entomology
Project: "Development of A Comprehensive Recreation
Land Use Plan for Lubbock County"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$ <u>750.00</u>
Total -----	2	\$ <u>750.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Dean and Professor		
Gerald Waylett Thomas -----	3	\$ -0-
Professor and Chairman		
Elo Joe Urbanovsky -----	4	-0-
Principal Investigator		
James William Kitchen -----	5	-0-
Student Assistants and/or Part-time Help -----	6	200.00
Travel -----	7	-0-
Maintenance and Operation -----	8	550.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$ <u>750.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Park Administration, Horticulture and Entomology
Project: "Varietal and Cultural Research in Pomology"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$1,500.00
Total -----	2	<u>\$1,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean and Professor		
Gerald Waylett Thomas -----	3	\$ -0-
Professor and Chairman		
Elo Joe Urbanovsky -----	4	-0-
Principal Investigator		
Robert Rentoul Reed -----	5	1,000.00(a)
Research Assistant		
-----	6	-0-
Student Assistants and/or Part-time Help -----	7	300.00
Travel -----	8	-0-
Maintenance and Operation -----	9	200.00
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$1,500.00</u>

(a) Contract to be dated August 1, 1969, through August 31, 1969.

Board Minutes
 December 14, 1968
 Budget Attachment 39
 Account No. 391-2651

TEXAS TECHNOLOGICAL COLLEGE
 Office of Research and Special Programs
 Project: Gulf Universities Research Corporation
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Reimbursement Agreement with Gulf Universities Research Cooperation (10-17-68) -----	1	\$15,343.20
Total -----	2	<u>\$15,343.20</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Associate Vice President for Research		
Monty E. Davenport -----	3	\$ -0-
Principal Investigator		
Daniel Edwards Feray -----	4	15,000.00(a)
OASI -----	5	343.20
Maintenance, Equipment and Travel -----	6	-0-
Indirect Cost (Overhead) -----	7	<u>-0-</u>
Total Estimated Expenses -----	8	<u>\$15,343.20</u>

(a) Approximately three-fourths time. Also one-fourth time research, Account No. 191-4770 at a salary of \$5,000.00 for 12 months. Total salary for 12 months, \$20,000.00.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "Cooperative Research in Range Management
With Post-Montgomery Ranch"
For the period December 1, 1968, through November 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Estimated unencumbered balance on December 1, 1968 --	1	\$1,500.00
Grant from Post-Montgomery Estate -----	2	<u>3,000.00</u>
Total -----	3	<u>\$4,500.00</u>

<u>Estimated Expenses</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	4	\$ -0-
Principal Investigator		
Joseph Lawrence Schuster -----	5	-0-
Henry Albert Wright -----	6	-0-
Research Fellow		
-----	7	2,250.00(a)
-----	8	750.00(b)
Student Assistants and/or Part-time Help -----	9	-0-
OASI -----	10	-0-
Travel -----	11	-0-
Maintenance and Operation -----	12	-0-
Capital Outlay -----	13	1,500.00
Indirect Cost (Overhead) -----	14	-0-
Total Estimated Expenses -----	15	<u>\$4,500.00</u>

- (a) Stipend \$250.00 per month for the period December 1, 1968, through August 31, 1969.
(b) Stipend \$250.00 per month for the period September 1, 1969, through November 30, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "A Study of the Woody Phreatophytes
Along Brazos River Upstream from Possum Kingdom Lake
to the Confluence of the Salt and Double Mountain Forks"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum appropriation to ICASALS for research, Budget page 407A, Item 2 -----	1	<u>\$1,950.00</u>
Total -----	2	<u>\$1,950.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Joseph Lawrence Schuster -----	4	1,100.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	850.00
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$1,950.00</u>

(a) One-half time from noon July 16, 1969, through August 31, 1969. Also one-half time on Organized Research or teaching at a salary of \$1,100.00 for 1½ months. Total salary for 1½ months, \$2,200.00.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "A Study of the Woody Phreatophytes
Along Brazos River Upstream from Possum Kingdom Lake
to the Confluence of the Salt and Double Mountain Forks"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted lump sum allocation for Research Projects, Water Resources Center, Budget page 430,		
Item No. 3 -----	1	<u>\$1,950.00</u>
Total -----	2	<u>\$1,950.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Joseph Lawrence Schuster -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	350.00
Travel -----	7	600.00
Maintenance and Operation -----	8	600.00
Capital Outlay -----	9	<u>400.00</u>
Total Estimated Expenses -----	10	<u>\$1,950.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Economics

Project: "Economic History, Economic Thought and the Sociology of Knowledge"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	\$2,100.00
Total -----	2	\$2,100.00
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Lewis Edgar Hill -----	4	-0-
Research Assistant		
-----	5	1,200.00(a)
Student Assistants and/or Part-time Help -----	6	250.00
Travel -----	7	250.00
Maintenance and Operation -----	8	400.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$2,100.00

(a) Approximately two-fifths time for the period January 16, 1969, through May 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Finance
Project: "Debt and the Drug Industry"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$2,500.00</u>
Total -----	2	<u>\$2,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
William Parks Dukes -----	4	2,117.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	283.00
Travel -----	7	-0-
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,500.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "A Budgeting Practice Case--An Integrated Model"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	\$2,600.00
Total -----	2	<u>\$2,600.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	3	\$ -0-
Principal Investigator		
Wayne Ralph Chapin -----	4	2,417.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	183.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,600.00</u>

(a) Full time for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "A Critical Investigation of Financial Reporting
for External Purposes"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, page 2 -----	1	\$3,650.00
Total -----	2	<u>\$3,650.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	3	\$ -0-
Principal Investigator		
Frank James Imke -----	4	2,500.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	950.00
Travel -----	7	-0-
Maintenance and Operation -----	8	200.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$3,650.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Management
Project: "An Analysis of Selected Current Problems
in Hospital Organization and Management"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$2,920.00</u>
Total -----	2	<u>\$2,920.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Vincent Peter Luchsinger -----	3	\$ -0-
Principal Investigator		
Louis David Ponthieu -----	4	2,100.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	525.00
Travel -----	7	175.00
Maintenance and Operation -----	8	120.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,920.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Finance

Project: "A Critical Evaluation of Bank Customer Service"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$2,750.00</u>
Total -----	2	<u><u>\$2,750.00</u></u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Charles Ernest Wade -----	4	2,200.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	500.00
Travel -----	7	-0-
Maintenance and Operation -----	8	50.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u><u>\$2,750.00</u></u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting

Project: "Accounting Controls: A Key to Increasing Farm Profitability
on the South Plains of Texas"

For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business,		
Budget page 416, Item 2 -----	1	\$3,083.00
Total -----	2	<u>\$3,083.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	3	\$ -0-
Principal Investigator		
Philip Warren Ljungdahl -----	4	2,033.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	650.00
Travel -----	7	75.00
Maintenance and Operation -----	8	325.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$3,083.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Finance

Project: "Restrictions upon the Flow of Private Investment Capital
from the United States to Australia"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$990.00</u>
Total -----	2	<u>\$990.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$-0-
Principal Investigator		
George William Berry -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	715.00
Travel -----	7	-0-
Maintenance and Operation -----	8	275.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$990.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Business Education
Project: "A Study of International Programs in Business Education
as they Apply to Collegiate Schools of Business in the United States"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$2,558.00</u>
Total -----	2	<u>\$2,558.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
William Robert Pasewark -----	3	\$ -0-
Principal Investigator		
John Charles Gilliam -----	4	-0-
Carlton James Whitehead -----	5	-0-
Research Assistant		
-----	6	1,200.00
Student Assistants and/or Part-time Help -----	7	250.00
Travel -----	8	558.00
Maintenance and Operation -----	9	550.00
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	<u>\$2,558.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Finance

Project: "An Investigation of the Development of Selected Areas
of Micro-Financial Thought"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$2,155.00</u>
Total -----	2	<u>\$2,155.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Robert Lyle Rouse -----	4	1,055.00(a)
Research Assistant		
-----	5	600.00
Student Assistants and/or Part-time Help -----	6	150.00
Travel -----	7	-0-
Maintenance and Operation -----	8	350.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,155.00</u>

(a) One-third time for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "An Initial Investigation into the Financial Structure
of United States Hospitals"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$3,168.00</u>
Total -----	2	<u>\$3,168.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	3	\$ -0-
Principal Investigator		
Belverd Earl Needles, Jr. -----	4	2,083.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	395.00
Travel -----	7	-0-
Maintenance and Operation -----	8	690.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$3,168.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Management
 Project: "The Nature, Role, and Scope of Quantitative Science
 in the Curricula of Selected Southwestern Business Schools"
 For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$1,800.00</u>
Total -----	2	<u>\$1,800.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Vincent Peter Luchsinger -----	3	\$ -0-
Principal Investigator		
Vincent Peter Luchsinger -----	4	-0-
Research Assistant		
-----	5	1,200.00
Student Assistants and/or Part-time Help -----	6	200.00
Travel -----	7	150.00
Maintenance and Operation -----	8	250.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$1,800.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 Department of Economics
 Project: "Latin America: Foreign Investment Inducements"
 For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	\$3,458.00
Total -----	2	<u>\$3,458.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Robert Lester Bonnington -----	4	2,083.00(a)
Research Assistant		
-----	5	600.00
Student Assistants and/or Part-time Help -----	6	250.00
Travel -----	7	400.00
Maintenance and Operation -----	8	125.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$3,458.00</u>

(a) Contract for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Economics

Project: "Adjustments in Economic Activity and Practices
in West Texas and Eastern New Mexico
Necessary to Justify Importation of Water"
For the Period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From budgeted allocation for Research in Business, Budget page 416, Item 2 -----	1	\$4,660.00
Total -----	2	<u>\$4,660.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Vernon Thomas Clover -----	4	2,767.00(a)
Research Assistant		
-----	5	1,000.00
Student Assistants and/or Part-time Help -----	6	743.00
Travel -----	7	100.00
Maintenance and Operation -----	8	50.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$4,660.00</u>

(a) Salary for one summer term, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agronomy and Range Management
 Project: "Water Use Efficiency as Influenced by
 Deep Placement of Fertilizer"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation to Water Resources Center for Research, Budget page 430, Item 3 -----	1	<u>\$1,200.00</u>
Total -----	2	<u>\$1,200.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Alfred Eugene Coleman -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	600.00
Travel -----	7	-0-
Maintenance and Operation -----	8	600.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$1,200.00</u>

Board Minutes
December 14, 1968
Budget Attachment 58
Account No. 391-3688

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Decarbonylation of Substituted Organic Acids"
For the period September 1, 1968, through April 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from The Robert A. Welch Foundation, Houston, Texas (New Grant No. D-283) -----	1	\$10,458.77
Total -----	2	<u>\$10,458.77</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
William Barnett Guerrant, Jr. -----	4	-0-
Pre-doctoral Fellowship		
-----	5	1,250.00(a)
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	150.00
Maintenance and Operation -----	8	694.58
Equipment -----	9	7,000.00
Indirect Cost (overhead) -----	10	<u>1,364.19</u>
Total Estimated Expenses -----	11	<u>\$10,458.77</u>

(a) Stipend \$250.00 per month from December 1, 1968, through April 30, 1969.

Board Minutes
December 14, 1968
Budget Attachment 59
Account No. 391-3171

TEXAS TECHNOLOGICAL COLLEGE
Department of Agricultural Engineering
Project: "Development of Systems for Ground Water Recharge
into the Ogallala Formation"
For the period January 1, 1969, through December 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Office of Water Resources Research, Department of the Interior -----	1	<u>\$10,325.00</u>
Total -----	2	<u>\$10,325.00</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Willie Lee Ulich -----	3	\$ -0-
Principal Investigator		
Marvin John Dvoracek -----	4	-0- (a)
Co-Investigator		
Rolland Zelbert Wheaton -----	5	-0- (a)
Research Associate		
-----	6	5,925.00
Research Assistant		
Steven Austin Dennis -----	7	2,000.00(b)
Student Assistants and Part-time Help -----	8	500.00
Employee Benefits -----	9	-0- (c)
Travel -----	10	200.00
Maintenance and Operations -----	11	1,700.00
Capital Outlay -----	12	-0-
Indirect Cost (Overhead) -----	13	-0- (d)
Total Estimated Expenses -----	14	<u>\$10,325.00</u>

- (a) On the budget for Organized Research Account No. 191-4158.
(b) Contract from noon January 16, 1969, through May 31, 1969, for \$1,200.00, two fifths time; and June 1, 1969, through August 31, 1969, for \$800.00, one-half time.
(c) This is to be paid from Account No. 391-3550.
(d) See Budget for Organized Research Account No. 191-4158.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agricultural Engineering
 Project: "Development of Systems for Ground Water Recharge
 into the Ogallala Formation"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for College Matching		
Funds, Organized Research Project; Budget p. 406, Item 3-	1	\$5,254.00
Total -----	2	<u>\$5,254.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Willie Lee Ulich -----	3	\$ -0-
Principal Investigator		
Marvin John Dvoracek -----	4	2,063.00(a)
Co-Investigator		
Rolland Zelbert Wheaton -----	5	2,375.00(b)
Research Associate		
-----	6	-0-
Research Assistant		
-----	7	-0-
Student Assistants and/or Part-time Help -----	8	-0-
Employee Benefits -----	9	-0-
Travel -----	10	-0-
Maintenance and Operation -----	11	-0-
Capital Outlay -----	12	816.00
Indirect Cost (Overhead) -----	13	-0- (c)
Total Estimated Expenses -----	14	<u>\$5,254.00</u>

(a) One-half time for 3 months.

(b) Contract for one Summer Term, 1969.

(c) The College will contribute overhead estimated at \$4,498.00 on this project.

Board Minutes
December 14, 1968
Budget Attachment 61
Account No. 191-8801

TEXAS TECHNOLOGICAL COLLEGE
Department of Animal Science
Project: "Efficient Production of Pork"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item for Swine Research, Account No. 191-8801; Budget page 432; Item No. 2 -----	1	\$25,000.00
Total -----	2	<u>\$25,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Dale Wendel Zinn -----	3	\$ -0-
Principal Investigator		
Leland Floyd Tribble -----	4	2,333.00(a)
Research Associate		
Clovis Boyd Ramsey -----	5	1,125.00(b)
Research Assistant		
-----	6	3,000.00
Student Assistants and/or Part-time Help -----	7	4,542.00
Travel -----	8	500.00
Maintenance and Operation -----	9	8,500.00
Capital Outlay -----	10	<u>5,000.00</u>
Total Estimated Expenses -----	11	<u>\$25,000.00</u>

(a) For one summer term; from noon July 16, 1969, through August 31, 1969.
(b) One-fourth time from June 1, 1969, through August 31, 1969.

Board Minutes
December 14, 1968
Budget Attachment 62
Account No. 191-8852

TEXAS TECHNOLOGICAL COLLEGE
Department of Agricultural Economics
Project: "Economics of the Northern Texas Vegetable Industry"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item for Vegetable Research, Account No. 191-8850; Budget page 433; Item No. 2 -----	1	\$10,757.00
Total -----	2	<u>\$10,757.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Willard Forest Williams -----	3	\$ -0-
Principal Investigator		
James Ezra Osborn -----	4	-0-
Research Associate		
Wilfred Herman Hoelscher -----	5	2,400.00(a)
-----	6	1,600.00
Unallocated Salaries -----	7	2,000.00
Research Assistant		
-----	8	1,800.00
Student Assistants and/or Part-time Help -----	9	457.00
Travel -----	10	1,000.00
Maintenance and Operation -----	11	1,000.00
Capital Outlay -----	12	<u>500.00</u>
Total Estimated Expenses -----	13	<u>\$10,757.00</u>

(a) Contract for 3 months, November 1, 1968, through January 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Infrared Studies of Matrix-Impurity Interactions"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for College		
Matching Funds; Budget Page 406, Item 3 -----	1	<u>\$3,000.00</u>
Total -----	2	<u>\$3,000.00</u> (a)
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
Richard Lee Redington -----	4	-0- (b)
Richard Edward Wilde, Jr. -----	5	-0- (b)
Research Assistant		
-----	6	-0-
Travel -----	7	-0- (c)
Maintenance and Operation -----	8	3,000.00
Capital Outlay -----	9	-0- (c)
Total Estimated Expenses -----	10	<u>\$3,000.00</u>

- (a) College matching funds for Organized Research Project Account No. 391-3104.
(b) Salary on the budget for Organized Research Account No. 391-3104.
(c) On the budget for Organized Research Account No. 391-3104.

Board Minutes
December 14, 1968
Budget Attachment 64
Account No. 391-3104

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Infrared Studies of Matrix-Impurity Interactions"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Department of Army, Defense		
Supply Service -----	1	\$33,222.00
Total -----	2	<u>\$33,222.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
Richard Lee Redington -----	4	2,666.00(a)
Richard Edward Wilde, Jr. -----	5	1,528.00(b)
Post-doctoral Research Associates		
-----	6	7,000.00(c)
-----	7	7,000.00(c)
Student Assistants and/or Part-time Help -----	8	100.00
OASI -----	9	873.00
Travel -----	10	800.00
Maintenance and Operation -----	11	4,366.00
Capital Outlay -----	12	500.00
Indirect Cost (overhead) -----	13	<u>8,389.00</u>
Total Estimated Expenses -----	14	<u>\$33,222.00</u>

- (a) Contract for two months; June 1, 1969, through July 31, 1969.
(b) Contract for one month; June 1, 1969, through June 30, 1969.
(c) Stipend for twelve months.

Board Minutes
December 14, 1968
Budget Attachment 65
Account No. 191-8437

TEXAS TECHNOLOGICAL COLLEGE
Department of Business Education and Secretarial Administration
Project: "Planning for An Experimental Model Simulated Office
Laboratory"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	\$2,711.67
Total -----	2	<u>\$2,711.67</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
William Robert Pasewark -----	3	\$ -0-
Principal Investigator		
Mrs. Ernestine Dolores Kilchenstein -----	4	1,461.67(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	250.00
Travel -----	7	900.00
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$2,711.67</u>

(a) Contract for summer term, 1969.

Board Minutes
December 14, 1968
Budget Attachment 66
Account No. 191-8433

TEXAS TECHNOLOGICAL COLLEGE
Department of Economics
Project: "Implications of the Emergence of the Multinational
Corporation for International Trade and Economic Development"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	\$3,165.00
Total -----	2	\$3,165.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Roger Monroe Troub -----	4	1,950.00(a)
Research Assistant		
-----	5	750.00
Student Assistants and Part-time Help -----	6	110.00
Travel -----	7	265.00
Maintenance and Operation -----	8	90.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$3,165.00

(a) Salary for one summer term, 1969.

Board Minutes
December 14, 1968
Budget Attachment 67
Account No. 191-8436

TEXAS TECHNOLOGICAL COLLEGE
Department of Finance
Project: "Case Research for Use In The Teaching of Corporation
Finance"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	<u>\$1,000.00</u>
Total -----	2	<u>\$1,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Elick Neal Maledon, Jr. -----	4	-0-
Research Assistant		
-----	5	600.00
Student Assistants and/or Part-time Help -----	6	350.00
Travel -----	7	-0-
Maintenance and Operation -----	8	50.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$1,000.00</u>

Board Minutes
December 14, 1968
Budget Attachment 68
Account No. 191-8435

TEXAS TECHNOLOGICAL COLLEGE
Department of Marketing
Project: "Inventory of Business Administration
Faculty Research"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	\$ <u>490.00</u>
Total -----	2	\$ <u>490.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
John Allen Ryan -----	3	\$ -0-
Principal Investigator		
Robert Daniel Amason -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	300.00
Travel -----	7	-0-
Maintenance and Operation -----	8	125.00
Capital Outlay -----	9	<u>65.00</u>
Total Estimated Expenses -----	10	\$ <u>490.00</u>

Board Minutes
 December 14, 1968
 Budget Attachment 69
 Account No. 191-8439

TEXAS TECHNOLOGICAL COLLEGE
 Department of Marketing
 Project: "The Negative Binomial As A Theoretical Sampling
 Distribution of Errors In Auditing"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	\$2,241.33
Total -----	2	<u>\$2,241.33</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
John Allen Ryan -----	3	\$ -0-
Principal Investigator		
Howard Lloyd Balsley -----	4	1,453.33(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	408.00
Travel -----	7	220.00
Maintenance and Operation -----	8	160.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$2,241.33</u>

(a) Approximately one-half time for one and one-half months, summer 1969.

Board Minutes
December 14, 1968
Budget Attachment 70
Account No. 191-8438

TEXAS TECHNOLOGICAL COLLEGE
Department of Marketing
Project: "Advertising Policies and Practices for U. S. Firms
Selling Products Abroad"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the Special Item Appropriation for Research in Business, Budget page 416, Item 2 -----	1	\$2,000.00
Total -----	2	<u>\$2,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
John Allen Ryan -----	3	\$ -0-
Principal Investigator		
Billy Irvan Ross -----	4	1,200.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	400.00
Travel -----	7	-0-
Maintenance and Operation -----	8	400.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,000.00</u>

(a) Approximately one-half time for one summer term.

TEXAS TECHNOLOGICAL COLLEGE
School of Home Economics
TECH TIPS AND TOPICS

Current Restricted Funds, Account No. 391-1580
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1967-1968</u>	<u>1968-1969</u>
Balance on September 1, 1968 -----	1	\$ -0-	\$17,840.09
Subscriptions (Estimated) -----	2	6,703.00	7,467.00
Sale of Back Issues (Estimated) -----	3	1,000.00	1,390.00
Total Estimated Funds -----	4	<u>\$7,703.00</u>	<u>\$26,697.09</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1967-1968</u>	<u>1968-1969</u>
Professor and Editor			
Billie Frances Williamson -----	5	\$1,083.00a	\$ 1,167.00(a)
Secretary I (116; 12 months)			
Mrs. Gloria Ann Williams -----	6	1,680.00(b)	3,215.00(c)
Student Assistants and/or Part-time Help ----	7	700.00	800.00
OASI -----	8	112.64	236.00
Scholarship Funds -----	9	500.00	500.00
Travel -----	10	800.00	1,500.00
Maintenance and Operation -----	11	2,527.36	4,450.00
Capital Outlay -----	12	300.00	500.00
Transfer to 391-1535 -----	13	-0-	10,000.00
Unallocated (Contingent Funds) -----	14	<u>-0-</u>	<u>4,329.09</u>
Total Estimated Expenses -----	15	<u>\$7,703.00</u>	<u>\$26,697.09</u>

- (a) One-half time for one summer term. Also Part-time in the Office of the Dean of Home Economics.
- (b) One-half time. Also one-half time in the Office of the Dean of Home Economics.
- (c) Full time on this budget effective November 1, 1968, at an annual rate of \$3,540.00.

Board Minutes
December 14, 1968
Budget Attachment 72
Account No. 191-5202

TEXAS TECHNOLOGICAL COLLEGE
School of Education

Project: "A Study of the Utilization and Effectiveness of
the State Provisions for Merit Salary Increments in Texas"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the funds allocated to the School of Education for Research, Budget page 382, Item 3 -----	1	\$ <u>50.00</u>
Total -----	2	\$ <u>50.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Holmes Andrew Webb -----	3	\$ -0-
Principal Investigator		
Weldon Earnest Beckner -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	50.00
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>50.00</u>

Board Minutes
December 14, 1968
Budget Attachment 73
Account No. 391-3108

TEXAS TECHNOLOGICAL COLLEGE
Department of Physics
Project: "Paramagnetic Properties of Ions in Solids"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Department of Army, Defense Supply Services, Grant for 1968-1969 -----	1	<u>\$23,514.00</u>
Total -----	2	<u>\$23,514.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Henry Coffman Thomas -----	3	\$ -0-
Principal Investigator		
Charles Richard Quade -----	4	1,556.00(a)
Research Associate		
-----	5	1,833.00(c)
Research Assistant		
Donald Delmar Daniel -----	6	433.00(b)
-----	7	2,567.00
OASI -----	8	304.00
Student Assistants and/or Part-time Help -----	9	-0-
Travel -----	10	500.00
Maintenance and Operation -----	11	5,000.00
Capital Outlay -----	12	8,375.00
Indirect Cost (overhead) -----	13	<u>2,946.00</u>
Total Estimated Expenses -----	14	<u>\$23,514.00</u>

(a) Approximately three-tenths time for 3 months.

(b) Contract for three months, September 1, 1968, through November 30, 1968.

(c) Salary for one summer term, 1969.

Board Minutes
December 14, 1968
Budget Attachment 74
Account No. 191-4787

TEXAS TECHNOLOGICAL COLLEGE
Department of Physics
Project: "Paramagnetic Properties of Ions in Solids"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum appropriation for College		
Matching Funds for Research, p. 4 , Item -----	1	<u>\$5,092.00</u>
Total -----	2	<u>\$5,092.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Henry Coffman Thomas -----	3	\$ -0-
Principal Investigator		
Charles Richard Quade -----	4	-0-
Research Associate		
-----	5	-0-
Research Assistant		
Donald Delmar Daniel -----	6	867.00(a)
-----	7	500.00
Travel -----	8	-0-
Maintenance and Operation -----	9	725.00
Capital Outlay -----	10	<u>3,000.00</u>
Total Estimated Expenses -----	11	<u>\$5,092.00(b)</u>

- (a) Contract for six months, December 1, 1968, through May 31, 1969.
(b) The College will contribute an estimated \$86.00 in faculty benefits and overhead in the approximate amount of \$830.00 on the project.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Chemical Engineering
 Project: "Activation Analysis in Fluid Flow"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Engineering, Budget page 417, Item 2 -----	1	<u>\$12,000.00</u>
Total -----	2	<u>\$12,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arnold Jarvis Gully -----	3	\$ -0-
Principal Investigator		
John Ross Bradford -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	2,000.00
Travel -----	7	-0-
Maintenance and Operation -----	8	2,000.00
Capital Outlay -----	9	<u>8,000.00</u>
Total Estimated Expenses -----	10	<u>\$12,000.00</u>

Board Minutes
December 14, 1968
Budget Attachment 76
Account No. 391-3089
First Revision

TEXAS TECHNOLOGICAL COLLEGE
Department of Food and Nutrition
Project: "Analysis of Selected Fractions of the Kernel
of Grain Sorghum Milled by Harvest Queen Mill"
For the period September 1, 1967, through December 31, 1968
(This budget supersedes Attachment No. 17; December 9, 1967)

<u>Source of Funds:</u>	<u>Item</u>	<u>1967-1968</u>
Grant from Harvest Queen Mill, Plainview, Texas -----	1	\$6,353.06
Total -----	2	<u>\$6,353.06</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1967-1968</u>
Professor and Chairman		
Mrs. Mina Wolf Lamb -----	3	\$ -0-
Principal Investigator		
Mrs. Margarette Leggitt Harden -----	4	4,200.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	500.00
OASI -----	7	224.40
Maintenance, Equipment and Travel -----	8	600.00(b)
Indirect Cost (Overhead) -----	9	<u>828.66</u>
Total Estimated Expenses -----	10	<u>\$6,353.06</u>

- (a) Contract for three-fifths time, September 16, 1967, through June 15, 1968.
(b) Allocation for travel--none.

Board Minutes
 December 14, 1968
 Budget Attachment 77
 Account No. 391-3253
Corrected Copy

TEXAS TECHNOLOGICAL COLLEGE
 Department of Electrical Engineering
 Project: "The Effects of Control Parameters on ASM
 Terminal Guidance Testing"
 For the period November 1, 1968, through July 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Renewal of Contract AF 29(600)-5590 -----	1	\$20,000.00
Total -----	2	<u>\$20,000.00</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Russell Holland Seacat, Jr. -----	3	\$ -0-
Principal Investigator		
Russell Holland Seacat, Jr. -----	4	3,075.00(a)
Research Associate		
Larrie Fred Judd -----	5	5,600.00(b)
Research Assistants		
Charles Edward Burton -----	6	800.00(c)
David Ronald Fannin -----	7	1,200.00(c)
Ronald James Kuhler -----	8	1,200.00(c)
Samuel Martin Mastenbrook -----	9	800.00(c)
Student Assistants and/or Part Help -----	10	855.00
OASI -----	11	642.00
Travel -----	12	1,140.00
Maintenance and Operation -----	13	-0-
Capital Outlay -----	14	-0-
Indirect Charges (Overhead) -----	15	<u>4,688.00</u>
Total Estimated Expenses -----	16	<u>\$20,000.00</u>

- (a) Full time research June 1, 1969, through noon July 16, 1969.
 (b) Full time research November 1, 1968, through May 31, 1969.
 (c) Three-fifths time research June 1, 1969, through July 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agricultural Engineering
 Project: "Effects of Temperature and Humidity on Swine in a
 Controlled Environment Facility"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Swine Research, Special Item, Budget Page 432, Item 2 -----	1	\$5,000.00
Total -----	2	<u>\$5,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Willie Lee Ulich -----	3	\$ -0-
Principal Investigator		
Walter Grub -----	4	2,375.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	500.00
OASI and Workmen's Compensation Insurance -----	7	140.00
Travel -----	8	100.00
Maintenance and Operation -----	9	185.00
Capital Outlay -----	10	<u>1,700.00</u>
Total Estimated Expenses -----	11	<u>\$5,000.00</u>

(a) Contract for one summer term.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agronomy and Range Management
 Project: "The Effect of Soil Physical Conditions Upon Cotton Root
 Growth and Resultant Lint Production"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$2,100.00
Total -----	2	<u>\$2,100.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Raymond Erwin Meyer -----	4	-0- (a)
Research Assistant		
-----	5	1,200.00
Student Assistants and/or Part-time Help -----	6	300.00
Travel -----	7	-0-
Maintenance and Operation -----	8	250.00
Capital Outlay -----	9	<u>350.00</u>
Total Estimated Expenses -----	10	<u>\$2,100.00</u>

(a) Full time teaching contract for 12 months on the budget for the Department of Agronomy and Range Management.

Board Minutes
December 14, 1968
Budget Attachment 80
Account No. 191-8229

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "Environmental Factors Affecting Gossypium SSp. Lint Quality"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	<u>\$2,205.00</u>
Total -----	2	<u>\$2,205.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Eugene Alfred Coleman -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	800.00
Travel -----	7	-0-
Maintenance and Operation -----	8	305.00
Capital Outlay -----	9	<u>1,100.00</u>
Total Estimated Expenses -----	10	<u>\$2,205.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "Varietal Response of Cotton to Climate and Soil as Measured
by Fiber Quality and Yields"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$1,440.00
Total -----	2	<u>\$1,440.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Eugene Alfred Coleman -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	400.00
Travel -----	7	-0-
Maintenance and Operation -----	8	300.00
Capital Outlay -----	9	<u>740.00</u>
Total Estimated Expenses -----	10	<u>\$1,440.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agronomy and Range Management
 Project: "Studies of Wildlife Ecology in Texas"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	\$2,500.00
Total -----	2	<u>\$2,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Eric George Bolen -----	4	714.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	800.00
Travel -----	7	646.00
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	<u>240.00</u>
Total Estimated Expenses -----	10	<u>\$2,500.00</u>

(a) One-half time for the period August 1, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 Department of Agricultural Engineering
 Project: "Investigations in Low-Cost Agricultural Structures"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the budgeted allocation for Research in Agriculture, Budget page 415, Item 2 -----	1	<u>\$4,000.00</u>
Total -----	2	<u>\$4,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Willie Lee Ulich -----	3	\$ -0-
Principal Investigator		
Willie Lee Ulich -----	4	-0-
Research Associate		
-----	5	1,750.00
Research Assistant		
-----	6	-0-
Secretary I (115; 1/2 time for 3 months)		
-----	7	465.00
Student Assistants and/or Part-time Help -----	8	300.00
Travel -----	9	200.00
Maintenance and Operation -----	10	160.00
Capital Outlay -----	11	<u>1,125.00</u>
Total Estimated Expenses -----	12	<u>\$4,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Management
Project: "Managerial Relations with Disadvantaged Work Groups:
Supervisor Expectations of the Underprivileged Worker"
For the period November 1, 1968, through October 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the United States Department of Labor, Under the provisions of Title I of the Manpower Development and Training Act of 1962 (42 U.S.C. 2572) -- 1		\$6,822.00(a)
Total ----- 2		<u>\$6,822.00</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Vincent Peter Luchsinger ----- 3		\$ -0-
Associate Professor and Sponsor		
Carlton James Whitehead ----- 4		-0- (b)
Doctoral Candidate		
Albert Sidney King ----- 5		3,125.00(c)
Student Assistants and/or Part-time Help ----- 6		500.00
OASI ----- 7		24.00
Tuition and Fees ----- 8		275.00
Travel ----- 9		100.00
Maintenance and Operation ----- 10		2,625.00
Capital Outlay ----- 11		-0-
Indirect Cost (overhead) ----- 12		<u>173.00(d)</u>
Total Estimated Expenses ----- 13		<u>\$6,822.00</u>

(a) Grant Number: 91-46-69-21.

(b) Also Sponsor. The College will contribute an estimated \$875.00 in salary for the Sponsor toward this project.

(c) This stipend is to be \$1,875.00 for 9 months (November 1, 1968, through July 31, 1969) and \$1,250.00 for 3 months (August 1, 1969, through October 31, 1969).

(d) The College will provide an estimated amount of \$50.00 in supplies, materials, etc. through the budget for the Department of Management for this project.

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "ICASALS Focus on the Arts" (a)
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Funds Transferred from Bookstore Prior Year		
Balance (Re: H30; September 28, 1968) -----	1	<u>\$20,225.00</u>
Total -----	2	<u>\$20,225.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Deputy Director		
Idris Rhea Traylor, Jr. -----	3	\$ -0-
Committee Chairman		
Gene LeClair Hemmle -----	4	-0-
Student Assistants and/or Part-time Help -----	5	1,200.00
OASI -----	6	57.60
Travel -----	7	-0-
Maintenance and Operation -----	8	18,967.40
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$20,225.00</u>

(a) The arts programs and/or exhibits are scheduled for the 1969 Spring Semester.

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "The Architecture of Ancient Peru"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Private Contributions through Texas Technological College Foundation (ICASALS--Sasser Text) -----	1	<u>\$900.00</u>
Total -----	2	<u>\$900.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Deputy Director		
Idris Rhea Traylor, Jr. -----	3	\$-0-
Professor and Author		
Mrs. Maria Elizabeth Skidmore Sasser -----	4	-0-
Student Assistants and/or Part-time Help -----	5	-0-
OASI -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	900.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$900.00</u>

Budget Attachments: January 18, 1969 (and/or February 8, 1969)

1. Budget; Organized Research Account No. 391-3675 Revised; Dr. Kamalaksha Das Gupta; Item E531.
2. Budget; Future Data Processors Course, Account No. 491-0155; Mrs. Luta Pelham Eaves; Item E532.
3. Budget; Organized Research Account No. 391-1299; Dr. William Cecil Herndon; Item E533.
4. Budget; Organized Research Account No. 391-3349 Revised; Dr. Ralph Marion Durham; Item E534.
5. Budget; Organized Research Account No. 391-3437 Revised; Dr. Ralph Marion Durham; Item E535.
6. Budget; Organized Research Account No. 191-5935; Dr. Bonnie L. Allen; Item E536.
7. Budget; Organized Research Account No. 191-5954; Dr. Robert Lewis Packard; Item E537.
8. Budget; Organized Research Account No. 191-5956; Dr. Vernon Willard Proctor; Item E538.
9. Budget; Organized Research Account No. 191-5949; Dr. Joe Wilkes Berry, Jr.; Item E539.
10. Budget; Organized Research Account No. 191-5950; Mrs. Grace Pleasant Wellborn; Item E540.
11. Budget; Data Processing Workshop for High School Students, Account No. 491-0155 Revised; Mrs. Luta Pelham Eaves; Item E541.
12. Budget; Organized Research Account No. 191-8616; Dr. George Francis Meenaghan; Item E542.
13. Budget; Organized Research Account No. 391-3689; Mr. Cecil Irvy Ayers; Item E543.
14. Budget; Organized Research Account No. 391-3600; Dr. William Barnett Guerrant, Jr.; Item E544.
15. Budget; Organized Research Account No. 391-3663; Dr. Pill-Soon Song; Item E545.
16. Budget; Organized Research Account No. 391-3586; Dr. Henry Joseph Shine; Item E546.
17. Budget; Organized Research Account No. 391-3560; Dr. John Norbert Marx; Item E547.
18. Budget; Organized Research Account No. 391-3551; Dr. James Roland Craig; Item E548.

19. Budget; Organized Research Account No. 191-5941; Mr. Roy Sylvan Dunn; Item E549.
20. Budget; Organized Research Account No. 191-5945; Dr. Harley Dean Oberhelman; Item E550.
21. Budget; Organized Research Account No. 191-5938; Dr. Samuel Everett Curl; Item E551.
22. Budget; Organized Research Account No. 191-5957; Dr. Jerry Dean Berlin; Item E552.
23. Budget; Organized Research Account No. 191-5958; Dr. Robert Wetsel Mitchell; Item E553.
24. Budget; Organized Research Account No. 191-5953; Dr. Robert Morrison Bethea; Item E554.
25. Budget; Organized Research Account No. 191-5933; Dr. Corwin C. Reeves, Jr.; Item E555.
26. Budget; Organized Research Account No. 191-5959; Dr. John Joseph Dowling; Item E556.
27. Budget; Organized Research Account No. 191-5944; Mr. Arthur Dudley Thompson; Item E557.
28. Budget; Organized Research Account No. 191-5955; Dr. Francis Lewis Rose; Item E558.
29. Budget; Organized Research Account No. 191-5946; Dr. Thomas Kunhyuk Kim; Item E559.
30. Budget; Organized Research Account No. 391-3303; Dr. Pun-Kien Koh; Item E560.
31. Budget; Organized Research Account No. 191-5937; Dr. Raymond Erwin Meyer; Item E561.
32. Budget; Organized Research Account No. 191-5932; Dr. William Donald Miller; Item E562.
33. Budget; Organized Research Account No. 191-5951; Dr. Marion Otho Hagler; Item E563.
34. Budget; Mexican American Teacher Education Project Account No. 391-1173; Dr. Owen LaVerne Caskey; Item E564.
35. Budget; Organized Research Account No. 191-5943; Mr. Martin Alan Frey; Item E565.
36. Budget; Rocky Mountain Social Science Conference Account No. 191-4396; Dr. William Eugene Oden; Item E566.

37. Budget; Organized Research Account No. 191-5952; Dr. Darrell Lee Vines; Item E567.
38. Budget; Organized Research Account No. 191-5961; Mr. George Neff Stevens; Item E568.
39. Budget; Organized Research Account No. 191-5962; Mr. Murl Alton Larkin; Item E569.
40. Budget; Organized Research Account No. 191-5963; Mr. Martin Alan Frey; Item E570.
41. Budget; Organized Research Account No. 191-5964; Mr. Richard William Hemingway; Item E571.
42. Budget; Experienced Teacher Fellowship Program for Counselors of Mexican American Youth; Account No. 391-1124; Dr. Owen L. Caskey; Item E572.
43. Budget; Institute for Elementary School Principals; Account No. 391-1123; Dr. Charles Leonard Ainsworth; Item E573.
44. Budget; Technical Services Project Account No. 391-1380; Dr. Vincent P. Luchsinger; Item E574.
45. Budget; Organized Research Account No. 191-8901; Mr. Joseph Andrew King; Item E575.
46. Budget; Organized Research Account No. 191-5929; Mrs. Margarette L. Harden; Item E576.
47. Budget; Organized Research Account No. 391-3329; Dr. John Arthur Anderson; Item E577.

TEXAS TECHNOLOGICAL COLLEGE

Department of Physics

Project: "Nature of the Chemical Bond by Soft X-ray Spectroscopy"

For the period May 1, 1968, through April 30, 1969

(This budget supersedes Budget Attachment 40, August 24, 1968)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from The Robert A. Welch Foundation, Houston, Texas, New Grant No. D-243 -----	1	\$20,000.00
Total -----	2	\$20,000.00

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Henry Coffman Thomas -----	3	\$ -0-
Principal Investigator		
Kamalaksha Das Gupta -----	4	-0-
Pre-doctoral Fellow		
Bobby Bain Faulkner -----	5	2,150.00(a)
Cecil Alan McClure -----	6	400.00(b)
Franklin Gregory Potter -----	7	875.00(c)
John Finley Priest -----	8	875.00(c)
Undergraduate Scholarship		
Robert Hinson Bumpous, Jr. -----	9	600.00(d)

- (a) Stipend to be paid at the rate of \$225.00 per month from May 1, 1968, through May 31, 1968, and September 1, 1968, through November 30, 1968; and \$250.00 per month from December 1, 1968, through April 30, 1969.
- (b) Stipend to be paid at the rate of \$100.00 per month from January 1, 1969, through April 30, 1969.
- (c) Stipend to be paid at the rate of \$250.00 per month from noon January 16, 1969, through April 30, 1969.
- (d) Stipend to be paid at the rate of \$100.00 per month from June 1, 1968, through August 31, 1968, and February 1, 1969, through April 30, 1969.

Estimated Expenses: (Continued)

	<u>Item</u>	<u>1968-1969</u>
Undergraduate Scholarship		
Philip George Dorcas -----	10	\$ 900.00(a)
Travel -----	11	400.00
Maintenance and Operation -----	12	3,119.00
Capital Outlay -----	13	8,073.00
Indirect Cost (overhead) -----	14	<u>2,608.00</u>
Total Estimated Expenses -----	15	<u>\$20,000.00</u>

(a) Stipend to be paid at the rate of \$100.00 per month for the period May 1, 1968, through May 31, 1968, and from September 1, 1968, through April 30, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "Future Data Processors Course"
For the period January 25, 1969, through March 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Fees (22 students at \$20.00 each) -----	1	\$440.00(a)
From Grant Funds (Balances 1967-1968) -----	2	<u>207.50</u>
Total -----	3	<u>\$647.50</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	4	\$ -0-
Assistant Professor and Director		
Mrs. Luta Pelham Eaves -----	5	495.00(b)
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	23.00
Capital Outlay -----	9	-0-
Indirect Charges (overhead) -----	10	<u>129.50</u>
Total Estimated Expenses -----	11	<u>\$647.50</u>

- (a) Should the income from fees fail to reach the budget estimate, the additional funds required for this budget will be charged against grant funds.
(b) Contract to be dated February 1, 1969, through May 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Non-Observable Diels-Alder Reactions"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant-in-Aid from the American Chemical Society, The Petroleum Research Fund, Grant No. 3069-A4 -----	1	\$7,573.00
Total -----	2	\$7,573.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
William Cecil Herndon -----	4	2,000.00(a)
Research Fellow		
-----	5	2,700.00(b)
-----	6	-0-
-----	7	-0-
Tuition and Fees for Research Fellow -----	8	300.00
Student Assistants and/or Part-time Help -----	9	-0-
OASI and Workmen's Compensation -----	10	261.00
Travel -----	11	350.00
Maintenance and Operation -----	12	700.00
Capital Outlay -----	13	-0-
Indirect Cost (overhead) -----	14	(c)
Total Estimated Expenses -----	15	\$6,311.00

(a) Part-time for two months.

(b) Stipend for 12 months.

(c) \$631.00 has been placed in Account No. 391-2650, Unrestricted Gifts and Grants and \$631.00 in Chemistry Cost-of-Education Grant, Account No. 391-1110.

TEXAS TECHNOLOGICAL COLLEGE
Department of Animal Science
Project: "100 Day High Level Antibiotic Application"
For the period June 15, 1968, through August 31, 1969
(This budget supersedes Budget Attachment 35, August 24, 1968)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from Charles Pfizer and Company, Inc., Terre Haute, Indiana 47808 -----	1	<u>\$1,500.00</u>
Total -----	2	<u>\$1,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Dale Wendel Zinn -----	3	\$ -0-
Principal Investigator		
Ralph Marion Durham -----	4	1,304.35(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Indirect Cost (overhead) -----	10	<u>195.65</u>
Total Estimated Expenses -----	11	<u>\$1,500.00</u>

(a) Approximately one-half time for the period from noon July 16, 1969, through August 31, 1969. Also approximately one-half time on Account No. 391-3437 at a salary of \$1,354.00 for the same period.

TEXAS TECHNOLOGICAL COLLEGE
Department of Animal Science
Project: "A Study to Determine the Value of Tylosin in Control
of Liver Abscesses in Fattening Cattle"
For the period November 15, 1968, through August 31, 1969
(This budget supersedes Budget Attachment 1, June 1, 1968)

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Balance on November 15, 1968 (391-3437) -----	1	\$1,758.72
Transfer from Account No. 391-3086, Balance 11-15-68 ---	2	215.47
Transfer from Account No. 391-3430, Balance 11-15-68 ---	3	36.50
Transfer from Account No. 391-3431, Balance 11-15-68 ---	4	903.82
Transfer from Account No. 391-3433, Balance 11-15-68 ---	5	10.25
Total -----	6	<u>\$2,924.76</u>
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Dale Wendel Zinn -----	7	\$ -0-
Principal Investigator		
Ralph Marion Durham -----	8	1,354.00(a)
Student Assistants and/or Part-time Help -----	9	450.00
OASI -----	10	21.60
Travel -----	11	350.00
Maintenance and Operation -----	12	749.16
Capital Outlay -----	13	-0-
Indirect Cost (overhead) -----	14	-0-
Total Estimated Expenses -----	15	<u>\$2,924.76</u>

(a) Approximately one-half time for the period noon July 16, 1969, through August 31, 1969. Also approximately one-half time on Account No. 391-3349 at a salary of \$1,304.35 for the same period.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "A Clay Mineralogical Investigation of Shore Deposits of
Ancient Lake Palomas, Chichahua, Mexico"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	<u>\$600.00</u>
Total -----	2	<u>\$600.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Bonnie L. Allen -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	150.00
Travel -----	7	200.00
Maintenance and Operation -----	8	250.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$600.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Mammals of the Llano Estacado: Their Distribution and
Taxonomy"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$1,800.00
Total -----	2	<u>\$1,800.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert Lewis Packard -----	4	-0-
Research Assistant		
-----	5	600.00(a)
-----	6	600.00(a)
Student Assistants and/or Part-time Help -----	7	-0-
Travel -----	8	400.00
Maintenance and Equipment -----	9	200.00
Capital Outlay -----	10	-0-
Total Estimated Expenses -----	11	<u>\$1,800.00</u>

(a) Two-fifths time from June 1, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Charophytes of Israel"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$1,450.00
Total -----	2	<u>\$1,450.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Vernon Willard Proctor -----	4	1,450.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$1,450.00</u>

(a) Contract to be dated June 1, 1969, through June 30, 1969.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "A Study of the Writings of Mary Hunter Austin: Essayist,
Poet, Novelist, and Dramatist of the American Southwest"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$500.00
Total -----	2	<u>\$500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Everett Alden Gillis -----	3	\$ -0-
Principal Investigator		
Joe Wilkes Berry, Jr. -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	75.00
Travel -----	7	350.00
Maintenance and Operation -----	8	75.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Plant Lore of Arid Areas--Hebrew Plant Lore"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$250.00
Total -----	2	<u>\$250.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Everett Alden Gillis -----	3	\$ -0-
Principal Investigator		
Mrs. Grace Pleasant Wellborn -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	250.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$250.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Accounting
Project: "Data Processing Workshop for High School Students"
For the period October 1, 1968, through January 16, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Special Fees, 54 Students @ \$20.00. -----	1	\$1,080.00
From Balances in Account No. 491-0155 -----	2	302.50
Total -----	3	<u>\$1,382.50</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Reginald Rushing -----	4	\$ -0-
Assistant Professor and Director		
Mrs. Luta Pelham Eaves -----	5	900.00(a)
Teaching Assistants		
Thomas Ray Anthis -----	6	150.00(b)
Philip Chamberlain Smartt -----	7	10.00(b)
Student Assistants and/or Part-time Help -----	8	-0-
Travel -----	9	-0-
Maintenance and Operation -----	10	46.00
Capital Outlay -----	11	-0-
Indirect Charges -----	12	276.50
Total Estimated Expenses -----	13	<u>\$1,382.50</u>

(a) Contract dated October 1, 1968, through January 15, 1969.
(b) Contract dated December 1, 1968, through December 31, 1968.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemical Engineering
Project: "The Composition and Rate of Generation of Gases
from Deep Stabilization Ponds"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to the School of Engineering for Organized Research, Budget page 417, Item No. 2 -----	1	\$5,917.00
Total -----	2	<u>\$5,917.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
George Francis Meenaghan -----	3	\$ -0-
Principal Investigator		
George Francis Meenaghan -----	4	2,917.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	1,000.00
Travel -----	7	200.00
Maintenance and Operation -----	8	300.00
Capital Outlay -----	9	<u>1,500.00</u>
Total Estimated Expenses -----	10	<u>\$5,917.00</u>

(a) Contract for one-half time from June 1, 1969, through August 31, 1969. Also one-half time on the Summer School Budget for the Department of Chemical Engineering.

TEXAS TECHNOLOGICAL COLLEGE
Department of Agronomy and Range Management
Project: "Winter Grain Research Nursery"
For the period November 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from The Jenkins Research Foundation, Salinas, California -----	1	\$500.00
Total -----	2	<u>\$500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Cecil Irvy Ayers -----	4	-0-
Research Assistants		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	320.00
OASI -----	7	15.00
Travel -----	8	-0-
Maintenance and Operation -----	9	90.00
Capital Outlay -----	10	-0-
Indirect Cost (Overhead) -----	11	<u>75.00</u>
Total Estimated Expenses -----	12	<u>\$500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "A Study of the Chemical Composition of the
Juice of the Aloe Vera"
For the period May 1, 1969, through April 30, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1969-1970</u>
Grant from The Robert A. Welch Foundation, Houston, Texas; Renewal Grant No. D-283 -----	1	\$12,000.00
Total -----	2	<u>\$12,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1969-1970</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
William Barnett Guerrant, Jr. -----	4	3,330.00(a)
Pre-doctoral Fellowship		
-----	5	3,600.00
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	233.00
Maintenance and Operation -----	8	1,547.05
Capital Outlay -----	9	1,725.00
Indirect Cost (Overhead) -----	10	<u>1,564.95</u>
Total Estimated Expenses -----	11	<u>\$12,000.00</u>

(a) Contract to be dated June 1, 1969, through July 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Electronic Structures and Photochemistry of
Flavins and Related Biomolecules"
For the period May 1, 1969, through April 30, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1969-1970</u>
Grant from The Robert A. Welch Foundation, Houston, Texas; Renewal Grant No. D-182 -----	1	\$15,000.00
Total -----	2	<u>\$15,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1969-1970</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
Pill-Soon Song -----	4	2,700.00(a)
Pre-doctoral Fellowship		
William Eugene Kurtin -----	5	1,200.00(b)
-----	6	3,000.00(c)
Undergraduate Scholarship		
-----	7	600.00(d)
Travel -----	8	400.00
Maintenance and Operation -----	9	1,143.50
Capital Outlay -----	10	4,000.00
Indirect Charges (overhead) -----	11	<u>1,956.50</u>
Total Estimated Expenses -----	12	<u>\$15,000.00</u>

- (a) Contract for the period June 1, 1969, through July 31, 1969.
(b) Stipend for four months, May 1, 1969, through August 31, 1969.
(c) Stipend for twelve months, May 1, 1969, through April 30, 1970.
(d) Stipend for three months.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Aromatic Molecular Rearrangements"
For the period May 1, 1969, through April 30, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1969-1970</u>
Grant from The Robert A. Welch Foundation, Houston; Renewal Grant No. D-028 -----	1	\$20,000.00
Total -----	2	<u>\$20,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1969-1970</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
Henry Joseph Shine -----	4	2,389.00(a)
Post-doctoral Fellow		
James Francis Sullivan -----	5	7,400.00(b)
Pre-doctoral Fellow		
Charles Milton Baldwin -----	6	3,000.00(c)
Joseph Harvey Harris -----	7	3,000.00(c)
Student Assistants and/or Part-time Help -----	8	-0-
Travel -----	9	400.00
Maintenance and Operation -----	10	1,202.30
Capital Outlay -----	11	-0-
Indirect Charges (overhead) -----	12	<u>2,608.70</u>
Total Estimated Expenses -----	13	<u>\$20,000.00</u>

- (a) Stipend for one month, June 1, 1969, through June 30, 1969.
(b) Stipend for twelve months, May 1, 1969, through April 30, 1970.
(c) Stipend for twelve months, May 1, 1969, through April 30, 1970.

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry
Project: "Synthetic Routes to Sesquiterpenes"
For the period May 1, 1969, through April 30, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1969-1970</u>
Grant from The Robert A. Welch Foundation, Houston, Texas; New Grant No. D-36 -----	1	\$12,000.00
Total -----	2	\$12,000.00
<u>Estimated Expenses:</u>	<u>Item</u>	<u>1969-1970</u>
Professor and Chairman		
Joe Dennis -----	3	\$ -0-
Principal Investigator		
John Norbert Marx -----	4	2,400.00(a)
Pre-doctoral Fellowship		
-----	5	-0-
-----	6	3,225.00(b)
Undergraduate Scholarship		
-----	7	500.00(c)
-----	8	500.00(c)
Student Assistants and/or Part-time Help -----	9	-0-
Travel -----	10	300.00
Maintenance and Operation -----	11	2,109.78
Capital Outlay -----	12	1,400.00
Indirect Charges -----	13	1,565.22
Total Estimated Expenses -----	14	\$12,000.00

- (a) Stipend for two months, June 1, 1969, through July 31, 1969.
(b) Stipend for eleven months.
(c) Stipend for eight months.

TEXAS TECHNOLOGICAL COLLEGE
Department of Geosciences
Project: "Phase Relations of Copper-Antimony-Arsenic Sulfides"
For the period May 1, 1969, through April 30, 1970

<u>Source of Funds:</u>	<u>Item</u>	<u>1969-1970</u>
Grant from The Robert A. Welch Foundation, Houston, New Grant No. D-302 -----	1	\$12,000.00
Total -----	2	\$12,000.00
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1969-1970</u>
Professor and Chairman		
Richard Benjamin Mattox -----	3	\$ -0-
Principal Investigator		
James Roland Craig -----	4	2,444.42(a)
Post-doctoral Fellowship		
-----	5	-0-
Pre-doctoral Fellowship		
-----	6	3,050.00(b)
Student Assistants and/or Part-time Help -----	7	-0-
Travel -----	8	-0-
Maintenance and Operation -----	9	765.36
Capital Outlay -----	10	4,175.00
Indirect Charges (overhead) -----	11	1,565.22
Total Estimated Expenses -----	12	\$12,000.00

(a) Stipend for two months, June 1, 1969, through July 31, 1969.

(b) Stipend for eleven months.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Aridity as a Social Factor in Western America"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$1,800.00
Total -----	2	<u>\$1,800.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Director		
Roy Sylvan Dunn -----	3	\$ -0-
Principal Investigator		
Roy Sylvan Dunn -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	1,600.00
Travel -----	7	-0-
Maintenance and Equipment -----	8	200.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	<u>\$1,800.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "The Development of Techniques for the Teaching
of English as a Second Language to Mexican-
American Inhabitants of the Southwest"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$2,500.00
Total -----	2	<u>\$2,500.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Harley Dean Oberhelman -----	3	\$ -0-
Principal Investigator		
Harley Dean Oberhelman -----	4	-0-
Research Associate		
Faye LaVerne Bumpas -----	5	-0-
Research Assistant		
Elaine Cross -----	6	400.00(a)
-----	7	800.00(b)
Student Assistants and/or Part-time Help -----	8	400.00
Travel -----	9	600.00
Maintenance and Equipment -----	10	300.00
Capital Outlay -----	11	-0-
Total -----	12	<u>\$2,500.00</u>

- (a) Thirteen per cent time for the period January 27, 1969, through May 31, 1969.
(b) One-fifth time for the period January 27, 1969, through May 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "The Physiological Effects of Low Levels
of Air Moisture on Livestock"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,000.00</u>
Total -----	2	\$ <u>2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Dale Wendel Zinn -----	3	\$ -0-
Principal Investigator		
Samuel Everett Curl -----	4	-0-
Research Associate		
Walter Grub -----	5	-0-
Leland Floyd Tribble -----	6	-0-
Student Assistants and/or Part-time Help -----	7	-0-
Travel -----	8	-0-
Maintenance and Operation -----	9	500.00
Capital Outlay -----	10	<u>1,500.00</u>
Total Estimated Expenses -----	11	\$ <u>2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "Electron Microscopy of a Fungus (Erysiphe chichoracearum)
 Indigenous to Arid and Semi-Arid Lands"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,000.00</u>
Total -----	2	\$ <u>2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Jerry Dean Berlin -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	250.00
Travel -----	7	-0-
Maintenance and Operation -----	8	1,350.00
Capital Outlay -----	9	<u>400.00</u>
Total Estimated Expenses -----	10	\$ <u>2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "A Survey of Cavern Development and Cave
 Faunas in the Sierra del Abra, Mexico"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>1,500.00</u>
Total -----	2	\$ <u>1,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Robert Wetsel Mitchell -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	650.00
Travel -----	7	-0-
Maintenance and Operation -----	8	850.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>1,500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "The Use of Naturally Occurring Lipids
 as Water Conservation Agents"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,500.00</u>
Total -----	2	\$ <u>2,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
George Francis Meenaghan -----	3	\$ -0-
Principal Investigator		
Robert Morrison Bethea -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	205.00
Travel -----	7	-0-
Maintenance and Operation -----	8	1,045.00
Capital Outlay -----	9	<u>1,250.00</u>
Total Estimated Expenses -----	10	\$ <u>2,500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Relation of Caliche and Playa Lake Basins,
Southern High Plains, Texas"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$1,500.00
Total -----	2	\$1,500.00
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Richard Benjamin Mattox -----	3	\$ -0-
Principal Investigator		
Corwin C. Reeves, Jr. -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	300.00
Travel -----	7	300.00
Maintenance and Operation -----	8	900.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$1,500.00

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Geophysical Investigations: Prospecting
for Water Using Electrical Methods"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$2,500.00
Total -----	2	<u>\$2,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Richard Benjamin Mattox -----	3	\$ -0-
Principal Investigator		
John Joseph Dowling -----	4	1,833.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	267.00
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>400.00</u>
Total Estimated Expenses -----	10	<u>\$2,500.00</u>

(a) Contract to be dated June 1, 1969, through noon July 15, 1969.

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "A Prototype City Design on the
 U.S. - Mexico Border"

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$2,000.00
Total -----	2	<u>\$2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Nolan Ellmore Barrick -----	3	\$ -0-
Principal Investigator		
Arthur Dudley Thompson -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	1,000.00
Maintenance and Operation -----	8	1,000.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Ecology and Behavior of the Endemic
Mexican Desert Tortoise"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	<u>\$1,600.00</u>
Total -----	2	<u>\$1,600.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Earl D. Camp -----	3	\$ -0-
Principal Investigator		
Francis Lewis Rose -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	400.00
Travel -----	7	600.00
Maintenance and Operation -----	8	600.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$1,600.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Economic Development in Arid Lands"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$2,000.00
Total -----	2	<u>\$2,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Robert Lyle Rouse -----	3	\$ -0-
Principal Investigator		
Thomas Kunhyuk Kim -----	4	-0-
Research Assistant		
-----	5	1,017.00
Student Assistants and/or Part-time Help -----	6	270.00
Travel -----	7	313.00
Maintenance and Operation -----	8	400.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	<u>\$2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 Department of Mechanical Engineering
 Project: "Study of Residual Stresses by X-Ray
 Diffraction Technique
 For the period September 1, 1968 through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Contract with the National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas, 77058 (Contract NAS 9-9019) -----	1	\$ <u>3,000.00</u>
Total -----	2	\$ <u>3,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Louis John Powers -----	3	\$ -0-
Principal Investigator		
Pun-Kien Koh -----	4	-0-
Research Assistant		
-----	5	1,000.00
Undergraduate Research Assistant		
-----	6	750.00
Student Assistants and/or Part-time Help -----	7	-0-
OASI -----	8	77.00
Travel -----	9	400.00
Maintenance and Operation -----	10	-0-
Capital Outlay -----	11	169.00
Indirect Charges (Overhead) -----	12	<u>604.00</u>
Total Estimated Expenses -----	13	\$ <u>3,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "Selection of Crop Plants for Efficiency
 of Water Usage"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,000.00</u>
Total -----	2	\$ <u>2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Arthur Wesley Young -----	3	\$ -0-
Principal Investigator		
Raymond Erwin Meyer -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	300.00
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>1,700.00</u>
Total Estimated Expenses -----	10	\$ <u>2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Water Quality of the Santa Rosa Formation,
Southern High Plains of Texas"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>1,700.00</u>
Total -----	2	\$ <u>1,700.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Richard Benjamin Mattox -----	3	\$ -0-
Principal Investigator		
William Donald Miller -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	556.00
Travel -----	7	1,044.00
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>1,700.00</u>

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Electrical Theory of Tornadoes - Mechanism
and Control (A Feasibility Study)"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,500.00</u>
Total -----	2	\$ <u>2,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Russell Holland Seacat, Jr. -----	3	\$ -0-
Principal Investigator		
Marion Otho Hagler -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	540.00
Travel -----	7	300.00
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>1,660.00</u>
Total Estimated Expenses -----	10	\$ <u>2,500.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Education
Mexican American Teacher Education Project
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Balance from contract with Southwest Education Development Laboratory on September 1, 1968 -----	1	\$ 1,924.72
Grant payment due December 1968 -----	2	<u>3,962.00</u>
Total -----	3	\$ <u>5,886.72</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Professor and Associate Dean		
Donald McDonald -----	4	\$ -0-
Counselor Education		
Owen LaVerne Caskey -----	5	-0-
Student Assistants and/or Part-time Help -----	6	2,600.00
OASI -----	7	124.80
Travel -----	8	800.00
Maintenance and Operation -----	9	2,361.92
Capital Outlay -----	10	<u>-0-</u>
Total Estimated Expenses -----	11	\$ <u>5,886.72</u>

TEXAS TECHNOLOGICAL COLLEGE
 International Center for Arid and Semi-Arid Land Studies
 Project: "The Legal Aspects for Food Distribution
 for the World"
 For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,000.00</u>
Total -----	2	\$ <u>2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean and Chairman		
Richard Bruce Amandes -----	3	\$ -0-
Principal Investigator		
Martin Alan Frey -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	1,900.00
Travel -----	7	-0-
Maintenance and Operation -----	8	100.00
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>2,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Government
Project: "Rocky Mountain Social Science Conference"(a)
For the period December 31, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Special appropriation from the Unappropriated Balances -----	1	\$ <u>696.00</u>
Total -----	2	\$ <u>696.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Chairman		
Lynwood M. Holland -----	3	\$ -0-
Professor and Conference Planner		
William Eugene Oden -----	4	-0-
Student Assistants and/or Part-time Help -----	5	48.00
OASI -----	6	2.30
Travel -----	7	122.00
Maintenance and Operation -----	8	523.70
Capital Outlay -----	9	-0-
Total -----	10	\$ <u>696.00</u>

- (a) Conference May 2 - 3, 1969.
(b) Established College rate to be followed.

TEXAS TECHNOLOGICAL COLLEGE
International Center for Arid and Semi-Arid Land Studies
Project: "Modeling Extra-High Voltage Transmission
Lines for Arid Lands"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>2,500.00</u>
Total -----	2	\$ <u>2,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Russell Holland Seacat, Jr. -----	3	\$ -0-
Principal Investigator		
Darrell Lee Vines -----	4	-0-
Research Assistant		
-----	5	1,200.00(a)
Student Assistants and/or Part-time Help -----	6	200.00
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>1,100.00</u>
Total Estimated Expenses -----	10	\$ <u>2,500.00</u>

(a) Contract to be dated from Noon January 16, 1969, through May 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE

School of Law

Project: "American Bar Association Bar Examination Study"

For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from the lump sum appropriation for Research, School of Law, Budget p. 403, Item 2 ----	1	\$ <u>1,000.00</u>
Total -----	2	\$ <u>1,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Dean and Professor		
Richard Bruce Amandes -----	3	\$ -0-
Professor and Principal Investigator		
George Neff Stevens -----	4	1,000.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$ <u>1,000.00</u>

(a) Contract to be dated August 1, 1969, through August 31, 1969.

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TEXAS TECHNOLOGICAL COLLEGE
School of Law

Project: "Military Justice Course Materials"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from the lump sum appropriation for Research, School of Law, Budget page 403, Item 2 ---	1	\$ <u>1,500.00</u>
Total -----	2	\$ <u>1,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean and Professor		
Richard Bruce Amandes -----	3	\$ -0-
Professor and Principal Investigator		
Murl Alton Larkin -----	4	1,500.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>1,500.00</u>

(a) Contract to be dated June 1, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
School of Law

Project: "Research on Criminal Prosecutions of Juveniles"
For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from the lump sum appropriation for Research, School of Law, Budget page 403, Item 3 ---	1	\$ <u>1,500.00</u>
Total -----	2	\$ <u>1,500.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean and Professor		
Richard Bruce Amandes -----	3	\$ -0-
Assistant Professor and Principal Investigator		
Martin Alan Frey -----	4	1,500.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$ <u>1,500.00</u>

(a) Contract to be dated June 1, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE

School of Law

Project: "Materials in Fiduciary Administration"

For the period September 1, 1968, through August 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Allocation from the lump sum appropriation for Research, School of Law, Budget page 403, Item 3 --	1	\$ <u>2,000.00</u>
Total -----	2	\$ <u>2,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean and Professor		
Richard Bruce Amandes -----	3	\$ -0-
Professor and Principal Investigator		
Richard William Hemingway -----	4	2,000.00(a)
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	-0-
Travel -----	7	-0-
Maintenance and Operation -----	8	-0-
Capital Outlay -----	9	<u>-0-</u>
Total Estimated Expenses -----	10	\$ <u>2,000.00</u>

(a) Contract to be dated June 16, 1969, through August 31, 1969.

TEXAS TECHNOLOGICAL COLLEGE
School of Education

Project: "Experienced Teacher Fellowship Program for
Counselors of Mexican American Youth"
For the period December 6, 1968, through June 15, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant from the Department of Health, Education and Welfare, Office of Education, Grant No. OEG-0-9-530487-1766-721 -----	1	\$10,000.00
Total -----	2	<u>\$10,000.00</u>

<u>Estimated Expenses:</u>	<u>Item</u>	<u>1968-1969</u>
Dean		
Glenn E. Barnett -----	3	\$ -0-
Associate Dean		
Donald McDonald -----	4	-0-
Professor and Chairman		
Berlie Joseph Fallon -----	5	-0-
Project Director		
Owen LaVerne Caskey -----	6	-0-
Associate Project Director		
Drage Hall Watson -----	7	1,562.50(a)
Research Assistant		
George Worth Smith -----	8	1,400.00(b)
Secretary I (Part-time; 115)		
-----	9	811.25(c)

- (a) One-fourth time for the period from Noon January 16, 1969, through May 31, 1969. Also three-fourths time in the Department of Education at a salary of \$4,687.50 for 4½ months. Total salary for the Spring Semester, \$6,250.00.
- (b) Two-fifths time from Noon January 16, 1969, through May 31, 1969.
- (c) Part-time for 5½ months.

<u>Estimated Expenses (continued)</u>	<u>Item</u>	<u>1968-1969</u>
Student Assistants and/or Part-time Help -----	10	200.00
OASI -----	11	190.74
Consultants -----	12	1,250.00
Travel -----	13	750.00
Maintenance and Operation -----	14	1,500.00
Capital Outlay -----	15	693.16
Indirect Charges (Overhead) -----	16	<u>1,642.35</u>
Total Estimated Expenses -----	17	<u>\$10,000.00</u>

TEXAS TECHNOLOGICAL COLLEGE
School of Education
Project: "Institute for Elementary School Principals"
For the period December 18, 1968, through June 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Project Development Grant from the Department of Health, Education and Welfare, Office of Education, Washington, D.C., Grant No. OEG-0-9-530333-1926-725 --	1	\$ <u>3,000.00</u>
Total -----	2	\$ <u>3,000.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Dean School of Education		
Glenn E. Barnett -----	3	\$ -0-
Associate Dean		
Donald McDonald -----	4	-0-
Acting Chairman		
Laura Katherine Evans -----	5	-0-
Project Director		
Charles Leonard Ainsworth -----	6	950.00(a)
Student Assistants and/or Part-time Help -----	7	400.00
OASI -----	8	64.80
Tuition and Fees -----	9	900.00
Travel -----	10	-0-
Maintenance and Operation -----	11	445.20
Capital Outlay -----	12	-0-
Indirect Cost (Overhead) -----	13	<u>240.00</u>
Total Estimated Expenses -----	14	<u>\$3,000.00</u>

(a) One-half time for the first summer term.

TEXAS TECHNOLOGICAL COLLEGE
Department of Management
Project: "Management Science for the Businessman"
For the period July 1, 1968, through June 30, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
Grant under Section 10(b), Public Law 89-182, The State Technical Services Act of 1965 via The Coordinating Board, Texas College and University System -----	1	\$ 1,600.00
From Special Registration Fee of \$40.00 -----	2	<u>1,600.00</u>
Total -----	3	\$ <u>3,200.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Interim Dean		
Reginald Rushing -----	4	\$ -0-
Professor and Chairman		
Vincent Peter Luchsinger -----	5	-0-
Instructor and Coordinator		
John Norman Rogers -----	6	500.00(a)
Professional Staff -----	7	1,200.00(b)
-----	8	()
-----	9	()
-----	10	()
-----	11	()
-----	12	()
-----	13	()
-----	14	()

- (a) Contract for the period January 1, 1969, through April 30, 1969. This is in addition to the full time teaching contract as an Instructor in Management.
- (b) Appointments must be approved in advance by the Executive Vice President.

<u>Estimated Expenses (Continued)</u>	<u>Item</u>	<u>1968-1969</u>
Student Assistants and/or Part-time Help -----	15	\$ -0-
OASI -----	16	81.60
Travel -----	17	100.00
Maintenance and Operation -----	18	615.79
Capital Outlay -----	19	-0-
Indirect Charges (Overhead) -----	20	<u>702.61</u>
Total Estimated Expenses -----	21	<u>\$3,200.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Textile Research Center

Project: "To Study Blending Cotton, Wool and Mohair into a
Yarn Suitable for Weaving and/or Knitting on the Cotton System
and on a Modified Worsted System."

For the period January 1, 1969, through August 31, 1969

Source of Funds:

	<u>Item</u>	<u>1968-1969</u>
From budgeted allocation Account No. 191-8900, Budget page 431, Item 7 -----	1	\$33,000.00
Total -----	2	<u>\$33,000.00</u>

Estimated Expenses:

	<u>Item</u>	<u>1968-1969</u>
Project Leader		
Joseph Andrew King -----	3	-0- (a)
Director of Chemical Processes Laboratory		
Robert Foster Johnson -----	4	12,400.00(b)
Assistant to the Director		
Thomas Roy Wallace -----	5	8,666.68(c)
Research Associate		
Jhae Shin Lee -----	6	2,000.00(d)
Coordinator-Operations		
Fredy Elswood Briggs -----	7	8,000.00(e)
Travel -----	8	500.00
Maintenance and Operation -----	9	<u>1,433.32</u>
Total Estimated Expenses -----	10	<u>\$33,000.00</u>

- (a) On the budget for Textile Research Center, Account No. 391-3490 as Wool Technologist, page 549, Item No. 28.
- (b) Contract from January 1, 1969, through August 31, 1969 at an annual salary of \$18,500.00.
- (c) Contract from January 1, 1969, through August 31, 1969 at an annual salary of \$13,000.00.
- (d) Approximately 30 per cent time. Also approximately 70 per cent time on the budget for the Textile Research Center at a salary of \$4,666.68 for 8 months. Annual salary rate \$10,000.00.
- (e) Contract from January 1, 1969, through August 31, 1969 at an annual salary rate of \$12,000.00.

TEXAS TECHNOLOGICAL COLLEGE
Department of Food and Nutrition
Project: "Bioassay of Grain Sorghums"
For the period September 1, 1968, through May 31, 1969

<u>Source of Funds:</u>	<u>Item</u>	<u>1968-1969</u>
From the lump sum budgeted allocation to ICASALS for Organized Research Projects -----	1	\$ <u>752.00</u>
Total -----	2	\$ <u>752.00</u>
 <u>Estimated Expenses:</u>	 <u>Item</u>	 <u>1968-1969</u>
Professor and Chairman		
Mrs. Mina Wolf Lamb -----	3	\$ -0-
Principal Investigator		
Mrs. Margarette Lucile Leggitt Harden -----	4	-0-
Research Assistant		
-----	5	-0-
Student Assistants and/or Part-time Help -----	6	510.00
Travel -----	7	-0-
Maintenance and Operation -----	8	242.00
Capital Outlay -----	9	-0-
Total Estimated Expenses -----	10	\$ <u>752.00</u>

TEXAS TECHNOLOGICAL COLLEGE
Department of Chemistry

Project: "Specific Binding to Proteins"

For the period June 1, 1968, through May 31, 1969

(This budget supersedes Budget Attachment No. 46, Board Minutes, April 20, 1968)

Source of Funds:

	<u>Item</u>	<u>1968-1969</u>
Estimated Balance June 1, 1968 -----	1	216.37
Grant from the National Science Foundation, Washington, D. C., Grant No. GB-6434 -----	2	<u>4,197.00</u>
Total -----	3	<u>\$4,413.37</u>

Estimated Expenses:

	<u>Item</u>	<u>1968-1969</u>
Professor and Chairman		
Joe Dennis -----	4	\$ -0-
Principal Investigator		
John Arthur Anderson -----	5	-0-
Research Assistant		
Carter Jules Grandjean -----	6	2,399.94(a)
Leo Alexander Andron II -----	7	450.00(b)
Student Assistants and/or Part-time Help -----	8	53.48
OASI -----	9	131.13
Maintenance, Operation and Equipment -----	10	899.10
Travel -----	11	60.00
Indirect Cost (Overhead) -----	12	<u>419.72(c)</u>
Total Estimated Expenses -----	13	<u>\$4,413.37</u>

(a) Contract to be dated June 1, 1968, through February 28, 1969.

(b) Contract to be dated June 1, 1968, through August 31, 1968.

(c) This grant is a two-year grant in the amount of \$20,000.00 with the Grantee contributing \$1,000.00 in overhead for college matching.