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An Abbreviated History of the Agronomy Department From its Inception until the Late 1960's

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***An Abbreviated History of the
Agronomy Department***
From its Inception until the Late 1960's



June 2011

*Edited by:
Vance H. Watson & Lisa Noffsinger*

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Preface

This on line book is a compilation of edited papers written by distinguished faculty that covers over 150 years. The purpose is to define how agriculture in general and agronomy in particular developed at Mississippi State University from inception through the late 1960's which also coincides with the years that the department was housed in the Lloyd-Ricks-Watson building. It also includes a short chapter that describes some of the early findings of world class scientist Hilgard when agriculture was part of the program of the University of Mississippi before responsibility for agriculture programs was transferred to Mississippi State University.

Mississippi State University faculty in agriculture and natural resources have made many highly significant contributions to the economic development of the state through strong research and outreach programs and the training of students. This same faculty produced the first doctoral graduates of the University and helped grow a highly respected graduate school at the University. Three of Mississippi State University's Presidents, Dr. William L. Giles, Dr. J. Charles Lee, and Dr. Mark E. Keenum spent part of their careers in this historical building.

We hope that this manuscript will help document and define some of the significant progress that was made by faculty and staff located in the Lloyd-Ricks-Watson building over time. We dedicate this book to all of the employees that have served in the building since its original construction.

Vance H. Watson
Lisa Noffsinger

About the Authors

Vance H. Watson, a career employee of Mississippi State University, retired after 43 years of service. He served the University in a number of roles including Professor of Agronomy and Research Agronomist, Director of the Mississippi Agriculture and Forestry Experiment Station and MSU Extension Service, Dean of the College of Agriculture and Life Sciences, Vice President of Agriculture, Forestry and Veterinary Medicine, and interim President. Born and reared in the boot heel of Missouri, he and his wife, Jo Ann, came to Mississippi State as a first job out of graduate school. During his tenure at Mississippi State University he had the opportunity to travel in over 50 countries, serve as major professor for a host of graduate students. He has published over 300 papers, written chapters for 6 textbooks, and written and edited 3 books. Watson is a Fellow of the American Society of Agronomy, and the Crop Science Society of America. He and Jo Ann have 3 children and seven grandchildren.

Lisa Noffsinger, long time Administrative Assistant to the Vice President for Agriculture, Forestry, and Veterinary Medicine was born and reared in Winston County, MS. She attended Louisville public schools, Meridian Community College, and received the Bachelor's degree from Mississippi State University. She plays a leadership role in the annual Women in Management program for the southern region. Lisa is the mother of two children.

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Chapter 1

History of Agronomy at Mississippi State University

An Historical Sketch by C. Dale Hoover,
Professor and Head Emeritus of Agronomy
(Deceased)
Preface

Agronomy is defined by M.A. Carleton, the first President of the American Society of Agronomy, as “the study of field crops and their relations to the environment; as an art it is the management of field Crops and the soils in which they grow.”

The word Agronomy comes from two Greek roots—agros and nemein. Agros may be defined as field and nemein means to handle or manage. Therefore, Agronomy is ordinarily understood as the science of field crops and the soils in which they are grown. Agronomy currently encompasses three areas of interest at Mississippi State University namely Crops, Soils, and Seed Technology.

The first position of Agronomist in the United States was set up at the University of Illinois in 1900 and a year later the USDA set up their first Agronomy position.

The purpose of this writeup is to trace the development and growth of Agronomy, training, research, and services at Mississippi State University from the opening of Mississippi A&M College October 6, 1880 to July 1, 1972, the date the author retired.

For organizational purposes the material is presented as four time periods corresponding to what appears to be logical divisions of the subject matter. These periods are: 1. Agronomy in Pre—Agronomy era, 1880—1904, 2. Agronomy in Infancy, 1905—1931. 3. Agronomy in Youth, 1932-1949, and 4. Agronomy Comes of Age (Grows Up), 1950—1972.

The growth and development of Agronomy in each-period will be considered mainly from three viewpoints training, research, and services. Each of these areas will then be treated from the standpoint of crops, soils, and after 1950, Seed Technology. Some of the personnel involved are referred to in the subject matter presented with a complete list of personnel for each period given by year.

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Agronomy in Pre—Agronomy Era, 1880—1904

Training

Mississippi A&M College first opened its doors to students on October 6, 1880 and 354 students enrolled for the first session. Of the 354, 87 took the college course and 267 were enrolled in the Prep Dept. The initial enrollment was gratifying to the founders of Mississippi A&M in view of the fact that for several years prior to 1880 a School of Agriculture and Mechanic Arts had been established at the University of Mississippi with never more than twelve enrolled in the course.

It is worthy of note that this favorable enrollment at Mississippi A & M did not result in a decreased overall enrollment at the University of Mississippi. In fact, in 1881 Mississippi A & M was ninth from the top in the number of students enrolled among forty seven Land Grant Colleges.

All students at Mississippi A & M took the same courses leading to the B.Sc. degree for several years. The original course of study was as follows:

Freshman Class

First Term

Algebra
History
Higher English
Botany

Second Term

Geometry
Natural Philosophy
English

Third Term

Geometry
Agriculture
Drawing (Free-Hand)
Botany

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Sophomore Class

First Term

Trigonometry & Surveying
Elementary Chemistry
Rhetoric

Second Term

Mechanics
English
Organic Chemistry
Blowpipe Analysis

Third Term

Mechanics
Landscape Gardening
Drawing

Junior Class

First Term

Anatomy
English
Agricultural Chemistry
Horticulture

Second Term

Physiology
Chemical Physics
English

Third Term

Entomology
Veterinary Science
Astronomy
English Literature

Senior Class

First Term

Zoology
Agriculture

Psychology
Astronomy

Second Term

Political Economy
Botany (work with
microscope)
Geology
Moral Philosophy

Third Term

Civil Engineering
Constitution of U.S. (6 wks.)
Logic
Meteorology (lectures)

"The department of Scientific and Practical Agriculture and Horticulture" was one of the original departments of the college. The courses in agriculture and related were first taught by F.A. Gulley, Act-

An Historical Sketch by C. Dale Hoover

ing Professor. A description of the offerings indicates that the courses in "Agriculture" contained some material on Crops and Soils. As a practical approach to instruction all crops of value to the state were grown on the college farm which was operated with the help of students who were required to work two to three hours a day during five days of the week.

Provision was made for post graduate studies for those desiring training beyond the B.S. degree in fields of science.

Throughout this era (1880-1904) there was a Department of Agriculture and up until the academic year 1892—93 the one curriculum of study for all students remained essentially the same with the same three courses in agriculture.

In 1892—93, students at Mississippi A & M were offered two curricula of study — (1) Agriculture and (2) Mechanical Arts; However, there was little if any change in the three courses in agriculture that were included in the agricultural curriculum.

In 1900—01 three curricula were offered — Agriculture, Mechanical, and Textile but no changes were made in the three courses in agriculture in the agricultural curriculum.

In the academic year 1903—04 there was listed in the college catalog a "School of Agriculture" for the first time. W. L. Hutchinson M.Sc., a chemist, was the Director and E. R. Lloyd, M.S., was listed as the Professor of Agriculture and W. V. Reed, B.Sc., was a Fellow in Agriculture.

A review of the description of the three courses in Agriculture indicates that by 1904 more emphasis was being given to crops and soils than in earlier years.

In summary it can be concluded that there were only three academic courses in agriculture taught to all students until 1892 and for those electing the agricultural curriculum only three courses in agriculture were offered throughout this pre—Agronomy era, (1880—1904). As shown in the appendix for this period, F. A. Gulley handled the teaching from 1880 to the academic year, 1887—88. He was succeeded by B. Irby until 1889—90 when J. H. Cornell became Professor and Superintendent of the farm. In 1893—94, Mr. Cornell was succeeded by W. C. Welborn, B.Sc., who held this position until the academic year 1901—02 when E. R. Lloyd, M.Sc. was appointed Pro-

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fessor and Superintendent of the farm, a position which he held during the remainder of this period, (1901-02, 1903-04).

History of Agronomy Department

References

College Catalogs

Presidents' reports to Board of Trustees

Annual Experiment Station Reports

History of Experiment Station by E. B. Ferris 1945

History of Experiment Station by J. W. Bailey (Alumni Secretary, A&M College) Station Bulletin 216, 1923.

The Peoples College by Dr. J. K. Betterworth

Notes compiled earlier by Hoover

Budget & Personnel Records 1946—72

Annual Reports (College) 1946—72

Mississippi Agri. Exp. Sta. Annual Reports

Staff: Gen. S. D. Lee, Pres.

S. M. Tracy, M. S. Director.

B. Irby, M. S. Agriculturist

E. R. Lloyd, M. S. Asst. Agric.

A. B. McKay, B. S., Horticulturist

B. W. Safford, B. S., Asst. Horticulturist

D. L. Phares, M.D. Veterinarian

W. L. Hutchinson, B.S., Chemist

Mr. J. A. Myers, Prof. (resigned 6/30/88) Chemist

B. von Herff, Ph.D. Asst. Chemist

L. G. Patterson, Asst. Chemist

B. W. Kilgore, B.S., Meteorologist

T. F. Watson, Treasurer

On January 31, 1888 the State Legislature of Mississippi established the Mississippi Agriculture Experiment Station following the approval of the "Hatch Act" by the Congress March 2, 1887.

The first appropriation was \$15,000 from the U.S. Treasury. Control was placed under the Governing Board. The College Farm was 1,800 acres much of which was used by the Experiment Station. The Experiment Station gave the College equivalent returns in crops

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grown.

The Horticulture program used the College vegetable gardens, orchards, vineyards, etc.

Chemical work occupied 7 rooms of a College laboratory building. Meteorological work was outfitted with maximum & minimum, self registering and other types of thermometers and self—registering monitors.

One small building was provided for office, library, and microscope room and a basement for use as a tool and storage room. The same for was provided for horticulture work.

Some of the first Agronomy reports provide one year results on fertilizer and variety trials with corn, cotton, and forage crops including ensilage. Highest yields for corn were 61.3 bushels per acre, for cotton were 2340 pounds of seed cotton per acre, and 23425 pounds of corn ensilage per acre. Planting of ensilage crops in rows yielded nearly 3000 pounds in favor of planting in rows as compared to broadcasting. Tall orange sorghum yielded 3786 lbs. silage per acre. (From E. B. Ferris write—up).

Agronomists

Started		Term
1905	W. H. Perkins, M. SC.	1910
1910	J. W. Fox, M Sc.	1911
1912	J. R. Ricks, M. Sc.	1919
1919	J. R. Ricks, M. Sc., Dir. & Agronomist	1934
1934	Clarence Dorman, Ph.D.	1942
1942	J. F. O'Kelly	
1938	P.W. Gull, M. Sc. Delta Sta.	
1943	H. C. Eckhardt, Ph.D.	1957

First designation of Agronomy was in 1905 with the 18th annual report for year ending June 30, 1905 authored by W. R. Perkins. By this time three branch stations namely, McNeil, Holly Springs, and Delta Stoneville were established.

First Annual Report — Cotton, Corn, Alfalfa, Forages

Facts from Annual Catalogs

1. The College opened October 6, 1880; 354 students enrolled in

An Historical Sketch by C. Dale Hoover

- the first session.
2. The curriculum was same for all students for a B.S. degree.
 3. Preparatory and College curriculums were provided.
 4. Post graduate study was included from the beginning.
 5. There were three or four courses given in Agriculture with work on the College farm required to familiarize students with farming and to produce all crops of value to Mississippi farmers.

F. A. Gulley was Acting Professor of the Department of Scientific and Practical Agriculture & Horticulture from the beginning of the College and in 1881 he became Professor (promoted from Assistant in 1881).

In 1882 J. J. Colman became Professor of Horticulture & Entomology and Superintendent of Garden and Grounds and F. A. Gulley continued as Professor of Scientific and Practical Agriculture and Superintendent of Farm. At this time students could take post graduate work in Agriculture, Horticulture, Chemistry or Botany.

In 1883—84 Gulley and Colman continued

In 1882—83 Gulley received the M.S. degree

Post graduate course now provided for M.S. for two years in any scientific area and the course in English. Branches of Science were Biology, Agriculture, Horticulture, Chemistry, English and Math. Faculty during this time included F. A. Gulley 1884—85 M.S. Professor of Agriculture, and a vacant position (Professor of Horticulture and Entomology). For first two years 1881—1883 Gulley was overall in charge of the department of Science and Practical Agriculture and Horticulture.

In 1884-85 A. B. McKay became acting Professor of the Department of Horticulture.

The farm operation was also designated as a department.

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1885–86

F. A. Gulley, M.S. Professor of Agriculture
A. B. McKay, B.S., Acting Professor of Horticulture & Entomology

Agronomy Faculty and Staff by Year

1905 18th Annual Report of Experiment Station
W. R. Perkins Professor of Agronomy/Agronomist

1906

W. R. Perkins Professor of Agronomy/Agronomist
(Agronomy is mentioned as a department in college catalog)

1907 (Biennial Report 1906-07 Mentions Agronomy)
W. R. Perkins Professor of Agronomy/Agronomist

1908

W. H. Perkins Professor of Agronomy/Agronomist
J. R. Ricks Acting Professor
Also 1 new position unfilled

1909

W. R. Perkins Station agronomist
J. R. Ricks M.S.C. Acting Professor of Agronomy
W.O. Morgan hired 9/15/09

1910

W. R. Perkins Agronomist (left in May)
Dr. James O. Morgan, Professor of Agronomy.
Hugh Critz, B.S. Assistant Professor
J. R. Ricks Associate Professor and Agronomist
J. W. Fox, M.S. Experiment Station Director & Agronomist
E. C. Ewing, B.A. M. Sci., Plant Breeder
E. L. Clothier Botanist and Instructor in Cotton

Annual reports for years 1911—20 were not published - See Presidents report to Trustees and college catalogs.

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1911

Dr. James O. Morgan resigned
J.W. Fox Director & Agronomist
W. L. Hutchinson Professor of Agronomy
J. R. Ricks Agronomist
E. C. Ewing, Plant Breeder

1912

Dr. J. C. Roberts, B.Sc., V.M.D. PhD., M.D.
Director of School of Agriculture
Hugh Critz, B.Sc., Associate Professor
J. T. West, B. Sc. Fellow in Agronomy
J. R. Ricks, Agronomist
E. C. Ewing, Plant Breeder

1913

Dr. J. C. Robert, Director of School of Agriculture
and Professor of Agronomy

1913—14

J. T. West, Assistant Professor
E. C. Ewing, BA, MSA Cotton Specialist
Hugh Critz, Associate Professor
E. C. Ewing, Plant Breeder

1914

J. R. Ricks, Agronomist
Dr. J. C. Robert, Director, School of Agriculture &
Professor of Agronomy
J. T. West, Asst. Professor
J. F. Backstron, B.Sc. Instructor
E. C. Ewing, Plant Breeder

Hugh G. Critz became Professor of 2 year course in agriculture.

Agronomy was one of twelve departments in the school of Agriculture.

Chemistry was in the school of agriculture.

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1915

J. R. Ricks, Agronomist
J. C. Robert, Professor of Agronomy
J. T. West, Associate Professor
G. G. Snow, Assistant Professor
A. D. Suttle, Instructor

1916

H. B. Brown (a replacement of Ewing) Plant Breeder (Sta.)
J. R. Ricks, Agronomist
J. T. West
G. G. Snow, Assistant Professor
(A. D. Suttle became instructor in Botany)

1917

J. H. Ricks, Agronomist
Dr. J. C. Robert, Professor of Agronomy
J. T. West
G. G. Snow, Assistant Professor
President indicated a need (top priority in Agriculture) for a \$7,500 Agronomy Building in report 1915—17.

1918

J. R. Ricks, Agronomist
J. C. Robert, Professor of Agronomy
G. G. Snow, Assistant Professor
F. D. Cork (Fellow)

1919

J. R. Ricks, Director and Agronomist
J. C. Robert, Professor of Agronomy
E. L. Hobby
L. W. Cox, Student Assistants
Mr. Gracy added to teaching

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1920

J. R. Ricks, Director & Agronomist
J. C. Robert, Professor of Agronomy
Bourg, Associate Professor
Ferrell O. Cork, Instructor
Bedenbaugh, Instructor
Gracy, Instructor

1921

J. R. Ricks, Director & Agronomist
J. C. Robert, Professor of Agronomy, Dean of Agriculture
Of Agriculture
H. B. Brown, Chief in Agronomy, Vice—Director/Plant Breeder
J. F. O'Kelly, B.Sc. Agronomist/Plant Breeder
Arthur K. Watkins, BS, MA, Assistant Professor of Agronomy
Allen George Burg, Associate Professor
Ferrell O. Cork, Instructor
J. M. Britt, BS (Fellow)

1922

H. B. Brown, PhD Collaborator
J. R. Ricks, Chief in Agronomy & Director
J. F. O'Kelly M.Sc., Plant Breeder
Carson
Roland Cowart, Soil Specialist
Allen G. Bourg, Associate Professor
Ferrell Cork, Assistant Professor
Robert Dowden Morrow, BSA Assistant Professor

1923

J. C. Robert, Professor of Agronomy
J. R. Ricks, Chief in Agronomy & Director
Robert D. Morrow, Assistant Professor
J. F. O'Kelly, M.Sc., Plant Breeder Experiment Station
Roland Cowart, Assistant Agronomist
Allen G. Burg, Associate Professor
Ferrell O. Cork, Assistant Professor
Robert Gatlin Reeves, BS Fellow in Plant Breeding
C. B. Anders, (returned and became Assistant Director
at Raymond)

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1923—24

College catalog shows Dr. J. C. Robert Professor &
Dean, School of Agriculture

1924

J. R. Ricks, Director & Chief in Agronomy
Dr. A. D. Suttle, Professor of Agronomy (Presumably a
Replacement of J. C. Robert)
J. F. O'Kelly, M.Sc., Plant Breeder
Roland Cowart, Associate Agronomist
Allen G. Burg, BSA Associate Professor
Ferrell O. Cork Assistant Professor
Robert D. Morrow, BSA Assistant Professor

1925

J. R. Ricks Director & Chief in Agronomy
J. F. O'Kelly, Plant Breeder
Roland Cowart, B.Sc., (on leave) Associate Agronomist
W. W. Hull, B.Sc. Assistant Agronomist
Andrew Dillard Suttle, MS, PhD, Professor
Allen G. Burg, BA, MS, Associate Professor
Ferrell O. Cork, BSA, Assistant Professor & Superintendent of
Farm Management Vocational Project

1926

J. R. Ricks, M.Sc., Director & Chief in Agronomy
J. F. O'Kelly, M.Sc., Plant Breeder
A. D. Suttle, MS, PhD, Professor
Allen G. Burg, BA, MS, Associate Professor
Earnest Abbott Curry, Instructor
W. W. Hull, B.Sc., Assistant Agronomist or Plant Breeder
Roland Cowart, BS, (on leave) Associate Agronomist
Ferrell O. Cork, BS Assistant Professor

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1927

J. R. Ricks, Director & Chief in Agronomy
C. B. Anders, MS, Soils Specialist Experiment Station
Roland Cowart, Associate Agronomist (on leave)
J. F. O'Kelly, Plant Breeder
A. D. Suttle, MS, PhD, Professor
Allen G. Burg, MA, MS, Associate Professor
W. W. Hull, Assistant Plant Breeder
W. A. Templeton, Farm Foreman
Ernest Abbott Curry, BS, MS, Instructor in Agronomy
W. W. Hull, BS, Assistant Plant Breeder
Buzz M. Walker, PhD, President
New format in college catalog giving source of degrees

1928

J. R. Ricks, Director & Chief in Agronomy
A. D. Suttle, BS, MS, PhD, Professor
Allen G. Burg, MA, MS, Associate Professor
John P. Welborn, Assistant Professor
J. F. O'Kelly, MS, Plant Breeder
C. B. Anders, MS, Specialist in Soils
W. W. Hull, BS, Assistant Plant Breeder
Roland Cowart, BS, (on leave) Associate Agronomist
W. A. Templeton, Farm Foreman, Agronomy Department
Ernest A. Curry, BS, MS, Instructor in Agronomy

1929

J. R. Ricks, Director & Chief in Agronomy
Dr. A. D. Suttle, BS, MS, PhD
Allen G. Burt, BA, MS, Associate Professor
John Pullman Welborn, BS, MS, Assistant Professor
C. B. Anders, MS Specialist in Soils
W. W. Hull, BS, Assistant Plant Breeder
Roland Cowart, BS (on leave) Associate Agronomist
W. A. Templeton, Farm Foreman
J. F. O'Kelly, MS, Plant Breeder

An Historical Sketch by C. Dale Hoover

1930

A. D. Suttle, BS, MS, PhD Professor
J. R. Ricks, Director & Chief in Agronomy
*Roland Cowart, Associate Agronomist (on leave)
C. B. Anders, MS, Specialist in Soils
J. F. O'Kelly, MS, Plant Breeder
W. W. Hull, BS, Assistant Plant-Breeder
W. A. Templeton, Farm Foreman
Allen G. Burg, BA, MS, Associate Professor
John P. Welborn, BS, MS, Assistant Professor

1931

A. D. Suttle, Professor
W. R. Perkins, MS, Director
C. B. Anders, MS (on leave) Specialist in Soils
J. F. O'Kelly, MS, Agronomist & Plant Breeder
W. W. Hull, Assistant Plant Breeder
Roland Cowart, MS, Associate Agronomist
W. B. Andrews, BS, Assistant in Agronomy
W. A. Templeton, Foreman, Agronomy Department
John P. Welborn, BS, MS Associate Professor
James Thomas West, BS, Assistant Professor

1932

(Students could major in Agronomy)
Hugh Critz, BS, President
W. H. Perkins, MS, Director
J. F. O'Kelly, MS, Head Agronomy Department Experiment Station
C. B. Anders, MS (on leave) Specialist in Soils & Crops
W. W. Hull, MS, Assistant in Agronomy
W. B. Andrews, BS, Assistant in Agronomy
Dr. A. D. Suttle, BS, MS, PhD, Professor of Agronomy
E. H. Bailey, Instructor in Agronomy
W. A. Templeton, Farm Foreman
Roland Cowart, PhD, Specialist in Soils & Crops
W. A. Templeton, Foreman, Agronomy Department
John P. Welborn, BS, MS, Associate Professor (on leave)
James T. West, BS, Assistant Professor
46—51st Annual reports unpublished

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1933

(First listing of Soils as a section in Agronomy. 5 courses.)

Hugh Critz, BS, President

J. R. Ricks, BS, MS, Director

W. R. Perkins, MS, Assistant Director

A. D. Suttle, BS, MS, PhD, Professor

E. H. Bailey, BS, MS, Instructor

J. F. O'Kelly, MS, Agronomist and Plant Breeder

C. B. Anders, MS, Specialist in Soils

Roland Cowart, MS, PhD, Soils Specialist, Delta Station

N. N. Hull, BS, Associate Plant Breeder

W. A. Templeton, Foreman, Agronomy Department

Service Bureau was a regular publication on file in Archives.

1934

Hugh Critz, BS, President

James R. Ricks, Director

W. H. Perkins, Assistant Director

Dr. A. D. Suttle, Professor and Associate Agronomist

Dr. Clarence Dorman, PhD, Professor & Chief Agronomist, April
or May 1934, Acting Head of Soils Department

J. F. O'Kelly, Agronomist and Plant Breeder

C. H. Owen, Associate Plant Breeder

E. H. Bailey, BS, MS, Instructor in Agronomy

C. B. Anders, MS, Specialist in Soils (on leave)

W. B. Andrews, MS, Assistant in Agronomy (on leave)

Roland Cowart, MS, PhD, Soils- Specialist, Delta Station

W. W. Hull, BS, Associate Plant Breeder

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1935

G. D. Humphrey, MA, President.

J. R. Ricks, MS, Director

Dr. A. D. Suttle, Professor and Associate Agronomist

Dr. Clarence Dorman, Professor of Soils, Assistant Director
& Chief in Agronomy, Acting Head, Soils Department

H. W. Bennett, Associate Agronomist

Mr. G. D. Green, B.S., M.S., Assistant Professor

I. E. Miles, Associate in Soils

C. R. Owen, BS, Associate Plant Breeder

J. F. O'Kelly, Agronomist and Plant Breeder

W. A. Templeton, Farm Foreman

Roland Cowart, PhD, Soils Specialist, Delta Station

C. B. Anders, MS, Specialist in Soils

W. B. Andrews, MS, Assistant in Agronomy (on leave)

E. H. Bailey, BS, MS, Instructor in Agronomy

1936

G. D. Humphrey, MS, President

J. R. Ricks, MS, Director of Experiment Station

Dr. Clarence Dorman, Professor of Soils, Assistant Director of
Research and Chief in Agronomy

Dr. A. D. Suttle, MS, BS, PhD, Professor and Associate Agronomist

I. E. Miles, Associate Professor & Associate in Soils

G. D. Green, BS, MS, Assistant Professor

H. W. Bennett, Associate Agronomist

W. A. Templeton, Farm Foreman

J. F. O'Kelly, Agronomist and Plant Breeder

E. B. Ferris, Extension Agronomy

Earl H. Bailey, BS, MS, Instructor (resigned)

1935—36

C. R. Owen, BS, Acting Superintendent, Raymond Branch Station

Roland Cowart, PhD, Soils Specialist, Delta Branch Station

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1936—37

G. D. Humphrey, BA, MA, President
J. R. Ricks, Director, BS, MS, Experiment Station
Dr. A. D. Suttle, Professor and Associate Agronomist
Dr. Clarence Dorman, BS, MS, PhD, Professor of Soils,
Assistant Director & Chief in Agronomy
H. W. Bennett, MS, Associate Agronomist
G. D. Green, BS, MS, Assistant Professor
I. E. Miles, BS, MS, Associate Professor, Associate in Soils
J. F. O'Kelly, Agronomist & Plant Breeder
W. A. Templeton, Farm Foreman
W. B. Andrews, BS, MS, PhD, Associate Professor of Soils
Roland Cowart, PhD, Soils Specialist, Delta Station
Roy L. Donahue, BS, Associate Professor of Forest Soils
(In Forestry Department)

Note: E. B. Ferris is Extension Agronomist

1938

G. D. Humphrey, MA, President
Dr. Clarence Dorman, Professor of Soils, Vice—Director and
Head of Agronomy Department
Dr. A. D. Suttle, Professor of Crops
I. E. Miles, MS, Associate Professor and Associate Agronomist
W. B. Andrews, PhD, Associate Professor/Agronomist
G. D. Green, Assistant Professor
by transfer from Delta Station Roland Cowart
H. B. Vanderford, BS, Assistant Professor and Assistant Agronomist
J. F. O'Kelly, Agronomist and Plant Breeder
H. W. Bennett, MS, Associate Agronomist
C. R. Owen, MS, Assistant Agronomist
Russell Coleman, BS, Assistant in Soils
Note: L. I. Jones, Extension Agronomist
J. W. Willis Extension Cotton Specialist

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1939

Dr. Clarence Dorman, Director & Head, Agronomy Department

(Crops Section)

J. F. O'Kelly, MS, Agronomist, Plant Breeder

C. H. Owen, MS, Assistant Agronomist

H. W. Bennett, MS, Associate Agronomist

W. A. Templeton, Foreman, Agronomy

J. F. Leaky, BS, Market Investigator

(Soils Section)

Roland Cowart, PhD, Associate Agronomist

W.B. Andrews, PhD, Associate in Soils

I.E. Miles, PhD, Associate in Soils

C. Dale Hoover, PhD, Associate Professor

C. R. Owens, MS, Assistant Agronomist

Russell Coleman, MS, Assistant in Soils

H. B. Vanderford, MS, Assistant in Soils

J. L. Anthony, MS, Assistant in Soils

1940

A. D. Suttle, PhD, Professor of Crops

Dr. Clarence Dorman, Director & Head of Agronomy Department

C. H. Owens, MS, (returned from leave) Assistant Agronomist

J. F. O'Kelly, MS, Agronomist, Plant Breeder

H. W. Bennett, MS, Associate Agronomist

W. A. Templeton, Foreman, Agronomy Department

Roland Cowart, PhD, Associate Professor in Soils

Dr. C. F. Briscoe, Assistant in Soil Bacteria (Station)

Dr. Peter G. Hogg, Forage Crops Breeding

S. D. Green, Assistant Professor -

C. Dale Hoover, PhD, Associate in Soils

W. B. Andrews, PhD, Associate Professor in Soils

Russell Coleman, MS, Associate in Soils (on leave)

H. B. Vanderford, MS, Assistant Professor in Soils

J. L. Anthony, MS, Assistant in Soils

John B. Pitner, MS, Assistant in Soils

Perrin Grissom, Graduate Fellow - Soils

James E. Scott, Graduate Fellow - Crops

An Historical Sketch by C. Dale Hoover

1941

Dr. Clarence Dorman, Director & Head, Agronomy Department
C. R. Owens, MS, resigned to go to ΩΩ

Dr. Wayne H. Freeman, MS, replaced Owen, Assistant Agronomy
J. F. O'Kelly, MS, Agronomist, Plant Breeder
W. B. Andrews, Associate Professor of Soils
H. W. Bennett, MS, Associate Agronomist
W. A. Templeton, Foreman, Agronomy Department
J. L. Anthony, Assistant in Soils?

Thomas Fowlkes, MS, Assistant Soil Surveyor Leader
J. A. Herren, MS, Assistant Soil Surveyor
L. A. Davidson, MS, Assistant Soil Surveyor
L. C. G. Morgan, MS, Assistant Soil Surveyor
Peter G. Hogg, PhD, Associate Agronomist
Roland Cowart, PhD, Associate in Soils
C. Dale Hoover, PhD, Associate in Soils
A. D. Suttle, PhD, Professor of Crops
W. B. Andrews, PhD, Associate in Soils
Russell Coleman, PhD, Associate in Soils

H. B. Vanderford, MS, Assistant in Soils (on leave)
J. L. Anthony, MS, Assistant in Soils
John B. Pitner, MS, Assistant in Soils
C. F. Briscoe, PhD, Assistant in Soils Bacteria
J. G. Hammons, Graduate Fellow in Soils
A. L. Lundy, Graduate Fellow in Soils

An Historical Sketch by C. Dale Hoover

1942

Clarence Dorman, PhD, Professor of Soils and Director
J. F. O'Kelly, MS (Head of Department)
H. N. Bennett, MS, Associate Agronomist (on leave)
W. H. Freeman, MS, Associate Agronomist
Peter G. Hogg, PhD, Associate Agronomist
W. A. Templeton, Foreman, Agronomy Department
Roland Cowart, PhD, Associate Professor in Soils
C. Dale Hoover, PhD, Associate in Soils
W. B. Andrews, PhD, Associate Professor in Soils
Russell Coleman, PhD, Associate in Soils
H. B. Vanderford, PhD (on leave) Assistant in Soils
J. L. Anthony, MS, Assistant in Soils
John Pitner, MS, Assistant in Soils
C. F. Briscoe, PhD, Assistant in Soils Bacteria
G. D. Green, Assistant Professor of Agronomy
A. D. Suttle, Professor of Crops
Thomas Fowlkes, MS, Assistant Soil Surveyor
J. A. Herren, MS, Assistant Soil Surveyor
L. A. Davidson, MS, Assistant Soil Surveyor
Gibson Morgan, MS, Assistant Soil Surveyor

An Historical Sketch by C. Dale Hoover

1943

Clarence Dorman, Coordinator Agricultural Education,
Director & Professor of Soils

J. F. O'Kelly, MS, Head of Department (Crops & Soils)

A. D. Suttle, Professor of Crops

H. N. Bennett, PhD, Associate Agronomist

Hubert L. Weir, Instructor in Agronomy

W. A. Templeton, Foreman, Agronomy Department

G. N. Johnston, PhD, Assistant in Agronomy Crops

Jesse Josey (Title of Foreman — he was Technician Aide)

Robert Stillman resigned as Foreman

Roland Cowart, PhD, Associate Professor in Soils

C. Dale Hoover, PhD, Associate in Soils

W. B. Andrews, PhD, Associate in Soils

Russell Coleman, PhD, Associate in Soils

H. B. Vanderford, PhD, Associate in Soils

G. D. Green — transferred Feb. 1, 1943 to USDA during War II

Dr. Wayne Freeman - joined USDA & left

R. C. Eckhardt, MS, Agronomist, USDA (to replace Freeman)

T. J. L. Anthony, MS, Assistant in Soils

C. F. Briscoe, PhD, Assistant in Soils Bacteria (Inactive)

*Thomas Fowlkes, MS, Assistant Soil Surveyor

*J. A. Herren, MS, Assistant Soil Surveyor

*Gibson Morgan, MS, Assistant Soil Surveyor

L. A. Davidson, MS, Assistant Soil Surveyor

*military leave

An Historical Sketch by C. Dale Hoover

1944

Clarence Dorman, Coordinator, Director and Professor of Soils
J. F. O'Kelly, MS, Head of Department (Crops & Soils)
H. W. Bennett, PhD, Associate Agronomist
G. N. Johnston, PhD, Associate Agronomist
R. C. Eckhardt, PhD, USDA, Agronomist
Jesse Josey, Foreman, Agronomy Department
A. D. Suttle, PhD, Professor Crops
Roland Cowart, PhD, Associate Professor in Soils
C. Dale Hoover, PhD, Associate Professor in Soils
W. B. Andrews, PhD, Associate Professor in Soils
Russell Coleman, PhD, Associate in Soils
H. B. Vanderford, PhD, Associate Professor in Soils
J. L. Anthony, MS, Assistant in Soils
F. E. Edwards, BS, MS, Agricultural Engineer
C. F. Briscoe, PhD, Assistant in Soils Bacteria (inactive)
*Thomas Fowlkes, MS, Assistant Soil Surveyor~
J. A. Herren, MS, Assistant Soil Surveyor
*Gibson Morgan, MS, Assistant Soil Surveyor
R. E. Obrien may have been added in this year

*Military leave

An Historical Sketch by C. Dale Hoover

1945

Clarence Dorman, Coordinator, Director and Professor of Soils

J. F. O'Kelly, MS, Head of Department

H. N. Bennett, PhD, Associate Agronomist

G. W. Johnston, PhD, Associate Agronomist

H. C. Eckhardt, PhD, USDA, Agronomist

*R. E. O'Brien, MA, Associate Agronomist

J. F. Lock, PhD, Associate Botanist

Jesse Josey, Foreman, Agronomy Department

D. G. Jackson, Foreman, Agronomy Department

Robert Stillman, Foreman, Agronomy Department

A. D. Suttle, PhD, Professor

Roland Cowart, PhD, Associate Professor in Soils

C. Dale Hoover, PhD, Associate Professor in Soils

W. B. Andrews, PhD, Associate Professor in Soils

Russell Coleman, PhD, Associate Professor in Soils

H. B. Vanderford, PhD, Associate Professor in Soils

J. L. Anthony, MS, Associate Professor in Soils

J. G. Hammons, Assistant in Soils

J. C. Edwards, Foreman, Soils Department

F. E. Edwards, BS, MS, Agricultural Engineer

C. F. Briscoe (retired) PhD, Assistant in Soils Bacteria

Dr. Russell Coleman left Soils Department to be Associate Director

H. V. Jordan, MS, Soil Science, USDA

*Thomas Fowlkes, MS, Assistant Soil Surveyor

*L. A. Davidson, MS, Assistant Soil Surveyor

*Gibson Morgan, MS, Assistant Soil Surveyor

*Military leave

College catalog General Information section contains a chronology of important developments at MSU.

An Historical Sketch by C. Dale Hoover

1946

J. F. O'Kelly, MS, Head of Department
H. W. Bennett, PhD, Associate Agronomist
G. W. Johnston, PhD, Associate Agronomist
R. C. Eckhardt, PhD, USDA, Agronomist
*R. E. O'Brien, MA, Associate Agronomist
J. F. Lock, PhD, Associate Botanist
C. Dale Hoover, PhD, Associate in Soils
Roland Cowart, PhD, Associate in Soils
W. B. Andrews, PhD, Associate in Soils -
H. B. Vanderford, . PhD, Associate in Soils
J. L. Anthony, MS, Associate in Soils
J. O. Hammons, BA, Assistant in Soils
F. E. Edwards, MS, Agricultural Engineer
R. J. Laird, MS, Assistant in Soils
Howard V. Jordan, MS, Associate Soil Technology BPI
S. L. Wedgeworth, BS, Assistant in Soils
**C. E. Briscoe, PhD, Assistant in Soils Bacteria
**Thomas Fowlkes, MS, Soil Survey Party Chief
*L. A. Davidson, MS, Assistant Soil Surveyor
Gibson Morgan, MS, Associate Soil Surveyor
E. J. McNutt, BS, Assistant Soil Surveyor
G. E. Rogers, BS, Assistant Soil Surveyor

*Military service

**Resigned

An Historical Sketch by C. Dale Hoover

1947

C. Dale Hoover, PhD, Head of Department
J. F. O'Kelly, MS, Agronomist

H. N. Bennett, PhD, Associate Agronomist
H. C. Eckhardt, PhD, USDA, Agronomist

R. E. O'Brien, MA, Associate Agronomist (on military leave
or resigned)

H. D. Bunch, MS, Assistant Agronomist
Roland Cowart, PhD, Associate in Soils

W. B. Andrews, PhD, Associate in Soils
H. B. Vanderford, PhD, Associate in Soils

J. L. Anthony, MS, Associate in Soils
J. G. Hammons, BA, Assistant in Soils

R. J. Laird, MS, Assistant in Soils

S. L. Wedgeworth, BS, Assistant in Soils

F. E. Edwards, MS, Agricultural Engineer

Howard V. Jordan, MS, Associate Soil Technology, BPI

Gibson Morgan, MS, Party Chief (Soil Surveyor)

E. J. McNutt, BS, Assistant Soil Surveyor

G. E. Rogers, BS, Assistant Soil Surveyor

Keith H. Harris, Assistant Soil Surveyor

Donald A. Yost, BPI, Assistant Soil Surveyor

A. B. Maxwell, BPI, Assistant Soil Surveyor

On July 1, 1958 the Department employed Dr. W. A. Raney as the first Soil Physicist. His first research project was an intensive investigation of the potential of all of the then commercially available soil conditioners to determine the possibility of improving the physical structure of soils on an economic basis. The results for the most part were negative when economics were considered despite claims of advertisers to the contrary.

The second project in Soil physics research was on deep tillage. These investigations were very productive of useful information especially on certain soils of the Delta where increases of approximately 1000 pounds seed cotton per acre were obtained for deep tillage.

Dr. Raney accepted fulltime employment with the USDA in 1955 and was transferred to Beltsville, Maryland.

Dr. R. H. Bruce who had been employed September 1, 1955 continued Soil Physics research on deep tillage and he initiated some

An Historical Sketch by C. Dale Hoover

carefully controlled experiments on the effect of varying levels of moisture on cotton yields by varying soil moisture levels at different morphological stages of growth with the use of plot shelters which automatically cover the plots while it is raining. The results are being published and further investigations this year involve corn.

Prior to 1950 Dr. H. W. Bennett, who was employed in 1935, had the overall responsibility of all research in forage and pasture crops. He was assisted in certain phases of the pasture work for short periods of time by R. E. O'Brien (1944—47) and Morris D. Finkner (1947—49) but it was not until 1950 that a position in pasture management as a distinct area of research was initiated.

Dr. Louis N. Wise was employed in March, 1950 to be the leader in the new area of Pasture Management research and to teach a course in pasture development. His early work was on Sod seeding in permanent sods as well as on a prepared seed bed. He also initiated some work on the establishment of fescue and on fescue-clover mixtures.

Dr. Wise soon became the leader of the Seed Technology program and therefore did not continue actively in pasture management research.

In addition to handling the Seed Technology Laboratory, Dr. Wise initiated a new program of research in turfgrasses in 1958. He published a book entitled "The Lawn Book" in 1961. W. R. Thompson, Jr. was employed in 1959 to take major responsibility for this important research program. This program has excited a great deal of interest among city dwellers interested in improving their lawns, Superintendents of golf courses, park managers and highway ditch bank maintenance men. Over sixty varieties and species of grasses are under test with various cutting and fertilization management treatments. This research program has lately been expanded to include cooperative research with the State Highway Department on Stabilization of highway ditch banks and fills. The work in pasture management has been handicapped by a too rapid turnover of personnel since Dr. Wise became leader of Seed Technology in 1952.

Dr. William S. McGuire joined the staff in 1952 as a replacement of Dr. Giles. He continued pasture management research including some further work on sod seeding. In January of 1956 he transferred to

An Historical Sketch by C. Dale Hoover

New Mexico and was succeeded in March of 1956 by Dr. Corwin M. Johnson of the State of Washington. Dr. Johnson completed the work in sod seeding, took an active part in the turf research program and conducted some studies on the growth habits of some annual summer grasses. In September 1961 he transferred to California. This vacancy will be filled later in the year by William R. Meredith who is completing his doctorate at Cornell University.

Dr. Coleman Y. Ward joined the staff July 1, 1961 to take overall charge of the research in pasture management and turfgrasses including cooperative work with the State Highway Department.

Mr. Sammy Simpson was employed in February, 1962 to place special emphasis on Highway ditch bank stabilization research. With the coming of William R. Meredith the department will have two men in pasture management, one in highway ditch bank stabilization, and one in turf grasses.

Following the establishment of the new area of pasture management in 1950, Dr. Bennett concentrated on forage crops breeding with some special emphasis on Dallisgrass. He released Chief a new variety of Crimson Clover in 1960. He has also obtained some new plants by crossing Johnson grass with sorghum resulting in varying types of plants having unusual grazing, hay and silage qualities. He is currently concentrating on grass breeding and improvement.

This area was also strengthened by the assignment of Dr. W. E. Knight to this department in 1951 to intensify our research here on Crimson Clover. He has done some of the most outstanding work in the country on cultural practices in Crimson Clover production and he has lately released a new variety known as Frontier.

Research was initiated in 1955 on grain sorghums adapted to humid conditions of the South. Dr. Norman C. Merwine was employed in September 1, 1955 to initiate this new work.

Rapid progress has been made toward the testing of all existing varieties having promise and the development and improvement of better varieties. A new hybrid to be known as FS 617 has lately been released.

Following the retirement of Mr. J. F. O'Kelly in 1958, Dr. Patricia A.

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Sarvelle was employed to fill a position as a geneticist and a cyto—geneticist. Her first work has been in the area of cytology working with cooperatively the cytologist at the Delta Branch Experiment Station and with some parallel problems on corn cooperatively with the corn breeder at the Central Station. Cytological investigations on other plants are anticipated.

Dr. James D. Lancaster, who joined the staff in 1951, was responsible for the improvement of existing methods and the development of new methods for use in the Soil Testing Laboratory. He made a significant contribution by developing an improved method for phosphorus determination and he made a thorough study of the procedure in use for the determination of potassium. Following the retirement of Dr. Roland Cowart in 1958, Dr. Lancaster took charge of an expanded program of nitrogen fertilization. Concurrently he uncovered the need and outlined the remedy for magnesium deficiency in cotton production in the Black Belt area of Mississippi. Dr. Lancaster has made another important discovery. He has identified and described a heretofore unrecognized boron deficiency in cotton in the upper part of the Hill Section of Mississippi. Increases of 1000 pounds of seed cotton per acre have been obtained from the addition of boron at the rate of 0.5 pounds per acre costing about 35¢ per acre. This can be considered one a major "breakthrough" in cotton fertilization during the past two years. Following the resignation of Dr. W. B. Andrews as leader of research on anhydrous ammonia in 1957 (?), Dr. Lancaster was asked to take charge of this work. He is also working on the development of a satisfactory nitrogen test for use in the Soil testing laboratory.

Dr. Lyle E. Nelson who was employed in 1952 has been working on sulfur with some emphasis on the organic sulfur fraction in Soils. He is also conducting some basic studies on lime.

Dr. Bill C. Wright who was employed in 1959 has charge of research on improvement of soil testing methods working closely with L. E. Gholston, Associate Extension Agronomist, in charge of the Soil Testing Laboratory. He is also conducting some investigations on lime to provide a getter method for determining lime needs in the soil testing laboratory. He is also conducting some basic research on the effect of varying levels of ammoniation of phosphate on the availability of the ammoniated phosphates in mixed fertilizers.

Dr. Wright is also in charge of Cooperative research with the TVA. He

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is ably assisted by J. L. Anthony who has been on the research staff in soils since 1940. Mr. Anthony has field tested practically all of the different kinds of phosphate fertilizers in fertilizer use and or those developed by TVA during the past two decades. The results of these investigations have made a very significant contribution to current recommendations involving phosphate for pastures and row crops. While Dr. L. E. Nelson was away for two years (1955—57) to accept a position at the University of the Philippines to help Cornell University fulfill its commitment for technical assistance to the Philippines, Dr. I. C. Tucker was employed to continue research started by Dr. Nelson in Soil Fertility. Before Dr. Nelson's two year tenure in the Philippines expired Dr. U. S. Jones accepted a position with Olin Matheson Chemical Corporation thus creating a vacancy which was filled by the return of Dr. Nelson in 1957.

Dr. U. S. Jones made two distinct contributions. He published Bulletin No. 503 entitled Phosphate Fertilizers and he did some good research on the response of certain crops to varying lime levels.

Dr. I. C. Tucker, who came in Feb. 1955 transferred to University of Arizona in August 1956. He was succeeded by Dr. L. E. DeMumbrum in Jan. 1956. Dr. DeMumbrum did some fundamental research on the identification of clay minerals in soils through a special arrangement for the use of X—ray equipment at the Waterways Experiment Station near Clinton, Mississippi.

This work proved so valuable that extra funds were allocated to the department for the purchase of an X—ray refractometer at a cost of approximately \$13,000. Shortly after the equipment had been installed (1958) Dr. DeMumbrum's scientific publications had attracted the attention of one of the Administrators in the USDA research center at Beltsville, Maryland with the result that Dr. DeMumbrum transferred to Beltsville in the fall of 1959.

Following Dr. Cowart's retirement July 1, 1958, Dr. R. C. Glenn was employed to initiate a new research project which required the use of the new X—ray refractometer. This project involves a study of the factors affecting "pan" formation in soils. Results from this project will be invaluable in obtaining more information on the genesis and morphology of soils having a genetic pan and useful information can be obtained on soils which have a man-made pan due to unnatural causes. Dr. V. E. Nash succeeded Dr. DeMumbrum the same year

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(Nov. 1, 1959) and he has been analyzing the clay fractions of soils to obtain additional information on the relationship of type of clay mineral to potassium fixation and release. It is now anticipated that the department will soon be in position to obtain Differential Thermal Analysis equipment with which to study amorphous materials in soils since these materials cannot be identified with X-rays.

The last area within the Soils division to be provided for was Soil Microbiology. Except for the work of Dr. C. F. Briscoe on legume inoculants in 1940 and prior, no research was carried out in Soil Microbiology until Dr. Boris J. Stojanovic joined the Soils staff in August of 1956. Dr. Stojanovic has been investigating the factors affecting the losses of nitrogen from Southern soils. A PhD. candidate is now pursuing graduate study with a major in Soil Microbiology under his direction.

Undergraduate Training in Agronomy

Since 1932 students could major in Agronomy for the first time.

There have been a number of B.S. degrees granted in Agronomy at Mississippi State University, in Agronomy, ____ in Crops, ____ in Seed Technology, and ____ in Soils.

The list of these graduates in this issue of "The Agronomist" is as complete as is known. Also their present occupation is given if known. Agronomy Alumni from Mississippi State University have truly distinguished themselves in a multitude of places throughout this country and in several foreign countries. In 1933 Soils and Crops courses were listed separately and a separate major in each area could be obtained. With the coming of Dr. Clarence Dorman in 1934 several additional courses in Soils were added.

However, the most significant addition to the curriculum occurred in 1950—51 when the curriculum now known as Agronomy-Seed Technology was set up. This curriculum was essentially one in Crops with eighteen semester hours of electives replaced with six required courses in Seed Technology — four of these are specialized seed

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courses in Agronomy and two are in Agricultural Engineering to cover the engineering and machine phases of seed production, harvesting, processing and storing.

A new curriculum in Agronomy - Grassland Management was also offered in 1950—51. This new curriculum consisted essentially of a major in Crops with an additional twelve semester hours in the animal sciences.

There have been a few changes in the curricula in Agronomy during the past few years. These changes in some cases have involved reducing the required hours for a major to eighteen with the requirement of more Chemistry and Botany for Crops Majors, more physics for Soil majors, and more mathematics for all majors. Along with these changes there has been a reduction in the required number of introductory courses formerly required in the sophomore year. A minimum of two courses in business has also become a requirement. The curriculum is under further study at this time. The major change now under consideration involves the offering of three options in each major—a Science, A Business and a Production option.

Graduate Training in Agronomy

In academic year 1951—52 President Mitchell asked each department to make a self-evaluation study of their graduate training program. As a result of this study, it was determined that the Agronomy Department was qualified to offer the Ph.D. degree. Accordingly, the Board of Trustees of Institutions of Higher Learning in Mississippi approved the department for offering the Doctorate. During the next ten years the first twelve Ph.D. degrees awarded by Mississippi State University were obtained in Agronomy. Mississippi State University has awarded a total of fourteen Ph.D. degrees as of this date.

The department now has twelve candidates for the Ph.D. degree with a total enrollment of twenty—nine.

The department has been awarded ten National Defense Education Act (NDEA) fellowships (4 beginning in 1959—60, 4 beginning in 1960-61, 2 beginning in 1961-62) to support graduate students who could qualify as Ph.D. candidates. These fellowships pay the student \$2000.00 the first year, \$2200.00 the second year, and \$2400.00 the third year of graduate study plus \$400.00 per year for each dependent. The Institution pays tuition from a possible maximum of

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\$2500 per student per year which amount may be received by proper justification of the additional costs to the Institution. These fellowships have strengthened the graduate program and have resulted in an increase in the number of graduate students majoring in Agronomy. In 1951—52 or thereabouts a Professional degree in Agriculture, called Master of Agriculture was approved. This provides broad training in Agricultural subject matter with a non-thesis option for teachers of Vocational Agriculture and County Agents. Therefore most of the Master of Agriculture degrees are awarded to Agricultural Education Majors. Nine such degrees have been awarded with a major in Agronomy.

The first person to receive an M.S. degree in Agronomy was Ide P. Trotter. Since that time a total of 103 M.S. degrees have been awarded in Agronomy. It is not known exactly how many of these continued their graduate study and received the Ph.D. degree, but a number of them did complete their doctoral degree with distinction.

Dr. Ide P. Trotter, the first M.S. graduate, was dean of the Graduate School at Texas A & M College for a number of years prior to his retirement.

Dr. Russell Coleman became Director of the Mississippi Agricultural Experiment Station, President of the National Fertilizer Association for about eleven years and for the past several years he has been president of an international organization, the Sulfur Institute. Dr. R. J. Laird is in charge of Soil Fertility research in Mexico for the Rockefeller Foundation. His brother Kermit Laird completed his M.D. degree and is an eminent Doctor in Starkville, Mississippi. Dr. Walter K. Porter, Jr. is now Superintendent of the Delta Branch Experiment Station and Dr. W. B. Andrews who has been rightly called "the father of Anhydrous Ammonia" is on the technical staff of the Mississippi Chemical Corporation, Yazoo City, Mississippi.

The list of distinguished alumni is too long to review here. Many of these can be noted by referring to the list of alumni elsewhere in this issue of "The Agronomist".

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Honors and Achievements of the Staff

On the basis of the records reviewed for this report the following members of the Agronomy Staff were honored or achieved distinction as indicated below.

Administrators of the Department

1. Professor N. H. Perkins was the first Professor of Agronomy in 1905. He had been an Associate Chemist.
2. Dr. James O. Morgan became Professor of Agronomy 1909—11.
3. Professor W. L. Hutchinson, chemist, Professor of Agronomy 1911.
4. Professor J. C. Robert, Professor of Agronomy in 1912-21.
5. Dr. A. D. Suttle, Professor of Agronomy 1921.
6. Dr. H. B. Brown was Vice Director and Chief in Agronomy in 1921-22.
7. Dr. J. H. Hicks, Agronomist (Experiment Station) 1910—22, Chief of Agronomy in 1922.
8. J. F. O'Kelly, Head of the Agronomy Department of the Experiment Station, 1932.
9. Dr. Clarence Dorman acting Head of the new Soils Department in 1934. Assistant Director and Chief in Agronomy, 1935; Director 1939—47.
10. J. F. O'Kelly Head of Agronomy Department 1942-46.
11. Dr. C. Dale Hoover, Head, July 1, 1946. He has held this position continuously since 1946.

Promotions of Staff to Administrative Positions Outside the Department

The following have become Deans and/or Directors or Department Heads.

1. N. H. Perkins
2. J. H. Ricks
3. W. L. Hutchinson
4. J. C. Robert
5. Russell Coleman
6. U. S. Jones (Department Head Clemson College)
7. William L. Giles
8. N. A. Haney (In charge of Soil Physics Research of a Division in USDA)
9. Louis N. Wise

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10. Rollin Glenn
11. Coleman Y. Ward
12. Boris J. Stojanovic

Chapter 2

A Narrative History of the Agronomy Department at Mississippi State University

C.Dale Hoover, Professor and Head Emeritus, Deceased

Agriculture was one of the original divisions of Mississippi State University when A. & H. College opened on October 6, 1880 with 354 students. Although it was nearly twenty five years before the first Agronomist was appointed, the department of Scientific and Practical Agriculture and Horticulture, as it was called, taught some agronomic subject matter and some of the earliest research dealt with field crops and soils.

The first two departments to be established within agriculture were the departments of Horticulture and a Farm department in 1882. A professorship in Dairy Husbandry was set up in 1884.

The Mississippi Agricultural Experiment Station was established in 1888 with S. M. Tracy as Director, a position which he held until succeeded by L. Hutchinson 1897. The first experiment station staff consisted of B. Irby, M.S. Agriculturist; B. R. Lloyd; J. H. Connell, Assistant Agriculturist; A. B. McKay, B. S. Horticulturist D. L. Phares, H. D. Veterinarian; J. A. Myers, A. H. Chemist, B. Von Herff, Ph.D. Assistant Chemist, and T. F. Watson, treasurer.

The first person employed having specialized training in plant science appears to be J. H. White; N. S. listed on the experiment station staff in 1891 as Assistant Botanist. His tenure ended before 1893 and it was not until 1897 that G. W. Herrick, another Botanist was employed. He was also an Entomologist. In 1898 J. S. Moore was employed as Assistant Botanist and meteorologist.

E. R. Lloyd who was listed on the original Experiment Station Staff as Assistant Agriculturist probably had considerable training in Crops as his second publication (1892) was a bulletin entitled "Varieties of Corn" and his next bulletin published in the same year was entitled "Grasses and Forage Plants".

It is of interest to note that in 1888 the Station started a series of experiments with grasses and forage plants and during the next seven years 586 species were grown. By the use of the results obtained it was noted that in 1895 the average yield of hay had increased from 0.83 ton per acre in 1880 to 1.95 tons per acre in 1895. This was 84

A Narrative History of the Agronomy Department

per cent above the U. S. average and 114 per cent above the average yield in the Northern and Central States of the Mississippi Valley.

While Botanists were doing the early research work in crops, chemists were conducting research on soils. For example, Bulletin 29, 1894 by W. L. Hutchinson, chemist, was titled "Exhaustion and Restoration of Soil Fertility; Fertilizers and Their Use", and in 1901 he published Bulletin 66 entitled "Soils of Mississippi: Plant Food and Productiveness".

The first mention of Agronomy in the college catalogs was in the 1904—5 issue. It is listed on page 69 thus "Agronomy" see Agriculture. Specific courses relating to Agronomy were listed for the first time. These were : (2) Farm Crops—Selecting and testing seed judging corn and other grains; and studying the more important forage plants — Professor Perkins. (5) Farm Crops — the study of cereals and fiber crops, etc. — Professor Perkins. (6) Principles of Breeding — A study of the laws of heredity — Professor Lloyd. (7) Soils and Fertilizers — A study of the origin and formation of soils, etc. — Professor Perkins.

Professor W. R. Perkins who had previously been Associate Chemist became the first Professor of Agronomy in 1905 and Agronomy was referred to as a department for the first time although students could not major in agronomy until 1932. Five courses were offered. These were: (2) Farm Crops, (3) Farm Implements and Drainage, (5) Soils and Fertilizers, and (10) Soil Physics.

In the year 1906—7 H. S. Nichols was a Fellow in Agronomy. Presumably he was the first to do graduate work in Agronomy.

In 1908 J. R. Ricks was added to the teaching staff in Agronomy as acting Professor of Agronomy and a position (unfilled) as assistant professor was set up. Twelve courses were listed and there was a reference to graduate work principally in soils. The courses were: (1) Farm Crops, (2) Soil Physics, (4) Farm Management, (5) Farm Crops — Cultivated Crops — Forage Plants, (6) Agricultural Soils, (7) Soil Fertility, (8) Soil Fertility, (9) Grasses and Forage Crops, (10) Cotton and Cotton by—Products, (11) Advanced Soil Physics, and (12) Farm Management. Thus the Agronomy department had grown to three positions, W. R. Perkins, J. R. Ricks, and an unfilled position.

Annual reports of the Experiment Station were discontinued during

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the period 1911—20 and therefore some information is missing covering this ten year period.

J. W. Fox succeeded W. L. Hutchinson as Director in 1911. Two years later B. R. Lloyd became Director a position which he held until he was succeeded by J. R. Ricks in 1919.

Perkins resigned in the year 1909—10 and Dr. James O. Morgan became the Professor of Agronomy with J. R. Ricks as Associate Professor and Agronomist. Dr. Morgan resigned in 1911 and was succeeded by Professor W. L. Hutchinson, a chemist. J. W. Fox was Director and Agronomist. Thus, Fox, Hutchinson and Ricks made up the Agronomy Department in 1911.

Dr. J. C. Robert became Professor of Agronomy in 1912. With him were Associate Professor Critz, J. T. West and J. R. Ricks, Agronomist.

In 1914 J. C. Robert became Director of the School of Agriculture and Professor of Agronomy and J. T. West was an Instructor in Agronomy.

By 1914 there were 12 departments (all of them did not have a complete curriculum) in the School of Agriculture, but all students took the same courses until the last two quarters of their senior year.

G. G. Snow and A. D. Suttle were added in 1915 thus giving five in Agronomy including J. R. Ricks, Agronomist (Experiment Station).

More courses in Agronomy were added with separate course listings for the laboratory sections of all courses. The course offerings were as follows: 1. Field crops; 2. Field Crops Laboratory; 3. Soils; 4. Soils Laboratory; 5. Forage Crops; 6. Forage Crops Laboratory; 7. Soil Management; 8. Soil Management Laboratory; 9. Fiber Crops; 10. Fiber Crops Laboratory; 11. Seed Selection and Improvement; 12. Seed Selection Laboratory; 13. Grain Crops; 14. Grain Crops Laboratory; 15. Farm Manures; 16. Farm Manures Laboratory; 17. Soil Fertility and Perm. Agric.; 18. Soil Fertility and Penn. Agric. Laboratory; 19. Plant Breeding; 20. Plant Breeding Laboratory; 21. Meadows and Pastures; 22. Meadows and Pastures Laboratory; 23. First Principle of Soil Fertility; 24. First Principle of Soil Fertility Laboratory; 25. Elements of Agriculture 26. Elements of Agriculture Laboratory; 27. Forage Crops; 28. Forage Crops Laboratory; 29. Graduate minor in Agronomy; 30. Graduate Major in Agronomy.

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In 1916 A. D. Suttle was an Instructor in Botany leaving Robert, West and Snow in Agronomy.

Plant breeders were listed separately in the annual Experiment Station reports for several years after the first plant breeder was employed. E. C. Ewing, B.A. M, Science was employed in 1910 as the first plant breeder. He was succeeded in 1915 by Dr. H. B. Brown who became a very outstanding cotton Breeder. In 1921 he was Plant Breeder, Vice Director and Chief in Agronomy. Dr. Brown was succeeded as cotton breeder by J. F. O'Kelly in 1921. J. R. Ricks succeeded Dr. Brown as Chief in Agronomy in 1922. A Mr. Gracy was added to the teaching staff for two years beginning in 1919.

Associate Professor Burg, Mr. Cork and Mr. Bedenbaugh were added in 1920.

Dr. J. C. Robert continued as Professor of Agronomy until 1921) when Dr. A. D. Suttle was listed as Professor of Agronomy assisted in teaching by Mr. Burg, and Mr. Cork.

In the meantime J. R. Ricks who had continued as Agronomist since 1910 became Director of the Experiment Station in 1919. He also became Chief in Agronomy in 1922 a position which he held until 1932 when J. F. O'Kelly was made Head of the Agronomy Department of the Experiment Station and W. R. Perkins became Director.

In 1923 the Agronomy Department consisted of J. C. Robert, Mr. Burg, Mr. Cork and Mr. Carson as teachers and J. R. Ricks, Chief, J. F. O'Kelly and Roland Cowart as researchers.

Dr. Suttle returned to Agronomy in 1924 as Professor of Agronomy and with Associate Professor Burg and Assistant Professor Cork six courses were taught.

Though little research was done by people known as Agronomists during the first third of a century (1888—1922) a review of the 215 bulletins, 11 technical bulletins, 47 circulars and 18 miscellaneous circulars shows clearly that by far the greatest amount of work was done on cotton although J. W. Bailey stated in Bulletin 216, "a mule breeding experiment attracted more attention than any other experiments of an agricultural nature that have been conducted in

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the South”.

When all publications bearing on agronomy are considered there were 29 bulletins on cotton, 27 on fertilizers, over half of which were reports of chemical analyses of fertilizers; 10 bulletins on soils, 7 on corn, 6 on pasture and or forages, and 1 on small grains. In addition there were 9 circulars on cotton, 3 on corn and 1 on forages during the same period.

Mr. C. B. Anders joined the Agronomy Department in 1927 as the third Specialist in Soils. (Bourg & Cowart were the first two). The next year W. W. Hull was added.

Thus in 1929 the teaching staff consisted of Dr. A. D. Suttle, Professor, Associate Professor Burg, and Assistant Professor Welborn. The Experiment Station Agronomy Staff consisted of J. It. Ricks, Chief aid Director; J. F. O’Kelly, C. B. Anders. W. W. Hull ~with Roland Cowart on leave and W. A. Templeton as Farm Foreman • Thus the total staff added up to eight.

In 1930 Assistant Professor West succeeded Burg in teaching and W. B. Andrews joined the Experiment Station as the fourth soils man. (Burg, Cowart and Anders preceded) and Dr. Roland Cowart returned from leave as Associate Agronomist. Anders was on leave during 1930 and 1931.

It was not until 1932 that the college catalog set forth a curriculum for students majoring in Agronomy. The other departmental majors at that time were General Agriculture, Agricultural Education, Agricultural Engineering, Dairying and Horticulture. There were no courses listed in the 1931 college catalog due to a shortage of funds. The Experiment Station staff was also omitted from the catalog. In 1932—33 the research staff in Agronomy was made up of J. F. O’Kelly, C. B. Anders, on leave, W. W. Hull, W. B. Andrews, Dr. Roland Cowart and the teaching staff of Professors Suttle and E. H. Bailey.

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Courses were renumbered and soil courses were listed separately for the first time.

The course listings were:

Crops: Ag 203 Crops, Ag 504 Genetics, Ag 513 Forage and

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Pasture Crops, Ag 523 Experimental Information, Ag 723 Cotton Production, Ag 833 Cotton Classing, Ag 843 Plant Breeding, Ag 791—891 Seminar, Ag 900 Research.

Soils: Ag 344 Soils, Ag 603 Fertilizers and Manures, Ag 803 Soil Management, Ag 743 Soil Technology, Ag 812 Soil Genesis and Classification.

The appointment of Clarence Dorman as acting Head of the Soils Department in 1934 marked the beginning of the Soils division of the Department. When Dr. Dorman came, C. B. Anders and W. B. Andrews were on leave. In this year C. R. Owen joined the Crops division of the Department. The teaching staff consisted of Dorman, Suttle and Bailey. Two new soils courses, Ag 873 Soil Fertility and Ag ~23 Soil Erosion, and one new Crops course — Ag 753 Commercial Grading aid Identification of field crops were added. J. F. O'Kelly and C. R. Owen were full-time researchers.

In the next year, Dr. Dorman became Assistant Director and Chief in Agronomy. H. W. Bennett was added in Crops research and G. D. Green in Crops Teaching. Thus, the staff in 1935 was made up of Dr. Clarence Dorman, Assistant Director and Chief in Agronomy; Professor A. D. Suttle, Associate I. E. Miles, and Asst. G. D. Green in teaching and in research H. W. Bennett, J. F. O'Kelly and W. A. Templeton as Farm Foreman.

The same staff continued in 1936. Course offerings in soils were expanded to include Ag 913 Advanced Course in Soil Classification, Ag 923 Soil Physics, Ag 933 Soil Chemistry, and Ag 943 Soil Fertility. These additions were made to strengthen graduate training in Soils. By 1937, the Department was showing signs of marked expansion. Two courses were added Ag 953 Soil Microbiology and Ag 853 Green Manure Crops. H. B. Vanderford aid Russell Coleman were added to the soils staff making a total of ten staff members in Agronomy teaching and research.

In 1938, Dr. Roland Cowart returned from the Delta Station where he had been located for approximately 6 years. Several courses were added to strengthen the graduate program in Crops. These were: Ag 963 Advance Field Crops, Ag 973 Cotton Research, Ag 983 Plant Breeding, and ag 993 Experimental Information.

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In this year the title of the administrator of Agronomy was changed to Head, Department of Agronomy. Dr. Dorman held this title and became acting Director of the Experiment Station following the death of Director J. R. Ricks in 1938. Dr. Dorman became Director in 1939 and he continued as Head of the Department until 1942 when J. F. O'Kelly was named Head of the Department. (Crops and Soils).

Dr. C. Dale Hoover joined the staff as an Associate in Soils in 1939 and C. B. Owens and Russell Coleman took leave to do graduate work. The number on the staff stood at 11 with two on leave. Owens returned in 19110 and Dr. C. F. Briscoe was named Assistant in Soil Bacteriology on the Experiment Station Staff. Also, Dr. Peter G. Hogg was added to the Crops Division to fill a position in Forage Crops breeding. He held this position for about two years. C. B. Owen transferred to Louisiana State University in 19111 and the work on corn was continued by Wayne Freeman. In 1911.1, there were five additions to the Soils Staff. J. L. Anthony became Assistant in Soils and four soil surveyors were added.

A Soil Survey law was passed by the state legislature in 1940. This law authorized counties to levy one-half mill on real property to provide funds for cooperating with the Experiment Station on a Soil Survey of the county. The first county to be surveyed was Tunica and the first four soil surveyors employed were: Thomas Fowlkes, 3. A. Herren, L. A. Davidson, and C. G. Morgan. Mr. Fowlkes was the leader of the party under the general supervision of Dr. H. B. Vanderford. This new program was soon interrupted by World War II. By 1942, all four of the soil surveyors were on military leave, which kept them away until 1946. Apart from military leaves and some temporary transfers from Botany and Agricultural Engineering, there were few changes in personnel during the period 1911.2_11.6. A full story of the further development of the Soil Survey program is given under the "Soil Survey Story In Mississippi" by H. B. Vanderford in this issue of "The Agronomist".

Dr. G. W. Johnston of the Botany Department was employed 1911.2_46 as Assistant Agronomist in Crops and. Felix Edwards of the Agricultural Engineering Department was assigned to Agronomy

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(1945) to design and make equipment for the direct application of anhydrous ammonia into the soil as a much cheaper source of nitrogen fertilizer.

B. E. O'Brien joined the Crops Staff in 1911.11. and continued with the Department for about four years after which he resigned to go into business at Belzoni, Mississippi. G. D. Green accepted employment with the U.S.D.A. during the war period returning to full-time teaching in Crops in 1946.

In 1943, Wayne Freeman joined the U.S.D.A. and was transferred from Mississippi to another location. & Dr. B. C. Eckhardt was transferred from Knoxville, Tennessee to Mississippi by the U.S.D.A. to take charge of the hybrid corn research program which was destined, to be one of the most productive programs in the Crops division of the Department.

Dr. R. C. Eckhardt was one of the first scientists to incorporate the restorer factor in male sterile lines of corn. Before his untimely death in 1959 he was recognized as one of the leaders in his field. He was succeeded by Dr. C. O. Grogan (1959) who was transferred by the U.S.D.A. from the Missouri Agricultural Experiment Station.

Dr. Grogan has been concentrating on basic investigations relating to the characteristics of the most promising inbred lines of corn. One potentially important discovery he has made is the fact that some of the Inbred lines in Mississippi are much higher in Xanthophylls than any other lines in this country. Since this material will meet the requirements of poultry feed to cause the desired yellow pigmentation in broilers the possibility of hybrid corn high in Xanthophylls has tremendous possibilities.

Dr. Russell Coleman became Associate Director in ~.911.5 after having completed some outstanding research on Soil Phosphorus and Clay Minerals. His first major assignment was to locate new or enlarged. branch Experiment Stations in the Central or lower Brown Loam area, the Coastal Plains area, the Northern part of the Brown Loam area, the Lower Coastal Plains area, and. later the Pontotoc Ridge-Flatwoods soil area. He and Director Dorman set-up three criteria as a guide in locating these new Stations:

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J. F. O'Kelly; B. E. O'Brien; H. D. Bunch; * 11. V. Jordan; *R. C. Eckhardt; J. G. Hammons; J. L. Anthony; S. L. Wedgorth (11.5_47); F. B. Edwards; Dr. G. W. Johnston; Dr. H. W. Bennett; Dr. J. F. Locke *U.S.D.A. With the availability of more federal funds due to the passage of the Research and Marketing Act of 1911.6~47 and an increase of approximately 40 percent in the research budget from the State Legislature in 1911.8, the Department had opportunity to expand.

Dr. U. S. Jones was employed as a Soil Chemist in 1947. In March of 1911.7, Dr. W. B. Andrews and his Associates were responsible for a revolutionary finding -- the use of anhydrous ammonia as a source of nitrogen fertilizer. As a result anhydrous ammonia is today by far the leading source of nitrogen for direct soil application in this country. It is now used in 11.1 states, and several foreign countries. This discovery had a direct bearing on the establishment of the Mississippi Chemical and the Coastal Chemical Corporations which have a combined value of about 11.0 million dollars. The annual returns from this one research project continue to greatly exceed the annual cost of operating all Departments and divisions of Mississippi State University.

With the employment of Dr. Darrell G. Wells, February, 1949, a new program of research in small grain breeding and improvement was initiated. This program has developed into one of the strongest small grain improvement programs in the South. Dr. Wells has released Explorer a new and improved variety of rye for winter grazing and Pace a greatly improved variety of barley and he has several promising varieties of soft winter wheat nearly ready for release. Unfortunately for this program, Dr. Wells resigned in March of this year to accept a position at South Dakota State College, his native state. This position has not been filled as of this date. (April, 1962)

It was also in 1949 that Woodrow Marchbanks from Texas joined the staff as an instructor in Crops. He later became the first Ph.D. to be graduated from Mississippi State University. He completed the degree in January 1953. The degree was awarded in May 1953.

Dr. W. J. Drapala and Dr. William L. Giles were also employed in 1949. Dr. Drapala expanded the graduate course offerings in statistics and.

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he has served since his original appointment as half time Experiment Station Statistician. His advisory assistance is available to all project leaders of the Experiment Station.

Dr. Giles was employed as a forage crops breeder but within about one year he was asked to take overall responsibility for what is now known as the Seed Technology Laboratory. Within about one more year (January 1952) he became Superintendent of the Delta Branch Experiment Station, a position which he held with distinction until he returned to Mississippi State University, February 1, 1961, as Vice President for Agriculture and Forestry.

Dr. I. B. Miles returned from North Carolina to Mississippi State University July 1, 1939, as Leader in Extension Agronomy. He resigned from Agronomy in 1939 to accept an appointment with the North Carolina Department of Agriculture in charge of what became recognized as one of the best soil testing programs in the United States. He became a member of the teaching staff and the Director of the newly organized Soil Testing Laboratory. The Soil Testing Service which had been initiated a few years earlier in the Experiment Station was reorganized. The Soil Testing Service was handled by Dr. I. E. Miles in Extension Agronomy and the research on soil testing methods by the Soils Department of the Experiment Station. The Soil Testing Service has continued to be handled jointly by the Mississippi Agricultural Extension Service and the Mississippi Agricultural Experiment Station since the program was reorganized in 1948.

Two significant and far reaching developments occurred in 1950. The Seed Technology Laboratory was set up in the old Textile Building to carry out research and training in Seed Technology. This research and training program has attracted worldwide attention and acclaim. Those who have guided the destiny of this unique program and facility may well be proud of the contribution this laboratory has made and is now making to the Seedsmen of the United States and the World. Those directly connected with the program were the late Obey Easley of the Agricultural Engineering Department during the first year, 1950, Dr. W. I. Giles, 1950-51, Dr. L. N. Wise, 1952-1961, and Dr. H. D. Bunch since February 1, 1961.

The full story of the development of this phase of Agronomy is given in "The Seed Technology Story in Mississippi" as a part of this issue of "The Agronomist."

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The second significant and far reaching development which began in 1950 was the initiating of the Doctoral graduate training program in Agronomy.

The Department awarded the first twelve doctorates given by Mississippi State University, six to foreign students (three from India, one from Pakistan, one from Korea, and one from Egypt) and six to students in this country. The six United States citizens are Woodrow W. "Si" Marchbanks, deceased, Drs. Norman C. Merwine and H. D. Bunch, both members of our staff, Dr. Elvis R. Beaty, University of Georgia, and Dr. John B. Rice, Secretary of the North Carolina Seed Improvement Association. Among the thirty graduate students now enrolled, twelve are potential candidates for the Ph.D. degree.

On July 1, 1958 the Department employed Dr. W. A. Baney as the first Soil Physicist. His first research project was an intensive investigation of the potential of all of the commercially available soil conditioners to determine the possibility of improving the physical structure of soils on an economic basis. The results for the most part were negative when economics were considered despite claims of advertisers to the contrary.

The second project in Soil physics research was on deep tillage. These investigations were very productive of useful information, especially on certain soils of the Delta where increases of approximately 1000 pounds seed cotton per acre were obtained for deep tillage.

Dr. Raney accepted fulltime employment with the U.S.D.A. in 1955 and was transferred to Beltsville, Maryland.

Dr. R.R. Bruce who had been employed September 1, 1955 continued Soil Physics research on deep tillage and he initiated some carefully controlled experiments on the effect of varying levels of moisture on cotton yields by varying soil moisture levels at different morphological stages of growth with the use of plot shelters which automatically cover the plots while it is raining. The results are being published and further investigations this year involve corn.

Prior to 1950 Dr. H. W. Bennett, who was employed in 1935, had the overall responsibility of all research in forage and pasture crops. He was assisted in certain phases of the pasture work for short periods

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of time by B. E. O'Brien (1944-47) and Norris D. Finkner (1947-49) but it was not until 1950 that a position in pasture management as a distinct area of research was set up.

Dr. Louis N. Wise was employed in March 1950 to be the leader in the new area of Pasture Management research and to teach a course in pasture development. His early work was on Sod seeding in permanent sods as well as on a prepared seed bed. He also initiated some work on the establishment of fescue and on fescue-clover mixtures.

Dr. Wise soon became the leader of the Seed Technology program and therefore did not continue actively in pasture management research.

In addition to handling the Seed Technology Laboratory Dr. Wise initiated a new program of research in turf grasses in 1958. He published a book entitled "The Lawn Book" in 1961. W. B. Thompson, Jr. was employed in 1959 to take major responsibility for this important research program. This program has excited a great deal of interest among city dwellers interested in improving their lawns, Superintendents of golf courses, park managers and highway ditch bank maintenance men. Over sixty varieties and species of grasses are under test with various cutting and fertilization management treatments. This research program has lately been expanded to include cooperative research with the State Highway Department on stabilization of highway ditch banks and fills.

The work in pasture management has been handicapped by a too rapid turnover of personnel since Dr. Wise became leader of Seed Technology in 1952.

Dr. William S. McGuire joined the staff in 1952 as a replacement of Dr. Giles. He continued pasture management research including some further work on sod seeding. In January of 1956 he transferred to New Mexico and was succeeded in March of 1956 by Dr. Corwin M. Johnson of the State of Washington. Dr. Johnson completed the work in sod seeding, took an active part in the turf research program and conducted some studies on the growth habits of some annual summer grasses. In September 1961 he transferred to California. This vacancy will be filled later in the year by William B. Meredith who is completing his doctorate at Cornell University.

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Dr. Coleman Y. Ward joined the staff July 1, 1961 to take overall charge of the research in pasture management and turfgrasses including cooperative work with the State Highway Department.

Mr. Sammy Simpson was employed in February, 1962 to place special emphasis on Highway ditch bank stabilization research. With the coming of William B. Meredith the department will have two men in pasture management, one in highway ditch bank stabilization, and one in turfgrasses.

Following the establishment of the new area of pasture management in 1950, Dr. Bennett concentrated on forage crops breeding with some special emphasis on Dallisgrass. He released Chief a new variety of Crimson Clover in 1960. He has also obtained some new plants by crossing Johnson grass with sorghum resulting in varying types of plants having unusual grazing, hay and silage qualities. He is currently concentrating on grass breeding and improvement.

This area was also strengthened by the assignment of Dr. W. E. Knight to this department in 1951 to intensify our research here on Crimson Clover. He has done some of the most outstanding work in the country on cultural practices in Crimson Clover production and he has lately released a new variety known as Frontier.

Research was initiated in 1955 on grain sorghums adapted to humid conditions of the South. Dr. Norman C. Merwine was employed in September, 1955 to initiate this new work.

Rapid progress has been made toward the testing of all existing varieties having promise and the development and improvement or better varieties. A new hybrid to be known as RS 617 has lately been released.

Following the retirement of Mr. J. F. O'Kelly in 1958, Dr. Patricia A. Sarvella was employed to fill a position as a geneticist and a cytogeneticist. Her first work has been in the area of cytology working cooperatively with the cytologist at the Delta Branch Experiment Station and with some parallel problems on corn cooperatively with the corn breeder at the Central Station. Cytological investigations on other plants are anticipated.

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Dr. James D. Lancaster who joined the staff in 1951, was responsible for the improvement of existing methods and the development of new methods for use in the Soil Testing Laboratory. He made a significant contribution by developing an improved method for phosphorus determination and he made a thorough study of the procedure in use for the determination of potassium. Following the retirement of Dr. Roland Cowart in 1958 Dr. Lancaster took charge of an expanded program of nitrogen fertilization. Concurrently he uncovered the need and outlined the remedy for magnesium deficiency in cotton production in the Black Belt area of Mississippi. Dr. Lancaster has made another important discovery. He had identified and described a heretofore unrecognized boron deficiency in cotton in the upper part of the Hill Section of Mississippi. Increases of 1000 pounds of seed cotton per acre have been obtained from the addition of boron at the rate of 0.5 pound per acre costing about 35¢ per acre. This can be considered one of the major "break throughs" in cotton fertilization during the past two years. Following the resignation of Dr. W. B. Andrews as leader of research on anhydrous ammonia in 1957, Dr. Lancaster was asked to take charge of this work. He is also working on the development of a satisfactory nitrogen test for use in the Soil Testing Laboratory.

Dr. Lyle B. Nelson who was employed in 1952 has been working on sulfur with some emphasis on the organic sulfur fraction in soils. He is also conducting some basic studies on lime.

Dr. Bill C. Wright who was employed in 1959 has charge of research on improvement of soil testing methods working closely with L. B. Gholston, Associate Extension Agronomist, in charge of the Soil Testing Laboratory. He is also conducting some investigations on lime to provide a better method for determining lime needs in the soil testing laboratory. He is also conducting some basic research on the effect of varying levels of ammoniation of phosphate on the availability of the ammoniated phosphates in mixed fertilizers.

Dr. Wright is also in charge of cooperative research with the T.V.A. He is ably assisted by J. L. Anthony who has been on the research staff in soils since 1940. Mr. Anthony has field tested practically all of the different kinds of phosphatic fertilizers in fertilizer use and or those developed by T.V.A. during the past two decades. The results of these investigations have made a very significant contribution to current recommendations involving phosphate for pastures and row crops.

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While Dr. L. B. Nelson was away for two years (1955-57) to accept a position at the University of the Philippines to help Cornell University fulfill its commitment for technical assistance to the Philippines, Dr. I. O. Tucker was employed to continue research started by Dr. Nelson in Soil Fertility. Before Dr. Nelson's two year tenure in the Philippines expired Dr. U. S. Jones accepted a position with Olin Mathieson Chemical Corporation thus creating a vacancy which was filled by the return of Dr. Nelson in 1957.

Dr. U. S. Jones made two distinct contributions. He published Bulletin No. 503 entitled Phosphate Fertilizers and he did some good research on the response of certain crops to varying lime levels.

Dr. I. C. Tucker who came in February 1955 transferred to the University of Arizona in August 1956. He was succeeded by Dr. L. B. De Mumbrum in January 1956. Dr. De Mumbrum did some fundamental research on the identification of clay minerals in soils through a special arrangement for the use of X-ray equipment at the Waterways Experiment Station near Clinton, Mississippi.

This work proved so valuable that extra funds were allocated to the department for the purchase of an X-ray refractometer at a cost of approximately \$13,000. Shortly after the equipment had been installed (1958) Dr. DeMumbrum's scientific publications had attracted the attention of one of the Administrators in the U.S.D.A. research center at Beltsville, Maryland with the result that Dr. DeMumbrum transferred to Beltsville in the fall of 1959.

Following Dr. Cowart's retirement July 1, 1958, Dr. R. C. Glenn was employed to initiate a new research project which required the use of the new X-ray refractometer. This project involves a study of the factors affecting "pan" formation in soils. Results from this project will be invaluable in obtaining more information on the genesis and morphology of soils having and a genetic pan/useful information can be obtained on soils which have a man-made pan due to unnatural causes. Dr. V. E. Nash succeeded Dr. DeMumbrum the same year (November 1, 1959) and he has been analyzing the clay fractions of soils to obtain additional information on the relationship of type of clay mineral to potassium fixation and release. It is now anticipated that the department will soon be in position to obtain Differential Thermal Analysis equipment with which to study amorphous mate-

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rials in soils since these materials cannot be identified with X—rays.

The last area within the Soils division to be provided for was Soil Microbiology. Except for the work of Dr. C. F. Briscoe on legume inoculants in 1940 and prior, no research was carried out in Soil Microbiology until Dr. Boris J. Stojanovic joined the Soils staff in August of 1956. Dr. Stojanovic has been investigating the factors affecting lose of nitrogen from Southern soils. A Ph.D. candidate is now pursuing graduate study with a major in Soil Microbiology under his direction.

Undergraduate Training in Agronomy

Since 1932 students could major in Agronomy for the first time. (The first person to graduate with a major in Agronomy was _____. There have been approximately _____ B.S. degrees granted in Agronomy at Mississippi State University, _____ in Agronomy, _____ in Crops, _____ in Seed Technology, and _____ in Soils.

The list of these graduates in this issue of "The Agronomist" is as complete as is known. Also, their present occupation is given if known. Agronomy Alumni from Mississippi State University have truly distinguished themselves in a multitude of places throughout this country and in several foreign countries.

In 1933 Soils and Crops courses were listed separately and a separate major in each area could be obtained. With the coming of Dr. Clarence Dorman in 1934, several additional courses in Soils were added.

However, the most significant addition to the curriculum occurred in 1950—51 when the curriculum now known as Agronomy—Seed Technology was set up. This curriculum was essentially one in Crops with eighteen semester hours of electives replaced with six required courses in Seed Technology — four of these being specialized seed courses in Agronomy and two in Agricultural Engineering to cover the engineering and machine phases of seed production, harvesting, processing and storing.

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A new curriculum in Agronomy — Grassland Management was also offered in 1950—51. This new curriculum consisted essentially of a major in Crops with an additional twelve semester hours in the animal science.

There have been a few changes in the curricula in Agronomy during the past few years. These changes in some cases have involved reducing the required hours for a major to eighteen with the requirement of more Chemistry and Botany for Crops Majors, more physics for Soils majors, and more mathematics for all majors. Along with these changes there has been a reduction in the required number of introductory courses formerly required in the sophomore year. A minimum of two courses in business has also become a requirement. The curriculum is under further study at this time. The major change now under consideration involves the offering of three options in each major—a Science, A Business and a production option.

Graduate Training in Agronomy

In academic year 1951—52 President Mitchell asked each department to make a self—evaluation study of their graduate training program. As a result of this study it was determined that the Agronomy Department was qualified to offer the Ph.D. degree. Accordingly, the Board of Trustees of Institutions of Higher Learning in Mississippi approved the department for offering the Doctorate. During the next ten years the first twelve Ph.D. degrees awarded by Mississippi State University were obtained in Agronomy. Mississippi State University has awarded a total of fourteen Ph.D. degrees as of this date.

The department now has twelve candidates for the Ph.D., degree with a total enrollment of twenty—nine.

The department has been awarded ten National Defense Education Act (NDEA) fellowships (4 beginning in 1959—60, 4 beginning in 1960—61, 2 beginning in 1961—62) to support graduate students who could qualify as Ph.D. candidates. These fellowships pay the student \$2,000.00 the first year, \$2,200.00 the second year, and \$2,400.00 the third year of graduate study plus \$400.00 per year for each dependent. The Institution pays tuition from a possible maximum of \$2,500 per student per year which amount may be received

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by proper justification of the additional costs to the Institution. These fellowships have strengthened the graduate program and have resulted in an increase in the number of graduate student majoring in Agronomy. In 1951—52 or thereabouts a Professional degree in Agriculture, called Master of Agriculture was approved. This provides broad training in Agricultural subject matter with a non thesis option for teachers of Vocational Agriculture and County Agents. Therefore most of the Master of Agriculture degrees are awarded to Agricultural Education majors. Nine such degrees have been awarded with a major in Agronomy.

The first person to receive an M.S. degree in Agronomy was Ide P. Trotter. Since that time a total of 103 M.S. degrees have been awarded in Agronomy. It is not known exactly how many of these continued their graduate study and received the Ph.D. degree, but a number of them did complete their doctoral degree with distinction.

Dr. Ide P. Trotter, the first M.S. Graduate, was dean of the Graduate School at Texas A & M College for a number of years prior to his retirement.

Dr. Russell Coleman became Director of the Mississippi Agricultural Experiment Station, President of the National Fertilizer Association for about eleven years and for the past several years he has been president of an international organization, the Sulfur Institute. Dr. R. J. Laird is in charge of Soil Fertility research in Mexico for the Rockefeller Foundation. His brother Kermit Laird completed his M.D. degree and is an eminent Doctor in Starkville, Mississippi. Dr. Walter K. Porter, Jr. is now Superintendent of the Delta Branch Experiment Station and Dr. W. B. Andrews who has been rightly called "the father of Anhydrous Ammonia" is on the technical staff of the Mississippi Chemical Corporation, Yazoo City, Mississippi.

The list of distinguished alumni is too long to review here. Many of these can be noted by referring to the list of alumni elsewhere in this issue of "The Agronomist".

A Narrative History of the Agronomy Department

Honors and Achievements of the Staff

On the basis of the records reviewed for this report the following members of the Agronomy Staff were honored or achieved distinction as indicated below.

Administrators of the Department

1. Professor W. R. Perkins was the first Professor of Agronomy in 1905. He had been an Associate Chemist.
2. Dr. James O. Morgan became Professor of Agronomy 1909—11.
3. Professor W. L. Hutchinson, chemist, Professor of Agronomy 1911.
4. Professor J. C. Robert, Professor of Agronomy in 1912—21.
5. Dr. A. D. Suttle, Professor of Agronomy 1921.
6. Dr. H. B. Brown was Vice Director and Chief in Agronomy in 1921—22.
7. Dr. J. R. Ricks Agronomist (Experiment Station) was Chief of Agronomy in 1922.
8. J. F. O'Kelly, Head of the Agronomy Department of the Experiment Station, 1932.
9. Dr. Clarence Dorman acting Head of the new Soils Department in 1934. Assistant Director and Chief in Agronomy, 1935 and Director, 1939-47.
10. J. F. O'Kelly of Agronomy Dept, Head 1942—46.
11. Dr. C. Dale Hoover, Head, July 1, 1946. He has held this position continuously since 1946.

Promotions of Staff to Administrative positions

Outside the Department

1. The following have become Deans and/or Director.
2. W. R. Perkins
3. J. R. Ricks
4. W. L. Hutchinson
5. J. C. Robert
6. Russell Coleman
7. U.S. Jones (Department Head, Clemson College)
8. William L. Giles
9. W.A. Raney (In charge of Soil Physics Research of a Div. in U.S.D.A.)
10. Louis N. Wise

A Narrative History of the Agronomy Department

Chapter 3

History of Agronomy Department MSU — 1934-50 A Scientist's Perspective

By: H. B. Vanderford
Professor of Agronomy Emeritus

In 1934, Dr Clarence Dorman returned from graduate school as acting Head of the Agronomy Department. This marked the beginning of a well organized Department made up of crops and soils.

Dr. Dorman was a man of wisdom and broad vision who saw the need of a strong Agronomy Department to serve the needs of an agricultural state. During the first year of Dr. Dorman's tenure the research was done by O'Kelly and Owens and the teaching staff members were Dorman, Suttle and Bailey.

During the next year, Dr. Dorman became Assistant Director and Chief in Agronomy. H. W. Bennett was added in Crops research and G. D. Green in Crops teaching. Thus, the staff in 1935 was made up of Dr. Clarence Dorman, Assistant Director and Chief in Agronomy; Professor A. D. Suttle, Associate, I. E. Miles, and Asst. G. D. Green in teaching. The research staff included J. F. O'Kelly, H. W. Bennett, W. B. Andrews, C. R. Owen, J. L. Anthony and W. A. Templeton as Farm Foreman.

Mr. O'Kelly was engaged in plant breeding research working mainly on cotton and soybeans. He developed and released a new variety of cotton which was called "Miller" and this was an improved variety. This was the only and last cotton variety released by the Miss. Agri. Exp. Station. After this the Station research people concentrated effort in testing varieties rather than developing and releasing new ones.

Mr. O'Kelly's plant breeding using soybeans was pointed toward the production of hay and soil improvement crops. The number of acres planted to soybeans was small and no new varieties were released at that time. The great emphasis on soybean grain production and release of new varieties came later.

Dr. Bennett did research in plant breeding using Dallisgrass and in forage crop production. Mr. Owen was engaged in plant breeding using corn. This program was expanded later under Dr. Eckhardt.

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Mr. Anthony did research in cooperation with T.V.A. conducting studies in soil fertility using row and forage crops. Dr. Andrews did research on rates and analyses of fertilizers with special interest in nitrogen.

The same staff continued in 1936. Course offerings in soils were expanded to include Ag 913 and advanced course in Soil Classification, AG 923 Soil Physics, Ag 933 Soil Chemistry, and Ag 943 Soil Fertility. These additions were made to strengthen graduate training in Soils. By 1937 the Department was showing signs of marked expansion. At that time two courses were added: Ag 953 Soil Microbiology and Ag 853 Green Manure Crops. H. B. Vanderford and Russell Coleman were added to the Soils staff making a total of ten staff members in Agronomy teaching and research.

Under the leadership of Dr. Dorman the Agronomy Department began offering and awarding BS and MS Degrees to qualified students in both Crops and Soils. From this time on the Agricultural School of MSU had a strong Agronomy Department that was recognized all over the South.

A. Nature of Research Program

The addition of men trained in plant breeding, soil fertility, soil chemistry and soil classification strengthened the research work as well as the graduate instruction. Dr. Hoover replaced Dr. Miles in 1939 and worked in the area of soil fertility. Some new varieties of hybrid corn were developed which were adapted to the soil and climatic conditions in Mississippi. This work was under the leadership of Dr. H. C. Eckhardt. Mr. Howard Jordan, a USDA employee, joined the Agronomy staff in the late 1940's and began a research program in fertility and soil management in the corn research project. This research along with the adapted hybrids showed the possibilities for high corn yields in Miss. This research also gave rise to the many 100 bushel clubs all over the state. H. D. Bunch also assisted Eckhardt in the corn research program for a short time. This work has continued. In the mid—forties Dr. Andrews and F. E. Edwards started some research on using Anhydrous Ammonia as a source of nitrogen for crops production. This research proved to be the greatest breakthrough of the century. The initial work on this project was supported

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by a grant from T.V.A. Mr. J. L. Anthony conducted the T.V.A. fertilizer tests using row crops as well as forage crops. Jap. Hammons assisted Dr. Andrews in this project after Prof. Edwards returned to the Ag. Eng. Dept.

A soil survey law was passed by the state legislature in 1940. This law authorized counties to levy a one—half mill tax on real property to provide funds for cooperation with the Experiment Station in making Soil Surveys of these counties. The first county to be surveyed was Tunica and the first four soil surveyors employed were: Thomas Fowlkes, J. A. Herren, L. A. Davidson, and C. G. Morgan. Mr. Fowlkes was the leader of the party under the general supervision of Dr. H. B. Vanderford. This new program was soon interrupted by World War II. By 1942, all four of the soil surveyors were on military leaves, which kept them away until 1946. Apart from military leaves and some temporary transfers from Botany and Agricultural Engineering, there were few changes in personnel during the period 1942—46.

Dr. Dorman had the vision to solicit the cooperation of USDA scientists and this improved the research program of the Agronomy Department. This was especially true in the areas of corn breeding, soil survey and soil fertility.

Dr. Dorman became Director of the Mississippi Agriculture Experiment Station in 1938 after the death of Director Ricks, but he continued to hold the position of Chief or Head of Agronomy until 1943 when Mr. J. F. O'Kelly was appointed Head. Dr. Hoover replaced Mr. O'Kelly in July 1946. It was unfortunate for the institution, the State and the South that Dr. Dorman met his untimely death as a young man in 1947.

In 1948 two new research programs were initiated in the department. Dr. W. A. Raney was employed and he started research work on soil conditioners and deep tillage. This was the first well designed research by a soil physicist. The research on deep tillage produced some valuable information for planters in the Mississippi Delta and other Land Resource Areas.

Also about this time Dr. Reggie Laird joined the Agronomy Staff and he started a research program in soil testing. This was the first research work in this area.

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Both Raney and Laird left the Department after a few years, but the basic research work they started was continued by other soil scientists.

Prior to 1950 Dr. H. W. Bennett, who was employed in 1935 had the overall responsibility of all research in forage and pasture crops. He was assisted in certain phases of the pasture work for short periods of time by R. E. O'Brien (1944–47) and Morris D. Finkner (1947-49) but it was not until 1950 that a position in pasture management as a distinct area of research was set up. Dr. Drapala did some research on Red Clover strains during this period.

B. Instructional Program —

As indicated earlier the program of instruction in Agronomy was expanded along with the research program. Most of the staff members were employed for both research and instruction. In fact some new courses were organized because a researcher had expertise in a certain phase of Agronomy. The expansion in instruction can be visualized by looking at the courses offered in 1948, one can see the expansion which took place in Agronomy instruction during the next decade. In fact, these courses have remained about the same in Crops and Soils up to the present time (1978). The instructional staff was made up of Andrews, Coleman, Cowart, Green, Hoover, Laird, Raney, Suttle and Vanderford. As can be noted some of the research staff did not do any teaching.

Courses in Agronomy in 1935—36

A. Crops

1. Ag 203 General Crops
2. Ag 503 Genetics
3. Ag 513 Forage and Pasture Crops
4. Ag 723 Cotton Production
5. Ag 753 Commercial Grading and Id. of Field Crops
6. Ag 833 Cotton Classing
7. Ag 843 Plant Breeding
8. Ag 791—891 Seminar

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B. Agronomy Soils

1. Ag 344 Soils
2. Ag 603 Fertilizer and Manures
3. Ag 803 Soil Management
4. Ag 873 Soil Fertility
5. Ag 813 Soil Genesis and Classification
6. Ag 823 Soil Erosion

Courses in Agronomy in 1948—49

A. Agronomy Crops

1. Ag 203 Farm Crops
2. Ag 503 Genetics
3. Ag 513 Forage and Pasture Crops
4. Ag 723 Cotton production
5. Ag 753 Crop Judging and Ident.
6. Ag 791 Seminar
7. Ag 803 Grain. Crops
8. Ag 833 Cotton Classing
9. Ag 843 Plant Breeding
10. Ag 853 Misc. Crops

Graduate Courses

1. Ag 900C Special Problems
2. Ag 965C Adv. Field Crops
3. Ag 973C Cotton Research
4. Ag 983C Plant Breeding
5. Ag 993C Experimental Information

B. Agronomy Soils

1. Ag 344 Soils
2. Ag 533 Soil Mapping and Land Use
3. Ag 543 Soil Survey and Identification
4. Ag 603 Fertilizers and Manures
5. Ag 813 Soil Classification
6. Ag 823 Soil Conservation
7. Ag 863 Soil Chemistry
8. Ag 883 Physical Properties of Soils
9. Ag 891 Seminar

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Graduate Courses

1. Ag 913S Soil Genesis and Classification
2. Ag 923S Soil Physics
3. Ag 933S Soil Chemistry
4. Ag 943S Soil Fertility
5. Ag 953S Soil Microbiology
6. Ag 963S Fertilizers

C. Services Rendered by Agronomy Department

In keeping with the ideals and purpose of a Land Grant Institution the Agronomy Department rendered services to farmers and farm operators as they encountered problems in soil management and crop production. These services were extended over the State by way of the soil testing and soil survey programs. Proper land use along with crop and plant adaptation for all of the different kinds of soils was stressed by soil scientists.

The Agronomy staff members appeared before civic and other groups to discuss current agricultural problems and preach the gospel of wise land use and good soil management. The importance of Agronomy (Soils and Crops) to the agricultural and the economic conditions of Mississippi also was stressed. These services helped get appropriations for research and instruction.

The Miss. Agric. Exp. Sta. started publishing a "Research Highlights" paper each month. This publication provided an opportunity for the research people in Agronomy to release information to agricultural workers and farmers. An effort was made to write these releases in a form that agricultural workers and farm people could understand and use. This enabled the research staff in Agronomy as well as all other departments of the Experiment Station to render a great service to the agricultural people of Mississippi.

D. Highlights of Period 1934—1950

During this period Agronomy became a well organized department with two strong divisions of Crops and Soils. Several new courses were added and students could obtain BS and MS Degrees in both Crops and Soils. Students also had opportunity to major in special phases of these divisions, such as Soil Fertility, Soil Classification, plant breeding, etc.

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Research studies were expanded as new personnel were added to the Agronomy Department. Graduate students were able to do research under the supervision of staff members in research. In this manner the research complimented the instruction.

It was during this period (1934—50) that the foundation of a strong Agronomy Department was laid by Dr. Dorman. He developed a well organized and coordinated department that was soon recognized across this Nation. Dr. Dorman was truly the "Father" of an Agronomy department that represented the heart of Mississippi agriculture. The Agronomy Department of MSU has had a great impact on the agriculture and economy of our State. Much of the impact can be traced back to this early period in the history of the Agronomy Department.

It was during this period that Dr. Andrews and Professor F. E. Edwards proved by some applied research that Anhydrous Ammonia could be applied to the soil. Prof. Edwards designed the equipment for applying this new source of nitrogen. This material proved to be a good and the cheapest source of nitrogen for crop production. This finding (Research Data) has probably brought more dollars back into the economy of Mississippi than all of the research data released by the Mississippi Agriculture Experiment Station in its history.

New corn hybrids and new varieties of soybeans from the Delta Station were released for farmers and planters and these increased yields and farm incomes all over the State.

The modern Mississippi Soil Survey was initiated as a result of Soil Survey Law which enabled counties to contribute funds to the Agronomy Department for soil survey work. During the period 1934—1950 the department received about \$130,000 of county money.

This enabled the Agronomy Department with the cooperation of USDA to map most of the Mississippi Delta counties. Detailed soil maps were made available along with soil management and production information to the farm planners and planters in this highly productive Land Resource Area. This program has continued and standard soil maps and survey information are now used to re—evaluate and appraise land for taxation. The maps and basic information are also valuable in dealing with problems where environmental changes take place.

Dr. Russell Coleman became Associate Director in 1945 after having

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completed some outstanding research on Soil Phosphorus and Clay Minerals. His first major assignment was to locate new or enlarged branch Experiment Stations in the Black Belt the Central or lower Brown Loam area, the Coastal Plains area, the Northern part of the Brown Loam area, the Lower Coastal Plains area, and later the Pontotoc Ridge—Flatwoods Land Resource areas. The idea was to have a Branch Station in each of the major Land Resource Areas. This would make it unnecessary to have one in every county.

Two important developments occurred in the Department in 1950. The Seed Technology Laboratory was set up in the old Textile Building which has attracted World Wide attention and Doctoral training program in Agronomy was initiated. These two additions added greatly to the size and importance of the Dept.

E. General Remarks

In 1943 Mr. J. F. O'Kelly was appointed Head of the Agronomy Department following Dr. Clarence Dorman. Mr. O'Kelly was a serious minded research worker and he continued to lead the department in the same direction as Dr. Dorman had. He only served as Head for a brief span of 3 years.

Dr. Hoover replaced Mr. O'Kelly in July 1946. He made several additions to the research and instructional personnel. These staff members will be listed in the appendix of this history.

Dr. William L. Giles joined the Agronomy Department as Associate Agronomist in 1949. He soon turned his attention to the science and technology of important seed crops. Dr. Giles did basic work and laid the foundation for a new and third division of Seed Technology which later became known around the World.

Dr. Louis N. Wise was employed in 1950 to conduct research in Pasture Management. He soon became the leader of the Seed Technology Program.

Both Dr. Giles and Dr. Wise later advanced to administrative positions. Dr. Giles became President of MSU and served with distinction for a period of 10 years. Dr. Wise became Vice President of Agri., Forestry and Vet. Medicine, a position he still holds.

Chapter 4

The Seed Technology Story in Mississippi¹

H. Dean Bunch, Professor Emeritus of Agronomy²

Historically, in the area of crop science, large amounts of public money and effort have been expended in land grant institutions in the area of breeding. This is as it should have been, and today even more emphasis must be placed on this basic step in crop improvement. However, a look backward a few decades will show that there was no organized system of passing the fruits of breeding programs on to the farmer - the man for whom the breeding was done. As a result varieties were lost, mixed with inferior varieties, or did not get distributed far beyond the door of the experiment station.

In an attempt to make sure that farmers obtain varietal pure seed, Wisconsin, in 1913, started a field inspection system. Other states followed and from these efforts seed certification programs began. Foundation seed programs, usually within or in connection with the experiment station or extension division, were organized to provide the seed certification agencies with varietal pure seed stocks.

Concurrent with these efforts on the part of public institutions and certification agencies, was the development and expansion of private seed companies engaged in the breeding and distribution of their own varieties and hybrids.

During this period of the development of a seed industry, state and federal seed laws were established and developed through a series of changes, so that by 1939 the present Federal Seed Act was put into effect which requires proper labeling of interstate seed shipments. At the same time, state laws were enacted to set forth standards of seed quality in reference to physical impurities and viability of seed.

These developments in the seed industry, the stimulus of crop pro-

¹ Presented at the Mississippi Section, American Society of Agronomy, Heidelberg Hotel, Jackson, Mississippi, January 25, 1962.

² Dr. Bunch is Agronomist and Professor, In Charge, Seed Technology Laboratory, Mississippi Agricultural Experiment Station, Mississippi State University, State College, Mississippi. He is retired now 2011 and is Professor Emeritus

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duction during World War II, the exodus of labor from the farm to the city, the increased mechanization, and the high cost of labor and machinery on the farm, all started coming to a focus about 15 or 20 years ago.

To the man engaged in the seed business, whether it be in production, processing, or marketing, this meant that the farmer was becoming more discriminating in his tastes when it came to buying seed. He began taking greater interest in seeking out seed of improved varieties and hybrids: he began to be more cognizant of the potential germination of his planting seed, and the amount and kind of weed seeds present, (This trend has been increasing by leaps and bounds so that the day is almost past when just any kind of seed can be sold).

Where did this leave the seedsman? Here he was in the middle between breeding programs putting out new varieties, and farmers (supported by seed laws) demanding a clean bag of seed that would grow - fast. Here was the seedsman with inadequate equipment to clean his seed, yet at the same time beset by salesmen unfamiliar with their equipment. Here he was with conveying equipment grinding his seed to feed; buying and selling seed, the germination of which was declining faster than he could move it. In addition to these troubles he was having difficulty in the proper operation of his equipment, in the correct analysis of his seed samples, and in the safe handling and storage of his seed because his personnel was not trained for the job.

It was against this background that representatives of the Mississippi Seedsmen's Association and the Southern Seedsmen's Association met at Mississippi State to discuss the possibility of establishing a regional center for research and training in seeds. It was the opinion of these men that if a new improved variety of a crop were to make its intended contribution, the seed should be made available to the farmer (1) varietally pure, (2) of a high percentage viability, (3) free of noxious weed seeds, (4) in adequate quantities and (5) at a reasonable price. It was toward these goals that a research and training program was outlined and put into action.

The first action came when the Mississippi Legislature of 1948-50, at

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the request of the Experiment Station and the commercial seedsmen, appropriated \$75,000 to initiate the project. Mississippi State provided the building (the south end of the Old Textile Building), thereby making it possible to spend the major portion of these appropriations for equipment and operations. Manufacturers of seed processing equipment, realizing the significance of the project, contributed large quantities of specialized equipment. In the beginning, Title II appropriations from the Agricultural Marketing Service, matched by state funds provided for research, operational expenses and for additional equipment. Because it was established to serve the Southeast and the regional interest of seedsmen, the laboratory was known as the Southern Regional Seed Research Laboratory. In effect, however, financing and direction was always a Mississippi affair, therefore 3 or 4 years ago the name was changed to the Mississippi Seed Technology Laboratory. But by whatever name, it is considered to have the most complete facilities of its kind and the most complete seed science and technology training curriculum in the world.

The course of direction has shifted a few times since the facility was put into operation 11 years ago, but never the aim - the aim of supplying research information to help seedsmen supply our farmers with high quality seed; and the training of men and women for service in the various areas of seed production, processing, testing, marketing and related areas.

The training curriculum is set up as a division of Agronomy. The basic courses are essentially the same as for Agronomy Crops. In addition, 7 "seed" courses (production, processing, testing and physiology) as well as additional courses in Agricultural Engineering and business are required. Mr. Burns Welch of the Agricultural Engineering Department teaches 3 of the seed processing courses and is considered a member of the Laboratory staff.

The majority of research funds are administered directly to Seed Lab projects from the Director's Office from state sources, conventional federal experiment station funds, contracts with seedsmen's groups, the Agricultural Marketing Service and the Agency for International Development.

The establishment of the Laboratory was a new venture. This is not to

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infer that no research and training was being done elsewhere. Subject matter in the broad field of seed technology is a part of certain crops, soils horticulture, pathology, and entomology courses. Some seed testing research was being done as a sort of sideline in seed regulatory laboratories, and the agricultural engineers have provided information applicable to some extent, in their experiments with the handling of grain. But the idea behind the Seed Technology program was to provide and develop a single facility where those problems dealing directly with seed could be given more detailed study.

New ideas don't just happen and new developments do not progress unaided. Just as there must be a source of energy for the photo-synthetic processes, so the new-envisioned seed research and training center had to have a source of energy. It is a dangerous undertaking for one to cite individuals who are responsible for the success (or failure for that matter) of a group action, because a word here or a single vote there by someone in the right place at the right time can change the course of history. Nevertheless, we shall mention a few who have played significant parts in the short history of the Laboratory.

On the part of the Southern Seedsmen's Association, Dr. Lane Wilson, Executive Vice-President, played an important part in early planning, probably no single person in the seed industry of the South enjoys more esteemed admiration and trust from all segments - experiment stations, crop improvement associations, seed control people, and commercial seedsmen - than does Dr. Wilson. His personal interest and the interest of the group which he represented was influential during the developmental stage. Later he was instrumental in getting a Southern Seedsmen's Fellowship established at Mississippi State which helped two men obtain degrees, the speaker being one-and very grateful too for the assistance. Another man, who among seedsmen is probably the most cognizant for the need of research, has figured quite prominently in our program. Mr. Jim Sutherland, of McNair Seed Company, Laurinburg, N. C., where he was president of the S. S. A. persuaded that organization and the 13 State Seed Associations to put money in research at the Laboratory. We shall say more about this later.

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Of the Mississippi seedsmen who contributed heart, mind, and energy to the realization of a seed center in Mississippi, none gave greater service than Noble Pace, seedsman then of Cleveland, now retired in Columbus. He and Charlie McNeil of the Mississippi Federated Cooperative were no doubt the leaders in selling the idea to the administration at the University and to the Legislature. There were others who contributed from this group, but Noble Pace is generally conceded to be the father of the idea.

From the beginning, the entire membership of the Mississippi Seedsmen's Association have given solid moral support, and in addition has provided scholarship awards for deserving students. To further show their appreciation the program committee always has representation from the Laboratory on the program of their annual meetings. On the individual basis "Doc" Evans, W.T. Albert, John Wax, S. R. Bradshaw and the entire executive committee down through the years have been in pitching for the program.

In the Experiment Station, firm support was given the project by Director Frank Welch, and direction was ably supplied by our late Mr. Pete Sanders, who was Research Coordinator at the time. Professor W. C. Howell, Head of Agronomy Engineering, had the responsibility of equipping the laboratory with seed processing machines. In addition to planning the layout of equipment, which included the remodeling of a portion of the building, he, along with Mr. Pace, had to convince key equipment manufacturers that it was good business to place equipment in the laboratory on a loan basis. This was an important and necessary job, since the appropriation was not ample to buy all of the equipment. The late Oby Easley of the Agricultural Engineering Department contributed greatly in the early stages through assistance in the installation of equipment and instruction of the first classes in the engineering phases.

These were the chief figures during the days when the Laboratory was getting fitted physically for operation. Various committees representing different areas of interest were appointed by the Director. Principal people involved here, I believe, included Dr. John Presley, then in Pathology; A. L. Hamner, Entomology; Dr. Joe Edmond, Horticulture; and the late Dr. R. C. Eckhart, Peter Bennett and I represented Agronomy.

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Once in operation but long before the dust had settled, Dr. W. L. Giles, now Vice—President at Mississippi State University was placed in charge of the Laboratory program along with his other duties in forage crops. The late Dr. Si Marchbanks, who had the honor of earning the first PHD Degree at Mississippi State University, was added to the staff and was placed in charge of the physical plant and day to day operation, and the responsibility for some of the teaching load. Before Dr. Giles had really warmed up to the job he accepted the responsibilities as Superintendent of the Delta Branch Experiment Station. Dr. Louis Wise, our present Dean of Agriculture, was then selected to replace Dr. Giles. Dr. Wise did such a good job of directing the activities of the Laboratory during his 9 or 10 years of service that his name and Seed Technology Laboratory are almost synonymous.

The story as it concerns people would not be complete without the mention of two men who have been staunch allies throughout this period while the Laboratory was having “growing pains”, and up to the present day. Without the patience and forbearance of Mr. Henry Leveck, Director of the Experiment Station and Dr. C. Dale Hoover, Head of the Agronomy Department, the job of bringing the Laboratory to its present status would have been impossible. Financing a unique type of cooperative program with industry and the newness of the facility presented problems which required understanding and guidance which these men ably gave.

This is the background surrounding the organization and development of the Seed Technology program. What is the story in terms of action? Because of the shortage of staff and the relatively large amount of equipment, the first 5 or 6 years saw the emphasis chiefly on training and extension—type work among seedsmen. The amount of this type work has not decreased but with a more adequately-sized staff, research is playing a more important part each year. One of the aims of the Laboratory was to provide some training to persons already in the seed business. The annual Short Course for Seedsmen held each spring started as an offering for seed processors in the Southeastern states. Soon though, word got around and for the past 8 or 9 years producers, crop improvement people, analysts, and seedsmen from all areas of the industry have attended. A typical annual group of 200 represents 30 — 35 states and 4 or 5 countries. The short Course is supported by enrollment fees and by the free and willing contribution of technical assistance

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supplied by the equipment manufacturers. The Mississippi Seed Improvement Association and the Mississippi Seedsmen's Association provide a chicken barbecue for the participants; Sawan, Inc. of Columbus has always given a big Southern style barbecue at Columbus; and the equipment manufacturers have contributed to the pleasure of the group by supplying doughnuts, coffee, cokes and assorted drinks.

These occasions have acquainted about 2500 seedsmen and other interested persons in the latest developments in the field of seed processing and testing. Several hundred additional persons are reached through the Proceedings which have been published the past 4 years. Further contact is made with seedsmen and farmers through the many problems which are continually presented to us and through the approximately 1500 persons who have visited the Laboratory in addition to those attending Short Courses.

Another by-product of these short courses lies in the number of states that have sponsored similar short courses. There have been no less than 25 similar courses in other states, all based on the Mississippi short Course.

As important as are the contact of short courses, visitors, and analysis of problems, we think that the major contribution of the Laboratory in this short time has been in our graduates, for we have been exceedingly fortunate to have had a high percentage of excellent students. The success of the Laboratory as a training medium will in the long run depend upon the performance of these graduates in the field. To date we have had only praise from employers. The variety of positions which they as a group occupy gives an indication of the opportunities in the general field of seed science and technology, and the ability of the Laboratory to supply them. By our last count, the 50 odd graduates (B.S., M.S., and Ph. D.) reside in the states of Arkansas, Louisiana, Tennessee, Kentucky, Virginia, North Carolina, Georgia, Illinois, Nebraska, Ohio, California, Washington and about 1/3 of them here in Mississippi.

Some of the jobs include State Seed Analyst (in 2 states), Extension Seed Specialist (in 2 states), Manager of Foundation Seed Program (in 2 states), Crop Improvement Secretary, Crop Improvement Inspector, Agronomists in State Experiment Station closely connected with seed projects (several in this category). These jobs might be

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considered in the area of public work. Commercial firms have hired men for processing plant managers, farm managers, and agronomists in charge of seed production, plant breeders, and managers of grain elevators, salesmen, and manufacturers' agents of seed processing equipment. At least 2 men are in the business of chemicals and one in finance, but even those fields are close to seed.

The area of influence of the Seed Technology program has spread beyond the borders of this country in recent years. At the request of the Foreign Agricultural Service and the International Cooperation Administration (now called the Agency for International Development), the Laboratory started in the summer of 1956 to provide a 5 week concentrated course in seed improvement for agriculturists from other countries. This course is chiefly one in processing and testing, but also includes instruction in areas of foundation seed production, certification, drying, treating and storage. During the six years in which this course has operation, 80 men and women from 31 different countries have participated. These figures do not include international students who attend school under the regular curriculum.

Three years ago the Laboratory entered into a contract with ICA to supply further international training both inside and outside the U.S. As a result of this agreement, personnel of the Laboratory have traveled in 35 countries on surveys of seed problems, conducted training schools in Asia and South America, served as advisors to 4 regional seed improvement conferences in Latin America, Asia, and Africa, set up research studies in cooperation with Asian countries, designed seed processing plants, and supplied hundreds of copies of informative material around the world.

The advantages of this contract to our domestic program lie in the fact that we have been able to increase the staff to help with our overall program and do some research which benefits Mississippi and the U. S. as much as the cooperative country. The increased budget has bolstered our home program by helping with salaries and overhead. In short, our local program has not been hurt, but rather aided by these additional responsibilities.

So much for the training aspects! What about research? Research efforts have been directed toward the solution of those problems which should enable the seedsmen — from the seed producer on

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— to deliver high quality seed to the farmer at a fair price. For instance seed harvesting studies have shown the effect of cylinder speed end seed moisture content on the amount of seed damage which may be incurred. Further, studies with different seed processing machines and conveyors have pointed out danger spots and how to correct them. The way has been shown how to make difficult crop and weed seed separations in the processing plant. Experiments are underway to determine methods of insuring that seed lots be uniform, for the protection of the seller as well as the buyer.

Better and faster methods of testing seed are under investigation. We have just concluded an investigation designed to explore a practical method by which seedsmen, farmers, and analysts can ascertain the viability of a seed lot in a matter of a few minutes or hours instead of in terms of days as required in a germination test. This project was supported by a grant from the Southern Seedsmen's Association to which each of the State Seedsmen's Associations in the 13 Southern states contributed. This is one of the best examples of cooperative effort between an industry and a land grant institution to provide the "margin of excellence" described by Dr. Colvard as a necessity in land grant universities - when groups team up with a public institution to whip a particular problem.

In research more directly concerned with farming, the Laboratory has conducted cooperative drill box surveys with the Extension Service, Seed Improvement Association, Vocational Agriculture, and the State Department of Agriculture on oats and soybeans. Surveys have shown that farmers could be planting much higher quality seed if they bought it through commercial seedsmen rather than by planting their own or their neighbor's seed. Investigations have been underway the past two years, in cooperation with the Delta Station, to ascertain the causes of cottonseed deterioration. We expect that important information from these tests will lead to corrective measures.

This then is our version of the Seed Technology Story in Mississippi. Its history is brief and exciting, its future promising. The founders have laid a good foundation. They have pointed the direction. We have but to deliver the goods.

The Seed Technology Story in Mississippi

Chapter 5

The Mississippi Agricultural Experiment Station A Historical Sketch

By
Eugene Beverley Ferris.
Class of 1895
Written in 1945

INTRODUCTION

The following compilation of facts about Mississippi's experiment stations is based more on personal experience and word of mouth information than on any exhaustive study of library material, although much of this has been necessary. Such a history was published as a station bulletin in 1923, written by J.W. Bailey, then Alumni secretary of the A. and M. College and now Dr. J.W. Bailey of Richmond University, Richmond, Virginia and immediately Major J.W. Bailey of the U. S. Armed forces overseas. It proved so valuable to students and workers in the many departments of the stations that a later history was attempted in 1938 to be compiled by Professor W.R. Perkins, after his retirement from years of service with the experiment stations which had extended practically from its organization in 1888 of the Central Station to 1938 when he died. No more appropriate author could have been chosen for he had not only covered all the then years of station history, but had climbed all rungs of the ladder, such as assistant, associate, superintendent of branch station and the highest of them all, the directorship of the main station. Mr. Perkins had accumulated a good deal of material for this history which is being used in this compilation, especially facts for the biographical sketches for a great many of the older employees of the station that compose so interesting a part of this report.

The writer or compiler came to this college in 1892 and for quite a number of years worked under Professor Perkins, and other older men, obtaining many facts about the early history of the College and station from them, facts that may never have found their way into print, but are nevertheless pertinent as showing the many difficulties that faced the early authorities in placing agricultural education and training on the substantial footing on which it stands today. The difficulties that the leaders encountered in getting appropriations for the support of the College and even in keeping the College curriculum in line with their conception of the real purpose

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of the Land Grant College Act were great, for there seems to have been divergent opinions as to the real intent of the Morrill Act. The College was fortunate at the time of its policy developing period (1880 to 1890) in having men as leaders who were not afraid to fight for their conception of right and had fought for it through the Civil War. Such men as General Stephen D. Lee and his early executive committee of the Board of Trustees: Colonels W. B. Montgomery and H. M. Street with Dr. H. A. Minor, General J. Z. Yerger and many others, all of whom stood by General Lee, giving such good advice and assistance that finally made Mississippi's school a model for an entire nation. Perhaps no institution ever had a higher type of men to formulate and steer its growth and development than did the Mississippi A. & M. College in its early trustees, men who had been selected by such governors as Lowery and Stone, mainly ones who had fought through the Civil War, seemingly having had all the dross burned out of them with only the finer qualities left; who saw the need for a new type of training for the youth of the state and were willing to risk their all to attain it. Such men had more than courage, they had educational backgrounds; Colonel Montgomery, a graduate of Princeton; Dr. Minor of the University of Virginia; Colonel Street, a born genius in the art of statesmanship and business methods as exemplified by his many years as Speaker of the Mississippi House of Representatives and his great ability as a business executive. These three composed the executive committee of the Board during the policy forming period of the College and were backed by other trustees equally zealous and capable; General and U. S. Senator J. Z. George, the great commoner, being in a position to exert the greatest influence of them all. With General Stephen D. Lee as president and active leader, there is no wonder that the institution became a model for others of its kind.

This compiler has worked under every president and director that the College and Station have had; was seven years a chemist under Professors Hutchinson and Perkins; has been superintendent of sub-stations at McNeill, Poplarville and Holly Springs; has conducted research work with the sub—stations at Raymond, Natchez and West Point and has been a frequent visitor to all the other stations; personally knowing nearly every station employee during its fifty—seven years of existence, the most of the early staff having remained until after 1892. So, with this experience, little more than a retentive mem-

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ory is required to record the salient facts of station history. A study of agricultural schools and experiment stations in six countries in Europe, hastily made in 1928 as a guest of the French-German potash interests, has added some background to what has been read about early and late agricultural developments in such countries as; France, Belgium, Switzerland, Germany, Holland and England. In 1938, the most of one summer was spent at Cornell University where the leading early agricultural workers of the nation were present and gave talks on their early experiences. These included such men as; Thorne of Ohio; Hopkins of Illinois; Davenport of Illinois; Bailey and Jordan of New York; Hall of Rothamstead, England; Henry of Wisconsin; Schreiner of U. S. D. A.; and a long list of other notables, all stressing the early problems and handicaps of those agricultural workers.

In the material to follow, an effort has been made to so arrange it that, if thought advisable, separate pamphlets may be issued or the entire compilation published as one larger bulletin. At least, the chapters will be so arranged as to condense in each the following salient factors:

1. History and development of agricultural education as a whole and of agricultural research in Mississippi in particular:
2. Copies of legislative acts, Federal and State, under which agricultural research in Mississippi has been provided for;
3. A bibliography of experiment station publications.
4. A compilation of biographical sketches of selected persons who have distinct contributions to the development of agricultural research work in Mississippi.
5. Short histories and compilations of work at the branch or substations.
6. Condensed tables intended to show the incomes of the central and branch stations for the periods of their existence.

HISTORY LEADING TO MODERN AGRICULTURAL METHODS

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Agriculture as a business of calling is the oldest known to men, but as a subject to be taught in schools and to be understood scientifically, it is one of the newest. As expressed by an early writer, agriculture is not an exact science, but rather an art in which is found the application of many sciences, many of these underlying sciences, having been discovered and developed in comparatively recent years. Adam was a farmer and lived in the Garden of Eden where he got into his first trouble by eating the wrong kind of apple. His descendants, even to generations almost down to our own, knew little more about the real facts underlying plant and animal growth than did the original ancestor. Even now in vast areas of Africa, Asia and the islands of the seas, millions of people live much as they did in the time of Abraham, some driving their flocks and herds over mountains, valleys and streams in search of grass that grows and thrives or otherwise fails as a result of causes by no means understood by them. The real facts underlying modern agriculture are still not entirely understood, otherwise there would not be the need for continued experimental work which is just coming into its own, not only in agriculture but in every other branch of science and industry. In fact, agriculture is spending a far lower percentage of the total value of its output in research looking to a betterment of it, than are most industrial concerns, or even large sales organizations, in their efforts to try to put out better products and to reduce sales resistance by knowing better what the people want. What would now have been the status of the automobile industry, for instance, if research workers had not gone along with the builders in finding and developing the best new inventions and methods?

Perhaps the best comparison between the very old and the very new in agriculture, may yet be seen in the present Zionist movement where Jews are being colonized on the lands of Palestine, where Abraham grazed his flocks and herds, followed immediately by other Jews and finally by the Arabs. It will be interesting to know the relative efficiency of the old and the new as measured by the numbers who have and will earn a living from a given amount of the land of "The Lord's chosen people". W. C. Loudermilk, Chief of the U. S. Soil Conservation Service, is said to have made the statement that said country could support a population of six million as compared with a present one of 1,750,000, which would be made possible by draining swamps, irrigating semi—deserts, the use of fertilizers and more intensive farm methods generally. Much fertilizer, especially potash, with many other valuable chemicals will be taken from the waters of

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the Dead Sea, where by evaporation, they have been accumulated and concentrated during the countries several thousand years of known history.

For much of this time, especially in comparatively recant years, leading thinkers have been alert to find better ways of increasing farm production by rotations, manures, mucks, and marls, the only ways then known to them, and we find in this country such leaders as Franklin, Washington, Jefferson, and others corresponding with their friends in England and France and other European countries with a view to introducing here better methods of maintaining soils, then nearly two hundred years fresher than now, yet, even then, having perceptibly decreased in production. The introduction of commercial fertilizers, largely within the past seventy—five years, has done more to increase such production, directly as a result of the findings of European experiment stations, than all other things combined since the time of Adam. However, long before the introduction of commercial fertilizers, the American Indians frequently increased their yields of corn by placing a fish under each hill, but had no idea as to why such an increase happened.

The discovery of the need for fertilizers, sources from which they might be obtained, and the real relationship between soils and plants, was brought about more than one hundred years ago by scientists in Europe, largely chemists working in experiment stations. This had been made possible earlier by other chemists, even alchemists, working partly because they craved knowledge, but chiefly because they hoped to find a way for converting the base metals into gold. The result was, they discovered many of the elements, such as nitrogen, phosphorus, potassium, calcium and the ten or a dozen others found to be essential to plant growth and contained in the soils or air surrounding them. Liebig in Germany and Lawes and Gilbert in England, influenced agricultural development in their own countries and ours possibly more than any others. Liebig was a teacher as well as an experimenter and Gilbert was once his pupil and the physical facilities available to them such as chemical apparatus, now preserved in memorials erected to them near the scenes of their work, would make the average American chemist of today wonder how such crude beginnings had been the means of so revolutionizing world thinking. As a matter of fact, the first experiment stations in Europe seem largely to have antedated the teaching of Agriculture in schools which was quite the reverse in this

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country. Liebig is given the greatest credit for this revolution in thought by discoveries given to the world about 1840, yet he was by no means the only one working along such lines. His discoveries, however, greatly stimulated such work all over Europe and in the 1875 report of Frederick Watts, then secretary of Agriculture in this country, discussing "Agricultural Experiment Stations in Europe", he lists fifty experiment stations and thirteen agricultural laboratories in Germany and twenty—nine experiment stations and sixteen agricultural laboratories in other countries in Europe. Under "Other Agricultural Laboratories" was included the Rothamstead farm of Sir John Bennett Lawes, with Sir Henry Gilbert associated as the real scientist. Much of the work in Europe was done in green houses, laboratories, etc. with many of the stations not having farms larger than an average garden in size. Thus at Darmstadt, the home of Liebig, where his old residence has been converted into a memorial to him, and where his old apparatus, books, etc., are displayed, the experimental work is done entirely in pots or pits dug into the ground and cover a space not larger than many American yards. However, there are many experiment stations in Germany, France, Belgium, and England, or were in 1928, where the experiment work is done on field plots quite similar to the way such work is done with us.

France possibly influenced the establishment of agricultural schools in this country as much or more than any other European country. About 1827 there had been started near Versailles, on land once the home of Marshall Ney and given by him to France for such a purpose, an agricultural school which is still, with an experiment station connected, in active operation. It is known as the "Centre National Experiment Station and College" at Grignon. As American Charge d' Affaires to Belgium and a frequent visitor to Paris, Thomas G. Clemson, son—in-law of John C. Calhoun, became very much interested in this institution and is said to have returned to this country convinced that such institutions should be started here. The fact that Marshal Ney did give his old estate to France for such a purpose, may have influenced Clemson later to give his estate in South Carolina for a like purpose. The above statements are based on the following facts:

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In 1928 twenty—two agricultural workers from the South were guests of the French Potash Society on a tour of educational institutions, experiment stations, leading farms, and potash mines in France. On a visit to the Centre National Experiment Station and College at Grignon, near Versailles, this party was told by one of the officers of the institution how it has affected agricultural education in America. The statement, concurred on at least five members of the party who were or had been connected with Clemson College, was to the effect that the school at Grignon had been established in 1827 and had been in operation during the times that Thomas G. Clemson was a science student at the Sorbonne and Royal School of Wines in Paris. That then, or on later visits to Paris, while Clemson was Charge d' Affairs in Belgium, he had visited this farm school many times and had been so impressed that he returned to America determined to use his influence in favor of the introduction of such schools here. Clemson was primarily a scientist, next a farmer and possibly last a diplomat. He had married the daughter of John C. Calhoun of South Carolina and for many years previous to the passage of the Morrill Act had been a frequent lecturer before agricultural and scientific societies. Following his return from Belgium, he had lived in Maryland and is thought to have aided in the establishment of an agricultural school in that state in 1857, also, he had been "Superintendent of Agricultural Affairs of the United States", also superintendent of the "Agricultural Bureau" in the Buchanan administration, all before the present Department of Agriculture was organized.

While a native of Pennsylvania, Clemson had married the daughter of John C. Calhoun, took sides with and worked for the Confederacy and moved to the Calhoun home, now on the Campus of Clemson College. He was greatly interested in agricultural education and, like Matthew Fontaine Maury, doubtless lost much of the credit to which he was due by joining the ranks of the seceding states. So great was his interest in agricultural and industrial education that he and his wife agreed together to give the old Calhoun home and farm to the state of South Carolina conditioned on the establishment of a school to be located on it, to teach those subjects and to be supported by the state. Both Mr. and Mrs. Clemson died before this was done, she dying first and he leaving it in his will that such be done and the state finally accepting the offer. This estate was
valued

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at \$100,000.00, which the president of Clemson College later said was more than John Harvard gave Harvard University or Elisha Yale gave the school bearing his name.

As showing the impression the Mississippi A. & M. College had made on Clemson in his long study and efforts to have the teaching of agricultural science firmly established in the country as a whole and South Carolina in particular, we quote below a paragraph giving a brief description of the sort of institution he proposed to establish in South Carolina; "Feeling a great sympathy for the farmers of this state, and the difficulties with which they have had to contend in their efforts to establish the business of agriculture upon a proper basis, and believing that there can be no permanent improvement in agriculture without the knowledge of those sciences which pertain particularly thereto, I have determined to devote the bulk of my property to the establishment of an Agricultural College upon the Fort Hill place. This institution, I desire to be under the control and management of a Board of Trustees, a part of who are hereinafter appointed, and to be modeled after the Agricultural and Mechanical College of Mississippi as far as practicable."

Again Clemson College followed after the pattern of Mississippi A. & M. College in that both schools were established following the beginning of such teaching of agriculture at state universities, the one at Columbia, South Carolina and the other at Oxford, Mississippi, with later to start as entirely new schools. Ones who have visited the campus of Clemson College cannot but have been impressed with the wisdom of Clemson in establishing a memorial to the Calhoun and Clemson families, even if no better motive had prompted him, for never was a better idea conceived by which to stamp the imprint of two such families on the tens of thousands of boys and men who have since attended it as their Alma Mater. Not the least impressive thing about the institution is the old residence of these families, standing as it has for much more than 100 years and containing many pictures and mementos of the two leaders who occupied it as a home and always to be thus preserved.

Several men now living in Starkville recall the time when a delegation from South Carolina visited this school to obtain ideas useful in the establishment of their own A. & M. College, "Clemson". The grandfather of our present professor of Mechanical Engineering was a member of such a delegation.

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Agricultural education in this country began in a large way with the passage of the Morrill or Land Grant College Act in 1862, but the agitation in favor of such, began much earlier in Agricultural Societies and in the minds of advanced thinkers over the country as a whole. Thus in 1785, there was organized at Charleston, South Carolina a State Agricultural Society with the object of instituting a farm for agricultural experiments, etc. They offered medals for the best method of preventing injury to cotton by the caterpillar and other common problems of the time. Quoted from page 160, "Thomas Green Clemson: His life and Work" by Alexander G. Holmes and George R. Sherrill respectively professors of History and Economics in Clemson College.

This society owned a tract of land near Charleston where experiments were continued to the beginning of the Civil War. This was only one of many such societies over the country as a whole which agitated legislation finally embodied in the Morrill Act. This Act first passed the congress in 1858 and was vetoed by President Buchanan, later to be passed by a succeeding congress in 1858 and was signed by President Lincoln. As showing the long felt want for better farm information, the Mississippi legislature in 1850 appropriated "\$6,000.00 a year and each year thereafter", for a department of Agricultural and Geological Sciences. It provided for an agricultural and geological survey in every county in the state and in the natural history and soils of the state. Dr. John Millington, professor of Chemistry at the State University, was responsible for this survey. B. L. C. Wailes of Natchez was named as assistant professor and did much of the early work of surveying the state and writing the first report.

It was remarkable that a Mississippian at that time had been such a student of science and nature as to be deemed qualified to do such work for he had never had the advantage of such scientific training as had his later associates, Lewis Harper and E. W. Hilgard, both Germans who had been educated abroad. B. L. C. Wailes left records and diaries that have later been the means of giving to the world many of the facts and much of the wisdom of such a remarkable personage, during a time that little information of the kind had been recorded. His life has recently been compiled by Charles S. Syloon of Duke University into a most readable and instructive publication, entitled "Gentleman of the Old Natchez Region, Benjamin L. C. Wailes". Mr. Wailes completed and published his report in 1854;

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another report by Lewis Harper followed in 1857 and still another by E. W. Hilgard in 1860. This last report by Hilgard and a later report of his for the U. S. Tenth Census Report have long been the basis for much of the soils work in Mississippi, later much improved in the detail of soil classification but little in the broad sense of soil divisions which Hilgard based largely on vegetation, one of the very best means of soil classification.

To the writer, not the least interesting and instructive part of the Wailes record is the fact that he lived on and operated a farm in Warren county in 1850, adjoining one on which we hope to spend our declining years. On this old Wailes farm lives our nearest neighbor who, on moving into the Wailes home, found many relics stored in attic and cellar which have come to be of greatest interest if not of value in the present age of greater appreciation for old things in general. Thus there was found in this old attic, a leather bound letter book of 287 pages, about 8 by 14 inches, containing cleverly written copies of scores of letters Wailes had written to and received from leading scientists of the country, largely with reference to his first report to the state legislature on the "Agriculture and Geology of Mississippi". Everything was copied in his own handwriting, a beautiful script, easily read. In this book are letters to and from such notables of the time as A. B. Longtree, President of the State University; to Judge J. M. Howry, secretary of the Board of Trustees; J. M. Millington, Professor of Chemistry at the University of Mississippi; to L. Harper, Millingtons successor; to the Smithsonian Institution; to leading scientists in various educational institutions of the country; to such well known scientists as Lewis Agassiz and John L. LeConte; to various engineers of railroads asking for records of soil formations in cuts they had made.

This record shows Wailes to have been interested not only in geological specimens, but as well in birds, fishes, reptiles, forest products, in fact, he seems to have been a born naturalist who started the interest in many of the present day sciences insofar as Mississippi is concerned. He may also be called the father of higher education in the state, as shown by his interest in the College at Washington, early capital of the state where he spent his time previous to 1850, largely in efforts to promote the interest of said college. The old letter book above referred to, was loaned to Professor Sydnor, along with many of Wailes other records, diaries, etc. and not only became a part of his most interesting book, but give as well, much of the information

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contained in his 1854 report of the Geology of Mississippi.

The following is copied from Sydnors book and shows the size of the Warren county plantation, number of slaves owned, amount of crops harvested, hogs butchered, etc. In fact, nothing seemed too trivial to be recorded in these minute records kept by him. He states that in the plantation there were 960 acres, valued at \$10.00 per acre and 315 acres, valued at \$5.00 per acre and on this land he speaks of making in a single year, 150 bales of cotton, 3750 barrels of corn, of butchering 55 hogs, dressing 130 pounds each, saved as cured meat for the slaves. There were 65 slaves of all ages and in addition to meat and meal, the place produced all the peas, potatoes, pumpkins and vegetables generally consumed thereon. The place was called "Fonsylvania" because of numerous springs that are present in the woods. The entire property was valued at \$40,000.00.

Unfortunately the farm produced then a great deal more than now for, like "Tara", in "Gone with the Wind", the land since the Civil War has grown up largely to trees and the present owner was a saw mill man when he bought it. The fish, too, seemed to bite a good deal better than now as Wailes own words would indicate, describing a time he and a slave had gone fishing in "Conger" Lake, a common fishing place for the section, now owned by the writers family; "I never knew fish bite faster. I am satisfied that I sometimes threw out at least four a minute." Robert, (his slave) only caught five, but was occupied most of the time in taking off fish and baiting my hook which gave him full employment and kept me waiting on him at that."

Wailes was succeeded as State Geologist by L. Harper who issued a second report on the geology of Mississippi in 1857 and Harper was in turn succeeded by E. W. Hilgard, who was Mississippi's third state geologist, born in Germany in 1833, his parents emigrated to America in 1836. He went back to Germany and was given his doctors degree in 1853 at Heidelberg University and from 1855 to 1873 connected with departments of natural sciences at the University of Mississippi. Thus he was at Oxford for a part of the time that the College of Agriculture was in operation there. Possibly no man in this country had a better agricultural record than Hilgard, who received honorary degrees from three Universities; Mississippi, Michigan and Columbia and taught in three; Mississippi, Michigan and California, winding up as director of the California Experiment station, ending

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his career as emeritus professor in the California University. Thus it would seem that it was due to no lack of teacher talent that the school of agriculture started at Oxford in 1871, failed of success and was moved to a new location near Starkville.

All the interest shown above not only in Mississippi but in almost every other state of the union resulted in agitation for national aid in starting agricultural and industrial education. At the time, money was very scarce and hard to obtain by legislation, but public lands were plentiful and it was comparatively easy to have them given for public improvements, witness land grants for many railroads. So, the natural way to obtain Federal help for such schools was by grants of public lands which Representative Morrill knew and which he embodied in the Morrill or Land Grant College bill, giving to each state of the union certain grants of such lands in proportion to the then representation in the national congress. Such a bill passed both houses in 1860 but was vetoed by President Buchanan to be again introduced and passed in 1862 when President Lincoln signed it. Mississippi finally got her proportionate share of such lands, 30,000 acres each for two senators and five representatives or 210,000 acres. However, said lands did not accrue to her until 1871, for four years slipped by during the Civil War and five years while Congress wrangled as to whether or not she should be given such lands at all. As a matter of fact, practically none of the Southern states were able to take advantage of the Morrill Act until some years after its passage while most of the states of the North availed themselves of its benefits immediately after its passage, establishing schools of agriculture and mechanical arts, largely as departments of schools already in operation. In some of the southern states, Mississippi and South Carolina in particular, when funds from the sale of such lands were put into the hands of carpet bag legislators and largely wasted by being apportioned to negro schools entirely incapable of carrying out the intent of the law. Thus in South Carolina, the funds were given first to a negro school, Claflin University, when in 1875, they reported the school still struggling for existence, the interest on the fund for the time having amounted to \$57,540.00 with only \$11,836.00 actually collected and used. * In Mississippi 3/5 of the fund was apportioned to Alcorn University, later Alcorn Agricultural and Mechanical College, in 1871 and in 1875, when a state legislature in

* See Department of Agriculture Report for 1895, page 493.

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January abolished free scholarships in the school, the students, 120 in number began to leave so rapidly that in May following only 40 remained and the school closed, at least temporarily. In 1866, the University of Mississippi was given 2/5 of the fund but this was denied them in Washington until Governor Alcorn went to Washington in 1871 and arranged to have the fund apportioned 3/5 negroes and 2/5 to the whites. **

In 1871, two—fifths of the fund was given to the University of Mississippi as support for a College of Agriculture and Mechanical Arts” with five professors and two adjunct professors. In 1875, they reported no students pursuing the agricultural course and in 1877 not a graduate had been turned out. This was not uncommon in several other states; Missouri, and South Carolina, for instance. This brought about partially at least, the agitation within the state for the establishment elsewhere of a school of the kind entirely devoted to the teaching of agriculture and the mechanic arts, which finally culminated in the location of such a school at its present site near Starkville. The lack of interest in such a type of education at the state university was said to have been due to no fault of the ones in charge for one of the heads of the particular school was the later well known Dr. E. W. Hilgard who left a name unsurpassed by any other scientists in Mississippi, afterward to become the head of the California Experiment Station where his recognition increased. The trouble seems to have been with the type of young men then attending the University. At the time, not only in Mississippi, but over the country as a whole, agricultural and industrial training was frowned upon by the leaders, even boys who might otherwise have become interested, having been discouraged by the majority otherwise inclined. For years after the college in Starkville was started, we recall 1892 in particular, the students of the A. & M. College were derided at a11 public gatherings by the ones from the University as “cow punchers” or similar terms intended to belittle the type of education they were striving to obtain.

Reference to the experience had at the University in obtaining students to take the agricultural course indicated that there must have been a very strong prejudice against such a type of education by the ones supposedly well educated, and certainly there was on the

** See Department of Agriculture Report for 1895, page 485.

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part of the farmers themselves who were, in the main part, opposed to it because at least the ones who termed themselves “planters” had been reared to believe that manual labor was beneath the dignity of the elite in the first place and that nothing was to be accomplished from what was then know[n] as “book farming” in the second place. The fact that such a prejudice so generally prevailed was possibly responsible for Mark Twains inimitable story of the man who tried to farm by the book and when his hay was ready to save, lost his book and let his hay spoil.

As bearing out this thought, we quote below from L. Harpers introduction to his report on the “Geology of Mississippi” published by the legislature of the state of Mississippi in 1857: “Scarcely ten years ago our agriculturists were still obstinate in their cultivation of the soil. They thought that agriculture was only a correct one, which observed rigidly the manners and customs of their forefathers. All innovations and scientific principles applied to agriculture were called “Book—farming” and deemed utter nonsense. In their opinion, agriculture could only be learned by practice. By such principles the customs of their fathers were sanctioned, and rendered unchangeable.” Dr. Harper was a German, then serving as the second state geologist. What he had to say about farm prejudices of his day continued to apply for many years later, certainly through the time when an effort was made to teach agriculture in our State University and failed, even to the early years of teaching the underlying principles of correct farm practice at the later Mississippi Agricultural and Mechanical College.

In 1878 the Mississippi legislature passed an act authorizing the establishment of a school of agriculture and mechanical arts apart from the University and this was finally located near Starkville. Agitation for such had been active for several years among the leading thinkers of the state, led by members of several agricultural societies, chief of which had been Captain Put Darden of Jefferson county, Mississippi, Master of the State Grange and at one time Master of the National Grange, a monument to Captain Darden has long occupied a prominent place on the college campus. After the passage of this Act, the then Governor John M. Stone appointed the following Board of Trustees, the law making the Governor ex officio chairman of said board. The Board members were:

Hon. John M. Stone, Governor,

Jackson, Mississippi,

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	Ex officio president
Captain Frank Burkett, Secretary	Okolona, Mississippi
Colonel W. B. Montgomery, Executive Committee	Starkville, Mississippi
Captain Frank Burkett	Okolona, Mississippi
Hon. W. B. Augustus	Macon, Mississippi
Major J. C. Dockery	Hernando, Mississippi
Honorable C. L. Gilmer	Sharon, Mississippi
Senator J. Z. George	Carrollton, Mississippi
Honorable L. B. Brown	Enterprise, Mississippi
Honorable J. M. Gausey	McComb City, Mississippi
Major A. M. Paxton	Vicksburg, Mississippi
Honorable W. L. Hemingway, Treasurer	Jackson, Mississippi

Colonel W. B. Montgomery, Captain Frank Burkett and Hon. W. B. Augustus were members of the first executive committee until 1881, after which this executive committee was for years composed of: W. B. Montgomery, H. A. Minor and H. M. Street.

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These trustees elected the following faculty:

General Stephen D. Lee,	President
G. M. Roudebush, A.M., D.D.	Professor of English Language and Literature
D. L. Phares, A.M., M.D.	Professor of Biology
F.A. Gully, B.S.	Acting Professor of Agriculture and Horticulture
R.C. Kedzie, M.S.	Acting Professor of Chemistry
Lieutenant E.B. Bolton	Commandant and Acting Professor of Mathematics
W.T. J. Sullivan, A.M., D.D.,	Head of Preparatory Department
T. B. Bailey, A. M.	Assistant in Preparatory Department
W. R. Harper, A. B.	Assistant in Preparatory Department
W. S. Roudebush,	Assistant in Preparatory Department
J. F. Sellors	Assistant in Preparatory Department
W. H. Gibbs	Instructor in Writing
Captain W. B. Lucas	Steward
Captain Frank Johnston	Foreman of Farm

The degrees after the names of the various faculty members indicate the type of training they had previously received for teaching agriculture and the mechanic arts, for to that time there were few men or women trained along scientific lines and the two above listed, who were, had been brought in as young graduates from

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Michigan. This was in line with what had been the practice over the country as a whole for in the report of the secretary of the U. S. Department of Agriculture for 1875, thirty—seven states were listed as having shared in the proceeds of the Morrill Act and of these, fourteen of the heads of such institutions had Reverend or Doctor of Divinity preceding or following their names; five were Masters of Arts, eleven were Doctors of Law; one was a Doctor of Medicine; five had no degrees; and only one was a Doctor of Philosophy. It would be interesting now, seventy years later, to compare the degrees of such heads of institutions and their faculties.

Present College and Station employees who were students during the early days remember the efforts put forth by General Lee at the daily chapel exercises to impress upon the students the dignity of Labor. This he did so well that the boy who had to work to help pay his own expenses soon came to feel that it did no[t] belittle him in any way. The consequence was that instead of having none or too few students taking the agricultural course, as had happened at the State University, in a very few years, many students without the state were having to be refused admission and allotments had to be placed upon students coming from the counties within the state. Up to 1892 only the agricultural course was given, the mechanical course was started then and other, now offered, many years subsequently, so that it cannot be said that these students came to this institution except to receive the broad training that has always characterized the instruction given in the sciences underlying agriculture.

Many of the states of the North, not so busily engaged in the prosecution of the Civil War as were those of the South, in fact, not barred under the terms of the act, took advantage of its provisions and income at once and established schools for teaching the new scientific and industrial subjects. Maryland, Michigan, Pennsylvania, and several of the New England states and possibly a few others were notable in this regard. In fact, Maryland and Michigan established their schools of agriculture in 1857, five years before the Morrill Act was passed. Such states soon found the need for original facts underlying the teaching of Agriculture and established experimental farms. Thus, when some eighteen years later Mississippi established her school, she went to Michigan for a number of her early instructors and workers in the scientific field. Among such, from time to time, were F. A. Gully, Professor of Agriculture; K. C. Kedzie, Professor of

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Chemistry; S. M. Tracy, Botanist and first director of the Experiment Station; J. A. Myers, Professor of Chemistry; Howard E. Weed, first Entomologist and for a time horticulturist; and possibly B. Von Herff, an early Chemist.

Some of the best instruction in agriculture was from text books written in New England, based on experimental work done there on early experiment stations as well as on work done in various parts of Europe. Thus up to 1893 or later, Storers Agriculture by Professor Storer of the Bussey Institution, New England and Johnson's "How Crops Grow" and "How Crops Feed" by a Yale professor, furnished possibly the best instruction in agriculture to that given at Mississippi A. & M. College. Later texts based on work done by experiment stations closer home increased the efficiency and effectiveness of such instruction. Before the passage of the Hatch Act, in addition to stations started in several northern states, such stations were started in Alabama, Kentucky, Louisiana, Tennessee and quite a number of the states of the North, usually in connection with Land Grant Institutions.

The Louisiana sugar planters had felt so keenly the need for original experimentation with sugar cane, that they raised a large sum of money themselves and employed Dr. W. C. Stubbs, who had made quite a reputation as a research worker while connected with the Alabama Polytechnic Institute and Experiment Station at Auburn. Dr. Stubbs started, and for a number of year[s] conducted, the Sugar Experiment Station at Audubon Park in New Orleans. It accomplished wonderful results and it was from this institution that the Mississippi College and Station secured, in 1888, their later well known and long continued worker in the person of Professor L. Hutchinson, under whom these Mississippi institutions saw their greatest expansion to that time, notably in the establishment of the state fertilizer inspection law and the first three branch experiment stations.

Starting in 1880 to teach agriculture, the leaders in the Mississippi school immediately began to feel the need for research work in experiment stations so as to establish real, rather than theoretical, facts to be taught. Thus one of the schools early trustees, United States Senator J. Z. George, in 1885, introduced in the United States Senate a bill with practically the same provisions as the later Hatch Act. This bill passed the Senate in 1886, but failed of passage in the House where it was again introduced by representative Hatch and passed in 1887, when it was accepted by Senator George in place of his

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senate bill, thus becoming a law. The fact is, that all the Land Grant Colleges of the country realized the need of such research institutions as experiment stations and a national organization composed of the leaders of such schools had early advocated their establishment, with General Stephen D. Lee of the Mississippi school taking a prominent part in such advocacy, doubtless reflected in a Mississippi Senator and A. and M. College trustee, J. Z. George, first introducing such a bill.

Following the passage of the Hatch Act, it was accepted by the Mississippi legislature on January 31, 1888 and its control placed under the trustees of the A. M. College as follows: Governor Robert Lowery, President; Dr. H. A. Minor, Col. W. B. Montgomery and Col. H. M. Street, members of the executive committee, with the following other members of the board: Hon. J. Z. George, Carrollton; L. B. Brown, Enterprise; Dr. George H. Peets, Woodville; J. R. Cameron, Canton; J. W. Stone, Iuka; and T. C. Dockery, Hernando.

Governing Board:

General Stephen D. Lee	President A. & M. College
Colonel W. B. Montgomery	Local Trustee
Professor S. M. Tracy	Director of Experiment Station

At the same time an advisory board was appointed consisting of the following presidents of the existing agricultural associations in Mississippi:

R. T. Love	President of State Farmers Alliance
J. B. Bailey	Master of State Grange
R. L. Tynes	President of State Wheel
H. E. McKay	President State Horticultural Society
W. L. Hemingway,	President State Grass Growers Association

Early in 1900 the above advisory board became inactive and has

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not since taken any part in the work of the stations.

Soon after the acceptance of the provisions of the act by the state Legislature the funds going with it were turned over to the Board of Trustees of the College and the station became a department of the College with the following personnel and, of the eleven members listed, seven were on the College teaching staff. In recent years the research force has become more distinct from the teaching staff so that by 1923, out of 44 members at the station staff, only 14 were members of the teaching force. In 1944, out of a staff of 71 scientific workers, listed in the College catalogue, 19 did some teaching, and 10 of the 71 were on military leave, these largely non teachers.

Personnel of the First Station Staff

S. M. Tracy, M. S. Director	B. Irby, M. Sc.* Agriculturist
E. R. Lloyd, M. Sc. Asst. Agric.	A. B. McKay, B. Sc.* Horticulturist
R. W. Saffold, B. Sc. *Asst. Hort.	D. L. Phares, M.D. Veterinarian
W. L. Hutchinson, B.Sc.* Chemist	B. Von Herff, Asst. Chemist
L. G. Patterson, Asst. Chemist	B. W. Kilgore, B. Sc.* Meteorologist
T. F. Watson * Treasurer	

*Member of College Staff also.

One of the greatest handicaps under which the station has worked since its inauguration has been frequent changes in the staff, due to causes, as given early in its history: "Insufficient salaries and insecurity of tenure." To a large extent, this has been corrected in more recent years, yet there are even now, far too many changes. In the year of its organization, between February 1888 and December of the

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same year, the organization lost the following members of its staff; F. A. Gully, resigned to accept the directorship of the Texas Station; Professor John A. Myers, left to take charge of the West Virginia Station; Professor J. H. Connell was elected professor of agriculture in Kentucky; Mr. H. H. Harrington, accepted the professorship of chemistry at the Texas A. & M. College; and two assistants were called to similar positions in other states. All the above resigned before the work of the station was started, consequently were not give[n] on the list of the first station staff. With the scarcity of men then trained for such work at all the states in the union organizing their forces at the same time, it was but natural that there should then have been a great change in personnel, the state s able to pay the highest salaries usually getting the best men, other things being equal.

A change of any kind in station personnel is unfortunate since experiments have to extend over many years to obtain the information sought and usually the longer these experiments run, within reason, the more valuable they become, it is difficult to obtain continuity of action when the ones in charge change frequently and in looking over the personnel of the staff up to 1945, the man with the longest tenure forty—five years, is Professor J. S. Moore of the dairy department. Doubtless, if an unbiased judge should be called upon to select the type of work that has made the greatest progress in Mississippi during those 45 years, he would select dairying. But whether to argue that its success has been due to the long tenure of the man in charge or that his long tenure has been due to his good work would largely be a repetition of the age old argument as to whether the hen or the egg came first.

In connection with this change in personnel and looking in retrospect over the sixty—five years of College and the fifty—seven years of experiment station history in Mississippi, it is interesting to note the number of leaders in practically all lines of agricultural and industrial development that have gone out from these institutions to affect such development in the country as a whole. Thus In 1888, as recited in paragraph above, these institutions supplied directors for the Texas and West Virginia stations; a professor of agriculture for the Kentucky Agricultural College, a chemist for the Texas A. & M. College and two assistants called to similar places in other states, these two probably having been B. Irby and B. W. Saffold, who went to Georgia. Too, later, J. H. Harper, dairyman here, went first to Kentucky as agronomist; to Ireland as an adviser on tobacco production; to South Carolina as

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director of it station; later to direct the work in the South first of the Chilean Nitrate Co. and still later of the French and German Potash propaganda and sales. B. W. Kilgore, early chemist here went to North Carolina where his name, even until now, is all but a household word in matters pertaining to the agriculture of the Tar Heel state. To South Carolina went W. McGee, at the time, Assistant Director of the Mississippi Station, to help them get Clemson College well on its way to its present prominence in agricultural education and, later, also, went J. H. Harper, W. L. Hutchinson and W. R. Perkins, in fact, so many other that it will be impossible to name them. To Alabama, more than fifty years ago, went J. F. Duggar, later their director of experiment stations and until now the sage of the South in matters pertaining to information about the farm.

To Louisiana has gone Mason Snowdon, W. R. Perkins and W. B. Mercier, directors of Extension there; H. B. Brown, plant breeder, and a great number of other agricultural leaders. To the Philippines; W. C. Welborn, George E. Nesom, and B. L. Moss, just to name a few. Later to Texas went Harrington, Connell, Welborn, Morgan, Ridgeway, Trotter and many other Texas leaders. Arkansas, Florida, Oklahoma and Tennessee each have taken a large number of their leaders for these institutions. Even Cornell University has taken D. M. Duggar, Glenn W. Merrick, H. C. Thompson and others. The Dominion of Canada has reclaimed its former national, G. C. Creelman, to head its agricultural school at Guelph, but left to the south another son in the person of Dr. Tait Butler who, starting in Mississippi in 1891, went several years later to Kansas, North Carolina and finally to Tennessee to have his name become known to all of the south, if not the nation, as editor of the *Progressive Farmer*. Time and space will not permit the naming of all Mississippi College and Station men who have thus gone out, but it is doubtful if a state in the Union or a country of any prominence on the Western Hemisphere can be found where one or more such men have not worked since these institutions were established.

This is further illustrated in the writer's own experience when, soon after graduation in 1895, General Lee offered to recommend him to take charge of a hacienda for some large land owner in Peru and again, later, as chemist for a sugar plantation in Cuba, the latter of which would have been accepted except for the unrest immediately preceding the Spanish-American War. A good friend, J. L. Stinson, graduating a year later was offered and accepted a place in

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South Africa to demonstrate the possibility of cotton growing there. In fact, the school by that time had received such a reputation for sound agricultural training that the graduates were in demand almost the world over. However, with the addition of new schools in the college, a greatly increased student body, with graduates trained along so many lines in recent years, there are now, perhaps, attractive openings for 25 young graduates to where there was one fifty years ago. Thus, the foresight of the early officials of the institutions in keeping the training within the real intent of the Morrill Act has been vindicated.

Even after the College had been operating many years and the Experiment Station a shortly less time, the need for additional agricultural information with which to increase the efficiency of the work and popularize it over the state as a whole, was such that many simple tests were started on outlying farms, widely scattered, and on types of soil representative of large bodies of land that composed the surface area of the state. Thus in 1890, such tests were started with Dr. J. B. Bailey at Lake, later a trustee of the College and station for many years and president of the Patron Union, an early and long continued agricultural organization quite similar to the present Neshoba County Fair Association. Others were conducted on the plantation of Hon. George J. Finley of Holly Springs, a large land owner of Marshall County, member of the Constitutional Convention of 1890, and from whose estate the present Holly Springs Branch Experiment Station later purchased its North farm. Residents at Holly Springs and vicinity still recall the work done there some 16 years before the real branch station was established. As representative of vast quantities of Coastal Plain soils in the state, work was started at Ocean Springs under F. S. Earle, a trained scientist, who later contributed several bulletins descriptive of such work which were closely scanned after 1908 when a regular sub—station was established at McNei11 on much the same type of soil. Professor Earle's statements and conclusions were found most valuable in the conduct of the later work at McNeill.

On the first two outlying farms work was done with standard farm crops such as varieties of cotton, corn, grasses, etc., along with experiments with fertilizers, and, on the Ocean Springs farm, the principal work was with semi—tropical fruits, vegetables, rice, and sugar cane. A little later than this, experimental work was conducted with several kinds of fruits at Booneville under the supervision of Dr. J. F.

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Frice, a prominent physician there and a man extremely interested in such things. As a rule such work never extended over more than a few acres, but served a very useful purpose not only in information obtained, but as well in popularizing the work of the College and Station and in proving the need for more elaborate work of the kind in branch stations which began to be established within a very few years after the work on such outlying farms was started.

FARMERS INSTITUTES

Early in the history of the College and later the Experiment Station, it was found desirable to reach the farmers in a better way than could be done through bulletins and reports sent out from the institutions which the farmers often failed to read. Too, such institutes were valuable by which to popularize the work of both institutions because they needed every help possible not only to accomplish their purposes of helping the farmers, but even more so to establish favor with the legislatures and thus obtain needed support. In such work employees at the College were sent out largely during the summer months to discuss farm subjects in various parts of the state, such work frequently culminating with a round—up institute at the College. A number of experiment station bulletins were issued in 1902 and later descriptive of the work as a whole. Some of these bulletins gave digests of talks made at the Round Up by a number of men who had taken part in the work during the previous summer; others were confined to discussions of particular subjects such as one by G. L. Clothier dealing particularly with Rural School Landscaping. As showing the men who had taken part in such work, the bulletins lists the following Farmers Institute personnel: J. C. Hardy; E. R. Lloyd; W. L. Hutchinson; J. C. Hubert; G.W. Merrick; J.S. Moore; W. R. Perkins; A. Smith; G. L. Clothier, all of the College with J. W. Fox; C.T. Ames; and E. B. Ferris, at the Branch Stations.

Under the plan of holding such institutes, various teams were sent out over the state to prearranged meetings, advertised by community leaders and held in churches, school houses, court houses and always at gatherings of farmers at such places as the Neshoba County Fair Association, Patrons Union at Lake and several other such organizations in the state. These local leaders would request and advertise the meetings and try to get audiences assembled. Such meetings usually took place the summer months while the professors were not engaged in teaching and a small sum was set

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aside by the College to pay their expenses.

Popular subjects of discussion were: general facts about agricultural education; fertilizers and their proper usage; varieties of the many farm crops, especially cotton and corn; the use of cotton seed as feed and fertilizer; dairying and markets for dairy products; animal diseases, especially bloody murrain, now known as tick fever; in fact, all problems of the farmers. More good was usually accomplished by discussions coming as a result of such talks than from the talks themselves and such discussions frequently lead to vigorous debates pro and con. Since in the early days, many of the leaders were from the north and not entirely familiar with southern methods, it soon seemed advisable to College authorities to send to such meetings, as far as possible, young graduates from the state, more familiar with southern vernacular and methods than were those from the North. In time leaders were brought to Mississippi from many other Southern states to take part in these institutes and such names are recalled as Newman of Alabama, Stockbridge of Florida, J. L. Newman of North Carolina, B. Irby of Georgia and many others. Scarcely any were better able to meet the demands of the occasion than were Mississippi's own W. C. Welborn, E. R. Lloyd and C.T. Ames.

As an illustration of what actually happened at some of these institutes, one concerns a question asked as to how to treat an animal with bloody murrain. It was answered by a non veterinarian who said there was no specific, told how the disease was spread by ticks, the only real remedy being to get rid of the ticks. But that in some instances large doses of whiskey or alcohol had been know[n] to give some relief. This seemed to enrage a drunk in the audience who cried out in a loud voice; "Would anybody here be fool enough to give good whiskey to a sorry yearling?" It all but broke up the meeting.

EXTENSION WORK

On the whole these institutes did a great deal of good both in spreading agricultural information and in creating a better feeling for the new type of education being taught at the recently established A. & L. College, but one familiar with methods of approach to the farmer now, and not then, can scarcely realize the change that has come about largely from the introduction of Extension work which from a small beginning in 1914, has so expanded as to have

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now several highly trained men and women in nearly every county in the state equipped to answer almost any question asked by the farmer or his family and who know practically every individual in the county by name and every farm by its metes and bounds and general reputation. In fact, as has been so aptly expressed by others, "Agricultural Extension has made the entire state the enlarged Campus of Mississippi State College". This department has worked so intimately with the experiment stations as frequently not to be known as separate organizations and has made the matter of getting the results of station research to the ones to be benefitted by it a much more simple problem. In fact, the County Agents, under the supervision of station specialists, have helped to conduct a great deal of research work on practically every soil type in the state thereby eliminating the danger of giving the wrong advice about a particular situation because it might have worked under another act of circumstances. Really the early prejudice about "book farming" was brought about by too limited an acquaintance with the problems of the individual farmers soils, seasons and other variables being as they are. Those, the County Agents have largely overcome, first, by being on the ground, next by knowing weather conditions as they are and not as they were expected and last by broad training in his or her line and being able to profit by others possibly less highly trained but with a more intimate acquaintance with local conditions and circumstances.

One who, at least in part, did not experience the early prejudices and handicaps which had to be overcome in getting agricultural education established on its present substantial foundation, can scarcely appreciate what such leaders as General Lee and his early associates had to undergo. Many such leaders had recently fought through the years of the Civil War, but it is doubtful if any more gray hairs resulted than from the later fights before the state legislatures in getting appropriations for the new type of education and by meeting the criticisms out in the state. Possibly the causes of the many headaches thus brought on did not get into print, therefore, never formed a part of any official record, but did become known to ones who attended the daily chapel exercises at the time, or learned it by word of mouth later from ones who had so attended. General Lee seemed to have the broad conception of the real intent and meaning of the Morrill Act that the author had at its passage and later interpreted to ones interested in carrying them out.

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Prejudices of all kinds were rife, even differences among the trustees, faculty and the law makers, General Lee was called a tyrant, bull headed, even a man of limited education because at the time, the West Point Military Academy, of which he was a graduate, although one of the most thorough schools of the nation, did not give degrees. Therefore, certain members of his faculty were said to have criticized him for not having the A.M.'s and D.D.'s, L.D.'s, etc, which to that time were thought necessary for a College or University president. However, the General carried his point, dismissed any who disagreed with him, was sustained by his board of trustees and finally developed the best school of its kind in the South if not in the nation.

The Mississippi legislatures were highly prejudiced, many of its members having little patience with the new fangled idea of learning out of a book how to farm. As it was early expressed, it was well for agriculture that a few doctors, preachers, editors, merchants, lawyers, and other non—farmers composed so high a percentage of the membership of the Mississippi legislature, otherwise history might now be written about a decidedly different type of Land Grant Institutions. It is true that agricultural leaders generally were friendly to the new type of training and such men as Captain Put Darden, Dr. H. E. McDay and many others like then exerted a wonderful influence in its behalf. These fights before the legislature continued to take place long after the leaders in the law making bodies had established branch experiment stations, for biennially the superintendents of said stations had to fight not only for meager support funds but almost as often against bills introduced to abolish them, and on at least two occasions for passage of such bills over the vetoes of the governor. Thus, like all growths of the kind, that of agricultural education and research has come about gradually.

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Chapter 6

Historical Aspects of Agronomy in Mississippi

Report of the Geology and Agriculture of the State of Mississippi
Eugene W. Hilgard, Ph.D., State Geologist
1860

This is the third report which was made by staff members at the University of Mississippi. The first was made by B.L.C. Wailes, 1854. The second report was made by L. Harper, LLD., State Geologist of Mississippi., 1857. The first report was made in 1854. This third report by Hilgard included material that was given in the first two reports but with a great deal more emphasis placed upon agriculture in part 2 of the report. This appears to be the first comprehensive report on the soil resources of the State of Mississippi with sufficient understanding of soil chemistry to interpret the then known information about the soils of Mississippi. Dr. Hilgard believed that native vegetation could be used to determine to a great extent the quality of the soil upon which the vegetation grew. This he could apply to forest as well as to plants which are grown annually by common tillage practice.

Accordingly, Dr. Hilgard's report constitutes the first treatise on soils which is a good point of beginning for agronomy in Mississippi. Dr. Hilgard possessed an astounding understanding of the agricultural chemistry of soils and the practical application of the information which he was reporting. Part 2 of his report entitled "Agriculture Report" consists of about 190 pages including an appendix which gives the composition of soils tested from most of the counties of the state. His report starts out with a definition of soil, followed by a treatise on the judging of land by its natural vegetation and then soil analyses, the origin of soils, the principles of agricultural chemistry leading right on to his suggestion that about 16 elements out of the 64 elements known at that time are of concern to the agriculturalists. These as given by him were oxygen, hydrogen, nitrogen, carbon, silicon, sulphur, chlorine, fluorine, phosphorus, potassium, sodium, calcium, magnesium, aluminum, manganese, and iron. Then he added a few minor elements—iodine and copper. It is interesting to note his description of the action of lime in soils. He indicated that in a brief period of time we could produce the same effects on the soil by the addition of lime which the atmosphere would produce

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offer centuries. To quote from his explanation he is referring here to his previous statement about liming "But in so doing we exhaust the soil very rapidly; what we gain in the fullness of crops we lose in the duration of our land; hence the well-known adage that lime enriches the father but impoverishes the son." He goes ahead to say that the use of lime on land to excess is scarcely a better policy than that of the drunkard who in order to sustain the excitement he desires finds it necessary to take deeper potations each succeeding day until at last the energies of life are completely exhausted and the foundation gives way before.

On Page 217 a rather significant paragraph on the analyses of soils, crops and manures appears. Quoting from this paragraph "Analysis teaches us what are the kinds and respective quantities of the ingredients contained in crops soils and manures. It teaches us therefore which of the latter two will be best calculated to promote the successful culture of the former. Knowledge to obtain which by mere experimenting would require a disproportionate amount of time and labor. It has already been stated that the absence of a single one of the ingredients necessary for the growth of a plant renders unavailing the presence of all the rest. Unless we are taught by analysis which is the ingredient of which there is a deficiency, we shall be compelled in order to be safe to add all of them at great and unnecessary expense."

There is an interesting discussion on manures, mechanical manures, and chemical manures and a rather lengthy discourse throughout on the marls as to distribution and as to their effect on the other constituents in the soil and even on the health of people. He has a section on the restoration of exhausted soils and the maintenance of fertility on them. He points out that cotton, a major crop, is a very light feeder on the nutrients of the soils and therefore it is not hard on the soil and strangely enough he indicates that a one cropping system in the south has merit rather than rotation due to the high value of cotton. He discusses the soils by soil areas in Mississippi and all in all his discourse on soils is classic. Dr. Hilgard left the University of Mississippi after the 1872-73 session. He transferred to the University of California where he established a College of Agriculture at the University of California and later was Director of the California Experiment Station until his retirement.

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Course of Study Listed in the First Annual Catalog of the Agricultural and Mechanical College of Mississippi, 1880-81.

Freshman Class

First Term - Algebra, History and Higher English

Second Term - Geometry, Natural Philosophy, English and Botany

Third Term - Geometry, Agriculture (lectures), Drawing (freehand), Botany

Sophomore Class

First Term - Trigonometry and Surveying, Elementary Chemistry, Rhetoric

Second Term - Mechanics, English, Organic Chemistry, and Blow-pipe Analysis

Third Term - Mechanics, Landscape Gardening, Drawing

Junior Class

First Term - Anatomy, English, Agricultural Chemistry (lectures), Horticulture

Second Term - Physiology, Chemical Physics, English

Third Term - Entomology, Veterinary Science, Astronomy, English Literature

Senior Class

First Term - Zoology, Agriculture, Psychology, Astronomy

Second Term - Political Economy, Botany (work with microscope), Geology, Moral Philosophy

Third Term - Civil Engineering, Constitution of the United States (6 wks.) Logic, Meteorology (lectures). Each student was required to work on the farm or in the greenhouse three hours each day. This was to make certain that the student did not lose the appreciation for common labor and realize the importance of it in agriculture.

From the curriculum it is seen that three courses in agriculture were given; one during the third term of the Freshman class, one in Agricultural Chemistry during the first term of the Junior class, and one in Agriculture during the first term of the Senior class. The first course pertained to animal husbandry with reference to the valuable breeds of all kinds of livestock. The second course had to do with the principles of drainage, the effect on an excess of water in the soil on the growing of crops and the construction of farm imple-

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ments and machinery with practical instruction in the field, on the use of the equipment available for farming. The third course consisted of lectures on stock feeding, management and application of manures and fertilizers, the adaptation of soils to crops, rotation of crops, and the processing of food crops and their preparation for feeding in an economical manner. Nearly all the work on the farm, except driving the teams, was performed by the students. "At the close of the course in agriculture questions pertaining to the details of the entire work of the farm department will constitute a part of the regular required examination.

All students took the same curriculum and all were involved in the three hours of labor each day.

HISTORICAL

"The University of Mississippi" by Allen Cabaniss

The University of Mississippi was established in 1848. Millington of the first faculty had the title of Professor of Chemistry and Agriculture, 1850-53. J. C. Keeny during the period 1853-54 had the title of Professor of Chemistry, Agriculture and Geology. In 1854-55 Lewis Harper had the title of Professor of Geology, State Geologist, Professor of Agriculture and Analytical Chemistry. On request of the Chancellor of the University of Mississippi Dr. Hilgard made a detailed report in 1871 regarding the agricultural and mechanical colleges of the United States. The title of his report is Report on Organization of the Department of Agriculture and Mechanic Arts. It should be noted that Hilgard left the university after the 1872-73 session and that the agricultural college did not actually get started at the University of Mississippi until the autumn of 1873. Mr. Cabaniss states that the work in the College of Agriculture was hampered by the lack of adequate equipment and Hilgard left after the 1872-73 session. (Another reference indicates that no students were graduated from the College of Agriculture by 1877 and therefore the College of Agriculture was discontinued with the result that great agitation occurred for a separate college which later resulted in A & M College as it was set up in 1878.)

Historical Aspects of Agronomy in Mississippi
