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A STUDY OF GRADUATE REACTION TO  
THE ANIMAL INDUSTRIES CURRICULA AT  
MICHIGAN STATE COLLEGE

Thesis for the Degree of Ed. D.  
MICHIGAN STATE COLLEGE

Howard C. Zindel  
1953



This is to certify that the

thesis entitled

A Study of Graduate Reaction to the Animal  
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presented by

Howard C. Zindel

has been accepted towards fulfillment  
of the requirements for

Doctor's degree in Education

Sam Y. Hill

Major professor

Date December 4, 1953

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A STUDY OF GRADUATE REACTION TO THE ANIMAL INDUSTRIES  
CURRICULA AT MICHIGAN STATE COLLEGE

By

Howard C. Zindel

A THESIS

Submitted to the School of Graduate Studies of Michigan  
State College of Agriculture and Applied Science  
in partial fulfillment of the requirements  
for the degree of

DOCTOR OF EDUCATION

School of Education

1953



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A STUDY OF GRADUATE REACTION  
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AN ABSTRACT

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Approved

Guy H. Hill

Howard C. Zindel

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The study analyzed the responses of 737 graduates who were asked to evaluate the agricultural phases of the Animal Industries curricula at Michigan State College.

The investigation consisted of two distinct but correlated parts. First, the writer analyzed the answers of two hundred graduates to 254 specific and detailed questions on the value of agricultural courses to livestock students. The graduates were asked such questions as the following:

1. Was the undergraduate curriculum adequate in terms of the graduate's present job or future career?
2. To what extent, if any, should the curriculum be modified, expanded, extended, or shortened?
3. Should more or fewer departmental courses be required of all majors in the livestock field?
4. Should a student be allowed more credits for exploratory courses outside his major?

Second, the writer analyzed the answers to the more general questions of Dean Anthony's 1952 survey of five hundred thirty-seven livestock graduates on the value of general fields of study to the livestock student.

Howard C. Zindel

Responses from the two hundred graduates in the first part of the study revealed the following major facts:

1. Ninety-seven percent of all graduates recommended that one-fourth to one-half of college time be set aside for electives. Seventy percent favored one-third to one-half time, and forty percent favored one-half or more time.
2. In general, livestock graduates considered the 100 series of courses in Agriculture of little or no practical value.
3. Animal Husbandry majors preferred a broad training in Agriculture, with special emphasis on Animal Husbandry courses. This finding coincides substantially with the results of the Anthony survey.
4. Dairy Production majors preferred a broad training in agricultural and non-agricultural courses, with emphasis upon Bacteriology, Chemistry, and Dairy Husbandry. The Anthony survey obtained essentially the same answer.
5. Dairy Manufacturing majors, like Dairy Production majors, preferred a broad training.
6. Poultry Husbandry graduates favored courses in their own specialized field over those considered to be non-technical agricultural courses.

Howard C. Zindel

7. In answer to the question of what would enhance the value of the agricultural curriculum and in what areas the college curriculum had failed to meet real needs, the graduates supplied a wide variety of suggestions and criticisms. Their answers showed clearly that these graduates would like to have had (in order of preference)

- (1) Courses giving more practical training.
- (2) Required Business Administration courses.
- (3) More Public Speaking courses.
- (4) More Journalism or Business Writing courses.
- (5) Better teaching methods or better instructors.
- (6) "On the job" training for credit.
- (7) Better counseling.
- (8) Better guidance.

The preceding information was supplemented by the writer's breakdown of the general data in the Anthony survey. This analysis revealed other facts important for any future curriculum remodeling:

1. Livestock graduates placed an overwhelming importance upon the technical agricultural courses such as Agricultural Economics. This held true even when the graduate had received college training in that specific area.

Howard C. Zindel

2. In evaluating non-agricultural courses, the graduates ranked accounting and bookkeeping at the highest. This was true whether the graduate was trained in those areas or not.
3. One out of every three livestock graduates preferred a curriculum combining "broad training" and "specialization". This group preferred taking two or more courses in several departments in agriculture, with the remaining technical courses in some field of specialization.
4. More than one graduate out of three felt the "ability to get along with people" was the most important ability essential for job success.
5. The replies did not substantiate the frequent claims that the student selects his courses on the basis of the teacher's personality and teaching ability.

The preceding facts are of course valuable guides for any future agricultural curriculum planning at Michigan State College.

## TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.....	1
Importance of Problem.....	2
Purposes of Study.....	17
Method of Study.....	20
Basic Assumptions.....	22
Limitations.....	23
Definition of Terms.....	24
II. REVIEW OF RELATED STUDIES.....	26
University of Missouri.....	27
University of Connecticut.....	27
University of West Virginia.....	31
University of Maine.....	31
Kansas State College.....	27
University of Wyoming.....	32
University of Vermont.....	27
Pennsylvania State College.....	30
University of Illinois.....	28
University of California.....	33
Texas A. & M.....	35
University of Arizona.....	38
Purdue University.....	39
Cornell University.....	40
Ohio State University.....	41
Michigan State College.....	44
Iowa State College.....	26
Results of Other Surveys Made in Fields of Agriculture.....	29
Iowa State College.....	40
Results of Other Surveys Made in Fields of Agriculture.....	45
III. TECHNIQUES USED.....	54
IV. GRADUATE REPLIES IN RESPONSE TO THE ANTHONY SURVEY.....	57
Agricultural Curriculum.....	57
Value of College Course Areas to Graduates.....	58
Factors Influencing Selection of Study.....	61
Evaluation of Course Work Areas.....	63



## TABLE OF CONTENTS - Continued

CHAPTER	PAGE
Broad Training Versus Specialization.....	71
Essential Skills and Abilities.....	72
Summary of Chapter IV.....	77
V. GRADUATE REPLIES IN RESPONSE TO THE AUTHOR'S QUESTIONNAIRE.....	80
Distribution of Graduates.....	82
Questionnaire Response.....	85
VI. TABULAR AND STATISTICAL SUMMARY OF REPLIES FROM TWO HUNDRED LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE	87
Section A. General Agricultural Series.....	87
Section B. Animal Husbandry Majors.....	91
Section C. (1) Dairy Production Majors.....	93
(2) Dairy Manufacturing Majors.....	95
Section D. Poultry Husbandry Majors.....	97
Section IIIB. Non-Required Courses.....	99
Section IV. Evaluation of Electives.....	100
Qualitative Analysis of Technical Agricultural Courses.....	101
Qualitative Analysis of Non-Technical Non-Agricultur- al Courses.....	110
Section V. Electives.....	130
Section VI. Professional Positions.....	134
Sections VII, VIII, and IX, Graduate Suggestions.....	141
VII. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	144
Summary.....	144
Conclusions and Recommendations.....	154
Problems for Further Study.....	159
BIBLIOGRAPHY.....	161
APPENDIX.....	165
Cover Letter.....	166
Anthony Questionnaire.....	167
Zindel Questionnaire.....	168
Tables I A - VIII A.....	169
Tables IX A - XXXI A.....	172

## LIST OF TABLES

TABLE	PAGE
I. Value of College Course Area to Agricultural Graduates in Relation to Their Present Work. First Most Important Course Area.....	58
II. Value of College Course Area to Agricultural Graduates in Relation to Their Present Work. Second Most Important Course Area.....	59
III. Value of College Course Area to Agricultural Graduates in Relation to Their Present Work. Third Most Important Course Area.....	60
IV. Factors Influencing the Selection of College Course Areas..	62
V. Evaluation of Agricultural and Non-Agricultural Course Areas Based on College Training for Graduates Majoring in the Livestock Courses. Took Courses in College.....	64
VI. Evaluation of Agricultural and Non-Agricultural Course Areas by Livestock Graduates Not Having Courses in College.....	68
VII. Recommendations by Graduates for Type of College Training in Preparation for Work in Which Graduates are Engaged...	73
VIII. Most Important Skill and Ability Found to be Essential to Job Success by Graduates.....	75
IX. Year of Graduation of Respondents Who Returned Questionnaires.....	76
X. Distribution of Livestock Graduates by Year and Major Subject.....	81
XI. Questionnaire Response.....	82
XII. Respondent's Views Regarding Required Courses Listed Under the General Agricultural Series.....	88
XIII. Opinions of Livestock Graduates Regarding Required Subjects Which Were Thought to be Non-Essential and Should Not Be Required of All Students.....	90
XIV. Opinions of Animal Husbandry Majors Regarding Subjects Required by Their Department.....	92

## LIST OF TABLES - Continued

TABLE	PAGE
XV. Opinions of Dairy Production Majors Regarding Subjects Required by Their Department.....	94
XVI. Opinions of Dairy Manufacturing Majors Regarding Subjects Required by Their Department.....	96
XVII. Opinions of Poultry Husbandry Majors Regarding Subjects Required by Their Department.....	98
XVIII. Qualitative Evaluation of Elective Agricultural Engineering Courses By Livestock Graduates of Michigan State College.	102
XIX. Qualitative Evaluation of Elective Animal Husbandry Courses by Livestock Graduates of Michigan State College.....	103
XX. Qualitative Evaluation of Elective Dairy Husbandry Courses by Livestock Graduates of Michigan State College.....	104
XXI. Qualitative Evaluation of Elective Economics Courses by Livestock Graduates of Michigan State College.....	106
XXII. Qualitative Evaluation of Elective Farm Crops Courses by Livestock Graduates of Michigan State College.....	107
XXIII. Qualitative Evaluation of Elective Horticulture Courses by Livestock Graduates of Michigan State College.....	108
XXIV. Qualitative Evaluation of Elective Poultry Husbandry Courses by Livestock Graduates of Michigan State College.	108
XXV. Qualitative Evaluation of Elective Soils Courses by Live- stock Graduates of Michigan State College.....	109
XXVI. Qualitative Analysis of Elective Non-Technical Agricultural Courses, Based on the Judgment of Livestock Graduates of Michigan State College Agriculture.....	111
XXVII. Anatomy.....	112
XXVIII. Animal Pathology.....	113
XXIX. Bacteriology.....	114
XXX. Business Administration.....	115
XXXI. Chemistry.....	116

## LIST OF TABLES - Continued

TABLE	PAGE
XXXII. Civil Engineering.....	117
XXXIII. Conservation.....	118
XXXIV. Entomology.....	118
XXXV. Engineering Drawing.....	119
XXXVI. Forestry.....	119
XXXVII. Geology.....	120
XXXVIII. Hygiene and Public Health.....	120
XXXIX. Journalism.....	121
XL. Landscape Architecture.....	122
XLI. Mathematics.....	123
XLII. Mechanical Engineering.....	124
XLIII. Physics.....	124
XLIV. Physiology.....	125
XLV. Political Science.....	126
XLVI. Sociology.....	126
XLVII. Speech.....	127
XLVIII. Zoology.....	128
XLIX. Proportion of College Time (Course Credits) Desired for Electives Based on College Training.....	133
L. Evaluation of General Agricultural Series Courses Listing Those Thought Not Important Enough to be Required of All	135
LI. Evaluation of General Fields of Study by Animal Husbandry Graduates Holding Professional Positions.....	137
LII. Evaluation of General Fields of Study by Dairy Husbandry Graduates Holding Professional Positions.....	138

## LIST OF TABLES - Continued

TABLES	PAGE
LIII. Evaluation of General Fields of Study by Poultry Husbandry Graduates Holding Professional Positions.....	139
LIV. Evaluation of General Fields of Study by Livestock Graduates of Michigan State College Holding Professional Positions.....	140
LV. Curricula Revision Suggestions by Livestock Graduates After Experience on the Job.....	142

## CHAPTER I



## CHAPTER I

### INTRODUCTION

Democracy and Education have advanced as partners in the United States of America. Our system of education has produced the doctor, the lawyer, the business man, the farmer, the teacher, the engineer, the scientist, the informed citizen, but most of all, it has helped develop the free and inquisitive mind, without which progress is not possible. Through their course work, research work, adult education programs and other public services, America's colleges and universities have also contributed immeasurably to the strength and maturity of our democratic society.

The more college administrators know about the ideas and attitudes of the youth they serve and their environment, the more efficiently they can interpret their colleges to that segment of youth seeking to advance its education.

The Basic College of Michigan State College recently completed a survey (March, 1953) which showed that one of the most frequently mentioned reasons why students selected Michigan State College as the place to continue their education was that the Basic College offered them a curriculum which fitted their needs, and which, in their estimation was outstanding.

Many faculty and staff members, and graduates, through the years, have long realized the need for a type of college curriculum which would

be both functional and yet less formal. A few minor curriculum changes may have occurred down through the years but certainly few major revisions have been realized. A desire to learn some of the facts, expressed by graduates, to assist in the formulation of curricula plans by which the college administration could make some needed changes, resulted in this study.

A desire to know what constitutes a desirable curriculum for undergraduates majoring in the livestock industry courses at Michigan State College according to their reactions prompted this investigation. This study involves the area of agricultural curriculum organization based upon the written opinions of two hundred out of 390 graduates of Michigan State College. These graduates matriculated with a Bachelor of Science Degree in Agriculture, having majored in either Animal Husbandry, Dairy Husbandry or Poultry Husbandry and graduated during the years 1940-52.

#### IMPORTANCE OF PROBLEM

The knowledge of what type or types of curricula should be made available to college students today presents a problem to every college administration and faculty. However, this problem is not new, it has been confronting our educators down through the years. Some of the problems such as: "What is college for?", "The Principles of College Education", "What courses should be taught?", "Of what use is a college degree?", "What electives should be given?", "Are curriculums obsolete?", and "Should the curriculum be cultural, scientific, vocational,

disciplinary?" have been discussed by educators and philosophers from the time of Confucius until the present.

There is much discussion about the important factors in curriculum construction. Many deans of agriculture emphasize subject matter, others place emphasis on method, some few occasionally take into account the finished product. Rarely, does one consider whether the institution is bringing the student in touch with the whole situation. There is an appreciable number of people who feel that there is a great need for integrating the agricultural college curricula with the life of today.

We find the colleges of agriculture with their Short Courses and Extension Courses adapting their teaching to the needs and activities of the farmers in the most practical way. They not only emphasize the activities of the farmers as they exist, but they also point to better ways of doing things, thus raising the ideals and living standards of the farmers. This teaching could not be otherwise because if it were, the discussions, lectures and demonstrations would be unattended.

Yutang<sup>1</sup> in his translation, states that Confucius says,

The principles of college education are as follows, First prevention or preventing bad habits before they arise. Secondly, timeliness or giving the students things when they are ready for them. Thirdly, order or teaching the different subjects in proper sequence. Fourthly, mutual stimulation (literally 'friction'), or letting the students admire the excellence of other students. These four things insure the success of education.

Former President Wilson,<sup>2</sup> as a teacher and then President of Princeton

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<sup>1</sup>Lin Yutang, The Wisdom of Confucius, (New York: Random House, Inc., p. 216, 1938).

<sup>2</sup>Woodrow Wilson, The Public Papers of Woodrow Wilson-College and State. Edited by R. S. Baker and W. C. Dodd, (New York: Harper and Brothers Publishers, 1925) Volume II, p. 161.

University, had definite ideas regarding the reasons why youth should attend college for he said, "What should a lad go to college for, -- for work, for the realization of a definite aim, for discipline and a severe training of his facilities, or for relaxation, for the release and exercise of his social powers, for the broadening effects of life in a sort of miniature world in which study is only one among many interests?"

In addition, Wilson<sup>3</sup> stated that college had a definite purpose when he declared, "We must distinguish what the college is for, without disparaging any other school, of any other kind. It is for the training of the men who are to rise above the ranks."

Unfortunately, too many students graduate from college without the proper training to take their place in society. Wilson<sup>4</sup> argued as follows: "College men, it is said, and often said with truth, come out undisciplined, untrained, unfitted for what they are about to undertake. It is argued, therefore, that what they should have been given was special vocational instruction; that if they had had that they would have been interested in their work while they were undergraduates, would have taken it more seriously and would have come out of college ready to be used, as they now cannot be."

The problem of what type of training should be given and how much time should be allotted for electives is discussed. Wilson<sup>5</sup> commits himself again saying,

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<sup>3</sup>Ibid., p. 166.

<sup>4</sup>Ibid., p. 168.

<sup>5</sup>Ibid., p. 167.

By a general training I do not mean vague spaces of study, miscellaneous fields of reading, a varied smattering of a score of subjects and the thorough digestion of none. The field of modern knowledge is extremely wide and varied. After a certain number of really fundamental subjects have been studied in the schools, the college undergraduate must be offered a choice of the route he will travel in carrying his studies further.

The former president of the University of Chicago, Robert M. Hutchins, has certain ideas about college, its objectives, curriculum, and intellectual virtues. Hutchins<sup>6</sup> says,

I suggest again that the primary object of institutions with this aim will be the cultivation of the intellectual virtues which can be accomplished through the communication of our intellectual disciplines. This means understanding the great thinkers of the past and present, scientific, historical and philosophical. It means a grasp of the disciplines of grammar, rhetoric, logic and mathematics; reading, writing and figuring.

Whenever educators discussed curriculum and value for future living, Hutchins<sup>7</sup> felt, "A second consequence of American ideals in an American education is that we have a tendency to base the curriculum on 'useful' information."

He<sup>8</sup> did feel that success in life was a test of education when he stated before a group of educators at Louisiana University, "for no one will deny that the test of education is whether the graduates succeed in life, and even those who argue for intellectual development as the aim of education are constrained to add that the man with a developed intellect will make more money than a man with an undeveloped one."

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<sup>6</sup>Robert M. Hutchins, Education for Freedom, (Baton Rouge, La.: Louisiana State University Press, 1947) p. 60.

<sup>7</sup>Ibid., p. 53.

<sup>8</sup>Ibid., p. 42.

Furthermore, Hutchins<sup>9</sup> thought too much emphasis in college was being placed on course work which was concerned with making a living, for he said, "what the pupil must have is some sort of strictly practical, technical training in the routines of a vocation that will enable him to fit into it with a minimum of discomfort to himself and his employer. The tendency is more and more to drive out of the course of study everything which is not immediately concerned with making a living."

When he reminisced about his own college education and observation of his fellow students, Hutchins<sup>10</sup> vividly points out that,

College was a lot of courses. You toiled your way through those which were required and for the rest, wandered around taking those which seemed most entertaining. The days of the week and the hours of the day at which courses were offered were perhaps the most important factor in determining the student's course of study.

Whenever a survey is planned, many leaders question the validity of the responses even though the questionnaire has been well prepared, pre-tested and validated. The National Society for the Study of Education has reported much on this subject. Kelly<sup>11</sup> reported that it was freely acknowledged that alumni are not always able to render judgments upon questions with due respect to or recognition of the more subtle values of the courses previously studied. However, he declared that if this

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<sup>9</sup>Ibid., pp. 50-51.

<sup>10</sup>Ibid., p. 4.

<sup>11</sup>F. J. Kelly, Chapter XXVIII, Curriculum Reconstruction in the College. The Foundations and Technique of Curriculum Making: Past and Present. The Twenty-Sixth Yearbook of the National Society for the Study of Education, edited by G. M. Whipple, Bloomington, Illinois; Public School Publishing Company, p. 381, 1930.



sampling is representative of competent alumni opinion, one can no longer, either by specific requirements or by group requirements, demand the study of those subjects which seem to alumni to have so little value.

Kelly's<sup>12</sup> investigation reveals that the method of curriculum building is still a matter of controversy to all concerned. He states that a study of the program at most colleges reveals that their curricula are constructed very much as a tariff bill is built in the Congress of the United States. "The final result is an agreement based upon strains and tensions, concessions and exchanges between administrations and departmental representatives." Finally Kelly<sup>13</sup> says, "but even to date, curricula which have resulted from the struggle by departmental specialists on the faculty for recognition of their particular fields of subject matter are in vogue throughout the country as a whole."

The problem of curriculum building has been with us always and will probably confront educators as long as education is one of mankind's chief concerns. There are some leaders who feel that a curriculum should be uniform with definite subjects and subject matter being required for mastery. However, there are others who disagree. Bobbitt<sup>14</sup> feels that a uniform curriculum, even though it might be effective, is a clear denial

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<sup>12</sup>Ibid., p. 382.

<sup>13</sup>Ibid., pp. 393 and 394.

<sup>14</sup>Franklin Bobbitt, Chapter III, The Orientation of the Curriculum Maker. Part II, The Foundations of Curriculum Making. The Foundations and Technique of Curriculum-Construction. The Twenty-Sixth Yearbook of the National Society for the Study of Education edited by G. M. Whipple. Bloomington, Illinois: Public School Publishing Company, p. 47, 1930.

of the right of the individual pupil to initiate plans and to carry through the activities in which he can most fully realize the ends of his existence.

Bobbitt<sup>15</sup> further believes that education should be administered to individuals of any age, by giving them the greatest amount of individual freedom providing this freedom is accompanied by a sense of responsibility.

"Curriculum-making is mainly concerned with the making of the individual curriculum for the individual boy or girl, by himself, or herself, as guided by teacher and parents," according to Bobbitt.<sup>16</sup>

Originally the word 'curriculum' meant 'race course'. Robert Ulich<sup>17</sup> in a recent book says that is still just what a curriculum is. Young people still go round and round but seldom go to the heart of life and its many problems. He feels that the curriculum too seldom meets human needs.

One educator having a definite opinion about and in regard to curriculum is: Morrison<sup>18</sup> who believes that "The curriculum is crowded with material unteachable because of its lack of any significant connection with modern life."

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<sup>15</sup>Ibid., p. 47.

<sup>16</sup>Ibid., p. 47.

<sup>17</sup>Robert Ulich, Introduction to Philosophy of Education by Henderson, Stella. Chicago, Illinois: University of Chicago Press, 1947, p. 355.

<sup>18</sup>Henry Morrison, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 57.

Cubberley<sup>19</sup> notes that "in curriculum content, despite the nominal similarity of the school subjects of today to those at the turn of the century, there has been veritable revolution. Too little study, however, has been made of instructional results and not much effort has as yet gone into the intensive study of local educational needs and of general community problems in their educational bearings."

Finney<sup>20</sup> considers that "The curriculum problem becomes simply that of selecting subject matter relevant to modern life and grading it according to stages of mental development."

Thorndike<sup>21</sup> says "Every subject and every method must be appraised in terms of the degree to which it contributes improvement in fundamental adjustments of human beings to increase bodily and mental health, and to greater recreational, ethical, and intellectual resources."

Horne<sup>22</sup> suggests "constant study of the functioning of particular subjects in life outside the school, the clearer definition of what knowledges, abilities, skills, attitudes and appreciations are needed to fulfill the functions of life, the determination of proper grade placement of subject materials, the organizing of more valid methods of teaching, and the development of measurement devices and techniques corresponding to each type and unit of instruction."

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<sup>19</sup>Elwood P. Cubberly, Molders of the American Mind by Norman Woefel, New York; Columbia University Press, 1933, p. 67.

<sup>20</sup>Ross L. Finney, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 79.

<sup>21</sup>Edward L. Thorndike, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 96.

<sup>22</sup>Herman H. Horne, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 103.

In order to understand the necessity for remaking a curriculum or even considering changes in a curriculum, one must realize that the modern social and thinking worlds have brought significant new developments which make demands on schools that our intelligent and conscientious educators can no longer disregard. This is the chief reason for a new curriculum and educational procedure according to Kilpatrick.<sup>23</sup> He<sup>24</sup> further states that the aims of any proper educational system is to study life and how to enrich it, to study our customs and institutions and how to improve them and to educate our youth so they may grow up socially capable.

Many educators advise the necessity for a gradual working over of existing curricula, the elimination of obsolete materials and methods, the addition of new elements from a comprehensive inventory of skills, knowledges, ideals and attitudes. Charters<sup>25</sup> is one of the exponents of this necessity. He<sup>26</sup> further feels that an immediate need presents itself to execute hundreds of technical studies designed to throw a light on the problem of material selection in the field of curricular reorganization.

Charters<sup>27</sup> defines the essential steps in curriculum construction as follows:

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<sup>23</sup>William H. Kilpatrick, Remaking the Curriculum, New York: Newsom and Company, 1936, p. 1.

<sup>24</sup>Ibid., p. 45.

<sup>25</sup>W. W. Charters, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 107.

<sup>26</sup>Ibid., p. 108.

<sup>27</sup>W. W. Charters, Molders of the American Mind by Norman Woefel, New York: Columbia University Press, 1933, p. 108 and 109.

1. A comprehensive analysis of man's social life to set up general objectives of education.
2. The breaking up of these objectives into particular ideals, activities and basic working units.
3. The arrangement of curricular elements or working units into an order of importance.
4. The placing high on the list of those ideals and activities which are high in value for children and low in value for adults.
5. The determination of those items the teaching of which will be the school's responsibility.
6. The collection of the best practices with respect to the techniques for inculcating the selected ideals and attitudes.
7. The arranging of the selected list of elements into proper instructional order by reference to the psychological nature of children.

Herrick and Tyler<sup>28</sup> have as their concept of curriculum design, a triangle showing the purpose or outcomes supported on legs of needs plus interests of students and needs of society plus resources of a school which in turn gives a philosophy of life and education for those responsible for educational programs.

#### Purposes or Outcomes

Needs and Interests  
of Students

Needs of Society  
and Resources of  
a School

Philosophy of Life and Education  
of Those Responsible for Educa-  
tional Programs.

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<sup>28</sup>V. E. Herrick and R. W. Tyler, Chapter IV, The Concept of Curriculum Design, Toward Improved Curriculum Theory, Chicago, Illinois: The University of Chicago Press, Supplementary Educational Monographs No. 71, p. 38, March 1950.

This is the curriculum design for the General College at the University of Minnesota.

Both Herrick and Tyler<sup>29</sup> feel that four important elements must be considered in curriculum development. These are:

1. That a curriculum is developed on the base of the educational beliefs and convictions of the persons responsible for its development;
2. That the purposes of the General College provide the means for selecting and giving direction to the needs of the student; and
3. That the individual needs of the students cannot be considered in isolation but must be recognized in relation to the needs of society and the capacity of the resources of the school to meet them.
4. The elements must be combined in such a manner as to produce a well-balanced curriculum.

Woefel<sup>30</sup> states the American university and college students, in recent years, have given signs of a self-conscious maturity and an independence which in the past has been almost completely lacking. This independence reveals itself in many varied forms, one of which is the increasing discrimination in the choice of courses or course work to be undertaken. This idea leads one to entertain the thought of an "elective system" or "free choice" of subjects. Lodge<sup>31</sup> reports that several years ago, under the "elective system" in force at one of the eastern universities, several students actually received their B. A. degree for

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<sup>29</sup>Ibid., p. 39.

<sup>30</sup>Op. cit., p. 32.

<sup>31</sup>Rupert C. Lodge, Philosophy of Education. New York: Harper and Brothers, p. 62, 1947.

completing the required number of credits in rather an unusual manner.

He<sup>32</sup> stated,

They elected courses entirely on the basis of their beginning courses, independently of their content. 'French 1', 'English 1', 'Physics 1', etc. were selected. In their final year, these students were somewhat put to it to find enough courses numbered '1' to complete the required number of 'credits'. But by taking 'Assyriology 1' and similar courses, the record was finally established.

Henderson<sup>33</sup> feels that perhaps in the past we went too far with the elective system for college students seldom have the maturity or the judgment to make wise choices. Chancellor Hutchins<sup>34</sup> says that when President Eliot of Harvard instituted the elective system, he robbed youth of their cultural heritage. Hutchins felt that few young people have the wisdom or the self-discipline to choose difficult but rewarding subjects. These students have a tendency to pile up credits in so-called "snap" courses. The growth of this elective system has resulted in a bewildering number of subjects among which it is difficult to choose. On the other hand, Callom<sup>35</sup> warns against merely a cultural education or merely a scientific or vocational education. He feels that a merely cultural education, at the expense of scientific or vocational training, will not be adequate for the life that one must lead in society today. Nor will a merely vocational or scientific education set apart from the development of any

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<sup>32</sup>Ibid., p. 62.

<sup>33</sup>Op. cit., p. 356.

<sup>34</sup>Robert Hutchins, Introduction to Philosophy of Education by Stella Henderson, Chicago, University of Chicago Press, 1947, p. 356.

<sup>35</sup>C. W. Callom, Chapter XII, Philosophical Principles. Student Personnel Services in General Education edited by P. J. Brower. Washington, D. C.: American Council on Education, 1949. p. 282.

cultural insights or appreciations, be thought to be adequate for a good life in today's society. There is a need for selecting material which is pertinent to the problems of the present and this is forcefully substantiated by George Lunberg.<sup>36</sup> He says, there is no doubt that much of what we now teach is worse than useless because it consists merely of transmitting the errors, prejudices, and speculations of bygone generations.

Through the years, much has been said about the importance of subject matter versus the teachers or teaching methods. One idea is adequately expressed by Edman<sup>37</sup> while reminiscing and writing about his former students, when he said, "As in the playing of music, it is the music, not the musician, that is ultimate. And in the art of teaching, it is what is taught that counts, not the teacher."

Sometimes the "Public" is neglected when education and educational features are discussed. One of the Opinion Research Centers recently devoted a report on the subject, "The Public Looks at Education."<sup>38</sup> In this survey, they asked a number of questions, one of which is discussed herewith:

1. "What do you think is the most important thing for children to get from their education in school?"

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<sup>36</sup>George Lunberg. Practical Applications of Democratic Administration, edited by Clyde M. Campbell. New York: Harper & Bros., 1952 p. 18.

<sup>37</sup>Irwin Edman, Chapter VI Former Students, Philosopher's Holiday, New York: The Viking Press, Inc., 1938.

<sup>38</sup>National Opinion Research Center, Report No. 21, The Public Looks at Education. Denver, Colorado: University of California.



The response was:

- 34% Mastery of regular school subjects.
- 34% Character education.
- 26% Preparation for earning a living.
- 14% Citizen education.
- 11% Teach how to get along with other people.
- 7% Not specific in suggestions.

Even the question is raised regarding the value of a college training. In fact, James<sup>39</sup> raises the question, "Of what use is a college training?" He goes on to say, "A certain amount of meditation has brought me to this as the pithiest reply which I myself can give: The best claim that a college education can possibly make on your respect, the best thing it can aspire to accomplish for you is this: that it should help you to know a good man when you see him."

Apparently, curriculum requirements are currently a problem in Land Grant Colleges. E. L. Anthony, Dean of Agriculture, Michigan State College, in a recent release,<sup>40</sup> discussed the requirements necessary for a degree in Agriculture. Dean Anthony stated that one of the most discussed questions before teachers and administrators of professional education in Agriculture was the question regarding the requirements for the Bachelor's degree in Agriculture. He said, "To my mind it is one of the most important questions confronting the Land Grant Colleges today and is much overdue in its discussion and determination."<sup>41</sup>

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<sup>39</sup>William James, The Social Value of the College-Bred. Memories and Studies. New York: Longmans, Green & Company, 1911.

<sup>40</sup>E. L. Anthony, Minimum Requirements for the Bachelor of Science degree in Agriculture. (Oral communication with mimeographed data). East Lansing, Michigan: Michigan State College. Fall, 1951.

<sup>41</sup>Ibid., p. 1.

The early promoters and fathers of higher education in Agriculture had this to say in the passage of the first legislative act establishing the first agriculture college in 1853 (Michigan State College). "The day has gone by when an enlightened liberal education was deemed useful for a farmer. Agriculture has risen into a science, too, the most comprehensive of all others and which demands not alone strong hands and bodily labor but active, vigorous, cultivated minds. Nor should the claims of literature and the five arts be wholly neglected, as tending to polish the mind and manner, refine the taste, and add greater luster and dignity to life."<sup>42</sup>

Dean Anthony stated that any consideration of higher education in agriculture must start with the sciences, in view of the fundamental basis of science in all modern agriculture today. It was his opinion,<sup>43</sup> that at least half of the credits required for a B. S. degree in Agriculture should be in the fields of technical agriculture. This means that in colleges on a term basis of 200 credits, about 100 credits are required in agricultural fields. Therefore, at least 25 to 40 different three to five credit courses should be required of the agricultural student and in addition, as many more as are available so that selection and election may be possible.<sup>44</sup>

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<sup>42</sup>Ibid., p. 2.

<sup>43</sup>Ibid., p. 3.

<sup>44</sup>Ibid., p. 4.

The Association of Land Grant Colleges<sup>45</sup> and Universities devoted several years to studying the problems involved in the qualifications for a Bachelor's degree in Agriculture. This group, in a report on the training of teachers of Vocational Agriculture, set up criteria<sup>46</sup> for a curriculum.

"The theory upon which current curricula have usually been constructed maintains that the content of the curricula should come from the specialist and be applied by the individual to the activities in which he engages after he has learned them. The specialist in Chemistry for instance, constructs a course in that subject which presents the fundamental facts and principles of the science as the chemist uses them. The same material is taught to chemists, engineers, farmers, doctors, housekeepers and laymen, with the expectation that each will apply such of it as he may need, to the activities of his vocation or of his leisure."<sup>47</sup>

In May of 1950, the All College Educational Research Committee issued to staff members, a mimeographed leaflet (6359, May 18, 1950) entitled, "Explanatory Statement and Credit Pattern Recommendations to the Staff." In the report, it was shown that the current Michigan State College catalog lists two thousand nine hundred thirty six courses. This picture is somewhat distorted in view of the fact that some courses, for example,

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<sup>45</sup>Association of Land Grant Colleges and Universities. Report of the Senate Committee on Training Teachers of Vocational Agriculture. Washington, D. C., 1952.

<sup>46</sup>Ibid., p. 2.

<sup>47</sup>W. W. Charters. Activity Analysis and Curriculum Construction. Journal of Educational Research, Volume V, p. 357.

French 101 a, b and c, while covering three terms, is not really three courses, but one. There are many instances, where subject matter has been divided and redivided far beyond the point of necessity. Under the subtitle of "Discussion of Curricular Problems" this report reads as follows: "There are instances where courses in different departments or even different schools, have almost the same title and course description, and it may be assumed, cover the same subject matter. The situation is not peculiar to Michigan State College. It is characteristic of programs offered at a great many--perhaps most colleges and universities. Michigan State College need not pattern its program after that of any other institution. This is a time when this institution may again show its readiness to pioneer and develop the kind of program which best meets the needs of its students . . . .

As the reader has readily seen, there seems to be a difference in the criteria held by different schools of educational philosophy as to the intent, the type and the methods of higher education. The reading of great books is advocated by one school, memorization of facts by another, and the translation of facts into action by the third group. However, it appears that almost everyone is consulted in the field of curriculum revision except the products of that curriculum--the student. With all of the theorizing about what should be taught, and how it should be taught, and in spite of all of the investigations which have been made, it appears as though we are still at sea at Michigan State College as indicated by the All College Research Committee. The author proposes to bring into the picture, the opinions of a segment of those graduates who have been affected by these curricula.

Finally the following three points must be considered while discussing the importance of this problem:

1. Educational leaders and teachers at Michigan State College recognize that the agricultural curricula offered at Michigan State College may be inadequate and possibly should be changed and improved.
2. Opinions of students presently enrolled can be solicited, but due to their lack of experience, these students can give only immature answers.
3. Graduates, who majored in livestock courses in Agriculture, and who have been out earning a living are in a better position to supply the proper information and necessary facts for modification of the curricula, if needed.

In summary, Michigan State College School of Agriculture feels the need to improve its instructional program in various phases of its present status. It believes that it can best serve its true purpose when it is serving its constituents. Hence, the findings of this study should contribute to the information necessary to change the agricultural curriculum to meet changing human needs.

#### PURPOSES OF THE STUDY

1. To follow up a selected number of graduates majoring in livestock courses given in the School of Agriculture at Michigan State College, in order to ascertain their opinions on the adequacy of the agricultural curricula received while matriculating as students at Michigan State College in terms of their present jobs.
2. To ascertain evaluative information regarding specific course work taken by a selected group of graduates, majoring in livestock courses.

3. To determine whether and to what extent the agricultural curricula at Michigan State College should be changed, modified, expanded or shortened in light of these findings.

#### METHODS OF STUDY

It was proposed:

1. To review the literature to ascertain what previous studies, carried out by Land Grant Colleges, United States Department of Agriculture, or recognized leaders in the field of agriculture curricula had to contribute to the present problem.

2. To secure lists of graduates majoring in Animal Husbandry, Dairy Husbandry and Poultry Husbandry who graduated from Michigan State College with a degree of Bachelor of Science in Agriculture during the period from 1940-1952.

3. To verify the addresses of the above-mentioned graduates by checking the files of the Michigan State College Alumni Office for any recent address changes.

4. To secure photostatic copies of transcript of grades for each graduate listed. These transcripts to be sent out to each graduate with questionnaire to assist in recalling course names and numbers.

5. To develop a valid questionnaire based upon course names and numbers listed in Michigan State College catalogs during the period 1940-1952. This questionnaire is designed to secure the opinions of graduates as to the adequacy of the curricula they had in college in terms of their present job.

6. To pretest questionnaires with known graduates of all three segments of the livestock industry to perfect the questions. An attempt was made to eliminate repetitious, ambiguous, leading, stereotyped phrases and questions.

7. To interview a certain number of respondents for pretesting in order to verify the written results obtained.

8. To prepare questionnaires in such a manner as to allow, by substitution of a different page three (3) for each major (Animal Husbandry, Dairy Husbandry, and Poultry Husbandry), a reduction in the total pages in the questionnaire and so that a graduate in one field of interest would not receive questions concerning the other two segments of industry.

9. To formulate questions to yield exactly the information desired.

10. To follow up after one month had elapsed, a letter in an attempt to secure additional questionnaire returns.

11. To test the questionnaire for reliability by:

(a) Including a few questions to serve as checks on the accuracy and consistency of the questions as a whole.

(b) Using the questionnaire as a personal interview schedule to allow reviewing of questions and problems as they arose on part of interviewees.

(c) Using a sample run of the questionnaire among local graduates.

(d) Using statistical tests such as item analysis and cross tabulation.

12. To tabulate the results and prepare a report allowing comprehension of the facts, maps, charts and statistics. To evaluate the responses of entire group of graduates to certain "required" and "elective" courses. To evaluate certain factor differences to course work by Animal Husbandry, Dairy Husbandry and Poultry Husbandry graduates.

13. To report the results of this study to the administrative group in charge of curricula planning at Michigan State College.

#### BASIC ASSUMPTIONS

1. That this type of study will make a contribution to curriculum study at the college level.

2. That one of the better ways to determine the value of a curriculum is to ask the graduates, who took the courses, to evaluate it.

3. That former graduates who majored in the livestock courses in Agriculture at Michigan State College and who, subsequently, have been earning a living, are in a position to supply some information of value in appraising the course work they took as undergraduates.

4. That the selected graduates will give reliable responses to questions asked of them.

5. That former students will recall course work of practical and non-practical value, when supplied with a transcript of grades and courses.

6. That the curriculum builders in the School of Agriculture at Michigan State College will utilize the findings of this study in an attempt to improve its curriculum.



## LIMITATIONS

1. This study was confined to graduates of the School of Agriculture of Michigan State College who graduated during the years 1940-1952 and whose correct mailing addresses were available.

2. Questionnaires were sent only to those graduates, who majored in Animal Husbandry, Dairy Husbandry or Poultry Husbandry at Michigan State College.

3. This questionnaire, as developed, was rather lengthy as it contained two hundred fifty-four questions on 13 pages of mimeographed copy. This large number of questions and number of pages would doubtlessly result in a poorer response than a questionnaire with fewer questions and fewer pages.

4. Some courses titles and/or numbers were modified or changed during the period from 1940-1952, which resulted in duplicate numbers or titles for some courses.

5. Introduction of Basic College at Michigan State College at the beginning of the Fall term 1944 necessitated a change of requirements and prerequisites for the period 1944-1952 when compared to the period 1940-1944. This conflict limited the responses of those who graduated prior to 1944.

6. Recent graduates may have been inducted into armed services immediately following graduation and are not vocationally utilizing course work taken as a student and therefore are not in the position to evaluate the courses taken as an undergraduate, in the light of the use they are making of them.

7. No attempt was made to analyze or correlate the likes and dislikes of courses based upon the grades received or personalities of instructors who taught the course.

8. The data contained in Section I of page 1 of the Questionnaire were not used in this study because the information contained therein was used only as a "Foot in door" or "Can opener" technique to secure the human interest appeal. This technique is suggested by both Mildred Parten in "Surveys, Polls and Samples: Practical Procedures," and W. J. Goode and P. K. Hatt's "Methods in Social Research."

9. No effort has been made in this study to ascertain the effectiveness of a college degree in terms of benefit to society unless such effectiveness is reflected in rewards to individuals.

#### Definitions of Terms

1. Agricultural Curriculum -- Course work required of an undergraduate in the School of Agriculture.
2. Animal Husbandry -- A department in the School of Agriculture specializing in the feeding, management, and breeding of Beef Cattle, Swine, Sheep, and horses, and care of meat products.
3. Curriculum -- Course work, both required and elective, required of undergraduates to fulfill the requirements for graduation.
4. Dairy Husbandry -- A department in the School of Agriculture specializing in the feeding, management, breeding of Dairy cattle, and the techniques involved in the manufacture and care of dairy products.
5. Dairy Manufacturing -- One phase of Dairy Husbandry, specializing in the methods and techniques of the manufacturing and preserving of dairy products.
6. Dairy Production -- One phase of Dairy Husbandry, specializing in the feeding, breeding and management of dairy cattle.

7. Graduate -- A recipient of a B. A. or B. S. degree from a recognized college.
8. Livestock Division -- An arbitrary grouping of Animal Husbandry, Dairy Husbandry and Poultry Husbandry departments in the School of Agriculture at Michigan State College.
9. Major -- indicates one's major interest area as an undergraduate in college.
10. Poultry Husbandry -- A department in the School of Agriculture specializing in the feeding, management and breeding of poultry and the care of poultry products.
11. Pretesting -- technique used to test questionnaire in field in order to remove flaws, ambiguous statements and hazy questions from questionnaire.
12. Questionnaire -- type of survey used to secure answers, from a large number of respondents, to a large number of questions.
13. Respondent -- A person who completes questions on survey form and returns it for compilation.
14. Selected Graduates -- Group of graduates selected by author for candidate respondents based on year of graduation, major emphasis as undergraduate and correctness of address.
15. Transcript of Grades -- A photostatic copy of course title, number, grades and credits given to respondent as an undergraduate. These copies prepared by the Registrar's office at Michigan State College.
16. Undergraduate -- refers to that phase of college work prior to receipt of degree.

## CHAPTER II

## CHAPTER II

### REVIEW OF RELATED STUDIES

This chapter will summarize some of the results of studies which are related to the curricula derived from:

- (1) The minds of professors and the catalogs of other institutions.
- (2) The opinions of the students who have been exposed to the courses.
- (3) The surveys made in the various fields of agriculture.

The major findings of these investigations as they relate to the present study will be presented.

#### Studies of Institutions of Higher Learning

Dean E. L. Anthony, School of Agriculture, Michigan State College made an effort in 1951 to ascertain whether any study had been made or was being made at any other School of Agriculture regarding the graduates' views of the curricula. The following institutions reported no work having been done, nor any in progress:

Colorado Agricultural and Mechanical College,  
Cornell University,  
State College of Montana,  
North Dakota State College,  
University of Hawaii,  
University of Kentucky,  
University of Minnesota,  
University of Mississippi,  
University of Nebraska, and  
University of Nevada.

In the summer of 1950, a survey was made of the Agricultural Economics and Agricultural Administration graduates of Kansas State College.<sup>48</sup> The objective of this penny postcard survey was to determine present occupation, correct addresses and to obtain the names of those who wished to consider other employment opportunities. There was no particular consideration of curriculum or courses taken by these graduates except as current occupations revealed suitability of undergraduate courses.

The University of Missouri<sup>49</sup> reported that a Personal Data sheet had been sent out, which proved to be unsatisfactory as it was too detailed and did not fit their needs. This questionnaire did not take any consideration of curricula or course work.

An occupational survey was sent out to graduates of the University of Connecticut.<sup>50</sup> However, a 32% return revealed very little.

Perhaps the aim of our land grant colleges should be restated. Because the University of Vermont conducted a similar study of graduates' reactions, their aim, as reproduced in their annual report,<sup>51</sup> is given:

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<sup>48</sup>G. Montgomery, Head, Department of Economics and Sociology, "Occupations of Graduates in Agricultural Economics and Agricultural Administration", (written communication with mimeographed data) (Manhattan, Kansas: Kansas State College, August 13, 1952).

<sup>49</sup>Sam. B. Shirkey, Dean, College of Agriculture, "Personal Data Sheet of Graduates of the University of Missouri College of Agriculture", (written communication with mimeographed data) (Columbia, Missouri: University of Missouri, July 30, 1952).

<sup>50</sup>A. I. Mann, Assistant Dean, College of Agriculture, "Occupational Survey". (written communication with mimeographed data) (Storrs, Connecticut: University of Connecticut, August 18, 1952).

<sup>51</sup>College of Agriculture, University of Vermont, Annual Report #2, Burlington, Vermont, December, 1946. p. 5.

Aim of the College of Agriculture of the University of Vermont is to provide general training in agriculture and to prepare young men and women so they can fill farm positions, teach agriculture in school, and carry on extension work and field service work for various commercial firms which service agriculture. At the same time it aims to provide specialized training in agricultural economics, agricultural engineering, agronomy, botany, dairy production, dairy manufactures, horticulture and poultry husbandry.

Specific recommendations for curriculum improvement at the University of Vermont<sup>52</sup> are below:

<u>Comment</u>	<u>Number</u>	<u>Percent</u>
More manual art	61	26
More basic courses	26	11
More social studies	13	6
Better counseling	13	6
Combine practice with theory	9	4
Better facilities	7	3
More specialization	6	3
Better instruction	3	1
Miscellaneous	8	2
None	<u>89</u>	<u>38</u>
Total	235	100

Vice-Dean H. K. Wilson<sup>53</sup> of the School of Agriculture of Pennsylvania State College, in 1949 made a survey of other land grant institutions on Common Practices in Agriculture in the First Two Years in Our Land-Grant Institutions. The object of this survey was to learn what methods were being followed in making the very important first two years in college most effective in the educational pattern. This survey showed that most land grant colleges have the fixed curriculum in the first two years and

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<sup>52</sup>Ibid., Table 13, p. 15.

<sup>53</sup>H. K. Wilson, "Common Practices in Agriculture in the First Two Years in Our Land Grant Institutions", (State College, Pennsylvania: Pennsylvania State College School of Agriculture, March, 1949).

allow for more electives in the later years. However, the University of Minnesota permits much latitude on the part of the student and his advisor. The Junior and Senior years at Minnesota are almost entirely determined by the combined action of advisor and student according to the interest and aims of the student.

Conrad White,<sup>54</sup> in his doctoral dissertation, studied the curricula in agricultural education at Michigan State College in an attempt to secure reliable and valid information in the area of subject-matter preparation. White showed that subject matter and methods of presentation are constantly changing in the field of agriculture; that teachers of vocational agriculture do not have the opportunity to take enough courses in Animal Husbandry in their undergraduate work; that there seems to be varied opinions as to what should be included in the Animal Husbandry courses taken by majors in Agricultural Education, that teachers need occupational ability in any vocational subjects taught; and that teachers of vocational agriculture need to be competent in technical agriculture.

The 1953-54 Michigan State College Bulletin's<sup>55</sup> description of the School of Agriculture reads as follows:

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<sup>54</sup>Conrad P. White, "Factors Associated with Certain Abilities Possessed and Jobs Taught in Selected Livestock Enterprises by Teachers of Vocational Agriculture in Michigan." Unpublished Ph. D. Thesis, Michigan State College, 1951. 165 pp.

<sup>55</sup>E. L. Anthony and E. R. Megee, School of Agriculture, Michigan State College Bulletin, Michigan State College, East Lansing, Michigan. Volume 48, Number 11, May, 1953.



Modern training in agriculture is based upon an understanding of the sciences and a knowledge of effective agricultural organization, practices, processing, and marketing. The curricula of the various departments of the School of Agriculture are planned: (1) To give fundamental training in the basic sciences; (2) to give the broad, general educational experience provided by the Basic College; and (3) to establish a direct contact with the field of technical agriculture during the freshman and sophomore years and provide a course of study for specialization during the junior and senior years. A sufficient number of subjects in the various technical agricultural fields are offered in the first two years to acquaint the student with several phases of agriculture and to furnish a foundation for the final decision in regard to the course in which he wishes to specialize.

It should be noted that several institutions reported no curricula studies completed or in progress. Most of the surveys that were made by these institutions were for the purpose of obtaining information regarding correct addresses and occupations. Very little work was done on a School of Agriculture level although the University of Vermont secured general recommendations regarding possible curriculum improvement. The work reported by the author concurs with most of the Vermont's recommendations. The Pennsylvania State College survey revealed that most land grant colleges have a fixed curriculum in the first two years and allow for more electives in later years. A notable exception is the University of Minnesota. The author's work reveals that Michigan State College has a fixed curriculum for the first two years plus requiring certain subjects in each department in the School of Agriculture.

The definition of the School of Agriculture at Michigan State College as given in the catalog, reveals that the curricula of the various departments are planned:

- (1) To give a fundamental training in the basic sciences;
- (2) To give the broad general educational experience provided by Basic College; and

- (3) To give a direct contact with the field of Technical Agriculture during freshman and sophomore years.
- (4) To provide for a course of study for specialization during the junior and senior years.

It is with this description of the purposes of the School of Agriculture, that the graduates disagree as shown by their opinions. This will be discussed in the summary.

The Department of Rural Organization of the University of West Virginia<sup>56</sup> sent out a vocational agricultural study questionnaire on January 12, 1952. This nine-page questionnaire tried to determine the value of courses taken as undergraduates. This questionnaire showed a wide variation of answers in rating course work in the teaching of vocational agriculture. The courses in theory rated much lower than those of a practical nature. However, this study attempted to evaluate course work by asking for a reply of "most essential", "desirable, but not essential". This questionnaire did list required and non-required courses as well as course title and number.

Associate Dean Libby<sup>56</sup> of the University of Maine sent a questionnaire to one hundred College of Agriculture graduates in the classes of 1942, 1943, 1946 and 1947. He received a 55% response. The responses

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<sup>56</sup>J. P. Bail, Assistant Professor, College of Agriculture, "Teacher Education in Agriculture", (written communication with mimeographed data) (Morgantown, West Virginia: University of West Virginia, August 14, 1952).

<sup>57</sup>W. C. Libby, Associate Dean, School of Agriculture, (written communication with mimeographed data) (Orono, Maine: University of Maine, 1952).

were tabulated, based upon the respondent's occupation. The most interesting question asked in this survey was: "To your way of thinking, what is the most important single thing that the College of Agriculture could do to improve the effectiveness of its teaching program (avoid personalities)?"

The Answers: (Numbers in brackets refer to frequency of mention.)

1. Related to students -- Eliminate poor students (3); more strict discipline (1); better guidance program early in college experience (1); closer faculty/student relationships (1).
2. Related to faculty -- Employ permanently only teachers of proven effectiveness (11); encourage leave of absences for staff (1); more dignity from staff (1); eliminate tenure for staff members (1); better salaries for good teachers and early release of poor ones (6).
3. Course or Program of Study -- Student trainee program involving practical supervised farm experience (12); field trips to successful farms (3); require overhauling and modernization of courses periodically (2); broaden all curricula (1); require mathematics (1); require business administration (1); stress through organized courses the value of social poise and personality (1); work in agricultural courses entirely too simple and easy (3).
4. Methods -- Stimulate students to think, talk, and discuss (4); greater use of visual aids and classroom demonstrations (5).
5. No suggestions -- (4).

A one-page questionnaire was sent out by the University of Wyoming in 1948 in an effort to obtain information for curriculum revision. Mr. H. W. Benn,<sup>58</sup> Assistant Dean, in a letter to Dean Anthony dated August 12, 1952, said, "The major difficulty was in identifying the courses by the names which the graduates listed." Dean Benn felt that

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<sup>58</sup>H. W. Benn, Assistant Dean, College of Agriculture, "Special Questionnaire on Courses, 1948", (written communication with mimeographed data) (Laramie, Wyoming: University of Wyoming, August 12, 1952).

the major benefit was from suggestions as to the courses and general nature of subject matter which the graduate in each of the various vocations found to be the most useful. In the Wyoming questionnaire, the graduate was asked to give his or her frank opinion on features of college work which helped the individual. The respondent was asked to rank 5 or 10 courses in order of their value. Likewise courses which were of the least value were requested. An unusual feature of this questionnaire was the request that the graduate was asked to list the courses which he didn't take and which he would recommend for students planning to enter the work in which he was engaged.

Carter and Fenix<sup>59</sup> attempted to learn how well these aims were being met. They questioned graduates for the period 1900-44. One of the most significant points brought out by the study was the importance of a broad, well-rounded background of college studies, as compared with a narrow concentration. This is indicated by a comparison of Vermont's graduates' life work with their major interest while in college.

Hall and Judelson<sup>60</sup> sent out questionnaires to 1,740 University of Illinois graduates in agriculture who matriculated in 1940 or before. The bulletin is based upon replies received from these one thousand seven hundred forty graduates. Their findings indicate the improvements in agricultural curriculum, suggested by graduates in the following table:<sup>61</sup>

<sup>59</sup>R. M. Carter and R. E. Fenix, "Vermont's Agricultural College Graduates". Bulletin 541 (Burlington, Vermont: University of Vermont and State Agricultural College, April, 1948). pp. 14-16.

<sup>60</sup>D. M. Hall and R. R. Judelson, "The Agricultural Student, His Opportunities and Choice of Job", Bulletin Number 3, Volume 41, (Urbana, Illinois: University of Illinois, September, 1943).

<sup>61</sup>Ibid., Table 3, p. 13.

IMPROVEMENTS SUGGESTED BY UNIVERSITY OF ILLINOIS  
GRADUATES FOR AGRICULTURAL INSTRUCTION

	College Teachers	Extension Workers	High School Teachers	Engineers	Agricultural Teachers	Business Managers	Clerks and Salesmen	Farmers	Tradesmen	Miscellaneous	All Groups
More intense guidance work	27.6%	17.7	18.2	14.3	30.5	13.8	20.0	12.9		21.0	18.6
Combine more practice with theory	3.5%	3.9	7.2		2.8	4.6	5.7	3.2		8.8	5.1
More courses in:											
Business Management	13.8%	13.7	3.0		8.3	24.6	20.0	17.7	33.0		11.9
Scientific Studies	17.2%	2.0	4.0	28.6	13.9	3.1		3.2	16.7	3.5	5.4
Practical Studies	13.8%	25.5	31.3	14.3	16.7	16.9	14.3	29.0		5.3	20.6
Personality Improvement	10.3%	11.8	22.2	14.3	5.6	12.3	14.3	12.9	33.3	26.3	16.1
Number of votes	29	51	99	7	36	65	35	62	6	57	447

Hall and Hudelson reported that a complete list of individual suggestions submitted by the alumni had been placed in the hands of all members of the teaching staff of the College of Agriculture. This was done with the hope that suitable adjustments would be made in courses and curricula. Furthermore, it was indicated that some progress had already been made along the suggested lines and college procedures had been modified somewhat to permit adaptations of curricula to the individual needs.

The College of Agriculture of the University of California at Davis in conjunction with the Division of Education<sup>62</sup> surveyed the degree graduates of the College of Agriculture. One of the purposes of this survey was to obtain from graduates, for period 1933-37, suggestions for making adjustments in under graduate curricula. Questionnaires were sent out to four hundred sixty-six graduates.

Sutherland and LeCount<sup>63</sup> reveal that respondents, in the main were satisfied with their undergraduate courses and training. However, the graduates indicated that they would like to have had:

- a. A broader program of courses; more agricultural and other courses outside their major field.
- b. More courses in Agricultural Economics, Business Law, Bookkeeping, Farm and Business Management.
- c. More practical instruction in agricultural courses.

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<sup>62</sup>S. S. Sutherland and S. N. LeCount "Survey of Degree Graduates of the College of Agriculture, Davis, (written communications with mimeographed data) (Davis, California: University of California, College of Agriculture) April 8 and 21, 1953).

<sup>63</sup>Ibid., p. 4.

d. More practical field work and experience.

e. More courses in Agricultural Engineering.

This California report shows that, based upon occupations, the undergraduate training provided more nearly meets the needs of students entering research or college teaching than it does of those entering other occupations. It appears that a much larger percentage of graduates in research or college teaching expressed complete satisfaction with their undergraduate training than in any other occupational group.<sup>64</sup>

As part of the California summary, each respondent was asked which courses or training he or she would take if they were to start college over again. Also, what improvements would be suggested as to courses, activities and curriculum. The most frequent suggestions regarding courses and curricula by graduates from the various majors were as follows:

Animal Science (Animal Husbandry) -- Graduates in this major suggested the following in order of frequency: (1) A broader program of Agricultural courses--more courses outside the major; (2) more practical field work and farm experience, (3) more instruction in farm management, business law, and farm accounting.

Dairy Industry -- Only one suggestion was made by majors in this division with any frequency, but more than half of the respondents mentioned it. They suggest more training in plant and business management, accounting, and business law. The graduates' suggestions<sup>65</sup> as to improvements based on occupation are given in the following table:

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<sup>64</sup>Ibid., p. 9.

<sup>65</sup>Ibid., Table Number 7, page

IMPROVEMENTS SUGGESTED BY AGRICULTURAL GRADUATES OF THE COLLEGE OF AGRICULTURE,  
UNIVERSITY OF CALIFORNIA, BY GRADUATES IN VARIOUS FIELDS SUGGESTING EACH IMPROVEMENT

Improvements Suggested	Voc Ag Teachers	Research Workers	Farmers	Extension Workers	Agricultural Business	Federal and State Empl.	Others	Total
1. More courses in:								
Related science	3	2	3	8	1	0	0	17
Basic science	0	6	1	2	1	0	0	10
Practical agriculture	16	1	11	4	6	1	0	39
Agriculture outside of major field-broader program	9	7	10	9	5	1	0	41
Agricultural Engineering	18	0	8	7	4	0	0	37
Business Law, administration, bookkeeping, management	1	3	14	1	17	3	2	41
Liberal arts - English, public speaking	4	4	2	5	1	2	0	18
2. More practical field work and experience	14	6	8	5	3	2	0	38
3. More extra-curricular activities	4	0	3	1	1	0	1	10
4. Better orientation and guidance	3	0	1	1	2	0	0	7
5. Generally satisfactory. No improvement to suggest	6	7	1	1	2	2	1	20
Total	78	36	62	44	87	11	4	278



A study was made by C. N. Shepardson,<sup>66</sup> Dean of Agriculture, of the Agricultural graduates of Texas Agricultural and Mechanical College, to answer two basic questions:

1. Why go to college to learn to farm? and
2. Why do your Agricultural Graduates not go back to the farm?

A comprehensive questionnaire was mailed to 4,702 graduates. Graduates were asked to list the outstanding educational and vocational contributions which the Agricultural and Mechanical College of Texas had made toward their success. While the nature of the replies varied, about three-fourths of them fell under five headings.

These are worth mentioning for comparative purposes. They are: Technical foundation and development of the ability to find needed information was given by 24.8 percent, 20.5 percent listed applied training, 14.3 percent listed development of self confidence, 7.9 percent thought that contacts made were of most importance, 6.3 percent listed military training and citizenship, 10 percent listed a wide variety of points and 16.2 percent failed to answer.

Another question of Dean Shepardson had to do with the major criticisms of the college. The major criticisms of the college by graduates according to fields of study are as follows:

First, was the lack of practical application in their college courses. The second was lack of vocational guidance and coordination between

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<sup>66</sup>Charles N. Shepardson, "A Study of the Agricultural Graduates of the Agricultural and Mechanical College of Texas", Bulletin Number 7, Series 5, Volume 7 (College Station, Texas: Agricultural and Mechanical College of Texas, July, 1951).

departments in their advice to students. Lack of training in the economics of Agriculture was listed by six percent and lack of training in social relations by 5.5 percent. Insufficient technical training and insufficient work in English and Public Speaking were each listed by 4.3 percent.<sup>67</sup>

Vice-Dean R. S. Hawkins of the College of Agriculture, University of Arizona reported the results of a survey completed in 1950. This report lists the alumni estimation of required courses in Freshman and Sophomore years as follows:<sup>68</sup>

ALUMNI ESTIMATION OF USEFULNESS OF REQUIRED FRESHMAN AND  
SOPHOMORE COURSES AT UNIVERSITY OF ARIZONA

Subject	Most Useful		Useful		Of Doubtful Value	
	No.	%	No.	%	No.	%
Agronomy 1 (Princ.)	155	46.7	155	46.7	22	6.62
Animal Husbandry 1 (Princ.)	152	47.8	120	37.7	46	14.47
Horticulture 1 (Princ.)	123	37.6	150	45.9	54	16.5
Dairy Husbandry 1 (Princ.)	81	26.4	136	44.3	90	29.31
Poultry Husbandry 1 (Princ.)	75	24.6	125	41.0	105	34.43
Agricultural Chemistry 1 (Soils)	212	67.5	88	28.0	14	4.46
Chemistry 1a or 2a (General)	169	50.9	141	42.5	22	6.62
Plant Pathology 105 (Disease)	149	50.9	116	39.6	28	9.56
Botany 1 (General)	158	47.6	142	42.8	32	9.64
English 1a and 1b (Composition)	152	46.2	141	42.9	36	10.94
Bacteriology 107 (General)	121	37.9	153	48.0	45	14.11
Chemistry 40 (Organic)	152	46.1	131	39.7	47	14.24
Botany 103 (Physiology)	124	43.4	121	42.3	41	14.34
Animal Pathology 116 (Anatomy)	126	48.3	85	32.6	50	19.16
Zoology 4a (General)	96	30.5	157	49.8	62	19.68
Math 70 (Agricultural)	99	31.7	137	43.9	76	24.36
Physics 11 (Elements)	76	23.8	163	50.9	81	25.31
Economics 1a (Introduction)	77	23.5	150	45.9	100	30.53

<sup>67</sup>Ibid., p. 30.

<sup>68</sup>R. S. Hawkins (written communication with mimeographed data)  
(Tucson, Arizona: University of Arizona, College of Agriculture)  
August 9, 1952.

E. W. Anderson<sup>69</sup> showed that the best learning situation probably involves practical experiences as well as theoretical concepts. Both are needed, and it is possible that poultry departments have been so interested in building up Poultry Husbandry as a science that they may have tended to stress the physical sciences more than applied husbandry. It was significant that very few hatcherymen gave even faint praise to the agricultural colleges from which they graduated. The necessity of understanding the practical, or economic and business type of problems faced by poultrymen was stressed. The entire study showed that all graduates stressed the necessity for ability to communicate with other people; this ability to include understanding of both written and spoken English plus the problems of effective advertising and salesmanship. Many respondents felt that more curricular emphasis should be placed upon the applied principles and practices of business management. The most frequently mentioned and strongest suggestions made for the improvement of curricula of Poultry Departments were to increase practical experience.

Irving R. Wyeth<sup>70</sup> in his recent study prepared, tabulated and analyzed the reactions from 2,902 graduates of the Department of Agriculture at Michigan State College, toward the curriculum studied.

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<sup>69</sup>E. W. Anderson, "A Study of the Curriculum and Its Organization in Departments of Poultry Husbandry." (Unpublished Ph. D. Thesis) Purdue University, 1953.

<sup>70</sup>Irving R. Wyeth, "A Study of the Agricultural Graduates of Michigan State College" (Unpublished Master of Science Thesis) East Lansing, Michigan: 1953.

This comprehensive study reported in detail the information supplied by these graduates and suggested suitable courses of action that the School of Agriculture might initiate, based on the opinions of graduates.

Wyeth<sup>71</sup> reported that the administrative staff of the School of Agriculture, Michigan State College, has long recognized the need to adjust its training program to best meet needs of an ever-changing American Agriculture. Plans were originally made in 1951 to conduct a follow-up study of agricultural graduates to obtain information for use in revising the agricultural curriculum. In 1952, the dean's questionnaire was prepared, pretested, revised and finally mailed on October 25, 1952. Surveys were sent out to all known addresses of 4,500 graduates holding Bachelor of Science Degrees in Agriculture from Michigan State College. On March 9, 1953, all I.B.M. card punching had been completed on 2,913 returns or a 65% response. Answers to all questions were tabulated and statistical relationships between various factors were computed. The data from this survey is discussed in detail in a later chapter.

D. Coaken Jones<sup>72</sup> made a study based upon the practices found in the various teacher training institutions as they related to training Vocational Agricultural teachers. Jones proposed a plan<sup>73</sup> for determining the training program for vocational teachers, based upon practices.

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<sup>71</sup>Ibid., p. 13.

<sup>72</sup>D. Coaken Jones. "Plans for Training Teachers of Vocational Agriculture". (Unpublished M. S. Thesis), Cornell University, 1930. 284 pp.

<sup>73</sup>Ibid., pp. 274-281.

He lists the general course areas plus the percentage of time for each course area, according to the opinions of the graduates.

Sexauer,<sup>74</sup> in his dissertation, gave the techniques involved in preparing a curriculum in Dairy Husbandry by using as a basis, the major activities of the better dairy farmers. Some of those dairy farmers may have been college graduates but for the most part, they were not.

The most important contribution by Sexauer was his summation<sup>75</sup> about how agriculture curricula was developed. He said:

In many of the colleges of agriculture and vocational schools, the curricula are made by a group of men who get together in an office and select from the catalogues there assembled, the courses they think should go into curricula. Their decisions may be based on their special training, available funds, or lack of funds. In fact, many times it is based on less than any of these conditions; it is likely to be based on tradition and prejudice.

He<sup>76</sup> further states that "what is needed in agricultural curriculum construction, is men who can take an overview of the whole situation, and not be influenced either by prejudice and thus misplace their emphasis."

Most of the material used in agriculture curriculum construction has been based on tradition and opinion, sometimes on prejudice. In a few cases small, incomplete surveys or analyses have been made, but even when results are tabulated and presented, the pressure from conservative faculty groups is so strongly against changes, that little has been done toward curriculum improvement.

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<sup>74</sup>T. E. Sexauer, "A determination of the Major Activities of Dairy Farmers of New York as a Basis for a Curriculum in Dairy Husbandry". Unpublished Ph. D. Thesis, Cornell University, 1927. 721 pp.

<sup>75</sup>Ibid., p. 1.

<sup>76</sup>Ibid., p. 2.

Much of the college teaching in agriculture today does not bridge the gap between college and farm life, between the things taught and the development of the student.

In many colleges of agriculture there has been a tendency to neglect the cultural side of life, but the curricula that can bring together the currents of cultural and practical life must be fashioned from the materials of student activity and of farm life.

Seldom does a group of agricultural educators take a view of the whole agricultural situation. The chief causes lie in the lack of vision in the personnel.

This is not so in our college degree courses. Many courses are offered and required which probably have very little, if any, bearing on the activities in which students will engage, the idea still being to get ready for life. Sexauer<sup>77</sup> suggests that

The Colleges of Agriculture now have in their possession the best possible basis for curriculum surveys, rural life surveys, economic surveys, production surveys, livestock surveys, social surveys, and numbers of other kinds of surveys. In these surveys may be found the scientific material for curriculum construction such as we have not been able to get otherwise.

The Farm Management records in the different states furnish an invaluable source of activity material. For instance, Departments of Field Crops, Departments of Animal Husbandry, Poultry Departments, Soils Departments, Rural Life Departments, Dairy Departments, in fact all Agriculture Departments, could well spend time and money studying survey records as a means of better adapting their curricula to the needs of the students and the State.

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<sup>77</sup>Ibid., pp. 693-694.

Sexauer<sup>78</sup> shows that a careful study of farm management survey records would in most cases, barring prejudice, revolutionize our course content. Very frequently we find professors including in their courses, content that is of little value to students and is of little interest to anyone except the person teaching it. For instance, the teaching of history of breeds of livestock is referred to as an example. In most Departments of Animal Husbandry, a study of various breeds of all classes of livestock is included in the courses. A careful study of surveys would eliminate much dead timber such as the above, from college courses.

Sexauer also stated that the same thing happens in all departments, but some still try to justify some of the courses and course content from the standpoint of formal discipline and culture. If students' years of training were not limited, many things might be included, but since they are limited, the things that are of most worth should be taught.

Sexauer felt that, in his opinion, based on a study of the activities of the successful farmers within a state, the proper curriculum for dairying could be formulated for that state.

At Ohio State University, O. L. Young<sup>79</sup> in his Masters Thesis stated that Dean Vivian of the College of Agriculture, Ohio State University had felt, for many years, the need for a study to determine what subject matter is functioning in the lives of the Agricultural College graduates.

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<sup>78</sup>Ibid., p. 695.

<sup>79</sup>Orville L. Young, "Functioning Subject Matter in Poultry Husbandry for Students in the College of Agriculture as Adjudged by Teachers of Vocational Agriculture in Ohio." Unpublished M. S. Thesis, Ohio State University, 1931, p. 66.

He wished to know what subject matter was and was not functioning and also what could be added to the courses already offered in the college to make the courses the most effective in the lives of the graduates. Young indicated that to that date, no such study had been made, especially at any other agricultural college. Young specifically tried to determine the subject matter that should be included in courses in Poultry Husbandry in the College of Agriculture at Ohio State University. It was his view that if subject matter could be adjudged necessary or desirable, then courses could be arranged to contain this subject matter. In this manner, Young revealed that:

1. Students will have had training in fundamental information.
2. Students will be protected from wasting valuable time in college getting information seldom used.
3. Students will be assisted in his learning process by being able to assure himself that he is getting the proper subject matter.

Mark Rhea<sup>80</sup> in an unpublished thesis, secured opinions of Iowa State graduates, who received degrees in Agriculture, regarding recommended changes in emphasis on subject fields by curriculum. He gave his respondents three choices: "increase emphasis", "same emphasis" and "decrease emphasis". However, Rhea only requested opinions on "Communications", "Natural Science", and "Social Science." Rhea's Table 64 reveals that based upon 1,124 replies, the majority of respondents, except for Dairy Husbandry graduates, replied they preferred the "same emphasis" for the above mentioned subject fields.

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<sup>80</sup>Mark B. Rhea, "Present Status and Opinions of Graduates Granted Bachelor of Science Degrees Since 1932 in Agricultural Curricula at Iowa State College." Unpublished Ph. D. Thesis, Iowa State College, 1953, p. 124.



## REVIEW OF THE OPINIONS OF GRADUATES

The related studies reported upon in Chapter II, have in many cases, a similarity to, while in other cases, a difference to the author's investigation. This fact will be pointed out in the more important contributions that are reviewed.

The surveys reported in this section were based upon the opinions, ideas and suggestions of the students who had been exposed to the curricula.

The West Virginia report shows that the courses in theory rate much lower than those of a practical nature. This report concurs with the reactions of the Michigan State College graduates.

University of Wyoming experienced a problem similar in many respects to the Michigan State College study, in that they reported difficulty for the graduate to identify courses by the name and number. This same problem confronts every survey or study involving graduates and curriculum study.

Carter and Fenix reported that the University of Vermont's graduates stressed the importance of a broad, well-rounded background of college studies. This goes hand in hand with the author's findings.

The University of Illinois work lists the improvements suggested by their agricultural graduates and these agree with the Michigan State College findings.

The most complete study, to date, involving degree graduates in agriculture and one which requested suggestions for making adjustments in undergraduate curricula was the work completed by Sutherland and LeCount of the University of California. This California survey was close in

line with the facts learned at Michigan State College. The more important agreements showed that the graduates indicated they would liked to have had:

- (1) A broader program of courses; more agricultural and other courses outside their major field.
- (2) More courses in Agricultural Economics, Business Law, Bookkeeping, Farm and Business Management.
- (3) More practical field work and experience.

Dean Shepardson of Texas Agricultural and Mechanical College found that their graduates' principle criticism was the lack of practical application in college courses, lack of vocational guidance, and coordination between departments in their advice to students. This confirms the author's findings.

Dean Hawkins of the University of Arizona reported the results of a survey completed in 1950. This study reveals that University of Arizona, like Michigan State College, has required courses in each department for Freshman and Sophomore years. The value given each of the required courses varied in the three categories of "Most Useful", "Useful", and "Of Doubtful Value". Although these categories are somewhat different than those used in the present Michigan study, the results closely correlate one another.

Dr. Anderson of Purdue University and I. R. Wyeth at Michigan State College both found that graduates stressed the necessity for applied husbandry instead of physical sciences. In both of these studies, the results parallel the findings of the author.

T. E. Sexauer in his Doctorate dissertation points out the inconsistencies in the methods of preparing a college agricultural curricula.

These facts presented by Sexauer caused many hours of conjecture as to the method or methods used by the faculty or administration at Michigan State College. The author suggests several solutions to this problem of curriculum building in the summary of this thesis.

O. L. Young at Ohio State University set out to learn what subject matter was, and was not functioning; and also what might be added to the courses already offered at Ohio State to make these courses the most effective in the lives of the graduates. Young's work differs from the author's in as much as he attempted to correlate what subject matter was functioning in the lives of agricultural college graduates, while the author requested information regarding likes and dislikes in course work without correlating this function of courses in the lives of the graduate.

In the minds of some staff members and students, there are evidences that there seems to be reasonable grounds for doubting that the School of Agriculture at Michigan State College has a basic philosophy of education, or at least it has not as yet been defined. There appears to be a conflict among staff members, as to exactly what and how the students should be taught. The School of Agriculture Educational Research Committee, studying course and curriculum changes, revealed tremendous differences of opinions among the committee members as to whether education should be a thinking experience, a memorization or mental discipline exercise, or action experience. Even within department educational research committees, members failed to agree upon an ideal system of what and how to teach the student.

In spite of all the theorizing about what should be taught and of all the investigations which have been made, it appears as though we are still at a loss at Michigan State College as to the proper curriculum. The author proposes to bring into the picture, the opinions of a segment of those graduates who have been affected by these curricula.

#### RESULTS OF OTHER SURVEYS MADE IN FIELDS OF EDUCATION

Havemann and West in their survey, reported in the book entitled They Went to College, found that about an equal number of respondents indicated that they wished they had taken a more specialized or generalized curriculum.

The Land-Grant College Association expressed a definite undergraduate training in percentages of time. Fifty-five percent of the studies should be basic work in agriculture subject matter and natural sciences with 25 percent devoted to basic work in the humanities and social sciences. Only 10 percent of the course work should be scheduled for professional preparation and only 10 percent was left for electives. The work at Michigan State College shows the respondents disagree particularly in the amount of time recommended for electives. These findings are discussed more completely in later chapters.

C. R. Pace analyzed course programs of 1947 graduates of Syracuse University and found his tabulations revealed that two-thirds of the average student's work was primarily specialized.

Whether training should be based upon specialization, a broad training or a combination of both, has long been a problem of American educators.<sup>81</sup> Thirty-five out of 100 respondents indicated they wished they had specialized more, twenty-five out of 100 wished they had followed a more generalized curriculum.<sup>82</sup> Perhaps the ultimate meaning is that the colleges have not yet found the happy medium between two types of education. It appears that in our tremendously complicated modern world, for a student who must learn both to earn a living and to live with his conscience, a question arises as to whether either the general or the special education is sufficient.

Havemann and West mailed a thirteen-page questionnaire<sup>83</sup> to a list of 17,053 college graduates in October, 1947. A total of one thousand thirty-seven colleges, or 53.1% replies were received. The most common complaint<sup>84</sup> voiced by the graduate was on the matter of general preparation for life, for citizenship, for a mature adulthood and for all the many intangible things that make up a useful and happy existence in the postgraduate years.

One respondent<sup>85</sup> voiced a criticism expressed by the majority, that very little or no guidance or advice of any kind is offered to the

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<sup>81</sup>E. Havemann and P. S. West. They Went to College. (New York: Harcourt, Brace and Company, 1952) p. 127.

<sup>82</sup>Ibid., p. 156.

<sup>83</sup>Ibid., pp. 268 and 269.

<sup>84</sup>Ibid., pp. 248 and 249.

<sup>85</sup>Ibid., p. 255.

student by the colleges. A large number of graduates cite this as an outstanding defect of all colleges, a fact "that should disturb every college president." The gist of the comments<sup>86</sup> of graduates is perhaps this: "by devoting insufficient thought to the quality and the inspiration of the teaching, and especially by failing to provide advice, guidance, and some rounded explanation of the curriculum, the colleges are succeeding the least with the type of students they could help the most."

The members of the Senate Committee on preservice and graduate training for Extension personnel of the Land-Grant College Association<sup>87</sup> recommended definite undergraduate training for prospective extension workers. This committee expresses this program for undergraduates in the following percentages:<sup>88</sup>

1. Basic work in major fields of subject matter in Agriculture -- 35%.
2. Basic work in the natural sciences (biological and physical) -- 20%.
3. Basic work in the humanities -- 15%
4. Basic work in the social sciences -- 10%.
5. Basic work in courses for professional preparation -- 10%.
6. Electives -- 10%.

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<sup>86</sup>Ibid., p. 261.

<sup>87</sup>Land Grant College Association, "Undergraduate Training for Prospective Extension Workers" (recommendations of the Senate Committee on Preservice and Graduate Training for Extension Personnel) (Washington, D. C.: U. S. Department of Agriculture Extension Service Leaflet 1100. (10-51)).

<sup>88</sup>Ibid., pp. 1-2.

C. Robert Pace<sup>89</sup> analyzed the course programs completed at Syracuse by a sampling of one thousand nine hundred forty-seven graduates. The programs of approximately 240 graduates were tabulated. These tabulations showed that two-thirds of the average student's work was primarily specialized. The remainder of the work was distributed as follows: four percent in the sciences, ten percent in the social sciences, fifteen percent in humanities and four percent in miscellaneous categories not included above, such as education and radio, etc. The typical one thousand nine hundred forty-seven graduates left the University of Syracuse having taken, outside his major field, one course more of sciences, two courses in social sciences, and work in the humanities which seldom went beyond freshman English and English Literature.

The results of this study are based upon tabulations of two questionnaires, viz:

- I. Dean Anthony's Survey, reported by I. R. Wyeth.<sup>90</sup>
- II. H. C. Zindel's Questionnaire reported in this dissertation.

As a result of a conference with the Guidance Committee Chairman, it was decided to include the results of the tabulation of the Anthony Survey. These I.B.M. Cards were processed from the returns of the Questionnaire<sup>91</sup> sent out to the graduates majoring in the span of years, 1895-1951.

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<sup>89</sup>C. R. Pace, University-Wide Studies in Evaluation of General Education at Syracuse. (Unpublished Manuscript) October 15, 1953, Syracuse University: Syracuse, New York.

<sup>90</sup>Op. cit., pp. 17-18.

<sup>91</sup>See Appendix C.

A total of 537 cards were used. The tabulations were as follows:

208 indicating Animal	Husbandry majors,
275 indicating Dairy	Husbandry majors,
54 indicating Poultry	Husbandry majors.

It must be assumed that some graduates may have answered both questionnaires. However, no attempt was made either to segregate those duplications or to correlate studies made.

The summaries of the graduates responding to the Anthony questionnaire are reported in Chapter IV.



### CHAPTER III

## CHAPTER III

### TECHNIQUES USED

In arriving at a decision as to the proper method of collecting data for a research survey, many references were examined. Various techniques have been devised for this purpose. Among these are interviews, observation, case study, schedules and questionnaires. In the planning of the proposed study, it was decided that the information to be gathered could best be done through the use of a mail questionnaire.

Accordingly, a suitable questionnaire involving three departments, Animal Husbandry, Dairy Husbandry and Poultry Husbandry was developed. Michigan State College catalogs for the years 1939-1952 were thoroughly examined and course names, numbers and content were analyzed for duplication, deletion and changes. Many revisions were made in the questionnaire based on the pre-testing results and the combined thinking of various faculty members and the guidance committee.

In the preparation and segregation of course titles and numbers, it was quickly ascertained that duplication, changes in title, overlapping of courses and course numbers would be a problem. A discussion with Kermit H. Smith, Assistant Registrar, Michigan State College, verified that this had been true in the past. However, a new system in the Registrar's office prevented a department from re-using an old course title or number for a new course.

Every effort was made to construct clear, concise and complete questions. Every attempt was made to eliminate duplications, vagueness, or confusion.

Realizing that response to a lengthy mail questionnaire was influenced largely by the introductory remarks and the cover letter, a great deal of attention was paid to wording of the cover letter.

Lists of agricultural graduates since 1940, majoring in Animal, Dairy and Poultry Husbandry Departments were secured from these departments and were checked against master lists in the Alumni Office for any address changes.

Realizing that response to a lengthy survey would be dependent upon the personal appeal, the investigator employed the most successfully used devices known to him of arousing the interest of the respondent. Several of these techniques included:

1. The Recorder of the Michigan State College's Record Office prepared grade transcripts for each of the selected graduates. It was decided to offer this transcript in a "token" payment for completion of the questionnaire. The respondent was aware that these manuscripts must have cost someone at least \$1.00.
2. The transcript allowed him to review his college days quickly.
3. Use of lemon yellow paper and black ink made the material easy to read. Mildren Parten<sup>91</sup> states that yellow colored paper secures the best questionnaire return.
4. Poultry Department stationary was used for the cover letter.
5. Each cover letter was personally signed in green ink.
6. The return address was that of the writer, rather than of a department of the College.

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<sup>91</sup>Parten, Mildred. Surveys, Polls and Samples: Practical Procedures. (New York: Harper and Brothers) 1950.

7. Stamps were placed on both envelopes, a technique which is thought to provoke more interest than the commercial-type business reply envelopes. A nine-cent stamp was placed on outgoing letter and a six-cent stamp on return envelope.
8. Two sizes of envelopes, a #10 and #9, which allowed easy stuffing, were sent out to the respondent. The #9 envelope was used for the return of the completed questionnaire.

## CHAPTER IV

## CHAPTER IV

### GRADUATE REPLIES IN RESPONSE TO THE ANTHONY SURVEY

A summary of the general information furnished by the 537 graduates of the livestock division of the School of Agriculture at Michigan State College is presented in this chapter. An interpretation is made of the more significant data.

The tables included in this chapter give a tabular summary of the replies to pertinent questions furnished by 537 respondents, irrespective of such factors as age, occupation, etc.

#### Agricultural Curriculum

College graduates everywhere have formed opinions of their own regarding courses, their value, and their practicality based upon year of graduation and occupation.

This section will attempt to show the value placed on course areas by the graduates majoring in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. The data in Tables I, II, and III depict the values placed on certain course areas by graduates in relation to their present work. Table I illustrates the "First Important Course Area" while Table II depicts the "Second Most Important Course Area" and Table III shows the "Third Most Important Course Area."

TABLE I  
VALUE OF COLLEGE COURSE AREA TO AGRICULTURAL GRADUATES  
IN RELATION TO THEIR PRESENT WORK\*

First Most Important Course Area

Area		Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
1. Technical-Professional Agriculture	% #	69 143	63 174	57 31	65 348
2. Biological Sciences	% #	4 9	5 14	11 6	5 29
3. Physical Sciences	% #	5 10	8 23	2 1	6 34
4. Social Sciences	% #	2 51	2 6	6 3	3 14
5. Communication Skills	% #	7 15	7 19	11 6	7 40
6. Literature and Fine Arts	% #	0 0	0 0	0 0	0 0
7. Other	% #	1 3	4 12	4 2	3 7
8. No Response	% #	11 23	10 27	9 5	11 55
Totals	% #	100 208	100 275	100 54	100 537

\*This Table and all following Tables are based on percentage distribution N.B. Read the table as follows: 143 or 69% of the graduates who majored in Animal Husbandry rated the technical professional agriculture courses as most important. The rest of the table is read in the same manner. The contrast between the value of Technical and Professional courses in Agriculture and all other courses listed is striking.

All of the groups were agreed on the positive value of communication skills and the sciences as well as upon the lower value of literature and fine arts courses.

TABLE II

VALUE OF COLLEGE COURSE AREA TO AGRICULTURAL GRADUATES  
IN RELATION TO THEIR PRESENT WORK

Second Most Important Course Area

Area		Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
1. Technical-Professional Agriculture	% #	58 120	53 146	39 21	53 287
2. Biological Sciences	% #	5 10	7 18	13 7	7 35
3. Physical Sciences	% #	9 19	11 28	15 8	10 55
4. Social Sciences	% #	3 6	2 5	0 0	2 11
5. Communication Skills	% #	9 18	9 26	19 10	10 54
6. Literature and Fine Arts	% #	0 0	0 0	2 1	0 1
7. Other	% #	1 2	3 8	4 2	2 12
8. No Response	% #	16 33	16 44	9 5	15 82
Totals	% #	100 208	100 275	100 54	100 537

N.B. In general, the figures in Table II, recording the graduates' second most important course area duplicates the results of Table I. These statistics reveal an overwhelming importance attached to the agriculture professional courses such as Agricultural Engineering, Dairy, etc. The main difference in the two tables is that the figure recorded for the Professional Agricultural courses in Table I dropped 5% in Table II, while the Sciences and Communication Skills came up 2 to 4%. Again, Literature and Fine Art courses received the lowest consideration.



TABLE III

VALUE OF COLLEGE COURSE AREA TO AGRICULTURAL GRADUATES  
IN RELATION TO THEIR PRESENT WORK\*

Third Most Important Course Area

Area		Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
1. Technical-Professional Agriculture	% #	47 97	43 119	19 10	44 237
2. Biological Sciences	% #	5 11	3 9	13 7	5 27
3. Physical Sciences	% #	7 4	10 28	13 7	9 49
4. Social Sciences	% #	5 10	3 9	2 1	4 20
5. Communication Skills	% #	7 15	11 31	9 5	9 51
6. Literature and Fine Arts	% #	0 1	0 1	0 0	0 2
7. Other	% #	5 11	15 15	6 3	5 29
8. No Response	% #	24 49	23 63	22 12	23 124
Totals	% #	100 208	100 275	100 54	100 537

N. B. The figures in Table III show that even when the graduates rated their third most important course area, the agricultural professional courses maintained their lead over the other areas. However, this lead was somewhat lower but still almost twice as high as the combined importance of the other course areas.

The tabulations, shown in tables I, II, and III revealing the importance given the course areas, conclusively indicate the overwhelming importance placed on the agricultural courses such as Agricultural Engineering, Animal Husbandry, etc. Communication Skills, although second in importance, are mentioned five to six times less frequently than the professional agricultural courses. On a percentage basis, the professional agricultural courses are rated 211 times more important than the other areas of Biological, Physical and Social Sciences, Communication Skills and Literature and Fine Arts combined.

For years, it has been frequently asserted that the teacher plays the most important role among the factors influencing the selection of college course areas. In an effort to learn exactly what plays that important role, the graduates were asked to list the factors in their order of importance. The results of this portion of the Anthony Survey are tabulated in Table IV.

An examination of Table IV fails to substantiate the claim that the teacher plays the most important role in the determination of course work. Barely 17 percent of all respondents in the livestock division, answering this question, thought the instructor and how he taught the course was most important. Surprisingly, a broad, general working knowledge, specific information and a confidence to tackle problems were thought to be more important than the teacher. Irwin Edman agrees with these findings as he said "and in the art of teaching, it is what is taught that counts, not the teacher."<sup>92</sup>

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<sup>92</sup>Loc. cit., Chapter VI.

TABLE IV  
FACTORS INFLUENCING THE SELECTION OF COLLEGE COURSE AREAS\*

Factors		Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
1. Specific information received in course	% 19 # 103	22 157	22 30	21 290	
2. The instructor, and the way he taught	% 17 # 91	16 118	18 24	17 233	
3. The knowledge of where and how to find inform- ation when needed	% 14 # 79	17 125	10 14	15 218	
4. A confidence to tackle problems in subject area when required by one's work	% 18 # 98	19 140	17 23	18 26	
5. A broad, general working knowledge of the subject that the course gives graduates	% 25 # 139	20 147	23 31	22 317	
6. Other	% 4 # 22	2 17	5 7	3 46	
7. No Response	% 3 # 15	3 25	4 6	3 46	
8. Totals	% 100 # 547	100 729	100 135	100 1411	

\* Based on answers to multiple choice questions.

An evaluation of college work will undoubtedly vary with the date of graduation and the nature of one's work. It is conceivable that a certain course may be of particular value to scientists whereas it may have little or no value to a hatchery serviceman. Table V reveals data which seem to indicate the general importance of some courses and the relative unimportance of other courses for graduates majoring in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. This table shows replies from those animal industry graduates who took courses in college. The respondents were asked to evaluate whether a course, either agricultural or non-agricultural, was "Very Important," "Important," or "Not Important." The Technical Agricultural Course is marked with a (T).

A study of Table V reveals information which seems to indicate the importance of certain courses and the relative unimportance of certain courses. For example, Public Relations is one course that was rated high by a large majority of the respondents. In fact, among those who received some training in Public Relations, 82 percent classed this training as Very Important in the pursuit of their everyday work. Surprisingly enough, both English and Speech rated high on the Important list. Ninety-three percent of the graduates having received training in English, classed this training as Very Important or Important, while 95 percent of the graduates said the same for Speech. These facts are significant and based on these replies, it seems advisable for the School of Agriculture to include appropriate courses in Public Relations, Speech and English or increase these courses in its curriculum.

TABLE V

EVALUATION OF AGRICULTURAL AND NON-AGRICULTURAL COURSE AREAS BASED ON COLLEGE TRAINING  
FOR GRADUATES MAJORING IN THE LIVESTOCK COURSES

Course Area	Department		Took Course(s) in College					Total Returns
			Very Important	Important	Not Important	Totals	No Reply	
Accounting	Animal Husbandry	% #	32 12	54 20	14 5	100 37	0	37
	Dairy Husbandry	% #	44 29	45 30	11 7	100 66	1	67
	Poultry Husbandry	% #	46 6	54 7	00 0	100 13	0	13
	Totals	% #	41 47	49 57	10 12	100 116	1	117
Agricultural Economics (T)	Animal Husbandry	% #	40 62	48 74	12 18	100 154	54	208
	Dairy Husbandry	% #	32 61	49 94	19 35	100 190	85	275
	Poultry Husbandry	% #	24 8	56 19	20 7	100 34	20	54
	Totals	% #	35 131	50 187	15 60	100 378	159	537
Agricultural Engineering (T)	Animal Husbandry	% #	25 36	52 76	23 33	100 145	6	151
	Dairy Husbandry	% #	29 55	55 104	16 30	100 169	5	194
	Poultry Husbandry	% #	22 7	50 16	28 9	100 32	2	34
	Totals	% #	27 98	54 196	19 72	100 366	13	379
Animal Husbandry (T)	Animal Husbandry	% #	65 110	31 52	4 8	100 173	3	173
	Dairy Husbandry	% #	37 73	48 97	15 30	100 200	12	212
	Poultry Husbandry	% #	49 18	32 12	19 7	100 37	3	40
	Totals	% #	49 201	40 161	11 45	100 407	18	425
Basic College	Animal Husbandry	% #	26 14	54 29	20 11	100 54	1	55
	Dairy Husbandry	% #	34 26	52 39	14 11	100 76	2	78
	Poultry Husbandry	% #	44 7	56 9	0 0	100 16	1	17
	Totals	% #	32 47	53 77	15 22	100 146	4	150
Bookkeeping	Animal Husbandry	% #	19 3	69 11	12 2	100 16	0	16
	Dairy Husbandry	% #	38 12	53 17	9 3	100 32	1	33
	Poultry Husbandry	% #	45 5	55 6	0 0	100 11	0	11
	Totals	% #	34 20	58 34	8 5	100 59	1	60
Botany	Animal Husbandry	% #	24 32	50 67	26 36	100 135	9	144
	Dairy Husbandry	% #	15 26	51 88	34 58	100 172	19	191
	Poultry Husbandry	% #	10 3	58 18	32 10	100 31	7	38
	Totals	% #	18 61	51 173	31 104	100 338	35	373
Business Law	Animal Husbandry	% #	19 5	70 19	11 3	100 27	0	27
	Dairy Husbandry	% #	31 9	45 13	24 7	100 29	1	30
	Poultry Husbandry	% #	14 1	57 4	29 2	100 7	1	8
	Totals	% #	24 15	57 36	19 12	100 63	2	65
Chemistry	Animal Husbandry	% #	41 68	45 74	13 22	100 164	6	170
	Dairy Husbandry	% #	48 104	41 89	11 23	100 216	16	232
	Poultry Husbandry	% #	41 14	38 13	21 7	100 34	8	42
	Totals	% #	45 186	43 176	12 52	100 414	30	444
Dairy (T)	Animal Husbandry	% #	52 83	36 57	12 20	100 160	6	166
	Dairy Husbandry	% #	79 173	17 38	4 8	100 219	6	225
	Poultry Husbandry	% #	36 13	31 11	33 12	100 36	4	40
	Totals	% #	65 269	26 106	9 40	100 425	16	431

(T) = Technical Agricultural Courses

Continued next page

TABLE V - Continued

Course Area	Department		Took Course(s) in College					Total Returns
			Very Important	Important	Not Important	Totals	No Reply	
Economics (other than Agriculture)	Animal Husbandry	% #	27 32	62 74	11 14	100 120	5	120
	Dairy Husbandry	% #	32 46	53 78	15 22	100 146	13	159
	Poultry Husbandry	% #	35 11	52 16	13 4	100 31	2	33
	Totals	% #	30 89	57 168	13 40	100 297	20	317
Education	Animal Husbandry	% #	35 28	48 38	17 14	100 80	6	86
	Dairy Husbandry	% #	36 32	37 33	27 24	100 89	4	93
	Poultry Husbandry	% #	48 11	39 9	13 3	100 23	3	26
	Totals	% #	37 71	42 80	21 41	100 192	13	205
English	Animal Husbandry	% #	59 95	35 57	6 10	100 162	12	174
	Dairy Husbandry	% #	54 112	39 79	7 15	100 206	16	222
	Poultry Husbandry	% #	58 19	33 11	9 3	100 33	7	40
	Totals	% #	56 226	37 147	7 28	100 401	35	436
Entomology	Animal Husbandry	% #	24 30	53 66	23 28	100 124	7	131
	Dairy Husbandry	% #	18 28	54 84	28 45	100 157	18	175
	Poultry Husbandry	% #	11 3	37 10	52 14	100 27	8	35
	Totals	% #	20 61	52 160	28 87	100 308	33	341
Farm Crops  (T)	Animal Husbandry	% #	50 79	36 58	14 22	100 159	9	168
	Dairy Husbandry	% #	38 71	45 86	17 32	100 189	15	204
	Poultry Husbandry	% #	34 12	37 13	29 10	100 35	4	39
	Totals	% #	42 162	41 157	17 64	100 383	28	411
Guidance and Counseling	Animal Husbandry	% #	15 2	62 8	23 3	100 13	2	15
	Dairy Husbandry	% #	44 7	56 9	0 0	100 16	1	17
	Poultry Husbandry	% #	67 2	33 1	0 0	100 3	0	3
	Totals	% #	35 11	56 18	9 3	100 32	3	35
History of Agriculture	Animal Husbandry	% #	10 9	48 43	42 38	100 90	6	96
	Dairy Husbandry	% #	6 7	48 50	46 48	100 105	10	115
	Poultry Husbandry	% #	15 3	15 3	70 14	100 20	1	21
	Totals	% #	8 19	45 96	47 100	100 215	17	232
Horticulture  (T)	Animal Husbandry	% #	14 21	38 58	48 72	100 151	14	165
	Dairy Husbandry	% #	8 15	34 62	58 107	100 184	16	200
	Poultry Husbandry	% #	3 1	44 15	53 18	100 34	5	39
	Totals	% #	10 37	37 135	53 197	100 369	35	369
Journalism	Animal Husbandry	% #	26 17	53 35	21 14	100 66	2	68
	Dairy Husbandry	% #	36 20	50 28	14 8	100 56	6	62
	Poultry Husbandry	% #	42 5	33 4	25 3	100 12	0	12
	Totals	% #	31 42	50 67	19 25	100 134	8	142
Mathematics	Animal Husbandry	% #	38 56	47 69	15 23	100 148	10	158
	Dairy Husbandry	% #	38 78	46 94	16 33	100 205	11	216
	Poultry Husbandry	% #	33 12	42 15	25 9	100 36	6	42
	Totals	% #	38 146	46 178	16 65	100 389	27	416
Poultry Husbandry  (T)	Animal Husbandry	% #	32 46	42 61	26 39	100 146	6	152
	Dairy Husbandry	% #	11 21	43 79	46 85	100 185	13	198
	Poultry Husbandry	% #	58 21	22 8	20 7	100 36	4	40
	Totals	% #	24 88	40 148	36 131	100 367	23	390

(T) = Technical Agricultural Courses

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Table V - Continued

Course Area	Department		Took Course(s) in College					Total Returns
			Very Important	Important	Not Important	Totals	No Reply	
Public Relations	Animal Husbandry	%	92	8	0	100		
		#	11	1	0	12	0	12
	Dairy Husbandry	%	71	29	0	100		
		#	10	4	0	14	1	15
	Poultry Husbandry	%	100	0	0	100		
	#	2	0	0	2	0	2	
	Totals	%	82	18	0	100		
		#	23	5	0	28	1	29
Radio and Television	Animal Husbandry	%	30	40	30	100		
		#	3	4	3	10	1	11
	Dairy Husbandry	%	75	25	0	100		
		#	3	1	0	4	0	4
	Poultry Husbandry	%	0	50	50	100		
	#	0	1	1	2	0	2	
	Totals	%	38	38	24	100		
		#	6	6	4	16	1	17
Recreation	Animal Husbandry	%	14	63	23	100		
		#	5	22	8	35	3	38
	Dairy Husbandry	%	14	50	36	100		
		#	6	22	16	44	1	45
	Poultry Husbandry	%	34	33	33	100		
	#	2	2	2	6	2	8	
	Totals	%	15	54	31	100		
		#	13	46	26	85	6	91
Rural Sociology and Anthropology	Animal Husbandry	%	21	44	35	100		
		#	14	30	24	68	5	73
	Dairy Husbandry	%	15	40	45	100		
		#	10	26	29	65	5	70
	Poultry Husbandry	%	25	17	58	100		
	#	3	2	7	12	0	12	
	Totals	%	19	40	41	100		
		#	27	58	60	145	10	155
Sociology and Anthropology	Animal Husbandry	%	15	48	37	100		
		#	9	30	23	62	2	64
	Dairy Husbandry	%	19	49	32	100		
		#	11	28	18	57	6	63
	Poultry Husbandry	%	27	27	46	100		
	#	3	3	5	11	2	13	
	Totals	%	18	47	35	100		
		#	23	61	46	130	10	140
Soil Science	Animal Husbandry	%	52	38	10	100		
		#	84	61	17	162	3	165
	Dairy Husbandry	%	40	40	20	100		
		#	77	76	39	192	10	202
	Poultry Husbandry	%	34	33	33	100		
	#	11	11	11	33	4	37	
	Totals	%	44	38	17	100		
		#	172	148	67	387	17	404
Speech	Animal Husbandry	%	57	39	4	100		
		#	81	55	5	141	8	149
	Dairy Husbandry	%	60	34	6	100		
		#	115	66	11	192	6	198
	Poultry Husbandry	%	72	24	4	100		
	#	18	6	1	25	5	30	
	Totals	%	60	35	5	100		
		#	214	127	17	358	19	377
Typing	Animal Husbandry	%	0	50	50	100		
		#	0	2	2	4	0	4
	Dairy Husbandry	%	8	69	23	100		
		#	1	9	3	13	0	13
	Poultry Husbandry	%	33	0	67	100		
	#	1	0	2	3	0	3	
	Totals	%	10	55	35	100		
		#	2	11	7	20	0	20
Zoology	Animal Husbandry	%	22	50	28	100		
		#	29	66	38	133	13	146
	Dairy Husbandry	%	12	46	42	100		
		#	19	72	65	156	19	175
	Poultry Husbandry	%	40	30	30	100		
	#	12	9	9	30	7	37	
	Totals	%	19	46	35	100		
		#	60	147	112	319	39	358
All Other Courses	Animal Husbandry	%	74	23	3	100		
		#	22	7	1	30	0	30
	Dairy Husbandry	%	76	22	2	100		
		#	28	8	1	37	1	38
	Poultry Husbandry	%	73	18	9	100		
	#	8	2	1	11	0	11	
	Totals	%	74	22	4	100		
		#	58	17	3	78	1	79

(T) = Technical Agricultural Courses

Among the agricultural technical courses, Horticulture was rated lowest. Only 10 percent of those livestock graduates who took a course in Horticulture deemed it Very Important and 37 percent more declared it Important. This revelation poses the necessity for the Agriculture School curriculum to restudy its requirements necessitating a livestock major to take a course in Horticulture. As can be expected, Animal Husbandry and Dairy Husbandry courses rated high with 81 percent and 91 percent graduates, respectively rating these courses Very Important and Important. Poultry Husbandry lagged somewhat with only 64 percent recognizing it to be Very Important or Important.

An interesting revelation among the non-agricultural course areas shows a high value placed on Accounting, Bookkeeping, and Guidance and Counseling, with over 90 percent of livestock graduates rating them to be both Very Important and Important. In comparison, a low rating was given to Botany, History of Agriculture, Typing, Sociology and Zoology.

An attempt was made to determine the difference, if any, in the value placed on certain course work by the respondent providing the course had not been taken while in college. This posed a problem because the survey asked for a "guesstimation" by the respondent on the relative value of course work even though the respondent had not received any training as a student in that course area. He again, was asked to evaluate a course area as being "Very Important," "Important" and "Not Important." The Technical Agricultural Course is marked with a (T).

A complete evaluation of agricultural and non-agricultural course areas for those livestock graduates who did not take courses in college is found in Table VI.



TABLE VI

EVALUATION OF AGRICULTURAL AND NON-AGRICULTURAL COURSE AREAS BY LIVESTOCK GRADUATES  
NOT HAVING THESE COURSES IN COLLEGE

Course Area	Department	Did Not Take Course(s) in College					Total Returns
		Very Important	Important	Not Important	Totals	No Reply To Importance	
Accounting	Animal Husbandry	% 23	42	35	100		
		# 25	47	39	111	60	171
	Dairy Husbandry	% 20	44	35	100		
		# 29	63	50	142	66	208
	Poultry Husbandry	% 12	40	48	100		
		# 3	10	12	25	16	41
	Totals	% 21	43	36	100		
		# 57	120	101	278	142	420
Agricultural Economics	Animal Husbandry	% 43	47	10	100		
		# 17	19	4	40	11	51
	Dairy Husbandry	% 25	53	22	100		
		# 13	28	12	53	27	80
	(T) Poultry Husbandry	% 46	46	8	100		
		# 5	5	1	11	8	19
	Totals	% 34	50	16	100		
		# 35	52	17	104	46	150
Agricultural Engineering	Animal Husbandry	% 22	39	39	100		
		# 8	15	15	38	19	57
	Dairy Husbandry	% 24	56	20	100		
		# 13	31	11	55	26	81
	(T) Poultry Husbandry	% 10	60	30	100		
		# 1	6	3	10	10	20
	Totals	% 21	51	28	100		
		# 22	52	29	103	55	158
Animal Husbandry	Animal Husbandry	% 78	11	11	100		
		# 21	3	3	27	8	35
	Dairy Husbandry	% 17	48	35	100		
		# 7	20	15	42	21	63
	(T) Poultry Husbandry	% 57	29	14	100		
		# 4	2	1	7	7	14
	Totals	% 42	33	25	100		
		# 32	25	19	76	36	112
Basic College Courses	Animal Husbandry	% 25	50	25	100		
		# 15	30	16	61	92	153
	Dairy Husbandry	% 19	57	23	100		
		# 15	44	18	77	120	197
	Poultry Husbandry	% 7	29	64	100		
		# 1	4	9	14	23	37
	Totals	% 20	51	29	100		
		# 31	31	43	152	235	387
Bookkeeping	Animal Husbandry	% 20	46	34	100		
		# 25	57	42	124	68	192
	Dairy Husbandry	% 14	51	35	100		
		# 22	80	54	156	86	242
	Poultry Husbandry	% 26	39	35	100		
		# 6	9	8	23	20	43
	Totals	% 17	48	35	100		
		# 53	146	104	303	174	477
Botany	Animal Husbandry	% 17	33	50	100		
		# 8	15	23	46	18	64
	Dairy Husbandry	% 8	32	60	100		
		# 5	19	35	59	25	84
	Poultry Husbandry	% 25	25	50	100		
		# 3	3	6	12	4	16
	Totals	% 14	32	54	100		
		# 16	37	64	117	47	164
Business Law	Animal Husbandry	% 12	41	47	100		
		# 13	45	51	109	72	181
	Dairy Husbandry	% 12	41	47	100		
		# 18	63	73	154	91	245
	Poultry Husbandry	% 8	46	46	100		
		# 2	11	11	24	22	46
	Totals	% 11	42	47	100		
		# 33	119	135	287	185	472
Chemistry	Animal Husbandry	% 50	23	27	100		
		# 13	6	7	26	12	38
	Dairy Husbandry	% 42	42	16	100		
		# 13	13	5	31	12	43
	Poultry Husbandry	% 57	29	14	100		
		# 4	2	1	7	5	12
	Totals	% 47	33	20	100		
		# 30	21	13	64	29	93
Dairy	Animal Husbandry	% 50	33	17	100		
		# 15	10	5	30	12	42
	Dairy Husbandry	% 62	30	8	100		
		# 23	11	3	37	13	50
	(T) Poultry Husbandry	% 43	14	43	100		
		# 3	1	3	7	7	14
	Totals	% 55	30	15	100		
		# 41	22	11	74	32	106

Continued next page

TABLE VI - Continued

Course Area	Department		Did Not Take Course(s) in College					Total Returns
			Very Important	Important	Not Important	Totals	No Reply To Important	
Economics (other than Agriculture)	Animal Husbandry	% #	15 7	55 25	30 14	100 46	37	83
	Dairy Husbandry	% #	19 14	45 33	36 27	100 74	42	116
	Poultry Husbandry	% #	39 5	23 3	38 5	100 13	8	21
	Totals	% #	20 26	46 61	34 46	100 133	87	220
Education	Animal Husbandry	% #	15 12	29 24	56 46	100 82	40	122
	Dairy Husbandry	% #	15 19	28 36	57 74	100 129	53	182
	Poultry Husbandry	% #	22 4	28 5	50 9	100 18	10	28
	Totals	% #	15 35	28 65	57 129	100 229	103	332
English	Animal Husbandry	% #	64 16	24 6	12 3	100 25	9	34
	Dairy Husbandry	% #	50 19	34 13	16 6	100 38	15	53
	Poultry Husbandry	% #	88 7	0 0	12 1	100 8	6	14
	Totals	% #	59 42	27 19	14 10	100 71	30	101
Entomology	Animal Husbandry	% #	14 8	37 21	49 28	100 57	20	77
	Dairy Husbandry	% #	3 2	31 22	66 47	100 71	29	100
	Poultry Husbandry	% #	16 2	42 5	42 5	100 12	7	19
	Totals	% #	9 12	34 48	57 80	100 140	56	196
Farm Crops  (T)	Animal Husbandry	% #	43 12	43 12	14 4	100 28	12	40
	Dairy Husbandry	% #	26 13	30 15	44 22	100 50	21	71
	Poultry Husbandry	% #	44 4	33 3	23 2	100 9	6	15
	Totals	% #	33 29	34 30	33 28	100 86	39	125
Guidance and Counseling	Animal Husbandry	% #	17 19	49 55	34 38	100 112	81	193
	Dairy Husbandry	% #	24 38	36 57	40 63	100 158	100	258
	Poultry Husbandry	% #	3 1	40 12	57 17	100 30	21	51
	Totals	% #	19 58	41 124	40 118	100 300	202	502
History of Agriculture	Animal Husbandry	% #	3 2	37 25	60 40	100 67	45	112
	Dairy Husbandry	% #	5 5	33 33	62 61	100 99	61	160
	Poultry Husbandry	% #	0 0	29 5	71 12	100 17	16	33
	Totals	% #	4 7	34 63	62 113	100 163	122	305
Horticulture  (T)	Animal Husbandry	% #	33 10	17 5	50 15	100 30	13	43
	Dairy Husbandry	% #	4 2	25 13	71 37	100 52	23	75
	Poultry Husbandry	% #	16 1	50 3	34 2	100 6	9	15
	Totals	% #	15 13	24 21	61 54	100 88	45	133
Journalism	Animal Husbandry	% #	20 18	39 35	41 36	100 89	51	140
	Dairy Husbandry	% #	13 17	32 44	55 75	100 136	77	213
	Poultry Husbandry	% #	27 6	46 10	27 6	100 22	20	42
	Totals	% #	17 41	36 89	47 117	100 247	148	395
Mathematics	Animal Husbandry	% #	24 8	62 21	14 5	100 34	16	50
	Dairy Husbandry	% #	29 11	47 18	24 9	100 38	21	59
	Poultry Husbandry	% #	67 4	0 0	33 2	100 6	6	12
	Totals	% #	29 23	50 39	21 16	100 78	43	121
Poultry Husbandry  (T)	Animal Husbandry	% #	24 9	37 14	39 15	100 38	18	56
	Dairy Husbandry	% #	17 8	23 11	60 29	100 48	29	77
	Poultry Husbandry	% #	60 6	30 3	10 1	100 10	4	14
	Totals	% #	24 23	29 28	47 45	100 96	51	147

Continued next page



TABLE VI - Continued

Course Area	Department		Did Not Take Course(s) in College					Total Returns
			Very Important	Important	Not Important	Totals	No Reply To Important	
Public Relations	Animal Husbandry	% #	47 61	37 48	16 20	100 129	67	196
	Dairy Husbandry	% #	53 97	34 62	13 25	100 184	76	260
	Poultry Husbandry	% #	62 61	24 8	16 5	100 34	18	52
	Totals	% #	52 175	34 118	14 50	100 347	161	508
Radio and Television	Animal Husbandry	% #	16 18	23 26	61 69	100 113	84	197
	Dairy Husbandry	% #	14 22	22 36	64 103	100 161	110	271
	Poultry Husbandry	% #	25 7	21 6	54 15	100 28	24	52
	Totals	% #	16 47	23 68	61 187	100 302	218	520
Recreation	Animal Husbandry	% #	7 7	41 41	52 52	100 100	70	170
	Dairy Husbandry	% #	9 13	44 67	47 71	100 151	79	230
	Poultry Husbandry	% #	8 2	31 8	61 16	100 26	20	46
	Totals	% #	8 22	42 116	50 139	100 277	169	446
Rural Sociology and Anthropology (T)	Animal Husbandry	% #	13 12	33 29	54 48	100 89	46	135
	Dairy Husbandry	% #	7 10	24 35	69 101	100 146	59	205
	Poultry Husbandry	% #	26 6	9 2	65 15	100 23	19	42
	Totals	% #	11 28	26 66	63 164	100 258	124	382
Sociology and Anthropology	Animal Husbandry	% #	10 9	28 25	62 55	100 89	55	144
	Dairy Husbandry	% #	7 10	19 25	74 100	100 135	77	212
	Poultry Husbandry	% #	8 2	17 4	75 18	100 24	17	41
	Totals	% #	8 21	22 54	70 173	100 248	149	397
Soil Science (T)	Animal Husbandry	% #	50 15	37 11	13 4	100 30	13	43
	Dairy Husbandry	% #	26 13	24 12	50 25	100 50	23	73
	Poultry Husbandry	% #	44 4	22 2	34 3	9 9	8	17
	Totals	% #	36 32	28 25	36 32	89 89	44	133
Speech	Animal Husbandry	% #	62 28	24 11	14 6	100 45	14	59
	Dairy Husbandry	% #	54 29	33 18	13 7	100 54	23	77
	Poultry Husbandry	% #	27 3	64 7	9 1	100 11	13	24
	Totals	% #	55 60	33 36	12 14	100 110	50	160
Typing	Animal Husbandry	% #	14 19	29 39	57 76	100 134	10	144
	Dairy Husbandry	% #	7 12	30 51	63 105	100 168	94	262
	Poultry Husbandry	% #	10 3	32 10	58 18	100 31	20	51
	Totals	% #	10 34	30 100	60 199	100 333	184	517
Zoology	Animal Husbandry	% #	22 8	42 15	36 13	100 36	26	62
	Dairy Husbandry	% #	7 4	23 14	70 43	100 61	39	100
	Poultry Husbandry	% #	20 2	60 6	20 2	100 10	7	17
	Totals	% #	13 14	33 35	54 58	100 107	72	179
All Other Courses	Animal Husbandry	% #	50 1	0 0	50 1	100 2	176	178
	Dairy Husbandry	% #	50 3	33 2	22 1	100 6	231	237
	Poultry Husbandry	% #	0 0	0 0	0 0	0 0	43	43
	Totals	% #	50 4	33 2	22 2	100 8	450	458

A study of Table VI indicates that even though certain course areas were not pursued while in college, the respondent, based on his judgment of job requirements, deemed it to be important. Courses in Dairy, Agricultural Economics, Animal Husbandry, and Agricultural Engineering were deemed most valuable in the technical agricultural field. In comparison, Rural Sociology and Horticulture are rated extremely low by the respondents.

Further study in the non-agricultural course areas, revealed that the livestock graduates thought Speech, English, Chemistry, Mathematics and Public Relations extremely important in their life's work. The course areas low on the valuation pole were Botany, Education, Entomology, Sociology, Typing, Radio and Television, and History of Agriculture.

The results of Tables V and VI force one to recommend to the administration the necessity of reconsidering the curriculum requirements for undergraduates majoring in any one of the three livestock courses.

#### Broad Training In College Versus Specialization in College

One of the problems confronting educators<sup>93</sup> is whether college training should be based upon specialization, a broad training, or a combination of both. It must be realized, that agriculture, in itself, is a specialized field. As used in this study, "specialization" means concentration upon a special subject of a given department such as Animal Husbandry, Dairy Husbandry, or Poultry Husbandry. "Broad training" implies that the

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<sup>93</sup>E. Havemann and P. S. West, They Went to College. (New York: Harcourt, Brace & Co., 1952). p. 127.

study has not been confined to any one single department within the School of Agriculture.

The respondents were given a choice between six evenly divided recommendations, ranging from intensive specialization to intensive broad training. The recommendation of the graduates based upon the work in which they were engaged is shown in Table VII.

The agricultural graduates favor taking two or more courses in several agricultural departments, and the remaining technical courses in their field of specialization. Approximately one out of every three graduates, who replied, favored this middle of the road point of view. Only seven percent of the respondents selected intensive specialization whereas seventeen percent favored intensive broad training. It is statistically significant that 34 percent, or 174 replies out of a possible 507 replies, of the graduates preferred a combination of broad training and specialization.

This preference by Michigan State College graduates agrees with Carter and Fenix's study at Vermont, Sutherland and LeCount's findings at the University of California, Shepardson's results at Texas, Anderson's study at Purdue, and Wyeth's tabulations at Michigan State College. In addition, Havermann and West in their survey found the same results, as did Pace at Syracuse.

When one ponders the abilities and skills necessary to hold a job successfully, many skills or abilities are reviewed. The graduates were asked to designate the skills and abilities essential to job success. The respondents were asked to list the one most important skill or ability

TABLE VII

RECOMMENDATIONS BY GRADUATES FOR TYPES OF COLLEGE TRAINING IN PREPARATION  
FOR WORK IN WHICH GRADUATES ARE ENGAGED

		Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
1. Intensively specialize in subject matter of a single department in Agriculture.	% #	2 3	10 25	14 7	7 35
2. Take one course in several departments in agriculture, with remaining technical agri- culture courses in some field of speciali- zation within one department.	% #	18 35	26 67	28 14	23 116
3. Take two or more courses in several depart- ments in agriculture, with remaining technical agriculture courses in some field of specialization.	% #	14 82	32 83	18 9	34 174
4. Take as broad a training as possible in agriculture, without specialization in any one single department in agriculture.	% #	19 38	16 42	16 8	17 88
5. Take a broad undergraduate training in agriculture without specialization, and then intensively specialize as a graduate student in subject matter of single agricultural department.	% #	18 36	15 39	20 10	17 85
6. Other	% #	2 4	1 3	4 2	2 9
7. Total Replies	% #	100 198	100 259	100 50	100 507
8. No Reply	% #	10	16	4	30
9. Totals		208	275	54	537

out of the eight given. Table VIII indicates the respective values of certain skills and abilities held by livestock graduates.

A study of the tabulations presented in Table VIII reveals that, for the most part, the graduates in the three departments agree with one another fairly well. The Poultry graduates place less importance on the "ability to accomplish things" and more importance on the "ability to speak to individuals and groups" than either the Dairy or Animal Husbandry graduates.

The statistics in this table show that more than one person out of every three responding, felt that the "ability to get along with people" was the most important ability essential for job success. "Skill in using technical knowledge" and the "ability to work hard" received second and third mention respectively in role of importance. The abilities least mentioned were: "ability to write," "ability to speak to individuals and groups" and "ability to sell." Perchance the deans and the professors may find themselves at loggerheads with the graduates on these values.

The livestock graduates responding to the Anthony survey graduated from Michigan State College during the period 1895-1951. These 537 respondents were divided into 208 Animal Husbandry majors, 275 Dairy majors and 54 Poultry majors. A time distribution of these graduates appear in Table IX.

It must be noted that although the predominance of Animal Husbandry and Dairy graduates matriculated after 1940, this is not true for Poultry graduates. As previously mentioned, it is conceivable that some graduates responded to both the Anthony survey and the Zindel questionnaire.

TABLE VIII

## MOST IMPORTANT SKILL AND ABILITY FOUND TO BE ESSENTIAL TO JOB SUCCESS BY GRADUATES

Skill or Ability	Animal		Dairy		Poultry		Totals
	%	#	%	#	%	#	
1. Skill in using Technical knowledge	17	29	22	46	18	7	20 82
2. Ability to sell (ideas or products)	7	12	9	19	10	4	9 35
3. Ability to accomplish things	14	24	17	35	5	2	12 61
4. Ability to work hard	19	32	17	36	18	7	18 75
5. Ability to write	0	0	0	0	0	0	0 0
6. Ability to get along with people	38	65	31	67	33	13	35 145
7. Ability to speak to individuals and groups	4	6	1	3	10	4	5 13
8. Ability to take an active part in community activities	0	0	1	3	0	0	1 3
9. Other	1	1	2	6	6	3	2 10
Total Replies	100	169	100	215	100	40	100 424
No Reply	39	208	60	275	14	54	113 537



TABLE IX

## YEAR OF GRADUATION OF RESPONDENTS WHO RETURNED QUESTIONNAIRES

Year	Animal		Dairy		Poultry		Totals		Year		Animal		Dairy		Poultry		Totals	
	Husbandry		Husbandry		Husbandry						Husbandry		Husbandry		Husbandry			
1895	1		-		-		1		1923		8		7		4		19	
96	-		-		-		-		24		4		5		2		11	
97	-		-		-		-		25		6		8		2		16	
98	-		-		-		-		26		6		7		2		15	
99	-		-		-		-		27		1		4		2		7	
1900	-		-		-		1		28		2		4		4		10	
01	-		1		-		1		29		1		5		3		9	
02	-		1		-		1		1930		2		5		-		7	
03	1		-		-		1		31		4		11		-		15	
04	2		1		-		3		32		1		6		1		8	
05	1		1		-		2		33		3		10		1		14	
06	1		-		-		1		34		8		10		-		18	
07	-		1		-		1		35		7		4		1		12	
08	5		-		1		6		36		4		8		1		13	
09	-		1		-		1		37		1		6		1		8	
1910	-		6		1		7		38		3		3		2		8	
11	3		2		-		5		39		6		8		-		14	
12	1		1		-		2		1940		9		13		1		23	
13	3		3		3		9		41		6		8		-		14	
14	1		4		-		5		42		5		9		2		16	
15	5		4		1		10		43		4		7		-		11	
16	-		6		-		6		44		-		1		-		1	
17	3		5		1		9		45		1		1		-		2	
18	5		11		2		18		46		5		1		-		6	
19	1		2		2		5		47		5		6		1		12	
1920	3		1		-		4		48		13		14		2		29	
21	3		1		1		5		49		11		14		2		27	
22	5		2		2		7		1950		25		20		5		50	
			3		-		8		51		10		13		1		24	
Totals																	537	
											208		275		54		537	

The distribution also indicates the tremendous upsurge in the importance of trained technicians and professionals in the latter years.

#### SUMMARY OF CHAPTER IV

Chapter IV attempted to present and evaluate the data gained from the Dean Anthony survey furnished by the graduates who majored in Animal Husbandry, Dairy Husbandry and Poultry Husbandry as undergraduates.

The highlights of these facts, presented in both narrative and tabular form, are summarized as follows:

It was found that,

1. An overwhelming importance was placed on the technical agricultural courses such as Animal Husbandry, Agricultural Economics, etc., by the livestock graduates. This fact was true, regardless of whether or not the graduate received training in that course area while a student.
2. In the non-agricultural courses, the areas of Accounting, and Bookkeeping were voted to be of most importance to the livestock graduate. This, again, was true even though the graduate may not have received training in that course while a student. This could be misconstrued by those who teach these courses as meaning that a general course in these two subjects is valuable to all animal industries majors. Such would not hold true.

3. Courses in Horticulture and Rural Sociology were rated extremely low in value to the livestock graduate in the technical agricultural course areas.
4. Non-agricultural course areas which received a low valuation by graduates included Botany, Education, Entomology, Sociology and Typing.
5. One out of every three livestock graduates preferred a curriculum utilizing a combination of "broad training" and "specialization." The respondents indicated they preferred taking two or more courses in several departments in agriculture, with remaining technical agricultural courses in some field of specialization.
6. More than one person out of three responding, felt that the "ability to get along with people" was the most important ability essential for job success. The abilities deemed least important were "ability to write, to sell and to speak." What types of experiences young people should be put through to develop these abilities are not suggested in this investigation.
7. The claim of many, that "the teacher and how he taught the course" was the most important item in the determination of course work, was not substantiated by the replies. Surprisingly, a broad, general working knowledge, specific information and a confidence to tackle problems were thought to be more important than the teacher.

In the light of these findings, the agricultural staff at Michigan State College should find much stimulus for making some curricular changes.

## CHAPTER V

## CHAPTER V

### GRADUATE REPLIES IN RESPONSE TO THE AUTHOR'S QUESTIONNAIRE

A summary of the general information furnished by 200 out of a possible 391 graduates in Animal Husbandry, Dairy Husbandry and Poultry Husbandry of the School of Agriculture at Michigan State College in response to the author's questionnaire is presented in this chapter. An interpretation is made of the more significant data. This chapter includes the method of conducting this survey, the geographical location of the graduates responding to the questionnaire, and some of the respondents' written comments.

Names of graduates majoring in Animal Husbandry, Dairy Husbandry and Poultry Husbandry who graduated during the years 1940-1952 were secured from their respective departments. A pre-test revealed that those graduating prior to 1940 were unable to give specific replies to specific questions concerning curricula even though a transcript of grades was included. However, inasmuch as only 19 Poultry majors were graduated during the years 1940-1952, a total of 13 more graduates were sent questionnaires. Questionnaires were sent to a total of 391 graduates after verification of their addresses at the alumni office. Table I shows the distribution of graduates by year and by major subject.

TABLE X  
DISTRIBUTION OF LIVESTOCK GRADUATES BY YEAR AND MAJOR SUBJECT

Year	Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Year	Poultry Husbandry
1941	--	13	1	1928	1
1942	9	17	4	1932	3
1943	14	13	-	1934	1
1944	2	4	-	1935	2
1945	4	1	-	1936	1
1946	4	3	-	1937	1
1947	12	14	2	1938	2
1948	14	21	2	1940	2
1949	21	30	1		
1950	46	26	5		
1951	33	15	2		
1952	15	18	2		
Total	174	175	19		13

On March 17, 1953, 391 questionnaires,<sup>94</sup> including cover letter and transcript of grades and return envelope, were mailed through the East Lansing Post Office. The first return was received the following afternoon. At the end of one month, 158 returns, or 40.4 percent were received. On April 18, 1953, the first follow-up letter<sup>95</sup> was mailed. This was a single page letter requesting the recipient to return his completed questionnaire. A total of 144 letters were sent out to selected nonrespondents living in the United States of America.

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<sup>94</sup>See Appendix

<sup>95</sup>See Appendix

The location of Livestock Graduates by county in Michigan, and by state in the United States, was tabulated. Two hundred and eleven graduates were found to be living in Michigan, one hundred and seventy-three in other states and seven in foreign countries.

Figures 1 and 2 show the geographical location of these graduates.

On June 8, 1953, after 200 questionnaires were returned, it was decided to begin tabulating and eliminate further returns. These 200 returns represented a response of 51.2 percent, well over expectations. Therefore, it was assumed that a return of 200 out of a possible 391 was an excellent response and an adequate sampling.

Table XI shows the questionnaire response by graduates in livestock field according to the major subject as an undergraduate.

TABLE XI  
QUESTIONNAIRE RESPONSE

Major		Sent Out	Returned
Animal Husbandry	% #	173	50.9 88
Dairy Husbandry	% #	174	52.3 91
Poultry Husbandry	% #	44	47.7 21
Total	% #	391	51.2 200







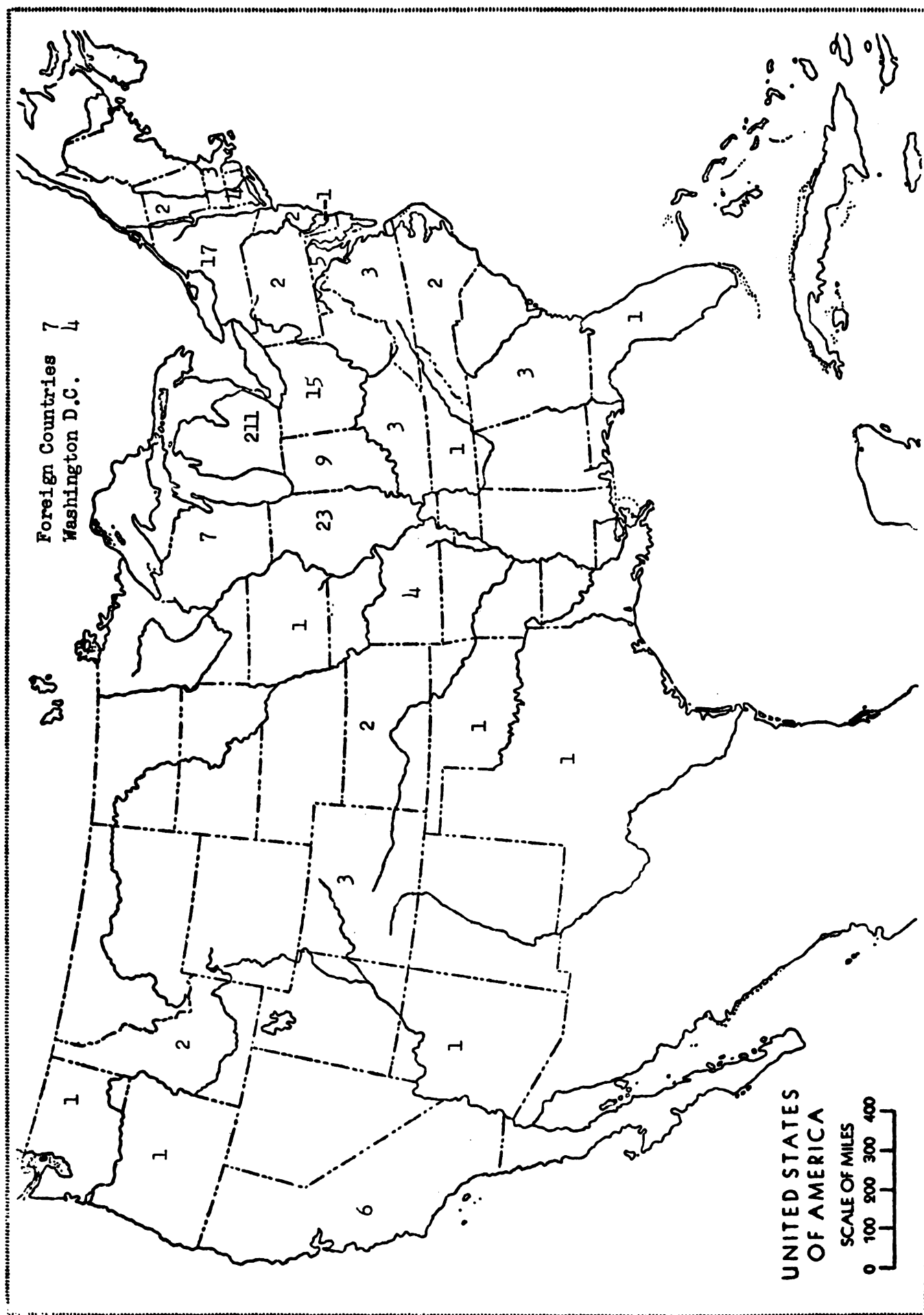


Figure 2. Location of Livestock Graduates by State.

1992

As the questionnaires were received, each one was recorded and given a number for identification purposes. It was interesting to note that only two percent, or four respondents failed to identify themselves by signing their names. Of that group, two were Animal Husbandry majors and two were Dairy majors. The rough tabulations began shortly after the responses arrived. Any questionnaire returned for improper address or inadequate address was remailed after checking with the Alumni Office for new addresses.

It was refreshing to note the comments from a large number of the graduates. Some of these were in the form of separate letters, while others incorporated them on the questionnaire in the space reserved for comments. One veterinarian,<sup>96</sup> who also majored in Animal Husbandry said, "The best Animal Husbandry men whom I contact are not only good husbandry men, but they are equally good businessmen. They are promoters and they are well grounded in farming as well as their special field. I feel that some effort should be directed toward contact with the world--the world that these graduates must face. Possible summer placement or required apprenticeship of the students would produce a more mature and more practical graduate."

A returning soldier<sup>97</sup> from Korea says, "It is very encouraging to know that such a survey is being made. I hope that my answers will be of some importance."

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<sup>96</sup>Dr. H. H. Sutton, Written Communication.

<sup>97</sup>Lt. James E. Pollard, Written Communication.

The possible utilization of a similar survey for high schools was recently suggested by a public school superintendent.<sup>98</sup> This superintendent asked, "Would it be possible for me to have another copy of this survey--some good ideas there, we would like to use in a high school survey."

Another graduate, an executive<sup>99</sup> assistant in a beef breeders association had this to say: "I only want to add that I think your questionnaire is and will prove to be of great service to students of the future. That is, if the powers that be take the information sent in and incorporate it into the curriculum. I think that in the case of others, as myself, that after leaving State, we form definite opinions on courses taken and courses that should have been taken. I have tried to emphasize in my report that I really believe that all Animal Husbandry students should take more speech, journalism and zoology in the form of genetics. I have probably given three or four hundred short talks and lectures since leaving school in 1949. My training in speech has been a decisive factor in conducting same."

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<sup>98</sup>W. M. Dunavin, Written Communication.

<sup>99</sup>L. V. Springer, Written Communication.

## CHAPTER VI





## CHAPTER VI

### TABULAR AND STATISTICAL SUMMARY OF REPLIES FROM TWO HUNDRED LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

A summary of the comments and general information furnished by 200 agricultural graduates of Michigan State College who majored in Animal Husbandry, Dairy Husbandry and Poultry Husbandry is presented in this chapter. In addition to the summary, a partial interpretation has been made of the more significant findings.

The tables in this chapter give a tabular summary of replies to all 254 questions furnished by the 200 respondents.

The first part of the survey (Section A) was an attempt to learn the graduate's viewpoint regarding required courses listed under the "General Agricultural Series." All students in agriculture were expected to take courses in General Agricultural Series before proceeding to their major subject. The respondent was asked to encircle the correct symbol V, S, N, or ? depending upon whether the course had been:

"very helpful (V)"

"somewhat helpful (S)"

"not at all helpful (N)"

"no wish to answer or did not take course (?)"

The views of the graduates are tabulated in Table XII.

Based upon the replies, the one course most often listed as being of little or no practical value was Agriculture 101, entitled

TABLE XII

VIEWS OF LIVESTOCK GRADUATES REGARDING REQUIRED COURSES LISTED UNDER THE GENERAL AGRICULTURAL SERIES

General Agricultural Series		Animal Husbandry					Dairy Husbandry					Poultry Husbandry					Total				
		%V	S	N	? Totals		V	S	N	? Totals		V	S	N	? Totals		V	S	N	? Totals	
Ag. 101	%	11	51	18	20	100	8	48	30	14	100	11	47	21	21	100	9	49	24	18	100
Development of	#	9	42	15	17	83	7	42	26	13	88	2	9	4	4	19	18	93	45	34	190
Agriculture																					
Ag. Econ. 211 & A	%	22	53	9	16	100	22	51	7	20	100	15	45	10	30	100	22	51	8	19	100
Agricultural- Economics	#	18	42	7	13	80	19	44	6	17	86	3	9	2	6	20	40	95	15	36	186
An. Hub. 115	%	70	26	2	2	100	20	48	5	27	100	20	55	15	10	100	42	39	5	14	100
Types of Livestock	#	57	21	2	2	82	17	40	4	23	84	4	11	3	2	20	78	72	9	27	186
Ag. Eng. 109	%	14	22	14	50	100	5	34	13	48	100	6	29	6	59	100	9	28	13	50	100
Farm Equipment	#	11	17	11	38	77	4	29	11	41	85	1	5	1	10	17	16	51	23	89	179
Ag. Eng. 114	%	16	34	16	34	100	4	31	23	42	100	16	31	16	37	100	11	32	19	38	100
Rural Electrifi- cation	#	12	26	12	26	76	4	26	19	35	84	3	6	3	7	19	19	58	34	68	179
Basic 111-2-3	%	34	21	3	42	100	46	25	1	28	100	30	35	--	35	100	39	25	1	35	100
Written & Spoken English	#	27	17	2	33	79	38	21	1	23	83	6	7	0	7	20	71	45	3	63	182
Basic 121-2-3	%	35	20	3	42	100	35	25	2	38	100	25	30	--	45	100	34	24	2	40	100
Biological Science	#	27	16	2	33	78	29	21	2	31	83	5	6	0	9	20	61	43	4	73	181
Basic 141-2-3	%	3	31	15	51	100	9	34	8	49	100	11	21	10	58	100	6	31	12	51	100
Social Science	#	2	24	12	39	77	7	28	7	40	82	2	4	2	11	19	11	56	21	90	178
Basic 151-2-3	%	5	32	9	54	100	11	27	19	43	100	11	26	10	53	100	8	29	14	49	100
Effective Living	#	4	25	7	42	78	9	22	15	35	81	2	5	2	10	19	15	52	24	87	178
Basic 161-2-3	%	6	26	17	51	100	6	22	20	52	100	11	10	16	63	100	7	22	18	53	100
History of Civilization	#	5	20	13	39	77	5	18	16	42	81	2	2	3	12	19	12	40	32	93	177
Basic 171-2-3	%	3	8	5	64	100	-	9	8	83	100	6	5	17	72	100	2	8	8	82	100
Literature and Fine Arts	#	2	6	4	62	74	0	7	6	64	77	1	1	3	13	18	3	14	13	139	169
Botany 101 A	%	20	27	5	47	100	7	33	15	45	100	17	28	5	50	100	14	30	10	46	100
General Botany	#	15	20	4	35	74	6	28	13	37	84	3	5	1	9	18	24	53	18	81	176
Chemistry 101 or 101A	%	34	52	9	5	100	42	56	-	2	100	20	60	10	10	100	36	55	5	4	100
General Chemistry	#	27	42	7	4	80	37	49	0	2	88	4	12	2	2	20	68	103	9	8	188
Chemistry 102 or 102A	%	35	48	11	6	100	44	52	2	2	100	21	58	11	10	100	38	51	7	4	100
General Chemistry	#	28	39	9	5	81	39	46	2	2	89	4	11	2	2	19	71	96	13	9	189
Chemistry 103 or 103A	%	35	49	12	4	100	49	49	1	1	100	16	58	16	10	100	40	50	7	3	100
General Chemistry	#	28	39	10	3	80	43	43	1	1	88	3	11	3	2	19	74	93	14	6	187
Dairy 101	%	45	35	6	13	99	53	40	2	5	100	25	30	30	15	100	46	37	7	10	100
Introduction to Dairying	#	37	29	5	11	82	46	35	2	4	87	5	6	6	3	20	68	70	13	18	189
Education 101	%	3	23	7	67	100	5	10	11	74	100	-	6	5	89	100	3	15	9	73	100
Orientation for Men	#	2	17	5	50	74	4	8	9	61	82	0	1	1	16	18	6	26	15	127	174
English 102 E	%	14	22	7	57	100	12	30	5	53	100	21	16	-	63	100	14	25	5	56	100
Composition	#	11	17	5	43	76	10	25	4	44	83	4	3	0	12	19	25	45	9	59	178
English 102 F	%	11	23	4	62	100	12	26	5	57	100	21	16	-	63	100	13	24	4	59	100
Composition	#	8	17	3	45	73	10	22	4	47	83	4	3	0	12	19	22	42	7	104	175
English 102 G	%	12	26	5	57	100	10	25	7	58	100	17	22	-	61	100	11	25	6	58	100
Composition	#	9	19	4	42	74	8	21	6	48	83	3	4	0	11	18	20	44	10	101	175
Farm Crops 101 A	%	36	48	10	6	100	26	23	20	31	100	30	45	5	20	100	31	36	14	19	100
Field Crop Indus- try	#	30	39	8	5	82	22	20	17	26	85	6	9	1	4	20	58	68	26	35	187
Farm Management 202	%	32	42	13	13	100	25	29	10	36	100	30	45	5	20	100	29	36	11	24	100
Farm Management	#	26	34	11	11	82	21	24	8	30	83	6	9	1	4	20	53	67	20	45	185
Horticulture 101 A	%	28	50	15	7	100	6	49	15	30	100	30	30	25	15	100	18	48	16	18	100
General Horti- culture	#	22	40	12	6	80	5	42	13	25	85	6	6	5	3	20	33	88	30	34	185
Math. 100 A	%	7	28	14	51	100	21	23	11	45	100	10	25	15	50	100	14	26	12	48	100
Elementary Algebra	#	5	21	10	38	74	17	19	9	37	82	2	5	3	10	20	24	45	22	85	176
Math. 100 C	%	1	4	3	92	100	4	2	4	90	100	6	-	6	88	100	3	3	4	90	100
Algebra for Statistics	#	1	3	2	66	72	3	2	3	70	78	1	0	1	15	17	5	5	6	151	167
Math. 101	%	3	14	7	76	100	29	51	10	10	100	11	31	5	53	100	14	32	8	46	100
College Algebra	#	2	10	5	54	71	18	32	6	6	62	2	6	1	10	19	22	48	12	70	152
Math. 101 A	%	7	21	5	67	100	12	22	6	60	100	17	11	11	61	100	10	20	6	64	100
Ag. Mathematics	#	5	16	4	51	76	10	17	5	49	81	3	2	2	11	18	18	35	11	111	175
Poultry 101	%	37	51	8	4	100	18	42	33	7	100	60	35	-	5	100	31	45	19	5	100
Farm Poultry	#	30	42	7	3	82	16	37	29	6	88	12	7	0	1	20	58	86	36	10	190
Soils 114	%	53	33	5	9	100	28	32	11	29	100	35	35	20	10	100	40	33	9	18	100
Soil Science	#	43	27	4	7	81	23	26	9	24	82	7	7	4	2	20	73	60	17	33	183
Sociology 337	%	6	24	12	58	100	3	11	11	75	100	16	10	16	58	100	6	17	12	65	100
Rural Sociology	#	5	18	9	44	76	2	9	9	59	79	3	2	3	11	19	10	29	21	114	174
Speech 101	%	56	18	1	24	100	50	15	-	35	100	47	5	11	37	100	52	15	2	31	100
Public Speaking	#	44	14	1	19	78	42	13	0	29	84	9	1	2	7	19	95	28	3	55	181
Zoology 104	%	33	30	4	33	100	12	25	8	55	100	21	32	5	42	100	22	28	6	44	100
Introduction to Genetics	#	26	23	3	26	78	10	21	7	45	83	4	6	1	8	19	40	50	11	79	180
Zoology 201	%	9	20	8	63	100	2	23	18	57	100	12	6	6	76	100	6	20	13	61	100
Economic Zoo.	#	6	14	6	44	70	2	19	15	48	84	2	1	1	13	17	10	34	22	105	171

\* Code: V - very helpful; S - somewhat helpful; N - not at all helpful; ? - no answer

"Development of Agriculture." Twenty-four percent of those respondents who answered this question on courses which should not be required of all agriculture graduates, mentioned Agriculture 101.

The next course most frequently mentioned as being of little value as presented was Agricultural Engineering 114, entitled "Rural Electrification." The Basic College courses, in general, were mentioned by some respondents questioning their value.

The course most often listed as being very helpful was Speech 101, entitled "Public Speaking." Fifty-two percent of those respondents who answered this question mentioned Speech 101. The next courses mentioned as being very helpful were: Dairy 101, Animal Husbandry 115 and Soils 114.

Those courses upon which the graduates had no opinion were:

Mathematics 100 C	(Algebra for Statistics)
Education 101	(Orientation for Men)
Sociology 337	(Rural Sociology)
Mathematics 100 A	(Elementary Algebra)
Zoology 201	(Economic Zoology)

Table XII reveals that most of these courses were introductory or general courses. Based on these replies, it appears that much can be done to improve the content, instruction, presentation or use of visual aids in the general 100 series agricultural courses to enhance their value to the student. The administration has already taken steps to correct this situation for the newly released 1953-54 Michigan State College catalog does not list the following three courses:

1. Agricultural Economics 211, entitled "Agricultural Economics."
2. Education 101, entitled "Orientation for Men," and
3. Rural Sociology 337, entitled "Rural Sociology."

However, it must be pointed out that neither Agricultural Engineering 114, entitled "Rural Electrification" or Agriculture 101, entitled "Development of Agriculture" were removed from the 1953-54 catalog.

Next, an attempt was made in Section IIIA of the Questionnaire to learn the name of any course which had been required of the graduate but one which the respondent felt should not have been required of all livestock majors.

The graduates who majored in Animal Husbandry, Dairy Husbandry and Poultry Husbandry did not respond with many suggestions. A total of twenty-six opinions were received from the Animal Husbandry, and Dairy Husbandry majors. These are listed in Table XIII.

TABLE XIII

OPINIONS OF LIVESTOCK GRADUATES, REGARDING REQUIRED SUBJECTS WHICH WERE THOUGHT TO BE NONESSENTIAL AND SHOULD NOT BE REQUIRED OF ALL STUDENTS

	Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Total
Landscape Architecture 102a (Principles of Landscape Architecture)	3	3	-	6
Agricultural Engineering 390 (Dairy Farm Structures)	-	4	-	4
Psychology 201 (General Psychology)	2	-	-	2
Animal Husbandry 405 (Advanced Stock Judging)	2	-	-	2
Chemistry 207 (Quantitative Chemistry)	6	2	-	8
Chemistry 208 (Biological Chemistry)	3	1	-	4
Totals	16	10	0	26

It should be noted that Landscape Architecture 102a and Psychology 201 have both been dropped from the required subject list in the 1953-54 catalog.

In Section B, the Animal Husbandry majors were asked their opinions of courses which were required by their department. Here again, the respondent was asked to rate courses as being:

"Very helpful (V)"

"Somewhat helpful (S)"

"Not at all helpful (N)"

A total of twenty-seven courses were listed for a valuation.

The tabulation of the Animal Husbandry required courses is given in Table XIV.

The students majoring in Animal Husbandry indicated, as demonstrated in Table XIV, that they preferred a broad training in agriculture with emphasis on Animal Husbandry courses. All Animal Husbandry courses received a high rating as being "very helpful" and "somewhat helpful." The courses receiving the highest vote for being "helpful" by the respondents were:

Animal Husbandry 301 (Animal Breeding)

Animal Husbandry 304b (Applied Feeding)

Bacteriology 201a (General Bacteriology)

Animal Husbandry 305a (Stock Judging)

Physiology 302 (Physiology of Domestic Animals)

Animal Husbandry 406 (Meat Production)

Chemistry 208 (Biological Chemistry)

Zoology 311 (Introduction to Genetics)

TABLE XIV  
OPINIONS OF ANIMAL HUSBANDRY MAJORS REGARDING SUBJECTS  
REQUIRED BY THEIR DEPARTMENT

Animal Husbandry		V	S	N	?	Total
Ag. 305	%	41	18	1	40	100
Nutrition	#	29	13	1	28	71
An. Hub. 301	%	59	32	4	5	100
Animal Breeding	#	46	25	3	4	78
An. Hub. 304b	%	60	31	4	5	100
Applied Feeding	#	48	25	3	4	80
An. Hub. 305a	%	62	22	1	15	100
Stock Judging	#	50	18	1	12	81
An. Hub. 322	%	43	25	1	31	100
Sheep and Swine Management	#	33	19	1	24	77
An. Hub. 405	%	44	10	-	46	100
Advanced Stock Judging	#	34	8	0	35	77
An. Hub. 406	%	60	14	3	23	100
Meat Production	#	46	11	2	18	77
An. Hub. 407	%	43	16	9	32	100
Livestock Production and Management	#	32	12	7	23	74
An. Hub. 416	%	27	30	3	40	100
Seminar	#	20	22	2	29	73
An. Hub. 423	%	36	27	1	36	100
Beef Cattle and Horse Management	#	28	20	1	28	77
Bacty. 201a	%	36	49	9	6	100
General Bacteriology	#	29	39	7	5	80
Bacty. 201b	%	28	41	12	19	100
Morphological and Cultural	#	21	31	9	14	75
Chemistry 207	%	11	31	7	51	100
Quantitative Analysis	#	8	22	5	37	72
Chemistry 208	%	28	46	13	13	100
Biological Chemistry	#	22	36	10	10	78
Conservation 201	%	8	21	15	56	100
Introduction to Conservation	#	6	16	11	42	75
Econ. 211a	%	13	34	17	36	100
Agricultural Economics	#	10	27	13	28	78
Econ. 211b	%	9	25	17	49	100
Agricultural Economics	#	7	19	12	37	75
Enty. 201	%	16	27	1	56	100
Introduction to Entomology	#	12	20	1	41	74
Farm Mgt. 302	%	25	35	7	33	100
Farm Management	#	19	26	5	25	75
Land. Arch. 102a	%	5	12	21	62	100
Elements of Landscape Architecture	#	4	9	16	46	75
Math. 102a	%	8	24	15	53	100
Trigonometry	#	6	17	11	38	72
Phys. 158	%	4	22	6	68	100
General Physics	#	3	16	4	48	71
Physiol. 302 or 304	%	45	31	1	23	100
Physiology of Domestic Animals	#	33	23	1	17	74
Psych. 201	%	13	25	23	39	100
General Psychology	#	10	19	17	29	75
Soils 201	%	37	26	2	35	100
Soils	#	29	20	2	27	78
Zoology 311	%	38	34	2	26	100
Introduction to Genetics	#	29	26	2	20	77
Zoology 333	%	9	15	2	74	100
Elementary Genetics	#	6	10	1	49	66

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The courses receiving the least valuable rating by the Animal Husbandry respondents were:

Psychology 201 (General Psychology)

Land Arch. 102a (Elements of Land Arch.)

Economics 211a (Agricultural Economics)

Economics 211b (Agricultural Economics)

Mathematics 102a (Trigonometry)

Conservation 201 (Introduction to Conservation)

Section C of the questionnaire was divided into two parts. Part one (1) was developed for Dairy Production majors and part two (2) was designed for Dairy Manufacturing majors.

All dairy majors were asked to evaluate the required courses by stating the course was "very helpful," "somewhat helpful," or "not at all helpful." The opinions of the Dairy Production majors regarding subjects required by their department is tabulated in Table XV.

The opinions of the Dairy Production majors revealed they felt the courses which were most helpful to them were centered in three departments. These departments were: Bacteriology, Chemistry and Dairy Husbandry. However, it must be noted that although every required Bacteriology and Chemistry course was rated high, this was not true for all of the Dairy courses. The one dairy course which seemed helpful was Dairy Husbandry 304b, entitled "Market Milk."

The required courses which were listed as being of less value were as follows:



TABLE XV

OPINIONS OF DAIRY PRODUCTION MAJORS REGARDING SUBJECTS REQUIRED BY THEIR DEPARTMENT

Dairy Production		V	S	N	?	Total
Ag. 305	%	23	17	3	57	100
Nutrition	#	15	11	2	38	66
Ag. Eng. 390	%	20	25	7	48	100
Dairy Farm Structures and Equipment	#	14	17	5	33	69
An. Hub. 301 or 402	%	34	18	1	47	100
Animal Breeding	#	23	12	1	32	68
An. Path. 412 or 412a	%	14	17	3	66	100
Livestock Hygiene and Disease Control	#	9	11	2	43	65
Bacty. 201a	%	46	41	10	3	100
General Bacteriology	#	33	29	7	2	71
Bacty. 201b	%	36	44	6	14	100
Morphological and Cultural	#	25	30	4	10	69
Bacty. 304d	%	59	27	3	11	100
Dairy Bacteriology	#	41	19	2	8	70
Chemistry 101	%	39	38	2	21	100
General Chemistry	#	26	25	1	14	66
Chemistry 102	%	38	38	3	21	100
General Chemistry	#	25	25	2	14	66
Chemistry 207	%	39	43	10	8	100
Quantitative Analysis	#	27	30	7	6	70
Chemistry 208	%	42	42	4	12	100
Biological Chemistry	#	29	29	3	8	69
Chemistry 344	%	50	32	1	17	100
Dairy Chemistry	#	35	22	1	12	70
Chemistry 353	%	44	33	7	16	100
Chemistry of Nutrition	#	31	23	5	11	70
Dairy Hub. 209	%	31	23	3	43	100
Dairy Herd Operations	#	21	16	2	29	68
Dairy Hub. 210	%	27	13	-	60	100
Dairy Plant Operations	#	18	9	0	40	67
Dairy Hub. 304b	%	71	16	6	7	100
Market Milk	#	50	11	4	5	70
Dairy Hub. 308	%	34	24	1	41	100
Dairy Technology	#	23	16	1	27	67
D & D 204c	%	8	20	45	27	100
Mechanical Drawing	#	7	17	39	23	86
Enty. 201	%	9	29	9	53	100
Introduction to Entomology	#	6	20	6	37	69
Farm Management 302	%	21	24	4	51	100
Farm Management	#	14	16	3	35	68
Hygiene 312a	%	11	8	-	81	100
Livestock Hygiene and Disease Control	#	7	5	0	53	65
Land. Arch. 102a	%	6	20	18	56	100
Principles of Landscape Architecture	#	4	14	12	38	68
Math. 102a	%	13	36	15	36	100
Trigonometry	#	9	25	10	25	69
Phys. 158	%	21	37	16	26	100
General Physics	#	14	25	11	18	68
Phys. 168	%	18	35	18	29	100
General Physics	#	12	24	12	20	68
Phys. 201d	%	10	20	7	63	100
Mechanics and Heat	#	7	14	5	43	69
Phys. 201e	%	10	22	6	62	100
Heat, Magnetism and Electricity	#	7	15	4	43	69
Physiol. 304	%	20	14	1	65	100
Physiology of Domestic Animals	#	13	9	1	42	65
Soils 201	%	25	25	12	38	100
Soil Science	#	17	17	8	26	68

D & D 204c (Mechanical Drawing)

Land Arch. 102a (Principles of Landscape Arch.)

Physics 158 (General Physics)

Physics 168 (General Physics)

Mathematics 102a (Trigonometry)

Soils 201 (Soils Science)

It is interesting to note that Land Arch. 102a and Mathematics 102a were considered unpopular by both the Animal Husbandry majors and the Dairy Production majors.

The opinions of the Dairy Manufacturing majors regarding subjects required by their department is tabulated in Table XVI.

The opinions of the Dairy Manufacturing students, regarding the course work required by their department, were similar to the Dairy Production majors in many respects. However, the Dairy Manufacturing majors felt that the most helpful courses were in Bacteriology and Chemistry. Every required Bacteriology and Chemistry course rated very high - even above the required Dairy courses. These tabulations were the first indication that the Dairy Manufacturing majors had different opinions from their brother agricultural students. In fact, the majority of these Dairy Manufacturing majors felt that they were not Animal Industry graduates and said so. These facts will be discussed in greater detail in the section devoted to suggestions for improvements.

It was rather interesting to note and impossible to explain the fact that the Dairy Manufacturing majors were only held for only seventeen (17) required courses by the Dairy Department while the Dairy Production majors

TABLE XVI

OPINIONS OF DAIRY MANUFACTURING MAJORS REGARDING SUBJECTS  
REQUIRED BY THEIR DEPARTMENT

Dairy Manufacturing	V	S	N	?	Total
Ag. 205	% 23	12	5	60	100
Nutrition	# 13	7	3	34	57
Ag. Engr. 114	% 10	30	26	34	100
Rural Electrification	# 6	18	16	21	61
Ag. Engr. 390	% 23	25	11	41	100
Dairy Farm Structures & Equipment	# 14	15	7	25	61
Ag. Engr. 392	% 48	16	2	34	100
Dairy Plant Engineering	# 30	10	1	21	62
Bacty. 201a	% 65	26	3	6	100
General Bacteriology	# 40	16	2	4	62
Bacty. 201b	% 54	29	3	14	100
Morphological and Cultural	# 32	17	2	8	59
Bacty. 304d	% 68	21	2	9	100
Dairy Bacteriology	# 42	13	1	6	62
Chem. 207	% 41	41	10	8	100
Quantitative Analysis	# 26	26	6	5	63
Chem. 208	% 35	46	6	13	100
Biological Chemistry	# 22	29	4	8	63
Chem. 344	% 59	25	3	13	100
Dairy Chemistry	# 37	16	2	8	63
Chem. 353	% 35	38	11	16	100
Chemistry of Nutrition	# 22	24	7	10	63
Dairy Hub. 225	% 55	19	2	24	100
Elements of Dairy Technology	# 34	12	1	15	62
Dairy Hub. 230	% 54	13	-	33	100
Dairy Sanitation	# 34	8	0	21	63
D & D 204c	% 24	26	7	43	100
Mechanical Drawing	# 15	16	4	26	61
Math. 102	% 10	41	11	38	100
Trigonometry	# 6	25	7	23	61
Phys. 158	% 23	40	11	26	100
General Physics	# 14	25	7	16	62
Phys. 168	% 22	35	11	32	100
General Physics	# 13	21	7	19	60

were required to enroll for twenty-nine (29) agricultural and non-agricultural courses.

The courses thought to be the least helpful were led by Agricultural Engineerings' "Rural Electrification," followed by Trigonometry and the General Physics courses.

Section D of the questionnaire was devoted to the required subjects of the Poultry Husbandry majors. Twenty-six (26) courses required of Poultry majors were listed by number and title. The graduates contacted were requested to evaluate each course and indicate whether it was "very helpful," "somewhat helpful" or "not at all helpful." Only eleven (11) out of the twenty-six (26) required courses were technical agricultural courses. It was interesting to note that four courses in Physics and three courses in Bacteriology were required of Poultry majors. No explanation for this fact was available. The opinions of the Poultry majors are tabulated in Table XVII.

The Poultry Husbandry Graduates, based on their opinions, failed to fall into the general pattern of all livestock graduates because they preferred required courses in their own specialized field to those courses considered non-technical agricultural courses.

The courses considered to be most helpful included:

1. All Poultry Husbandry courses,
2. General Bacteriology,
3. Poultry Hygiene and Sanitation,
4. Genetics.

TABLE XVII

OPINIONS OF POULTRY HUSBANDRY MAJORS REGARDING SUBJECTS REQUIRED BY THEIR DEPARTMENT

Poultry Husbandry		V	S	N	?	Total
An. Hub. 301	%	21	42	-	37	100
Animal Breeding	#	4	8	0	7	19
Bacty. 201a or 202	%	35	35	10	20	100
General Bacteriology	#	7	7	2	4	20
Bacty. 201b	%	26	26	22	26	100
Morphological and Cultural	#	5	5	4	5	19
Bacty. 403	%	11	5	-	84	100
Physiological	#	2	1	0	16	19
Cons. 201	%	15	20	5	60	100
Introduction to Conservation	#	3	4	1	12	20
Enty. 201	%	11	31	11	47	100
Introduction to Entomology	#	2	6	2	9	19
Farm Management 302	%	33	33	-	34	100
Farm Management	#	6	6	0	6	18
Hygiene 403	%	45	25	10	20	100
Poultry Hygiene and Sanitation	#	9	5	2	4	20
Journ. 302	%	21	21	5	53	100
Business Writing	#	4	4	1	10	19
Land. Arch. 102a	%	-	17	17	66	100
Elements of Landscape Architecture	#	0	3	3	12	18
Math. 102a	%	5	21	37	37	100
Trigonometry	#	1	4	7	7	19
Phys. 201d	%	11	22	6	61	100
Mechanics and Heat	#	2	4	1	11	18
Phys. 201e	%	11	22	6	61	100
Heat, Magnetism and Electricity	#	2	4	1	11	18
Phys. 158	%	18	24	35	23	100
General Physics	#	3	4	6	4	17
Phys. 168	%	16	32	21	31	100
General Physics	#	3	6	4	6	19
Physiol. 302 or 304	%	17	22	-	61	100
Physiology of Domestic Animals	#	3	4	0	11	18
Psych. 201	%	15	30	25	30	100
General Psychology	#	3	6	5	6	20
Poultry Hub. 302	%	55	35	5	5	100
Poultry Judging and Breeding	#	11	7	1	1	20
Poultry Hub. 303	%	40	50	5	5	100
Marketing of Poultry	#	8	10	1	1	20
Poultry Hub. 404	%	60	20	5	15	100
Incubation and Brooding	#	12	4	1	3	20
Poultry Hub. 408	%	70	20	-	10	100
Poultry Management	#	14	4	0	2	20
Poultry Hub. 410	%	25	50	5	20	100
Poultry Breeding	#	5	10	1	4	20
Poultry Hub. 411	%	30	45	-	25	100
Poultry and Egg Products	#	6	9	0	5	20
Soils 201	%	25	30	10	35	100
Soil Science	#	5	6	2	7	20
Speech 102	%	37	5	5	53	100
Public Speaking	#	7	1	1	10	19
Zoology 311	%	35	35	-	30	100
Introduction to Genetics	#	7	7	0	6	20

At the other extreme, the courses thought to be least helpful included two Physics courses, the Mathematics course, the Psychology course, and the Morphological and Cultural Bacteriology course. These graduate opinions make it apparent that a large number of required courses in Bacteriology and in Physics is neither wanted nor necessary for the Poultry Husbandry curricula.

Section III B of the survey attempted to ascertain which non-required courses, if any, previously taken by the graduates and which they now thought should be made a required course for all.

The following is a list of courses mentioned one or more times as being important enough to be required of all undergraduates:

Animal Husbandry 111	Types of Livestock
Animal Husbandry 202	Study of Breeds
Animal Husbandry 323	Animal Nutrition Application
Animal Husbandry 408	Animal Industry Skills
Agriculture 402	Senior Seminar
Animal Pathology 412 A	Livestock Hygiene and Disease Control
Agricultural Engineering 109	Farm Equipment
Agricultural Engineering 302	Building Materials and Methods
Agricultural Engineering 303	Farm Engines and Tractors
Agricultural Economics 322	Agricultural Marketing
Agricultural Economics 337	Marketing of Horticultural Products
Agricultural Economics 446	Agricultural Prices
Agricultural Economics 450	Agricultural Policy
Accounting 200	Introduction to Accounting
Chemistry 353	Chemistry of Nutrition
Botany 101	Introductory Botany
Dairy 101	Introduction to Dairying
Dairy 230	Dairy Sanitation
Dairy 411	Dairy Cattle Feeding, Breeding Management
Dairy 423	Dairy Cattle Nutrition
Farm Crops 304	Forage Crops
Farm Crops 409	Grassland Management
Farm Management 301	Farm Organization and Management
Geology 325	Photogrammetry
Journalism 302	Business Letter Writing
Journalism 305	Introduction to Advertising

Mathematics 208 G	Statistics
Physiology 304	Physiology of Domestic Animals
Poultry 101	Farm Poultry
Poultry 302	A Study of Breed Characteristics and Production Judging
Poultry 303	Marketing of Poultry Products
Poultry 310	Applied Feeding
Soils 216	Soil Science
Soils 308	Soils Management
Soils 304 B	Soil Fertility and Fertilizers
Speech 102	Public Speaking
Speech 128	Parliamentary Procedure
Speech 203	Conversational Speaking
Speech 303 A	Business Speaking
Zoology 311	Introduction to Genetics
Zoology 333	Elementary Genetics
Zoology 333 A	Elementary Genetics

Attention is drawn to the fact that the above list of courses does not contradict the previous tables. One might even be tempted to say that the courses mentioned in this section is really the curriculum as the graduates themselves would have it.

Part IV of the questionnaire was an attempt to learn how the livestock graduate valued elective course work in the School of Agriculture. An attempt was made to learn the respondents' viewpoints regarding the course content by department for non-required courses.

The Technical Agricultural courses were evaluated quantitatively by the graduates of Animal Husbandry, Dairy Husbandry, and Poultry Husbandry at Michigan State College. The purpose of this evaluation was to determine the respondent's views regarding course work they elected to receive while an undergraduate in light of their present needs. The respondents were asked to evaluate their technical courses under the categories of "Too Much," "Just Right" and "Too Little" providing they had taken the course as an undergraduate. If they did not take a particular course,

and felt that a certain course would have been helpful to them, then a column marked "Wish I Had" could be checked.

The above mentioned categories need an explanation as to the information requested. It must be remembered that each graduate received a transcript of grades and based upon this refresher, he evaluates the subject material given in the elective course listed. If, in a given course, the respondent believed that too much was required of the student, the column marked "Too Much" could be checked. If the requirements were just right, the column entitled, "Just Right" could be checked by the graduate. If the respondent believed that too little work was required, then the column entitled, "Too Little" could be marked. Finally, the graduate was given a chance to respond even though he may not have taken the course. In case he did not take the particular course but wished that he had, then the column entitled, "Wish I Had" could have been checked.

Tables XVIII through XXV show the results of the qualitative evaluation by the livestock graduates of Michigan State College, of the technical agricultural courses by departments. Tables I A to VIII A list the evaluation of these same courses by the graduates majoring in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. These tables are found in Appendix B.

A review of the records of the evaluation of these technical agricultural courses reveals that a majority of the respondents indicated the content to be "Just Right."



TABLE XVIII

QUANTITATIVE EVALUATION OF ELECTIVE AGRICULTURAL ENGINEERING COURSES  
BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Agricultural Engineering 201 Farm Mechanics	-	55	45	(42)	(158)	(31)	20
Agricultural Engineering 215 Farm Construction	8	42	50	(24)	(176)	(45)	26
Agricultural Engineering 302 Building Materials & Methods	-	<u>75</u>	<u>25</u>	(12)	(188)	(44)	23
Agricultural Engineering 303 Farm Engines & Tractors	8	57	35	(37)	(163)	(34)	21
Agricultural Engineering 304 Farm Machinery	3	68	29	(34)	(166)	(26)	16
Agricultural Engineering 305 Farmstead & Building Planning	-	<u>75</u>	<u>25</u>	( 8)	(192)	(36)	19
Agricultural Engineering 307 Farm Drainage & Irrigation	-	<u>50</u>	<u>50</u>	( 4)	(196)	(45)	23
Agricultural Engineering 316 Farm Field Equipment	<u>17</u>	<u>83</u>	--	( 6)	(193)	(37)	20
Agricultural Engineering 387	<u>17</u>	<u>83</u>	--	( 6)	(183)	(37)	20
Totals	5	60	35	(173)	(1615)	(335)	21

N.B. - The total number of cases, upon which the percentages are based, is placed in parenthesis. Whenever, percentages are based upon totals of less than fifteen (15), the percentage figures are underlined in order to caution the reader that generalization based on the results may be unreliable. The choice of fifteen (15) is arbitrary and, therefore, the totals are provided so that the reader may choose a higher, or lower, figure as the level below which he would not want to generalize.

Asterisks (\*) are used where there are statistically significant differences between the responses of Animal Husbandry and Dairy Husbandry majors. The Washington Agricultural Experiment Stations Circular No. 102, September, 1950 entitled "Significance of Differences Between Percentages" by Vernon Davies was used in making these tests.

TABLE XIX

QUANTITATIVE EVALUATION OF ELECTIVE ANIMAL HUSBANDRY COURSES  
BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Animal Husbandry 301 or 402 Animal Breeding	5	73	22	(110)	(90)	(12)	13
Animal Husbandry 302 (202) Study of Breeds	10	76	14	( 83)	(117)	( 8)	7
Animal Husbandry 304b Applied Feeding	7	51	42	(107)	(93)	( 8)	9
Animal Husbandry 305a Stock Judging	7	77	16	( 81)	(119)	( 6)	5
Animal Husbandry 311 Horse Breeding & Management	13	79	8	( 48)	(152)	(10)	7
Animal Husbandry 312 Swine Breeding & Management	2	65	33	( 52)	(148)	(14)	9
Animal Husbandry 320 Meat Selection & Use	4	83	13	( 48)	(152)	(34)	22
Animal Husbandry 401 Advanced Animal Breeding	-	80	20	( 15)	(185)	(43)	23
Animal Husbandry 405 Advanced Stock Judging	10	77	13	( 40)	(160)	(14)	9
Animal Husbandry 406 Meat Production	2	80	18	( 45)	(155)	(11)	7
Animal Husbandry 407 Livestock Production & Manage- ment	2	65	33	( 49)	(151)	(20)	13
Animal Husbandry 413 Sheep Breeding & Management	2	73	25	( 40)	(160)	( 6)	4
Animal Husbandry 414 Beef Cattle Breeding & Management	8	43	49	( 39)	(161)	(17)	11
Animal Husbandry 415 Special Problems	4	80	16	( 46)	(154)	( 3)	2
Animal Husbandry 424 Advanced Meat Selection and Grading	-	<u>80</u>	<u>20</u>	(10)	(190)	(28)	15
Totals	6	71	23	(813)	(2187)	(234)	11

TABLE XX

QUANTITATIVE EVALUATION OF ELECTIVE DAIRY HUSBANDRY COURSES  
BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Dairy Husbandry 230 Dairy Sanitation	5	67	28	(43)	(157)	(17)	11
Dairy Husbandry 304 & b Market Milk	5	87	8	(74)	(126)	( 6)	5
Dairy Husbandry 305 & a Ice Cream Manufacture	4	60	36	(47)	(153)	( 3)	2
Dairy Husbandry 306 Advanced Dairy Cattle Judging	10	72	18	(51)	(149)	(12)	8
Dairy Husbandry 309 Dairy Herd Operations	3	69	28	(39)	(161)	(23)	14
Dairy Husbandry 311 & a Dairy Cattle	27	60	13	(30)	(170)	(19)	11
Dairy Husbandry 318 Advanced Dairy Products Judging	2	73	25	(40)	(160)	(15)	9
Dairy Husbandry 326 Laboratory Methods	7	78	15	(40)	(160)	( 5)	3
Dairy Husbandry 402 Butter Making	10	73	17	(41)	(159)	( 2)	1
Dairy Husbandry 404 & b Concentrated Milk Products	5	74	21	(38)	(162)	( 6)	4
Dairy Husbandry 405 & b Cheese Making	4	85	11	(26)	(174)	( .9)	5

Continued next page

TABLE XX - Continued

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Dairy Husbandry 411 & b Milk Production	3	84	13	(38)	(162)	(13)	8
Dairy Husbandry 412 Dairy Farm Management	5	80	15	(40)	(160)	(30)	19
Dairy Husbandry 415 & 416 Dairy Seminar	5	78	17	(42)	(158)	( 7)	4
Dairy Husbandry 421 Plant Management	9	31	59	(32)	(168)	( 8)	5
Dairy Husbandry 423 Dairy Cattle Nutrition	7	81	12	(43)	(157)	(35)	22
Dairy Husbandry 424 Advanced Dairy Technology	6	71	23	(17)	(183)	( 7)	4
Dairy Husbandry 431 Dairy Inspection & Ordinances	6	72	22	(32)	(168)	(22)	13
Totals	7	73	20	(713)	(2887)	(239)	8

TABLE XXI

QUANTITATIVE EVALUATION OF ELECTIVE ECONOMICS COURSES BY LIVESTOCK  
GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Economics 211 a, b & c Agricultural Economics	20	70	10	(105)	(95)	(10)	11
Economics 307 Personnel Management	-	<u>100</u>	-	( 4)	(196)	(42)	21
Economics 318 Money, Credit & Banking	53	27	20	( 15)	(185)	(37)	20
Economics 322 Agricultural Marketing	15	60	25	( 40)	(160)	(34)	21
Economics 323 Cooperatives in the Economy	<u>38</u>	<u>54</u>	<u>8</u>	( 13)	(187)	(24)	13
Economics 338 Marketing of Dairy Products	-	83	17	( 24)	(176)	(26)	15
Economics 343 Cooperative Business Management	<u>8</u>	<u>92</u>	-	( 12)	(188)	(25)	13
Economics 446 Agricultural Prices	11	67	22	( 27)	(173)	(26)	15
Economics 450 National Agricultural Policies	<u>21</u>	<u>65</u>	<u>14</u>	( 14)	(186)	(30)	16
Farm Management 202 (302) Farm Management	7	71	22	( 97)	(103)	( 6)	6
Farm Management 301 Farm Management	11	72	17	( 35)	(165)	( 9)	5
Farm Management 303 Farm Management	<u>21</u>	<u>72</u>	<u>7</u>	( 14)	(186)	( 7)	4
Farm Management 404 Successful Michigan Farms	5	86	9	( 22)	(178)	(18)	10
Totals	15	70	15	(422)	(2178)	(294)	13

TABLE XXII

QUANTITATIVE EVALUATION OF ELECTIVE FARM CROPS COURSES BY LIVESTOCK  
GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Farm Crops 303 Special Field Crops	4	70	26	(23)	(177)	(10)	6
Farm Crops 304 Forage Crops	2	82	16	(62)	(138)	(20)	14
Farm Crops 305 Cereals, Grain Grading and Marketing	-	<u>60</u>	<u>40</u>	( 5)	(195)	( 9)	5
Farm Crops 405 a & b Techniques & Principles of Plant Breeding	-	<u>67</u>	<u>33</u>	( 3)	(197)	(11)	6
Farm Crops 409 Grassland Management	4	59	37	(49)	(151)	(35)	23
Totals	3	71	26	(142)	(858)	(85)	10

TABLE XXIII

QUANTITATIVE EVALUATION OF ELECTIVE HORTICULTURE COURSES  
BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Horticulture 416 Storage and Transportation	<u>25</u>	<u>25</u>	<u>50</u>	( 8)	(192)	( 9)	5

TABLE XXIV

QUANTITATIVE EVALUATION OF ELECTIVE POULTRY HUSBANDRY COURSES  
BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Poultry Husbandry 302 Poultry Judging & Breeding	6	81	13	(31)	(169)	(12)	7
Poultry Husbandry 303 Marketing of Poultry	-	68	32	(25)	(175)	(17)	10
Poultry Husbandry 309 Domestic Propagation of Turkeys	-	<u>60</u>	<u>40</u>	( 5)	(195)	( 9)	5
Totals	3	74	23	(61)	(539)	(38)	7

TABLE XXV

QUANTITATIVE EVALUATION OF ELECTIVE SOILS COURSES BY LIVESTOCK  
GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Soils 114 & 216 Soil Science	2	89	9	(104)	(96)	( 9)	9
Soils 306 Fertilizers	3	84	13	( 31)	(169)	(37)	22
Soils 308 Soil Management	-	88	12	( 25)	(175)	(36)	21
Soils 404 b Soil Fertility	<u>8</u>	<u>92</u>	-	( 12)	(188)	(35)	19
Totals	2	89	9	(172)	(628)	(117)	19

The reader's attention is directed to the fact that the evaluation of individual course work within each subject matter department varies with the respondents' replies. The reader is cautioned against accepting percentages without first ascertaining the size of the sample. Evaluation of the respondents' replies is based, not upon individual courses, but upon all courses given within a department. A lack of space prevents an evaluation of the replies for each course within the subject matter departments.



Although not significant, the respondents taking these courses felt that "Too Little" was given in both Agricultural Engineering and Farm Crops. Only the Agricultural Economics and Farm Management Courses received responses with 15% of these having had the courses rating the subject matter "Too Much" and also 15% listing "Too Little."

For those graduates who failed to take the course and indicated their desire to do so, under the heading, "Wish I Had," it was interesting to note that Agricultural Engineering and Soils Science, by far, are the ones the graduates wished they had taken. It appears that the value of these two courses is not known during the undergraduate days. Apparently, after graduation, however, the use, practicality and value of both Agricultural Engineering and Soil Science courses forge to the front. This poses a real problem as to when a course actually has or becomes valuable.

The non-technical, non-agricultural and elective courses were evaluated by graduates of Michigan State College, who majored in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. These courses, too, were evaluated under the categories of "Too Much," "Too Little," "Just Right" and "Wish I Had." The purpose of this section was to evaluate the reactions of the graduate regarding elective, non-technical, and non-agricultural courses taken as an undergraduate in light of their present work. This evaluation of course work differs from that described in Tables XVIII to XXV, only in that the courses listed include only non-agricultural courses and exclude all technical agricultural course work.

Tables XXVI through XLVIII give the quantitative evaluation of these non-agricultural courses by departments by the livestock graduates of

Michigan State College. Tables IX A to XXXI A list the evaluation of these same courses by the graduates who majored in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. These tables are found in the Appendix C.

TABLE XXVI

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Agriculture

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Agriculture 201 Cooperative Extension Work	6	72	22	(32)	(168)	(18)	11
Agriculture 205 Nutrition	8	75	17	(53)	(147)	(26)	18
Totals	7	74	19	(85)	(315)	(44)	14

TABLE XXVII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Anatomy

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Anatomy 305a, b & c Gross & Microscopic Anatomy	<u>43</u>	<u>57</u>	--	( 7)	(193)	(13)	7
Anatomy 307 Avian Embryology	--	<u>58</u>	<u>42</u>	(12)	(188)	(12)	6
Anatomy 308 Avian Embryology	<u>29</u>	<u>71</u>	--	( 7)	(193)	( 8)	4
Anatomy 403a Cytology & Histology	<u>22</u>	<u>78</u>	--	( 9)	(191)	(10)	5
Anatomy 403b Embryology	<u>10</u>	<u>80</u>	<u>10</u>	( 9)	(191)	(16)	8
Totals	18	68	14	(44)	(956)	(59)	6

TABLE XXVIII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Animal Pathology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Animal Pathology 301 General Pathology	<u>9</u>	<u>73</u>	<u>18</u>	(11)	(189)	(32)	17
Animal Pathology 301a General & Systemic Pathology	-	<u>87</u>	<u>13</u>	( 8)	(192)	( 9)	5
Animal Pathology 301b Systemic Pathology	-	<u>87</u>	<u>13</u>	( 8)	(192)	( 7)	4
Animal Pathology 412 & a Livestock Hygiene & Disease Control	4	45	51	(47)	(153)	(39)	25
Totals	4	58	38	(74)	(726)	(87)	12

TABLE XXIX

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Bacteriology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Bacteriology 201c Applied Bacteriology	8	78	14	(36)	(164)	(14)	9
Bacteriology 304a Antiseptics & Disinfectants	--	87	13	(16)	(184)	(31)	17
Bacteriology 304b Water & Sewage	--	<u>86</u>	<u>14</u>	( 7)	(193)	(24)	12
Bacteriology 304c Food Preservation and Decomposition	<u>20</u>	<u>60</u>	<u>20</u>	( 5)	(195)	(33)	17
Bacteriology 304f Pathogenic Bacteriology	--	<u>89</u>	<u>11</u>	( 9)	(191)	(22)	12
Bacteriology 304j Immunology & Serology	<u>17</u>	<u>83</u>	--	( 6)	(194)	(13)	7
Totals	6	81	13	(79)	(1121)	(137)	12

TABLE XXX

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Business Administration

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Business Administration 200 Introduction to Accounting	7	70	23	(44)	(154)	(48)	31
Business Administration 203a, 14 b & c Principles of Accounting	<u>14</u>	<u>86</u>	--	(14)	(186)	(30)	16
Business Administration 236 Principles of Insurance	--	<u>83</u>	<u>17</u>	( 6)	(194)	(27)	14
Business Administration 445a & b Business Law	14	67	19	(21)	(179)	(49)	27
Business Administration 448 Sales Administration	<u>12</u>	<u>88</u>	--	( 8)	(192)	(31)	16
Totals	10	74	16	(93)	(905)	(185)	20

TABLE XXXI

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Chemistry

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Chemistry 207 Quantitative Analysis	32	65	3	(98)	(102)	(13)	13
Chemistry 208 Biological Chemistry	35	59	6	(135)	(65)	(2)	3
Chemistry 221 Physiological Chemistry	17	75	8	(24)	(176)	(19)	11
Chemistry 341a, b & c Organic Chemistry	16	68	16	(25)	(175)	(15)	9
Chemistry 353 The Chemistry of Nutrition	10	58	32	(82)	(118)	(24)	20
Chemistry 383, 384 & 385, 390 & 457 Physical Chemistry	<u>14</u>	<u>72</u>	<u>14</u>	(7)	(193)	(12)	6
Chemistry 429b & c Biological Chemistry	<u>10</u>	<u>90</u>	--	(10)	(190)	(18)	9
Totals	25	63	12	(381)	(1019)	(103)	10

TABLE XXXII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Civil Engineering

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Civil Engineering 360 (San. Eng. 301) Water Treatment Technique	--	--	<u>100</u>	(1)	(199)	(11)	6
Civil Engineering 364 (San. Eng. 302) Sewage Treatment Technique	--	<u>100</u>	--	(1)	(199)	(10)	5
Totals	--	50	50	(2)	(398)	(21)	5



TABLE XXXIII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Conservation

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Conservation 201 Introduction to Conservation	5	36	59	(41)	(159)	(15)	9

TABLE XXXIV

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Entomology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Entomology 201 Introduction to Entomology	22	73	5	(63)	(137)	(11)	8

TABLE XXXV

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## E. Drawing

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
E. Drawing 204c Mechanical Drawing	13	81	6	(31)	(169)	(21)	12

TABLE XXXVI

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Forestry

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Forestry 100 Development of Forestry	<u>8</u>	<u>58</u>	<u>34</u>	(12)	(188)	(9)	5

TABLE XXXVII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Geology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Geology 208 Introduction to Geology	11	78	11	(18)	(182)	(21)	12

TABLE XXXVIII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Hygiene &amp; Public Health

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Hygiene & Public Health 403 Poultry Hygiene & Sanitation	7	40	53	(15)	(185)	(13)	7
Hygiene & Public Health 412a Livestock Hygiene & Disease Control	-	39	61	(23)	(177)	(36)	20
Totals	3	39	58	(38)	(362)	(49)	14

TABLE XXXIX

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Journalism

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Journalism 302 Business Writing	9	76	15	(85)	(115)	(28)	24
Journalism 302n & 318 Technical Writing	13	61	26	(23)	(177)	(16)	9
Journalism 302p & 321 Bulletin Writing	--	<u>60</u>	<u>40</u>	(5)	(195)	(14)	7
Journalism 302s & 319 Farm & Home Writing	<u>12</u>	<u>63</u>	<u>25</u>	(8)	(192)	(17)	9
Journalism 305 Principles of Advertising	9	56	35	(23)	(177)	(29)	16
Journalism 309 Feature Article Writing	--	<u>80</u>	<u>20</u>	(5)	(195)	(25)	13
Totals	9	70	21	(149)	(1051)	(139)	13

1. The first part of the document is a list of names and addresses.

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TABLE XL

QUANTITATIVE ANALYSIS OF ELECTIVE **NON-TECHNICAL** AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Landscape Architecture

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Landscape Architecture 101 & 102a Elements of Landscape Architecture	22	43	35	(54)	(146)	(15)	10

TABLE XLI

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Mathematics

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Mathematics 102 Trigonometry	17	81	2	(78)	(122)	(4)	3
Mathematics 103 Analytic Geometry	29	71	--	(17)	(183)	(5)	3
Mathematics 204 Elementary Calculus	<u>38</u>	<u>62</u>	--	(8)	(196)	(12)	6
Mathematics 225 Statistics	<u>7</u>	<u>57</u>	<u>36</u>	(14)	(186)	(17)	9
Mathematics 308g Elementary Statistics	<u>9</u>	<u>82</u>	<u>9</u>	(11)	(189)	(14)	7
Mathematics 325 Statistical Methods	--	<u>100</u>	--	(6)	(194)	(9)	5
Totals	17	77	6	(134)	(1070)	(61)	6

TABLE XLII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Mechanical Engineering

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Mechanical Engineering 209 Refrigeration	7	33	60	(15)	(185)	(29)	16
Mechanical Engineering 218 Plumbing & Fitting	--	<u>57</u>	<u>43</u>	(7)	(193)	(32)	17
Mechanical Engineering 320 & 321 Mechanical Equipment of Hotels	<u>17</u>	<u>66</u>	<u>17</u>	(6)	(194)	(2)	1
Totals	8	46	46	(28)	(572)	(63)	11

TABLE XLIII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Physics

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Physics 158 General Physics	17	78	5	(63)	(137)	(10)	7



TABLE XLIV

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Physiology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Physiology 302 & 304 Physiology of Domestic Animals	9	75	16	(69)	(131)	(15)	11
Physiology 310, 311, 312 Advanced Physiology	--	<u>71</u>	<u>29</u>	(7)	(193)	(6)	3
Physiology 314, 414 Abnormal Physiology	--	--	<u>100</u>	(1)	(199)	(4)	2
Physiology 410, 411, 412 Advanced Physiology	--	<u>33</u>	<u>67</u>	(3)	(197)	(5)	3
Physiology 413 Internal Physiology	--	<u>75</u>	<u>25</u>	(8)	(192)	(5)	3
Totals	7	73	20	(88)	(912)	(35)	4

TABLE XLV

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Political Science

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Political Science 203a National Government	8	<u>84</u>	8	(13)	(187)	(18)	10
Political Science 203b State Government	-	<u>83</u>	<u>17</u>	(6)	(194)	(18)	9
Totals	5	85	10	(19)	(381)	(36)	9

TABLE XLVI

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Sociology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Sociology 201 Principles of Sociology	25	50	25	(32)	(168)	(9)	5

TABLE XLVII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Speech

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Speech 128 & 228 Parliamentary Procedure	8	75	17	(24)	(176)	(38)	22
Speech 303a Business Speaking	--	77	23	(43)	(157)	(45)	27
Totals	3	76	21	(67)	(333)	(83)	25

TABLE XLVIII

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL AGRICULTURAL COURSES,  
BASED ON THE JUDGMENT OF LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

## Zoology

Course Number and Course Title	Total						
	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
Zoology 207 & 208 Introductory Zoology	29	68	3	(28)	(172)	(9)	5
Zoology 313 Human Heredity	5	81	14	(21)	(179)	(14)	8
Zoology 333 & a Elementary Genetics	12	73	15	(34)	(166)	(12)	7
Totals	16	73	11	(83)	(517)	(35)	7

A scanning of the tables showing the quantitative evaluation of the non-agricultural courses, reveals that the majority of the respondents indicated the content of the courses which they took was "Just Right." The reader's attention is drawn to the fact that evaluation of course work within each subject matter department varies as to the respondents' replies. The reader is cautioned against accepting the percentage figures without first ascertaining the number of replies involved. Evaluation of course work as described in Tables XXVI to XLVIII is based upon all courses within a given department. Significant differences were noted for two separate departments. These departments were Conservation, and Hygiene and Public Health. In each of these courses, the respondents indicated that "Too Little" was required of them. Over 50 percent of the former students who had taken course work in those departments indicated that "Too Little" was required of them. All Chemistry, Sociology, Entomology and Landscape Architecture courses received the largest percentage of votes, by those having taken course work, as requiring "Too Much" work of the student. Among those graduates who failed to take certain course work, and due to his or her present work, could now see the value of this course work, the following fields were classified as being important. These included: Speech, Business Administration, Hygiene and Public Health, and Agriculture. It was interesting to note that in the case of Hygiene and Public Health, the replies of those who took the course indicated that "Too Little" was required of the student, and the replies of those who failed to take these courses indicated a high desire to take this course.

Significant difference in percentages was noted between the replies of the Animal Husbandry majors versus the Dairy Husbandry majors for courses which they failed to take while undergraduates. The Animal Husbandry graduate significantly indicated that he would have preferred to have had the Agricultural Engineering Course #201, entitled "Farm Mechanics." In evaluating course work taken the Animal Husbandry graduates showed a significant difference from the Dairy Husbandry major in favor of Economics 211, A, B and C, entitled "Agricultural Economics" and Dairy 423 entitled "Dairy Cattle Nutrition." An explanation for the latter is difficult, and so the author ventures only a supposition that the Dairy majors responding were largely Dairy Manufacturing majors rather than Dairy Production majors.

In many instances, a significance of differences between percentages might have been found except that the number of responses for either the Animal Husbandry or Dairy Husbandry majors fell below the accepted limit of fifteen (15) for reasons previously explained.

A summation of the Dairy Husbandry graduates who took the course work, reveals that the following three courses are significantly more important to the Dairy graduates than the Animal Husbandry graduates: Dairy Husbandry 306, entitled "Advanced Dairy Cattle Judging," Farm Crops 305, entitled "Forage Crops," and Soils 114, entitled "Soil Science."

Section V of the questionnaire dealt with the graduates' viewpoints regarding electives.

For many years, the amount of time which should be allotted for electives has plagued the educators. One school of thought feels a rigid

system of required courses should be prescribed, whereas, another school of thought feels that the student should have but a few requirements, if any, and much leway for selected courses.

Woodrow Wilson<sup>100</sup> stated that the undergraduate, after a certain number of really fundamental subjects have been studied, must be offered a choice of the route he will travel in carrying his education further.

Robert Hutchins<sup>101</sup> pointed out that a student toiled his way through a few required courses and wandered around taking those which seemed the most entertaining.

Rupert C. Lodge<sup>102</sup> reported that under an "elective system" in force at one of the eastern universities, several students actually received a B. A. degree by electing only beginning courses, independent of their content.

Again Hutchins<sup>103</sup> felt that President Eliot of Harvard robbed youth of their cultural heritage when Harvard instituted the elective system. He thought that few young people have the wisdom or the self-discipline to choose difficult but rewarding subjects, but have a tendency to elect "snap" courses.

Stella Henderson<sup>104</sup> stated that perhaps in the past, the elective system went too far for college students seldom have the maturity or

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<sup>100</sup>Loc. cit., p. 167.

<sup>101</sup>Loc. cit., p. 42.

<sup>102</sup>Loc. cit., p. 62.

<sup>103</sup>Loc. cit., p. 356.

<sup>104</sup>Loc. cit., p. 356

the judgment to make wise choices. This, of course, is always debatable.

H. K. Wilson<sup>105</sup> surveyed the land grant institutions on the common practices in the first two years of agriculture. His survey showed that most land grant colleges have the fixed curriculum in the first two years and allow for electives in the later years. An exception was the University of Minnesota, which permits much latitude on the part of the student and his advisor beginning with the freshman year.

C. P. White<sup>106</sup> showed that the teachers of Vocational Agriculture at Michigan State College do not have the opportunity to take enough courses as an undergraduate in certain specialized fields in agriculture because of the large number of required courses.

Sexauer<sup>107</sup> stated that if a student's years of college training were not limited, many courses might be included.

R. S. Hawkins<sup>108</sup> reveals that the University of Arizona like Michigan State College has required courses in each department for Freshman and Sophomore years.

The Land Grant College Association<sup>109</sup> expressed a definite undergraduate training in percentage of time as they allowed only 10 percent for electives. This again is based upon a philosophy of discipline versus utilitarianism.

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<sup>105</sup>Loc. cit. Mimeographed folder.

<sup>106</sup>Loc. cit. Unpublished Ph. D. Thesis.

<sup>107</sup>Loc. cit. P. 695

<sup>108</sup>Loc. cit. Written communication with mimeographed data.

<sup>109</sup>Loc. cit. United States Department of Agriculture Extension Service Leaflet 100.



Section V of the questionnaire attempted to learn what proportion of college time, in terms of course credits, the respondent, when still an undergraduate, would like to have used in exploring his own interests (electives). The former student was offered a number of choices, ranging from one-eighth, one-fourth, one-third, to one-half, or any other fraction between.

When the livestock graduates of Michigan State College were asked their opinions about the amount of electives or elective time which they wanted, it was apparent that electives were very important. The proportion of college time, in course credits, desired by these graduates for electives is tabulated in Table XLIX.

TABLE XLIX

PROPORTION OF COLLEGE TIME (COURSE CREDITS) DESIRED FOR ELECTIVES  
BASED ON COLLEGE TRAINING

Course Area	Proportion of Time for Electives						Total
		1/8	1/4	1/3	1/2	Other	
Animal Husbandry	%	6	27	25	31	11	100
	#	5	24	22	27	10	88
Dairy Husbandry	%	1	26	32	32	9	100
	#	1	23	29	29	8	90
Poultry Husbandry	%	-	30	40	30	-	100
	#	-	6	8	6	-	20
Total	%	3	27	30	31	9	100
	#	6	53	59	62	18	198

An amazing 99 percent of the respondents answered this question, and 70 percent of those, wanted one third to one-half and more of their college time set aside for electives.

Thus, we find here grounds for controversy between the formal disciplinarians and the functionalists in education. The so-called traditionalist believes in the absolute good of a subject; the functionalist in its value as a means to a practical end.

Section E was designed to secure suggestions as to which courses listed in the General Agriculture Series, required for all students in Agriculture, should not be required of all students.

The replies listed courses, both in technical agriculture, and non-technical agriculture, which these graduates felt were of little value to them. An evaluation of the courses not thought to be important to be required of all agricultural students is given in Table L.

Section VI of the survey was devoted to those livestock graduates who formerly held, or now hold a professional position for which agricultural training was required. An effort was made to learn which of the fourteen General Fields of Study in Agriculture were most valuable in the minds of those graduates holding professional positions. The respondent was given four columns to check. If a course had been taken in the field of study, column number one, entitled "Took" would be checked. If those courses were valuable professional training in preparing for present job, column two, entitled "Valuable", would be checked. If these courses were of little value in professional training, column three, entitled "Little Value", would be checked. Finally, if these courses

TABLE L

EVALUATION OF GENERAL AGRICULTURAL SERIES COURSES LISTING THOSE  
THOUGHT NOT IMPORTANT ENOUGH TO BE REQUIRED OF ALL

Course Number	Course Title	Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Total	Percent
Ag. 101	Development of Agriculture	5	9	3	17	16.0
Ag. Econ. 211	Agricultural Economics	4	1	-	5	4.7
Ag. Eng'r. 114	Rural Electrification	7	7	1	15	14.2
Ag. Eng'r. 109	Farm Equipment	-	-	2	2	1.9
An. Hub. 115	Types of Livestock	2	1	-	3	2.8
Basics	History of Civilization				(4)	
	Effective Living				(3)	
	Literature & Fine Arts				(2)	
	Social Science				(2)	
	English				(1)	
	Total Basic Courses				12	11.3
Bact'y 201 a & b	General Bacteriology	4	-	-	4	3.8
Botany 101 a	General Botany	1	5	-	6	5.7
Chem. 101, 2 & 3	General Chemistry	6	1	1	8	7.5
Education 101	Orientation for Men	2	-	-	2	1.9
Farm Crops 101a	Field Crop Industry	-	3	-	3	2.8
Farm Management 202	Farm Management	-	1	-	1	1.0
Horticulture 100 A	General Horticulture	3	1	1	5	4.7
Math. 100 A	Elementary Algebra	1	-	2	3	2.8
Math. 100 C	Algebra for Statistics	1	1	1	3	2.8
Poultry 101	Farm Poultry	1	8	-	9	8.5
Rural Soc. 337	Rural Sociology	6	-	1	7	6.6
Soils 114	Soils Science	-	1	-	1	1.0
Totals		43	39	12	106	100.0

were of doubtful value, or if the value were not known, then column four, entitled "Don't Know", would be checked.

An evaluation of these general fields of study by graduates of Animal Husbandry, Dairy Husbandry and Poultry Husbandry Departments is tabulated in Tables LI, LII and LIII. A summary of all livestock graduates of Michigan State College is found in Table LIV.

In reviewing the evaluation of the General Fields of Study by the graduates of Animal Husbandry, Dairy Husbandry and Poultry Husbandry, holding professional positions, it was quickly noted that too few respondents answered this phase of the questionnaire. However, the Animal Husbandry graduates evaluated four general fields in sufficient numbers to warrant consideration here. Of those who actually had course work in a general field, Horticulture received more replies and also the highest percentage figure as to its value to the respondent. Ninety-five percent of the graduates evaluated Horticulture general field to be "Valuable" and only 5 percent "Little Value".

It should be noted that a discrepancy exists between this statement and the third statement in the Summary of Chapter IV. However, it must be pointed out that the graduates evaluating these General Fields of Study were holding professional positions whereas the graduates summarized in Chapter IV were livestock graduates holding all types of jobs.

Closely following, were Agricultural Economics and Agricultural Engineering, which received an evaluation of eighty-nine percent and eighty-four percent as "valuable" from 19 respondents. Rural Sociology

TABLE LI

EVALUATION OF GENERAL FIELDS OF STUDY BY ANIMAL HUSBANDRY GRADUATES  
HOLDING PROFESSIONAL POSITIONS

General Fields of Study	Valuable	Little Value	Number Evaluating General Field	Number Replying Don't Know	Number Taking Course Work
Agricultural Economics	89	11	(19)	(0)	(24)
Agricultural Education	<u>33</u>	<u>67</u>	(9)	(0)	(11)
Agricultural Engineering	84	16	(19)	(0)	(18)
Agricultural Extension	<u>37</u>	<u>63</u>	(8)	(0)	(9)
Animal Husbandry	0	<u>100</u>	(1)	(0)	(43)
Conservation	<u>55</u>	<u>27</u>	(11)	(2)	(14)
Dairy Husbandry	<u>100</u>	0	(7)	(0)	(32)
Farm Crops	<u>80</u>	<u>20</u>	(10)	(0)	(31)
Food Technology	<u>16</u>	<u>84</u>	(6)	(0)	(1)
Horticulture	95	5	(22)	(0)	(17)
Landscape	<u>71</u>	<u>24</u>	(7)	(1)	(5)
Poultry Husbandry	<u>88</u>	<u>12</u>	(8)	(0)	(36)
Rural Sociology & Anthropology	53	47	(17)	(0)	(3)
Soil Science	<u>75</u>	<u>25</u>	(8)	(0)	(35)

N.B. Explanation of figures, parenthesis, and underlined figures are explained after Table XX.

TABLE LII

EVALUATION OF GENERAL FIELDS OF STUDY BY DAIRY HUSBANDRY GRADUATES  
HOLDING PROFESSIONAL POSITIONS

General Fields of Study	Valuable	Little Value	Number Evaluating General Field	Number Replying Don't Know	Number Taking Course Work
Agricultural Economics	<u>100</u>	0	(5)	(0)	(27)
Agricultural Education	<u>80</u>	<u>20</u>	(10)	(0)	(15)
Agricultural Engineering	<u>91</u>	9	(11)	(0)	(21)
Agricultural Extension	<u>100</u>	0	(1)	(0)	(6)
Animal Husbandry	<u>83</u>	<u>17</u>	(12)	(0)	(17)
Conservation	<u>75</u>	<u>25</u>	(4)	(0)	(21)
Dairy Husbandry	<u>100</u>	0	(2)	(0)	(34)
Farm Crops	<u>69</u>	<u>31</u>	(13)	(0)	(18)
Food Technology	0	0	(1)	(1)	(5)
Horticulture	74	26	(23)	(0)	(8)
Landscape	<u>71</u>	<u>29</u>	(14)	(0)	(1)
Poultry Husbandry	65	35	(23)	(0)	(11)
Rural Sociology	<u>67</u>	<u>33</u>	(9)	(0)	(4)
Soil Science	<u>83</u>	<u>17</u>	(12)	(0)	(19)

TABLE LIII

EVALUATION OF GENERAL FIELDS OF STUDY BY POULTRY HUSBANDRY GRADUATES  
HOLDING PROFESSIONAL POSITIONS

General Fields of Study	Valuable	Little Value	Number Evaluating General Field	Number Replying Don't Know	Number Taking Course Work
Agricultural Economics	<u>75</u>	<u>25</u>	(4)	(0)	(7)
Agricultural Education	<u>50</u>	<u>50</u>	(2)	(0)	(5)
Agricultural Engineering	<u>100</u>	0	(5)	(0)	(5)
Agricultural Extension	0	0	(0)	(0)	(2)
Animal Husbandry	<u>67</u>	<u>33</u>	(3)	(0)	(10)
Conservation	<u>75</u>	<u>25</u>	(4)	(0)	(3)
Dairy Husbandry	<u>83</u>	<u>17</u>	(6)	(0)	(7)
Farm Crops	<u>50</u>	<u>50</u>	(2)	(0)	(10)
Food Technology	0	0	(0)	(0)	(0)
Horticulture	<u>67</u>	<u>33</u>	(9)	(0)	(4)
Landscape	<u>80</u>	<u>20</u>	(5)	(0)	(0)
Poultry Husbandry	<u>100</u>	0	(1)	(0)	(14)
Rural Sociology	<u>50</u>	<u>50</u>	(4)	(0)	(4)
Soil Science	<u>100</u>	0	(2)	(0)	(9)

TABLE LIV

EVALUATION OF GENERAL FIELDS OF STUDY BY LIVESTOCK GRADUATES OF  
MICHIGAN STATE COLLEGE HOLDING PROFESSIONAL POSITIONS

General Fields of Study	Valuable	Little Value	Number Evaluating Course	Number Taking Course	Percent Evaluating Course
Agricultural Economics	89	11	(28)	(58)	48
Agricultural Education	57	43	(21)	(21)	100
Agricultural Engineering	89	11	(35)	(44)	80
Agricultural Extension	<u>44</u>	<u>66</u>	(9)	(17)	53
Animal Husbandry	75	25	(16)	(70)	23
Conservation	71	29	(17)	(19)	89
Dairy Husbandry	93	7	(15)	(73)	21
Farm Crops	72	28	(25)	(59)	42
Food Technology	<u>17</u>	<u>83</u>	(6)	(1)	600 **
Horticulture	81	19	(54)	(29)	182 **
Landscape	72	28	(36)	(11)	327 **
Poultry Husbandry	72	28	(32)	(61)	52
Rural Sociology	57	43	(30)	(11)	272 **
Soil Science	82	18	(22)	(63)	35

N.B. Percentage figures marked with two asterisks in the right hand column of this table under the caption, "Percentage Evaluating Courses" ran beyond 100 because the number of graduates evaluating that particular course area exceeded the number of graduates who actually took the course as an undergraduate.



was given an evaluation of 53 percent "Valuable," and forty-seven percent "Little Value" by 17 respondents.

The Dairy Husbandry majors evaluated only two general fields of study in sufficient numbers to be enumerated here. Twenty-three respondents evaluated Horticulture to be 74 percent "Valuable" and twenty-six percent of "Little Value." A like number of replies listed Poultry Husbandry to be 65 percent "Valuable" and thirty-five percent of "Little Value".

The Poultry replies were so few as Table LIII will show, that no further comment is made of them.

Sections VII, VIII, and IX of the questionnaire requested suggestions for improvements or changes which would enhance the value of the agricultural curriculum or to state in what areas the college curriculum failed to meet a real need of the graduate. As one can expect, a wide variety of ideas and suggestions was proposed. After carefully summarizing and evaluating these suggestions, the broad categories of ideas are given in Table IV in the order of frequency of mention.

In reviewing the suggestions for curriculum revision, it was noted that almost nine out of every ten respondents had an idea or two to offer.

By all odds, the one idea mentioned most was the need for a more practical training in all college courses. The "learning by doing" philosophy was enhanced by the plea of the respondent for a more "practical training" in course work as well as "on the job" training for credit. Seventy-eight, or thirty-nine percent of the respondents entered a "learning by doing" plea.

TABLE IV

CURRICULA REVISION SUGGESTIONS BY LIVESTOCK GRADUATES AFTER EXPERIENCE ON THE JOB\*  
(In order of frequency of mention)

	Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
Want more practical training in courses	30	19	10	59
Require Business Administration courses	2	19	1	22
and especially:				
Accounting	2	4	0	6
Bookkeeping	2	0	0	2
Marketing	3	2	0	5
Insurance	0	2	0	2
Real Estate	0	1	0	1
Sales Technique	1	6	0	7
Buying Technique	0	1	0	1
Personnel Management	0	4	0	4
Business Law	0	3	0	3
Business Administration Total	10	42	1	53
Want more Public Speaking training	11	22	4	37
Want more Journalism or Business Writing	10	11	3	24
Use better teaching methods or better instructors	15	5	2	22
Want "On the Job" training for Credit	10	6	3	19
Want better Counseling	7	6	1	14
Want better Guidance	6	4	1	11
Separate Dairy Production and Dairy Manufacturing	0	10	0	10
Want more Electives	3	4	1	8
Must improve Department Facilities	4	3	1	8
Want General Education in Agriculture	3	2	3	8
Want better Placement Service	3	2	0	5
Need more outside speakers	1	3	0	4
Need more Seminars	2	1	0	3
Need more Field Trips to Industry	0	3	0	3
Want specialized Education in Agriculture	2	0	1	3
Require more courses in:				
Agricultural Engineering	3	2	0	5
Anatomy	4	0	0	4

Bacteriology	1	6	0	7
Biology	1	0	0	1
Chemistry	5	5	1	11
Civic Government	1	2	0	3
Disease	2	2	1	5
Economics	1	11	1	13
English	0	2	2	4
Entomology	2	0	0	2
Farm Crops	1	1	0	2
Farm Management	0	1	0	1
Foreign Language	1	1	0	2
Genetics	3	0	0	3
Herd Management	0	1	0	1
Horticulture	2	0	0	2
Landscape Architecture	1	0	0	1
Mathematics	2	6	2	10
National History	1	1	0	2
Nutrition	4	0	1	5
Parliamentary Procedure	0	1	0	1
Philosophy	0	2	0	2
Physical Science	0	0	1	1
Physics	0	3	0	3
Physiology	2	0	1	3
Plant Pathology	1	0	0	1
Public Relations	0	3	0	3
Psychology	1	0	0	1
Radio	2	0	0	2
Refrigeration	0	3	0	3
Research Technique	0	1	0	1
Sociology	1	2	0	3
Social Science	0	1	1	2
Soils	3	0	0	3
Need less General Agricultural Courses	0	3	0	3
Array of courses are good	2	0	0	2
Help us develop a philosophy	2	0	0	2
Not enough time to take all courses	2	0	0	2
Should increase Laboratory time & courses	1	1	0	2
Should rate each term - Instructors	2	0	0	2
- Courses	1	1	0	2
Combine Nutrition & Feeding of all animals	1	0	0	1
Don't place so much emphasis on grades	0	1	0	1
Eliminate courses such as:	0	1	0	1
Agriculture (100) series	0	1	0	1
Agricultural Engineering 115	0	1	0	1
Agricultural Engineering 390	0	1	0	1
Basics	0	1	0	1
General Agricultural Series	0	1	0	1

Need less General Agricultural Courses  
 Array of courses are good  
 Help us develop a philosophy  
 Not enough time to take all courses  
 Should increase Laboratory time & courses  
 Should rate each term - Instructors  
 - Courses  
 Combine Nutrition & Feeding of all animals  
 Don't place so much emphasis on grades  
 Eliminate courses such as:  
 Agriculture (100) series  
 Agricultural Engineering 115  
 Agricultural Engineering 390  
 Basics  
 General Agricultural Series

Don't believe in "padding of all animals"  
 Forget past, emphasize present and future  
 Help us develop spirit and aggressiveness  
 Help us make a living  
 Help us solve everyday problems  
 Initiate courses in:

Farm Skills

Methods & Techniques of Education

Moral Training

Social Adjustment

Need less Agricultural Education courses

Animal Husbandry courses

Chemistry courses

Dairy Manufacturing courses

Economics courses

Farm Crops courses

Farm Management courses

Mechanical Drawing courses

Physics courses

Poultry courses

Revamp such courses as:

Agricultural Economics 211

Agricultural Engineering

All courses

All 100 series

All 300 & 400 courses

Animal Husbandry 402

Basics

Farm Crops 409

Train men for executives and not specialized workers

Wants fewer courses, longer hours and more credit

Want small classes

Work closer with industry in courses

\*Replies based on answers to three questions: 1) In what areas in the entire college curriculum do (or did) you find a real need which your education should have met and did not? 2) In the light of your experience, what kind of improvements or changes do you think would enhance the value of the agricultural curriculum? 3) In this remaining space, we welcome any comments you wish to make which you feel might be helpful to us in improving the Agricultural Curriculum at Michigan State College.



TABLE IV

CURRICULA REVISION SUGGESTIONS BY LIVESTOCK GRADUATES AFTER EXPERIENCE ON THE JOB\*  
(In order of frequency of mention)

General Agricultural Series	0	1	0	0	1
Poultry 101	0	1	0	0	1
Eliminate Department Heads from teaching 101 courses	1	0	0	0	1
Forget past, emphasize present and future	0	1	0	0	1
Help us develop spirit and aggressiveness	0	1	0	0	1
Help us make a living	1	0	0	0	1
Help us solve everyday problems	0	1	0	0	1
Initiate courses in:					
Farm Skills	1	0	0	0	1
Methods & Techniques of Education	1	0	0	0	1
Moral Training	1	0	0	0	1
Social Adjustment	1	0	0	0	1
Need less Agricultural Education courses	0	1	0	0	1
Animal Husbandry courses	0	1	0	0	1
Chemistry courses	0	4	0	0	4
Dairy Manufacturing courses	0	1	0	0	1
Economics courses	0	1	0	0	1
Farm Crops courses	0	1	0	0	1
Farm Management courses	0	1	0	0	1
Mechanical Drawing courses	0	1	0	0	1
Physics courses	0	1	1	1	2
Poultry courses	0	1	0	0	1
Revamp such courses as:					
Agricultural Economics 211	1	0	0	0	1
Agricultural Engineering	1	0	0	0	1
All courses	1	1	0	0	2
All 100 series	3	1	0	0	4
All 300 & 400 courses	2	0	0	0	2
Animal Husbandry 402	1	0	0	0	1
Basics	1	0	0	0	1
Farm Crops 409	1	0	0	0	1
Train men for executives and not specialized workers	0	1	0	0	1
Wants fewer courses, longer hours and more credit	1	0	0	0	1
Want small classes	1	0	0	0	1
Work closer with industry in courses	0	1	0	0	1

\*Replies based on answers to three questions: 1) In what areas in the entire college curriculum

Human Geography	1	1	0	0	2	1
Farm Management	1	1	0	0	0	3
Foreign Language	1	1	0	0	0	1
Genetics	1	1	0	0	0	1
Herd Management	1	1	0	0	0	1
Horticulture	1	1	0	0	0	1
Landscape Architecture	1	1	0	0	0	1
Mathematics	1	1	0	0	0	1
National History	1	1	0	0	0	1
Nutrition	1	1	0	0	0	1
Parliamentary Procedure	1	1	0	0	0	1
Philosophy	1	1	0	0	0	1
Physical Science	1	1	0	0	0	1
Physics	1	1	0	0	0	1
Physiology	1	1	0	0	0	1
Plant Pathology	1	1	0	0	0	1
Public Relations	1	1	0	0	0	1
Psychology	1	1	0	0	0	1
Radio	1	1	0	0	0	1
Refrigeration	1	1	0	0	0	1
Research Technique	1	1	0	0	0	1
Sociology	1	1	0	0	0	1
Social Science	1	1	0	0	0	1
Soils	1	1	0	0	0	1
Need Less General Agricultural Courses	1	1	0	0	0	1
Array of courses are good	1	1	0	0	0	1
Help us develop a philosophy	1	1	0	0	0	1
Not enough time to take all courses	1	1	0	0	0	1
Should increase Laboratory time & courses	1	1	0	0	0	1
Should rate each term - Instructors	1	1	0	0	0	1
- Courses	1	1	0	0	0	1
Combine Nutrition & Feeding of all animals	1	1	0	0	0	1
Don't place so much emphasis on grades	1	1	0	0	0	1
Eliminate courses such as:	1	1	0	0	0	1
Agriculture (100) series	1	1	0	0	0	1
Agricultural Engineering 115	1	1	0	0	0	1
Agricultural Engineering 390	1	1	0	0	0	1
Basics	1	1	0	0	0	1

TABLE IV  
CURRICULA REVISION SUGGESTIONS BY LIVESTOCK GRADUATES AFTER EXPERIENCE ON THE JOB\*  
(In order of frequency of mention)

	Animal Husbandry	Dairy Husbandry	Poultry Husbandry	Totals
Want more practical training in courses	30	19	10	59
Require Business Administration courses and especially:	2	19	1	22
Accounting	2	4	0	6
Bookkeeping	2	0	0	2
Marketing	3	2	0	5
Insurance	0	2	0	2
Real Estate	0	1	0	1
Sales Technique	1	6	0	7
Buying Technique	0	1	0	1
Personnel Management	0	4	0	4
Business Law	0	3	0	3
Business Administration Total	10	42	1	53
Want more Public Speaking training	11	22	4	37
Want more Journalism or Business Writing	10	11	3	24
Use better teaching methods or better instructors	15	5	2	22
Want "On the Job" training for Credit	10	6	3	19
Want better Counseling	7	6	1	14
Want better Guidance	6	4	1	11
Separate Dairy Production and Dairy Manufacturing	0	10	0	10
Want more Electives	3	4	1	8
Must improve Department Facilities	4	3	1	8
Want General Education in Agriculture	3	2	3	8
Want better Placement Service	3	2	0	5
Need more outside speakers	1	3	0	4
Need more Seminars	2	1	0	3
Need more Field Trips to Industry	0	3	0	3
Want specialized Education in Agriculture	2	0	1	3
Require more courses in:				
Agricultural Engineering	3	2	0	5
Anatomy	4	0	0	4
Bacteriology	1	6	0	7
Biology	1	0	0	1
Chemistry	1	0	0	1



As one can readily expect, some of the suggestions and ideas offered were contradictory. This is naturally expected because students too have opposing philosophies of education. However, for the most part, those suggestions mentioned most often, did not contradict one another.

One suggestion was followed closely by the desire for more courses in business administration and in many cases, the specific courses were mentioned. In third place, the need for more training in public speaking was regarded as being valuable. Then in close order came requests for more Journalism or Business writing courses and the need for better teaching methods or instructors. Better guidance and counseling were listed as possible items which needed further study.

Several Dairy Husbandry majors felt that Dairy Production and Dairy Manufacturing should be completely separated. One Dairy Manufacturing major went so far as to suggest transferring the Dairy Manufacturing curriculum out of the School of Agriculture.

## CHAPTER VII

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### SUMMARY

This investigation had as one of its purposes, the desire to secure information from a selected number of recent graduates from the School of Agriculture at Michigan State College. The survey was made primarily of graduates who graduated during the years 1940-1952 and who majored in the department of Animal Husbandry, Dairy Husbandry and Poultry Husbandry in the School of Agriculture. In addition to the author's questionnaire, subsequent data were secured from Dean Anthony's survey in as much as it included generalized data from 537 livestock graduates.

The information asked of the former student was for the purpose of testing the following:

1. Whether or not, the curricula they had while undergraduates at Michigan State College, are adequate in terms of their present jobs or careers.
2. Whether, and to what extent, the agricultural curricula at Michigan State College should be changed, modified, expanded, extended, shortened, eliminated.
3. Whether fewer or more departmental courses should be required of all students majoring in the livestock field.

4. Whether or not a greater proportion of college time at Michigan State College, in terms of course credits, should be allowed the student for use in exploring his own interests, such as elective courses.

5. What kind of improvements or changes would enhance the value of the agricultural curriculum at Michigan State College?

Finally, after considerable planning and preparatory work, a thirteen page, 254 item questionnaire was developed and sent to 391 selected recipients of the baccalaureate degree in agriculture from the School of Agriculture at Michigan State College. These Bachelor of Science degree holders majored in Animal Husbandry, Dairy Husbandry or Poultry Husbandry and graduated during the years 1940 - 1952. A return of 51 percent or 200 replies was received. Additional generalized data were secured from the Anthony survey, summarized by I. R. Wyeth.

This study has been limited to an evaluation based upon those who received a Bachelor of Science Degree, ignoring the effectiveness or lack of effectiveness in terms of attrition or in terms of student selection of a terminal curriculum not primarily designed for a degree bound student. The limitation in this study to individuals who were granted their Bachelor of Science Degree in Agriculture at Michigan State College, was made in the interests of feasibility and economy. However, this limitation should not be interpreted to mean that former students who did not graduate from Michigan State College were unimportant in any complete evaluation of the effectiveness of the agricultural curricula.

An objection might be raised, on theoretical considerations, to a survey of former graduates, reflecting implications not for the present day program, but rather for a past program which has been modified and improved over a period of time. In spite of this theoretical objection, the vocational competency of graduates, their opinions concerning curriculum content courses, requirements and electives, plus suggestions for improvements or changes are considerations of vital importance to present day students, faculty, and college administration. A poll, informal and subjective, by staff members, students, or administrators, unplanned as they may be, should not be neglected by those individuals primarily interested in the improvement of the School of Agriculture curricula. This study attempted to assemble in a more complete and satisfactory manner some of the evidences of graduate evaluation, generally found by keeping the ear to the ground.

Examination of the catalogs over the years have shown that the curriculum administrators of the School of Agriculture of Michigan State College have been sensitive to the needs of the student and have made changes from year to year in the catalog requirements.

In summarizing the conclusions, it is necessary to review the facts portrayed by both the Anthony survey and the Zindel questionnaire. In many instances, these facts may agree and when this occurs, that fact will be emphasized.

The Anthony survey shows:

1. An overwhelming importance is placed upon the technical agricultural courses such as Agricultural Economics etc., by

livestock graduates. This fact was true, regardless of whether or not, the graduate received training in that course area as a student.

2. In the non-agricultural courses, the areas of Accounting and Bookkeeping were of most importance. This fact, again, was true even though the graduate may not have received training in that course while a student.
3. Courses in Horticulture and Rural Sociology in the technical field and Botany, Education, Entomology, Sociology, and Typing were given a low valuation by livestock graduates.
4. One out of every three livestock graduates preferred a curriculum utilizing a combination of "broad training" and "specialization." The respondents indicated they preferred taking two or more courses in several departments in agriculture, with remaining technical agricultural courses in some field of specialization.
5. More than one person out of three responding, felt the "ability to get along with people" was the most important ability essential for job success.
6. The claim of many, that "the teacher and how he taught the course" was the most important item in determination of course work, was not substantiated by the replies. On the contrary, a broad general working knowledge, specific information, and a confidence to tackle problems were thought to be more important than the teacher.

The author's survey revealed some rather significant facts as well as observations based upon the replies of the livestock graduates.

1. When graduates were asked to mention course work having little or no practical value, twenty-four (24) percent mentioned Agriculture 101, entitled, "Development of Agriculture."

A second course mentioned most often as being of little value was Agricultural Engineering 114, entitled, "Rural Electrification." In general, the 100 series in the agricultural courses lacked something which lessened their value to the student.

2. The Animal Husbandry majors indicated that they preferred a broad training in agriculture with a special emphasis on Animal Husbandry courses. This fact substantially agrees with the results of the Anthony survey.

3. The Animal Husbandry majors gave the least valuable rating to the following required courses:

Psychology 201, (General Psychology)

Landscape Architecture 102a, (Elements of Landscape  
Architecture)

Economics 211a, (Agricultural Economics)

Economics 211b, (Agricultural Economics)

Mathematics 102a, (Trigonometry)

Conservation 201, (Introduction to Conservation)

The course of study of the School of Agriculture at Michigan State College appears to be revised year by year as evidenced by the fact that many of these courses are no longer listed as required courses for livestock undergraduates.

4. The Dairy Production majors reveal they preferred a broad training in agriculture and non-agricultural courses with an emphasis in fields of Bacteriology, Chemistry and Dairy Husbandry. This fact differs from the Anthony results only in that the Dairy Production majors preferred courses classified as non-technical agricultural courses.
5. The Dairy Production majors concur with the Animal Husbandry majors in placing a low value on courses in Landscape Architecture 102a and Mathematics 102a. In addition, these additional required courses are listed as being of lesser value:
  - D & D 204c, (Mechanical Drawing)
  - Physics 158, (General Physics)
  - Physics 168, (General Physics)
  - Soils 201, (Soils Science)
6. The Dairy Manufacturing majors agreed somewhat with the Dairy Production majors, but they felt that the Bacteriology and Chemistry courses were far more important than any other courses, including the required Dairy courses.
7. The majority of Dairy Manufacturing majors felt they were not Animal Industry graduates.
8. The courses thought to be the least valuable to the Dairy Manufacturing major were:
  - Agricultural Engineering 114, (Rural Electrification)
  - Mathematics 102a, (Trigonometry)

Physics 158, (General Physics)

Physics 168, (General Physics)

9. The Poultry Husbandry graduates preferred courses in their own specialized field to those courses considered to be non-technical agricultural courses. The courses thought to be of least value included:

Physics 158, (General Physics)

Physics 168, (General Physics)

Mathematics 102a, (Trigonometry)

Bacteriology 201b, (Morphological & Cultural)

10. In passing, it should be noted that the majors in Animal Husbandry, Dairy Production, Dairy Manufacturing and Poultry Husbandry all agreed that Mathematics 102a, entitled, "Trigonometry" was of the least value to them.
11. With the exception of the Animal Husbandry majors, the other graduates indicated that the two Physics courses #158 and #168 were of little value to them.
12. The Animal Husbandry and Poultry Husbandry majors agreed that Psychology 201 was of little importance to them.
13. The Animal Husbandry and Dairy Production majors indicated the value of Landscape Architecture 102a was questionable.
14. The evaluation of the technical agricultural courses by the livestock graduates revealed that a majority of the graduates indicated the content of these courses to be "Just Right." However, although not significant, the respondents who took



these technical courses felt that "Too Little" was given the student in both Agricultural Engineering and Farm Crops.

15. For those graduates who failed to take the course and indicated their desire to do so, it was interesting to note that Agricultural Engineering and Soils Science, by far, are the ones the graduates wished they had taken. It appears the value of these two courses is not known during the undergraduate days but after graduation, the use, practicality and value are realized.
16. The evaluation by the livestock graduates of the non-agricultural courses, as well as the technical courses indicated that the majority of the respondents judged the content of the courses which they took to be "Just Right." Significant differences were noted for Conservation and Hygiene & Public Health. In each of these courses, the respondents indicated that "Too Little" was required of them. The courses listed as requiring "Too Much" work of the students included: Chemistry, Sociology, Entomology and Landscape Architecture.

In the case of graduates who failed to take certain course work and yet wished they had, the following fields were classified as being important: Speech, Business Administration, Hygiene & Public Health, and Agriculture.

It was interesting to note that in the case of Hygiene & Public Health, the replies of those who took the course indicated

that "Too Little" was required of the student and the replies of those who failed to take these courses, indicated a high desire to take this course.

17. Significant difference in percentages was noted between the replies of the Animal Husbandry majors and the Dairy Husbandry majors in several courses which they failed to take as undergraduates. Significantly, the Animal Husbandry graduate stated he preferred the Agricultural Engineering course number 201, entitled "Farm Mechanics." In evaluating course work taken while in college, the Animal Husbandry graduate showed a significant difference over the Dairy Husbandry major for Economics 211a, 211b and 211c entitled, "Agricultural Economics" and Dairy 423, entitled, "Dairy Cattle Nutrition."
18. The following three courses, which had been taken by the graduates while in college, are significantly more important to the Dairy graduates than the Animal Husbandry graduates:
  - Dairy Husbandry 306, (Advanced Dairy Cattle Judging)
  - Farm Crops 305, (Forage Crops)
  - Soils 114, (Soil Science)
19. The livestock graduates gave the best response (99 percent) to the question regarding the proportion of college time desired for elective courses. Ninety-seven (97) percent answered in favor of one-fourth to one-half of their college time set aside for electives. Seventy (70) percent of the respondents favored one-third to one-half of their college time for elective credits.



Forty (40) percent indicated one-half or more time should be reserved for electives.

20. Certain courses, required of all agricultural students, listed in the General Agricultural Series, are thought to be of such little value that they felt these courses should not be required of all. These courses included:

Agriculture 101, (Development of Agriculture)

Agricultural Engineering 114, (Rural Electrification)

Poultry 101, (Farm Poultry)

Rural Sociology 337, (Rural Sociology)

The first two courses listed have been mentioned several times as being of little or no value.

21. Too few livestock graduates, holding professional positions, evaluated the general fields of study to give an accurate accounting. However, of those who took the course work, ninety-five (95) percent of the Animal Husbandry respondents rated the Horticulture field to be "Valuable." Agricultural Engineering and Agricultural Economics followed very closely in the graduates' evaluation. The Dairy graduate also rated Horticulture high in the valuation column.
22. The last request made of the graduate was to ask for suggestions or changes which would enhance the value of the agricultural curriculum or to state in what areas, the college curriculum failed to meet a real need of the graduate. As one can expect, a wide variety of ideas and suggestions was proposed. After

carefully evaluating and summarizing, eight broad categories of ideas are given in order of the frequency of mention:

1. Want more practical training in courses
2. Require Business Administration courses
3. Want more Public Speaking training
4. Want more Journalism or Business Writing
5. Use better teaching methods or better instructors
6. Want "on the job" training for credit
7. Want better counseling
8. Want better guidance

Almost nine out of ten respondents had an idea or two to offer. Thirty-nine (39) percent of the respondents entered a plea for a "learn by doing" curriculum. As one can readily expect, some of the ideas and suggestions were in themselves contradictory but, for the most part, those suggestions mentioned most often did not contradict one another.

#### CONCLUSIONS AND RECOMMENDATIONS

In light of the results of these agricultural curricula surveys, certain recommendations for the agricultural curricula at Michigan State College seem justifiable. These are:

- (1) Required course work for livestock graduates should not include:
  - (a) Agriculture 101, (Development of Agriculture)
  - (b) Agricultural Engineering 114, (Rural Electrification)

- (c) Mathematics 102a (Trigonometry)
- (d) Physics 158, (General Physics)
- (e) Physics 168, (General Physics)
- (f) Psychology 201, (General Psychology)
- (g) Landscape Architecture 102a, (Landscape Architecture)

(2) The Agricultural curricula at Michigan State College should continue to be a combination of "broad training" and "specialization" with courses in several departments of agriculture and the remaining time for agricultural course work in the field of specialization.

(3) The evaluation of course work by the livestock graduates indicates that the content of the majority of both technical and non-technical agricultural courses was about right. However, it must be pointed out that certain courses in every department in the School of Agriculture were evaluated as exacting either too much or too little of the student. The opinions varied depending upon whether the courses had or had not been taken as an undergraduate. For those who took course work, insufficient requirements were expected of the student in the Agricultural Engineering department and the Farm Crops department. For those who failed to take the course work, the course work in the departments of Agricultural Engineering and Soils Science was indicated as desirable. Therefore, the content of certain courses offered by these departments mentioned above should be re-evaluated by the department members, in terms of usefulness, based on the results of this survey.

A course in Hygiene and Public Health should be made a required course for livestock students. The livestock graduates indicated a high

desire for this course and also replied that not enough work was required of the student.

(4) The amount of time allowed for electives in the School of Agriculture should be from one-third to one-half of the total college credits. This means a reduction in the number of required courses both in Basic College, General Agricultural Series, and within the departments of Animal Husbandry, Dairy Husbandry and Poultry Husbandry.

(5) Courses should be established in the livestock departments for "on the job training" with credit.

(6) Course work given livestock majors should incorporate "practical training." This may mean that "on the job" training for credit courses must be established within each department. This type of training requires close supervision by the College.

(7) Additional course work in Business Administration should be required of all majors in Animal Husbandry, Dairy Husbandry, and Poultry Husbandry.

(8) Additional courses in Journalism or Business Writing should be required of all livestock majors.

(9) A better guidance and counseling service should be made available to School of Agriculture students.

Therefore, it is recommended:

1. That supervised "On the Job" courses for credit be established by the departments of Animal Husbandry, Dairy Husbandry and Poultry Husbandry.
2. A guidance and counseling technician be attached to the

Dean of Agriculture's office for processing of all agricultural students.

3. The time allowed for electives in the School of Agriculture should be increased to allow from one-third to one-half of the total college credits. This means a reduction of required courses in Basic College, General Agricultural Series, and within the departments of Animal Husbandry, Dairy Husbandry and Poultry Husbandry.
4. The agricultural curricula at Michigan State College should be a combination of "broad training" and "specialization" with courses in each department within the School of Agriculture. One suggested Agricultural curriculum is as follows:

#### PLAN A

<u>Courses</u>	<u>Freshman Year</u>	<u>Suggested Credits</u>
<b>Basics</b>		
Humanities		9
Communication Skills		9
	Total	<u>18</u>
Military Science		3
Physical Education		3
Agricultural Economics		3
Agricultural Engineering		3
Animal Husbandry		3
Dairy Husbandry		3
Farm Crops		3
Horticulture		3
Poultry Husbandry		3
Soils Science		<u>3</u>
	Total	<u>30</u>



<u>Courses</u>	<u>Sophomore Year</u>	<u>Suggested Credits</u>
<b>Basics</b>		
Social Science		9
Natural Science		9
	Total	<u>18</u>
Military Science		3
Chemistry (Agricultural)		3
General Business		3
Bacteriology		3
Journalism		3
Public Speaking		3
Hygiene and Public Health		3
Accounting		3
Conservation		3
Genetics		3
	Total	<u>30</u>

<u>Courses</u>	<u>Junior Year</u>	<u>Suggested Credits</u>
"On the Job" Training with Supervision		16
Electives (Selected by Student and Agricultural Advisor)		32

<u>Courses</u>	<u>Senior Year</u>	<u>Suggested Credits</u>
Electives (Selected by Student and Agricultural Advisor)		32

Recapitulation of Plan A

<u>Freshman</u>		<u>Sophomore</u>		<u>Junior</u>		<u>Senior</u>	
Basics	18	Basics	18	"On the Job"		Electives	45
Military		Military		Training	16		
Science	3	Science	3	Electives	32		
Physical		Required Techni-					
Education	3	cal Agricultural					
Required		courses	30				
Technical Ag.							
Courses	24						
	—		—		—		—
Totals	48		51		48		45

Grand Total 192 credits for four year course.

All students would be expected to complete a minimum of thirty technical agricultural credit courses (300 and 400 series). A total of fourteen credits are necessary for a major in any School of Agriculture department.

An alternate plan would be:

#### PLAN B

Make Agriculture course a five year course. Only major change in this case would be to require two courses in each department in School of Agriculture instead of one.

Another alternate plan would be:

#### PLAN C

Instead of a three quarter school year with a summer vacation, develop a four quarter, four year agricultural course with no summer vacation. In this plan, two courses in each agricultural course would be required.

### PROBLEMS FOR FURTHER STUDY

There are some questions which have confronted the writer during the progress of the present study.

1. The necessity of study dealing with students electing non-degree curriculum, and also a study involving those students who fail to graduate and who drop out of school. These might well be two companion studies to the one reported. Such a study might reveal some of the causes for drop-outs, etc.



2. What is the relationship between grades made in coursework and the value placed upon that course work in educating specialists? The results of such a study might well be valuable in determining the necessity for studying the whole college grading and marking system.

3. What is the relationship between the type of job held by the graduates and the evaluation of the course work taken while an undergraduate? Such a study might assist the guidance and counseling service in their daily dealings with students.

4. Is there a necessity for a similar type of survey of Michigan State College graduates, who majored in Agricultural Engineering, Farm Crops, Horticulture, Soils Science, Agricultural Economics, Agricultural Extension, Rural Sociology, Landscape Architecture, Fisheries and Wildlife, Forestry, Forest Products, Land and Water Conservation and Agricultural Chemistry? The results of such a study might reveal some interesting opinions, suggestions and recommendations for enhancing the value of the Agricultural curricula at Michigan State College.

5. When does a course or an experience have value for the student or the learner? An answer to this would go far toward settling all curricular problems.

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## APPENDIX

Following are:

1. Cover letter sent to 391 livestock graduates who graduated in 1940 - 1952.
2. Dean Anthony's questionnaire sent to 4500 agricultural graduates of Michigan State College, of whom 537 majored in livestock.
3. Questionnaire used in survey showing special insert sheets for graduates in Animal Husbandry, Dairy Husbandry and Poultry Husbandry. This technique permitted the use of only thirteen pages instead of sixteen pages.
4. Tables I A through VIII A, showing the quantitative analysis of elective technical agricultural courses by departments and by the Animal Husbandry, Dairy Husbandry and Poultry Husbandry graduates of Michigan State College.
5. Tables IX A through XXXI A, showing the quantitative analysis of elective non-technical agricultural courses by departments and by the Animal Husbandry, Dairy Husbandry and Poultry Husbandry graduates of Michigan State College.

## APPENDIX A

MICHIGAN STATE COLLEGE  
EAST LANSING

DEPARTMENT OF POULTRY HUSBANDRY

March 18, 1953

Dear Livestock Graduate:

Michigan State College Needs Your Help!

This letter is an attempt, through your assistance, to get your reaction to the subject matter taught while you were a student here. We want to arrive at the best method of practical, down-to-earth teaching, based upon your ideas, experience and comments.

I am enclosing a questionnaire, which I frankly admit is lengthy and cumbersome. Its ultimate purpose is to assist in the development of studies adapted to the needs of present and future students in the field of Agriculture, majoring in livestock courses.

To help you recall the course-work taken, a copy of your transcript is enclosed, which you may keep if you wish.

We have tried out the questionnaire with a few people and most people can fill it out in less than half an hour. Won't you please look over the questionnaire now, complete and return it as soon as possible in the addressed envelope? We think you'll find it interesting to recall your old courses. Since course numbers and requirements have changed in some cases, you will probably have to use course titles at times.

You may have recently received another questionnaire sent out by Dean Anthony. That survey asked for general information while this one requests more specific information. No attempt will be made to identify or correlate the responses.

You may wonder why or think it peculiar that a questionnaire of this broad nature is sent to you from a person specializing in one segment of agriculture, but the writer is serving as an assistant on this project.

Your cooperation will be greatly appreciated by future agricultural students, the faculty and the writer.

Sincerely,

H. C. Zindel  
Extension Poultryman

HCC:ar  
enc.

S

Michigan State College of Agriculture  
OFFICE OF DEAN

October 24 19 52  
Graduates

Memorandum to:

✓ Please give your opinion and return.  
Michigan State College is planning a  
major revision of its program for the  
training of students in agriculture.

We need your help to make this train-  
ing program realistically meet the needs  
of our graduates.

To get your valued opinion we are ask-  
ing you to answer a few important ques-  
tions on the following pages.

You alone, as one of our graduates,  
have the experience to help us.

Signed

Ernest R. Anthony



Wherever we go, we find that college graduates have developed opinions about the value of the courses they took.

1. Which of your college courses have you found to be most valuable to you in your present position? (List the most important first.)

Course Name

First \_\_\_\_\_  
Second \_\_\_\_\_  
Third \_\_\_\_\_

2. What made the course, that you listed first, stand out in your mind?

(Check AS MANY as apply.)

- \_\_\_\_\_ 1. The specific information you received in the course  
\_\_\_\_\_ 2. The instructor, and the way he taught the course  
\_\_\_\_\_ 3. The knowledge of where and how to find information in that field of study when you need it  
\_\_\_\_\_ 4. A confidence to tackle problems in that subject matter area, when required by your work  
\_\_\_\_\_ 5. A broad, general working knowledge of the subject which the course gave you  
\_\_\_\_\_ 6. Others (specify) \_\_\_\_\_

Whether a graduate is in farming, business, or in some other occupation he usually finds that certain of his college courses help him in his job better than others.

3. For each of the courses or course areas below please check whether you have found them to be very important, important, or not important.

Course or Course Area	Very Important	Important	Not Important
1. Technical Agriculture			
A. Agriculture			
Economics			
B. Agricultural Engineering			
C. Animal Husbandry			
D. Dairy			
E. Farm Crops			
F. Horticulture			
G. Poultry Husbandry			
H. Rural Sociology and Anthropology			
I. Soil Science			

1. Technical Agriculture

- A. Agriculture \_\_\_\_\_  
Economics \_\_\_\_\_  
B. Agricultural Engineering \_\_\_\_\_  
C. Animal Husbandry \_\_\_\_\_  
D. Dairy \_\_\_\_\_  
E. Farm Crops \_\_\_\_\_  
F. Horticulture \_\_\_\_\_  
G. Poultry Husbandry \_\_\_\_\_  
H. Rural Sociology and Anthropology \_\_\_\_\_  
I. Soil Science \_\_\_\_\_

2. Accounting \_\_\_\_\_  
3. Typing \_\_\_\_\_  
4. Bookkeeping \_\_\_\_\_  
5. Business Law \_\_\_\_\_  
6. Economics \_\_\_\_\_  
7. History of Agriculture \_\_\_\_\_  
8. Botany \_\_\_\_\_  
9. Chemistry \_\_\_\_\_  
10. Education \_\_\_\_\_  
11. English \_\_\_\_\_  
12. Entomology \_\_\_\_\_  
13. Journalism \_\_\_\_\_  
14. Mathematics \_\_\_\_\_  
15. Sociology and Anthropology \_\_\_\_\_  
16. Speech \_\_\_\_\_  
17. Radio and Television \_\_\_\_\_  
18. Zoology \_\_\_\_\_  
19. Public Relations \_\_\_\_\_  
20. Recreation \_\_\_\_\_  
21. Guidance and Counseling \_\_\_\_\_  
22. Basic College Courses \_\_\_\_\_  
23. Other (specify) \_\_\_\_\_

Now please go back and encircle the number or letter before each of the above course areas in which you received some training in college.

Some people argue that a graduate in Agriculture is better off with a general course covering many fields, while other people favor a specialized kind of training.

4. For people in your type of work, which type of training would you recommend?

(Check one)

- \_\_\_\_\_ 1. Intensively specialize in the subject matter of a single department in the School of Agriculture. (For example: Forestry, Poultry, Horticulture, etc.)  
\_\_\_\_\_ 2. Take one course in several different departments of the School of Agriculture, with remaining technical agricultural courses in some field of specialization within one department

- \_\_\_\_\_ 3. Take two or more courses in several departments in the School of Agriculture, with remaining technical agricultural courses in some field of specialization  
\_\_\_\_\_ 4. Try to get as broad a training as possible in agriculture, without specialization in any one single department in the School of Agriculture  
\_\_\_\_\_ 5. Try to get a broad undergraduate training in agriculture without specialization, and then intensively specialize as a graduate student in the subject matter of a single department in the School of Agriculture  
5. Which of these ways is most helpful in getting the FIRST position following graduation?  
(Check one)

- \_\_\_\_\_ 1. Take specialized training in agriculture  
\_\_\_\_\_ 2. Take a broad general training in agriculture  
\_\_\_\_\_ 3. Take a combination of specialization and broad training

Every person who selects a career is usually influenced by several factors in making his decision. Knowledge of these factors helps in planning adequate counseling services for students.

6. When did you first make up your mind about following your present career?

(Check one)

- \_\_\_\_\_ 1. Before college  
\_\_\_\_\_ 2. Freshman year  
\_\_\_\_\_ 3. Sophomore year  
\_\_\_\_\_ 4. Junior year  
\_\_\_\_\_ 5. Senior year  
\_\_\_\_\_ 6. After graduation from college

7. Who was most influential in your decision to select your present career?

(Check AS MANY as apply.)

- \_\_\_\_\_ 1. High School teacher  
\_\_\_\_\_ 2. Someone in the dean's office  
\_\_\_\_\_ 3. Members of the department in which you majored  
\_\_\_\_\_ 4. Other faculty members of Michigan State College  
\_\_\_\_\_ 5. College Counseling Center  
\_\_\_\_\_ 6. Parents  
\_\_\_\_\_ 7. Relatives and/or friends  
\_\_\_\_\_ 8. Others (specify) \_\_\_\_\_

Now please go back and place a star (\*) opposite the one most helpful.

8. What kinds of help should freshmen be given regarding a choice of career?  
(Check AS MANY as apply.)

- \_\_\_\_\_ 1. An orientation course including information about agricultural occupations  
\_\_\_\_\_ 2. A Personal Counseling Service in the School of Agriculture  
\_\_\_\_\_ 3. Appropriate tests  
\_\_\_\_\_ 4. Freshman seminar given by each department  
\_\_\_\_\_ 5. Individual conferences to help students make wise career choices

Getting that first position is an anxious moment for every college senior. Knowing how you and others went about it is a step in assisting seniors in the future.

9. What was your first civilian position after graduation from Michigan State College? (Be as specific as possible. For example: Dairy Farmer; County Agricultural Agent; Agricultural Chemist.)

10. What part did your college training play in helping you to get your first civilian position?  
(Check one)

- \_\_\_\_\_ 1. Gave specific preparation  
\_\_\_\_\_ 2. Provided general background  
\_\_\_\_\_ 3. Provided little specific or general background

11. Did this first position provide you with a good opportunity for advancement?

(Check one)

- \_\_\_\_\_ 1. Yes  
\_\_\_\_\_ 2. No

12. How long did you hold this first position?

13. Which of the following contacts were MAINLY responsible for your getting this first position?  
(Check one)

- \_\_\_\_\_ 1. Michigan State College Placement Service  
\_\_\_\_\_ 2. Other employment agencies  
\_\_\_\_\_ 3. Michigan State College faculty member or adviser  
\_\_\_\_\_ 4. Friends (include schoolmates) or relatives  
\_\_\_\_\_ 5. Your own individual efforts  
\_\_\_\_\_ 6. Other means (specify) \_\_\_\_\_

Every educational institution has to keep up-to-date on the kinds of occupations available for its graduates. This knowledge again will make the counseling task easier.

14. What is your present major occupation? (Be as specific as possible. *For example:* Dairy Farmer; County Agricultural Agent; Agricultural Chemist, etc.)

15. How many years have you held this position?

16. What is the nature of your present employment? (Check one)

- \_\_\_\_\_ 1. Public employment (Federal, State, County employee, etc.)
- \_\_\_\_\_ 2. Private employment (working for a company, corporation, etc.)
- \_\_\_\_\_ 3. Self-employed (in business for yourself such as farming)
- \_\_\_\_\_ 4. Any other type of work

17. Check AS MANY of the following job descriptions that best apply to your present major occupation.

- \_\_\_\_\_ 1. Farming
- \_\_\_\_\_ 2. Management
- \_\_\_\_\_ 3. Teaching
- \_\_\_\_\_ 4. Research
- \_\_\_\_\_ 5. Sales
- \_\_\_\_\_ 6. Public Relations
- \_\_\_\_\_ 7. Supervision
- \_\_\_\_\_ 8. Organization
- \_\_\_\_\_ 9. Administration
- \_\_\_\_\_ 10. Other (specify) \_\_\_\_\_

18. What MAJOR POSITIONS have you held prior to your present one? (Begin with your first position after graduation from college. Please include military service, if any.)

Position	Years Held
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

19. Are you interested in changing from your present work to another type of position?

(Check one)

- \_\_\_\_\_ 1. Yes
- \_\_\_\_\_ 2. No
- \_\_\_\_\_ 3. Uncertain

Being successful on a job usually requires more than practical information. For example, personal skills and abilities often determine how well one gets along.

20. What skills and abilities have you found to be most essential in making a success of your present occupation? (Please list in order, "1, 2, 3, etc.," the most important first.)

- \_\_\_\_\_ 1. Skill in using technical knowledge
- \_\_\_\_\_ 2. Ability to sell (products, ideas, etc.)
- \_\_\_\_\_ 3. Ability to accomplish things
- \_\_\_\_\_ 4. Capacity to work hard
- \_\_\_\_\_ 5. Ability to write
- \_\_\_\_\_ 6. Ability to get along with people
- \_\_\_\_\_ 7. Ability to speak to individuals and groups
- \_\_\_\_\_ 8. Ability to take an active part in community services
- \_\_\_\_\_ 9. Others (specify) \_\_\_\_\_

21. Do you have a supplementary occupation in addition to the one that you listed above?

(Check one)

- \_\_\_\_\_ 1. Yes
- \_\_\_\_\_ 2. No

22. If answer is YES, what is the occupation?

23. How many years have you been engaged in part time work of this kind?

Every student counselor is asked about the salaries that may be expected regarding job opportunities. Your answers to the following questions will bring us up-to-date information on this matter.

24. Please check ONE of the following that best applies to your 1951 income (less expenses and before taxes) for your present major occupation. (This information is for averages only. Only averages will be tabulated. Individual answers will not be divulged.)

- \_\_\_\_\_ 1. Less than \$2000
- \_\_\_\_\_ 2. \$2000 - \$4000
- \_\_\_\_\_ 3. \$4000 - \$6000
- \_\_\_\_\_ 4. \$6000 - \$8000
- \_\_\_\_\_ 5. \$8000 - \$10,000
- \_\_\_\_\_ 6. Over \$10,000

Finally, we would like a little personal information in order that we may develop a good directory of graduates of the School of Agriculture.

25. Name \_\_\_\_\_  
Last First Middle

26. Present Address: \_\_\_\_\_  
Route No. or Street City or Town State

27. Year of graduation from M.S.C.? \_\_\_\_\_  
Age at time of graduation? \_\_\_\_\_

28. Major field of specialization in School of Agriculture (if any). (*For example:* Agricultural Education; Dairy; Farm Crops; etc.)

29. MINOR field of specialization in School of Agriculture (if any).

30. Additional degree(s) received after graduation from M.S.C.?

- 1. Degree \_\_\_\_\_
- 2. Year received \_\_\_\_\_
- 3. Major \_\_\_\_\_
- 4. Institution \_\_\_\_\_

THANK YOU FOR ANSWERING THESE QUESTIONS. Now please put this folder in the stamped, self-addressed envelope which is enclosed and drop it in the mail.

Sincerely yours,

*Ernest H. Anthony*

DEAN, SCHOOL OF AGRICULTURE

A Study of the Reactions of the Graduate to the  
Agricultural Curricula of the Animal Industry  
Division of Michigan State College

I. Please complete the following information about yourself:

1. I was graduated from Michigan State College in \_\_\_\_\_.(year) (1)
2. I majored in (Animal) (Dairy) (Poultry) Husbandry. Circle correct one. (2)
3. I (have) (have not) done graduate work. If so, how much? \_\_\_\_\_.(years). (3)
4. I am presently engaged as: (check one or more, or add any position not listed. (4)

Occupation	Years worked in each occupation
( ) A. Farmer	_____
( ) B. Agricultural Teacher	_____
( ) C. Extension Worker	_____
( ) D. Research Worker	_____
( ) E. Agricultural Salesman	_____
( ) F. 4-H Club Agent	_____
( ) G. Commercial	_____
( ) H. Private Business	_____
( ) I. Other (please specify)	_____

- 
5. I have had this position for \_\_\_\_\_.(years). (5)
  6. The work in which I am presently engaged (is) (is not) what I specifically prepared for while at Michigan State College. (6)
  7. The education which I received at Michigan State College has prepared me for my present life's work, (very well) (well) (poorly). (7)
  8. I belong to a farm organization.(Farm Bureau) (Grange) (Farmers' Union).(8)
  9. Name of State in which you are now located \_\_\_\_\_.(9)

II. The courses required for all students graduating from the School of Agriculture who majored in the livestock industry courses are listed by departments. To what extent do you believe those courses helped you to meet the problems you have encountered in your work?

For some of you, several of the courses listed may not have been required when you were in school. A quick check against your transcript of grades will verify this.





Please circle the correct symbol.

If a course has been:

very helpful to you, circle a (v)  
somewhat helpful to you, circle an (s)  
not at all helpful to you, circle an (n)

If you do not wish to answer because you did not take the course,  
simply circle the symbol (?).

SECTION A. General Agricultural Series

All students in Agriculture were expected to take these General Agriculture Series courses before proceeding to their major subject.

Codes: V - very helpful, S - somewhat helpful, N - not at all helpful,  
? - no answer

Course Number	Course Title				
Ag. 101	Development of Agriculture - - - -	V	S	N	?
Ag. Econ. 211, 211a	Agricultural Economics - - - -	V	S	N	?
An. Husb. 115	Types of Livestock - - - - -	V	S	N	?
Ag. Eng. 109	Farm Equipment - - - - -	V	S	N	?
Ag. Eng. 114	Rural Electrification - - - - -	V	S	N	?
Basic 111,112,113	Written & Spoken English - - - -	V	S	N	?
Basic 121,122,123	Biological Science - - - - -	V	S	N	?
Basic 141,142,143	Social Science - - - - -	V	S	N	?
Basic 151,152,153	Effective Living - - - - -	V	S	N	?
Basic 161,162,163	History of Civilization - - - - -	V	S	N	?
Basic 171,172,173	Literature & Fine Arts - - - - -	V	S	N	?
Botany 101a	General Botany - - - - -	V	S	N	?
Chemistry 101 or 101a	General Chemistry - - - - -	V	S	N	?
Chemistry 102 or 102a	General Chemistry - - - - -	V	S	N	?
Chemistry 103 or 103a	General Chemistry - - - - -	V	S	N	?
Dairy 101	Introduction to Dairying - - - - -	V	S	N	?
Education 101	Orientation for Men - - - - -	V	S	N	?
English 102e	Composition - - - - -	V	S	N	?
English 102f	Composition - - - - -	V	S	N	?
English 102g	Composition - - - - -	V	S	N	?
Farm Crops 101a	Field Crop Industry - - - - -	V	S	N	?
Farm Mgt. 202	Farm Management - - - - -	V	S	N	?
Hort. 100a	General Horticulture - - - - -	V	S	N	?
Math. 100a	Elementary Algebra - - - - -	V	S	N	?
Math. 100c	Algebra for Statistics - - - - -	V	S	N	?
Math. 101	College Algebra - - - - -	V	S	N	?
Math. 101a	Agricultural Mathematics - - - - -	V	S	N	?
Poultry 101	Farm Poultry - - - - -	V	S	N	?
Soils 114	Soil Science - - - - -	V	S	N	?
Sociology 337	Rural Sociology - - - - -	V	S	N	?
Speech 101	Public Speaking - - - - -	V	S	N	?
Zoology 104	Introduction to Genetics - - - - -	V	S	N	?
Zoology 201	Economic Zoology - - - - -	V	S	N	?
	Other courses not listed				
		V	S	N	?
		V	S	N	?
		V	S	N	?

# SECTION B. Animal Husbandry

Most of the following courses were required for Animal Husbandry Majors when you were in school.

Code: V - very helpful, S - somewhat helpful, N - not at all helpful,  
? - no answer

Course Number	Course Title					
Ag. 305	Nutrition - - - - -	V	S	N	?	(46)
An. Hub. 301	Animal Breeding - - - - -	V	S	N	?	(47)
An. Hub. 304b	Applied Feeding - - - - -	V	S	N	?	(48)
An. Hub. 305a	Stock Judging - - - - -	V	S	N	?	(49)
An. Hub. 322	Sheep & Swine Management - - - - -	V	S	N	?	(50)
An. Hub. 405	Advanced Stock Judging - - - - -	V	S	N	?	(51)
An. Hub. 406	Meat Production - - - - -	V	S	N	?	(52)
An. Hub. 407	Livestock Production & Management - - - - -	V	S	N	?	(53)
An. Hub. 416	Seminar - - - - -	V	S	N	?	(54)
An. Hub. 423	Beef Cattle & Horse Management - - - - -	V	S	N	?	(55)
Bacty. 201a	General Bacteriology - - - - -	V	S	N	?	(56)
Bacty. 201b	Morphological & Cultural - - - - -	V	S	N	?	(57)
Chemistry 207	Quantitative Analysis - - - - -	V	S	N	?	(58)
Chemistry 208	Biological Chemistry - - - - -	V	S	N	?	(59)
Conservation 201	Introduction to Conservation - - - - -	V	S	N	?	(60)
Econ. 211a	Agricultural Economics - - - - -	V	S	N	?	(61)
Econ. 211b	Agricultural Economics - - - - -	V	S	N	?	(62)
Enty. 201	Introduction to Entomology - - - - -	V	S	N	?	(63)
Farm Mgt. 302	Farm Management - - - - -	V	S	N	?	(64)
Land. Arch. 102a	Elements of Landscape Architecture - - - - -	V	S	N	?	(65)
Math. 102a	Trigonometry - - - - -	V	S	N	?	(66)
Phys. 158	General Physics - - - - -	V	S	N	?	(67)
Physiol. 302 or 304	Physiology of Domestic Animals - - - - -	V	S	N	?	(68)
Psych. 201	General Psychology - - - - -	V	S	N	?	(69)
Soils 201	Soils - - - - -	V	S	N	?	(70)
Zoology 311	Introduction to Genetics - - - - -	V	S	N	?	(71)
Zoology 333	Elementary Genetics - - - - -	V	S	N	?	(72)
	OTHER COURSES NOT LISTED					
		V	S	N	?	(73)
		V	S	N	?	(74)
		V	S	N	?	(75)



SECTION C. Dairy  
(1) Dairy Production

Most of the following courses were required for Dairy Production Majors while you were in school.

Code: V - very helpful, S - somewhat helpful, N - not at all helpful ? - no answer				
Course Number	Course Title			
Ag. 305	Nutrition - - - - -	V	S	N ? (46)
Ag. Eng. 390	Dairy Farm Structures & Equipment -	V	S	N ? (47)
An. Hub. 301 or 402	Animal Breeding - - - - -	V	S	N ? (48)
An. Path. 412 or 412a	Livestock Hygiene & Disease Control	V	S	N ? (49)
Bacty. 201a	General Bacteriology - - - - -	V	S	N ? (50)
Bacty. 201b	Morphological & Cultural - - - - -	V	S	N ? (51)
Bacty. 304d	Dairy Bacteriology - - - - -	V	S	N ? (52)
Chemistry 101	General Chemistry - - - - -	V	S	N ? (53)
Chemistry 102	General Chemistry - - - - -	V	S	N ? (54)
Chemistry 207	Quantitative Analysis - - - - -	V	S	N ? (55)
Chemistry 208	Biological Chemistry - - - - -	V	S	N ? (56)
Chemistry 344	Dairy Chemistry - - - - -	V	S	N ? (57)
Chemistry 353	Chemistry of Nutrition - - - - -	V	S	N ? (58)
Dairy Hub. 209	Dairy Herd Operations - - - - -	V	S	N ? (59)
Dairy Hub. 210	Dairy Plant Operations - - - - -	V	S	N ? (60)
Dairy Hub. 304b	Market Milk - - - - -	V	S	N ? (61)
Dairy Hub. 308	Dairy Technology - - - - -	V	S	N ? (62)
D & D 204c	Mechanical Drawing - - - - -	V	S	N ? (63)
Enty. 201	Introduction to Entomology - - - -	V	S	N ? (64)
Farm Management 302	Farm Management - - - - -	V	S	N ? (65)
Hygiene 312a	Livestock Hygiene & Disease Control	V	S	N ? (66)
Land. Arch. 102a	Principles of Landscape Architecture	V	S	N ? (67)
Math. 102a	Trigonometry - - - - -	V	S	N ? (68)
Phys. 158	General Physics - - - - -	V	S	N ? (69)
Phys. 168	General Physics - - - - -	V	S	N ? (70)
Phys. 201d	Mechanics & Heat - - - - -	V	S	N ? (71)
Phys. 201e	Heat, Magnetism & Electricity - - -	V	S	N ? (72)
Physiol. 304	Physiology of Domestic Animals - -	V	S	N ? (73)
Soils 201	Soil Science - - - - -	V	S	N ? (74)
	OTHER COURSES NOT LISTED			
		V	S	N ? (75)
		V	S	N ? (76)
		V	S	N ? (77)



SECTION C. Dairy  
(2) Dairy Manufacturing

Most of these courses were required of Dairy Manufacturing Majors while you were in school.

Code: V - very helpful, S - somewhat helpful, N - not at all helpful  
? - no answer

Course Number	Course Title				
Ag. 205	Nutrition - - - - -	V	S	N	?
Ag. Engr. 114	Rural Electrification - - - - -	V	S	N	?
Ag. Engr. 390	Dairy Farm Structures & Equipment	V	S	N	?
Ag. Engr. 392	Dairy Plant Engineering - - - - -	V	S	N	?
Bacty. 201a	General Bacteriology - - - - -	V	S	N	?
Bacty. 201b	Morphological & Cultural - - - - -	V	S	N	?
Bacty. 304d	Dairy Bacteriology - - - - -	V	S	N	?
Chem. 207	Quantitative Analysis - - - - -	V	S	N	?
Chem. 208	Biological Chemistry - - - - -	V	S	N	?
Chem. 344	Dairy Chemistry - - - - -	V	S	N	?
Chem. 353	Chemistry of Nutrition - - - - -	V	S	N	?
Dairy Hub. 225	Elements of Dairy Technology - -	V	S	N	?
Dairy Hub. 230	Dairy Sanitation - - - - -	V	S	N	?
D & D 204c	Mechanical Drawing - - - - -	V	S	N	?
Math. 102	Trigonometry - - - - -	V	S	N	?
Phys. 158	General Physics - - - - -	V	S	N	?
Phys. 168	General Physics - - - - -	V	S	N	?
	OTHER COURSES NOT LISTED				
		V	S	N	?
		V	S	N	?
		V	S	N	?





### SECTION D. Poultry

Most of these course were required of Poultry Majors when you were in school.

Code: V - very helpful, S - somewhat helpful, N - not at all helpful  
? - no answer

Course Number	Course Title	V	S	N	?	
An. Hub. 301	Animal Breeding - - - - -	V	S	N	?	(46)
Bacty. 201a or 202	General Bacteriology - - - - -	V	S	N	?	(47)
Bacty. 201b	Morphological & Cultural - - - - -	V	S	N	?	(48)
Bacty. 403	Physiological - - - - -	V	S	N	?	(49)
Cons. 201	Introduction to Conservation - - -	V	S	N	?	(50)
Enty. 201	Introduction to Entomology - - -	V	S	N	?	(51)
Farm Management 302	Farm Management - - - - -	V	S	N	?	(52)
Hygiene 403	Poultry Hygiene & Sanitation - - -	V	S	N	?	(53)
Journ. 302	Business Writing - - - - -	V	S	N	?	(54)
Land. Arch. 102a	Elements of Landscape Architecture	V	S	N	?	(55)
Math. 102a	Trigonometry - - - - -	V	S	N	?	(56)
Phys. 201d	Mechanics & Heat - - - - -	V	S	N	?	(57)
Phys. 201e	Heat, Magnetism & Electricity - - -	V	S	N	?	(58)
Phys. 158	General Physics - - - - -	V	S	N	?	(59)
Phys. 168	General Physics - - - - -	V	S	N	?	(60)
Physiol. 302 or 304	Physiology of Domestic Animals - -	V	S	N	?	(61)
Psych. 201	General Psychology - - - - -	V	S	N	?	(62)
Poultry Hub. 302	Poultry Judging & Breeding - - -	V	S	N	?	(63)
Poultry Hub. 303	Marketing of Poultry - - - - -	V	S	N	?	(64)
Poultry Hub. 404	Incubation and Brooding - - - - -	V	S	N	?	(65)
Poultry Hub. 408	Poultry Management - - - - -	V	S	N	?	(66)
Poultry Hub. 410	Poultry Breeding - - - - -	V	S	N	?	(67)
Poultry Hub. 411	Poultry & Egg Products - - - - -	V	S	N	?	(68)
Soils 201	Soil Science - - - - -	V	S	N	?	(69)
Speech 102	Public Speaking - - - - -	V	S	N	?	(70)
Zool. 311	Introduction to Genetics - - - - -	V	S	N	?	(71)
	OTHER COURSES NOT LISTED					
		V	S	N	?	(72)
		V	S	N	?	(73)
		V	S	N	?	(74)

E. Some of the courses listed in Section A., General Agriculture Series are required for all students in Agriculture, which of these required ones do you think should not be required of all students?

Name of Course \_\_\_\_\_ (78)

Why \_\_\_\_\_ (79)

Name of Course \_\_\_\_\_(80)

Why \_\_\_\_\_ (81)

Name of Course \_\_\_\_\_ (82)

Why \_\_\_\_\_ (83)

III. A. Would you list the name of any of the courses which were required of you which you believe should not be required of all Livestock Majors?

**Remember - - Section A - General Ag Series) Required for all Majors**

B - Animal Husbandry) Animal Hub Majors

C - Dairy Husbandry      (1) Production }  
                              (2) Manufacturing } Dairy Majors

**B - Poultry Husbandry) Poultry Majors**

Name of Course \_\_\_\_\_ (84)

Why \_\_\_\_\_ (85)

Name of Course \_\_\_\_\_ (86)

Why \_\_\_\_\_ (87)

Name of Course \_\_\_\_\_ (88)

Why \_\_\_\_\_ (89)

Name of Course \_\_\_\_\_ (90)

Why \_\_\_\_\_ (91)



B. List by name any agricultural courses which you took but which were not required of you and which you think should be required of all livestock Majors.

Name of Course \_\_\_\_\_ (92)

Why \_\_\_\_\_ (93)

Name of Course \_\_\_\_\_ (94)

Why \_\_\_\_\_ (95)

IV. Below are courses and subject-matter areas listed as elective. If you took an elective course listed by departments below, place a check mark (✓) in Column 1.

If in a given course, you believe that: Too much was required, check Column 2.

If requirements were just right, check Column 3.

If too little was required, check Column 4.

In the case you did not take the course, but wish you had, check Column 5.

Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<u>Agriculture</u>							
201	Cooperative Extension Work - - - - -						(96)
205	Nutrition - - - - -						(97)
<u>Agr'l Engr.</u>							
201	Farm Mechanics - - - - -						(98)
215	Farm Construction - - - - -						(99)
302	Building Materials & Methods - - - - -						(100)
303	Farm Engines & Tractors - - - - -						(101)
304	Farm Machinery - - - - -						(102)
305	Farmstead & Building Planning - - - - -						(103)
307	Farm Drainage & Irrigation - - - - -						(104)
316	Farm Field Equipment - - - - -						(105)
387	Drainage, Irrigation & Erosion Control						(106)



Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<b>Anatomy</b>							
305a, b o	Gross & Microscopic Anatomy - - - - -						(107)
307	Avian Anatomy - - - - -						(108)
308	Avian Embryology - - - - -						(109)
403a	Cytology & Histology - - - - -						(110)
403b	Embryology - - - - -						(111)
<b>An. Husbandry</b>							
301 or 402	Animal Breeding - - - - -						(112)
302 (202)	Study of Breeds - - - - -						(113)
304b	Applied Feeding - - - - -						(114)
305a	Stock Judging - - - - -						(115)
311	Horse Breeding & Management - - - - -						(116)
312	Swine Breeding & Management - - - - -						(117)
320	Meat Selection & Use - - - - -						(118)
401	Advanced Animal Breeding - - - - -						(119)
405	Advanced Stock Judging - - - - -						(120)
406	Meat Production - - - - -						(121)
407	Livestock Production & Management - - - - -						(122)
413	Sheep Breeding & Management - - - - -						(123)
414	Beef Cattle Breeding & Management - - - - -						(124)
415	Special Problems - - - - -						(125)
424	Advanced Meat Selection & Grading - - - - -						(126)
<b>An. Pathology</b>							
301	General Pathology - - - - -						(127)
301a	General & Systemic Pathology - - - - -						(128)
301b	Systemic Pathology - - - - -						(129)
412 & a	Livestock Hygiene & Disease Control - - - - -						(130)
<b>Bacteriology</b>							
201c	Applied Bacteriology - - - - -						(131)
304a	Antiseptics & Disinfectants - - - - -						(132)
304b	Water & Sewage - - - - -						(133)
304c	Food Preservation & Decomposition - - - - -						(134)
304f	Pathogenic Bacteriology - - - - -						(135)
304j	Immunology & Serology - - - - -						(136)



Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<u>Bus. Administration</u>							
200	Introduction to Accounting - - - -						(137)
203a, b & c	Principles of Accounting - - - -						(138)
236	Principles of Insurance - - - -						(139)
445 a & b	Business Law - - - - -						(140)
448	Sales Administration - - - - -						(141)
<u>Chemistry</u>							
207	Quantitative Analysis - - - - -						(142)
208	Biological Chemistry - - - - -						(143)
221	Physiological Chemistry - - - - -						(144)
341a, b & c	Organic Chemistry - - - - -						(145)
353	The Chemistry of Nutrition - - - -						(146)
383, 384, 385	Physical Chemistry - - - - -						(147)
390 & 457							
429 b & c	Biological Chemistry - - - - -						(148)
<u>Civil Engineering</u>							
360(San.Eng.301)	Water Treatment Technique - - - -						(149)
364(San.Eng.302)	Sewage Treatment Technique - - - -						(150)
<u>Conservation</u>							
201	Introduction to Conservation - - -						(151)
<u>Dairy Husbandry</u>							
230	Dairy Sanitation - - - - -						(152)
304 & b	Market Milk - - - - -						(153)
305 & a	Ice Cream Manufacture - - - - -						(154)
306	Advanced Dairy Cattle Judging - -						(155)
309	Dairy Herd Operations- - - - -						(156)
311 & a	Dairy Cattle - - - - -						(157)
318	Advanced Dairy Products Judging -						(158)
326	Laboratory Methods - - - - -						(159)
402	Butter Making - - - - -						(160)
404 & b	Concentrated Milk Products - - - -						(161)
405 & b	Cheese Making - - - - -						(162)
411 & b	Milk Production - - - - -						(163)
412	Dairy Farm Management - - - - -						(164)
415 & 416	Dairy Seminar - - - - -						(165)
421	Plant Management - - - - -						(166)
423	Dairy Cattle Nutrition - - - - -						(167)
424	Advanced Dairy Technology - - - -						(168)
431	Dairy Inspection & Ordinances - -						(169)



Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<u>Economics</u>							
211 a, b & c	Agricultural Economics - - - - -						(170)
307	Personnel Management - - - - -						(171)
318	Money, Credit & Banking - - - - -						(172)
322	Agricultural Marketing - - - - -						(173)
323	Cooperatives in the Economy - - - - -						(174)
338	Marketing of Dairy Products - - - - -						(175)
343	Cooperative Business Management - - - - -						(176)
446	Agricultural Prices - - - - -						(177)
450	National Agricultural Policies - - - - -						(178)
<u>Entomology</u>							
201	Introduction to Entomology - - - - -						(179)
<u>E. Draw.</u>							
204c	Mechanical Drawing - - - - -						(180)
<u>Farm Crops</u>							
303	Special Field Crops - - - - -						(181)
304	Forage Crops - - - - -						(182)
305	Cereals, Grain Grading & Marketing - - - - -						(183)
405a & b	Techniques & Principles of Plant Breeding - - - - -						(184)
409	Grassland Management - - - - -						(185)
<u>Farm Mgt.</u>							
202 (302)	Farm Management - - - - -						(186)
301	Farm Management - - - - -						(187)
303	Statistics of Crops & Livestock - - - - -						(188)
404	Successful Michigan Farms- - - - -						(189)
<u>Forestry</u>							
100	Development of Forestry - - - - -						(190)
<u>Geology</u>							
208	Introduction to Geology - - - - -						(191)
<u>Horticulture</u>							
416	Storage & Transportation - - - - -						(192)
<u>Hygiene &amp; Public Health</u>							
403	Poultry Hygiene & Sanitation - - - - -						(193)
412a	Livestock Hygiene & Disease Control - - - - -						(194)

Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<u>Journalism</u>							
302	Business Writing - - - - -						(195)
302n & 318	Technical Writing - - - - -						(196)
302p & 321	Bulletin Writing - - - - -						(197)
302s & 319	Farm & Home Writing - - - - -						(198)
305	Principles of Advertising - - - -						(199)
309	Feature Article Writing - - - - -						(200)
<u>Land. Arch.</u>							
101 & 102a	Elements of Landscape Architecture						(201)
<u>Mathematics</u>							
102	Trigonometry - - - - -						(202)
103	Analytic Geometry - - - - -						(203)
204	Elementary Calculus - - - - -						(204)
225	Statistics - - - - -						(205)
308g	Elementary Statistics - - - - -						(206)
325	Statistical Methods - - - - -						(207)
<u>Mech. Eng.</u>							
209	Refrigeration - - - - -						(208)
218	Plumbing & Fitting - - - - -						(209)
320 & 321	Mechanical Equipment of Hotels - -						(210)
<u>Physics</u>							
158	General Physics - - - - -						(211)
<u>Physiology</u>							
302, 304	Physiology of Domestic Animals - -						(212)
310, 311 & 312	Advanced Physiology - - - - -						(213)
314 & 414	Abnormal Physiology - - - - -						(214)
410, 411 & 412	Advanced Physiology - - - - -						(215)
413	Internal Physiology - - - - -						(216)
<u>Political Science</u>							
203a	National Government - - - - -						(217)
203b	State Government - - - - -						(218)
<u>Poultry Husbandry</u>							
302	Poultry Judging & Breeding - - - -						(219)
303	Marketing of Poultry - - - - -						(220)
309	Domestic Propagation of Turkeys -						(221)

Code: 1. Took Course 2. Too Much 3. Just Right 4. Too Little 5. Wish I Had		Took Course	Too Much	Just Right	Too Little	Wish I Had	
Course Number	Course Title	1	2	3	4	5	
<u>Sociology</u> 201	Principles of Sociology - - - -						(222)
<u>Soils</u> 114 & 216	Soil Science - - - - - - - -						(223)
306	Fertilizers - - - - - - - -						(224)
308	Soil Management - - - - - - - -						(225)
404b	Soil Fertility - - - - - - - -						(226)
<u>Speech</u> 128 & 228	Parliamentary Procedure - - - -						(227)
303a	Business Speaking - - - - - - - -						(228)
<u>Zoology</u> 207 & 208	Introductory Zoology - - - - -						(229)
313	Human Heredity - - - - - - - -						(230)
333 & a	Elementary Genetics - - - - - -						(231)

V. What proportion of college time ( in terms of course credits ) would (232) you have liked to use in exploring your own interests (electives)?

One eighth \_\_\_\_\_, One fourth \_\_\_\_\_, One third \_\_\_\_\_,

One half \_\_\_\_\_, Other \_\_\_\_\_.

This page is to <sup>be</sup> answered only by those who formerly held or now hold a professional position for which agricultural training was required.

VI. General Fields of study in the School of Agriculture are listed below.

If you took any courses in that field of study, check Column 1.

If these courses: Were valuable professional training in preparing you for your work, check Column 2.

Were of little value in professional training, check Column 3.

Were of doubtful value or if you don't know, check Column 4.

Code: 1. Took 2. Valuable 3. Little Value 4. Don't Know	Took	Valuable	Little Value	Don't Know	
General Fields of Study	1	2	3	4	
1. Agricultural Education - - - - -					(233)
2. Agricultural Engineering - - - - -					(234)
3. Animal Husbandry - - - - -					(235)
4. Food Technology - - - - -					(236)
5. Dairy Husbandry - - - - -					(237)
6. Farm Crops - - - - -					(238)
7. Horticulture - - - - -					(239)
8. Soils Science - - - - -					(240)
9. Agricultural Economics - - - - -					(241)
10. Agricultural Extension - - - - -					(242)
11. Poultry Husbandry - - - - -					(243)
12. Rural Sociology and Anthropology - - - - -					(244)
13. Landscape - - - - -					(245)
14. Conservation - - - - -					(246)



VII. In what areas in the entire college curriculum do (or did) you find a real need which your education should have met and did not?

Explain \_\_\_\_\_ (247)

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VIII. In the light of your experience, what kinds of improvements or changes do you think would enhance the value of the agricultural curriculum?

Explain \_\_\_\_\_ (248)

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IX. In this remaining space, we welcome any comments you wish to make which you feel might be helpful to us in improving the Agricultural Curriculum at Michigan State College. (Use next page for additional comments) (249)

Name \_\_\_\_\_ (250)

Address \_\_\_\_\_ (251)

\_\_\_\_\_

Please circle correct word or words:

1. I receive the Alumni Record regularly, Yes \_\_\_\_\_ No \_\_\_\_\_ (252)

2. I want my correct address given to the Alumni Office and/or Major Department, Yes \_\_\_\_\_ No \_\_\_\_\_ (253)

3. If you wish a copy of a summarized report, check here. ( ) (254)

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## APPENDIX B



Course Number and Course Title	Course Work Taken In College									Course Work Not Taken In College									Totals
	Animal Husbandry			Dairy Husbandry			Poultry Husbandry			Animal Husbandry			Dairy Husbandry			Poultry Husbandry			
	Too Much Just Right Too Little Number Who Took Course	Too Much Just Right Too Little Number Who Took Course	Too Much Just Right Too Little Number Who Took Course	Too Much Just Right Too Little Number Who Took Course	Too Much Just Right Too Little Number Who Took Course	Too Much Just Right Too Little Number Who Took Course	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had	Number Not Taking Course Number Wishing They Had Percent Wishing They Had					
TABLE I A - Agricultural Engineering																			
Ag. Eng. 201 Farm Mechanics	- 48 52 (21)	- 61 39 (19)	- 67 33 (3)	(67) (22) 31*	(73) (18) 25	(18) (2) 11	(156) (42) 27												
Ag. Eng. 215 Farm Construction	15 31 54 (13)	- 60 40 ( 5)	- 50 50 (6)	(75) (13) 39	(86) ( 5) 13	(15) (5) 40	(176) (23) 13												
Ag. Eng. 302 Bldg. Materials and Methods	- 80 20 ( 5)	- 60 40 ( 5)	-100 4 (2)	(83) ( 5) 6	(86) ( 5) 17	(19) (7) 37	(188) (17) 9												
Ag. Eng. 303 Farm Engines & Tractors	17 44 39 (18)	- 54 46 (13)	-100 - (6)	(70) (18) 30	(78) (13) 13	(15) (3) 20	(163) (34) 21												
Ag. Eng. 304 Farm Machinery	4 70 26 (23)	- 70 30 (10)	- -100 (1)	(65) (23) 29	(81) (10) 6	(20) (2) 10	(166) (35) 21												
Ag. Eng. 305 Farmstead & Bldg. Planning	- 67 33 ( 3)	- 67 33 ( 3)	-100 - (2)	(85) ( 3) 21	(88) ( 3) 11	(19) (8) 42	(192) (14) 7												
Ag. Eng. 307 Farm Drainage & Irrigation	- 67 33 ( 3)	- -100 ( 1)	- - - -	(85) (3) 31	(90) ( 1) 14	(15) (6) 40	(190) (10) 5												
Ag. Eng. 316 Farm Field Eqp't.	50 50 - ( 2)	- 33 67 ( 3)	-100 - (2)	(86) (18) 21	(88) ( 9) 110	(19) (2) 11	(193) (29) 15												
Ag. Eng. 387 Drainage, Irriga- tion & Erosion Control	25 75 - ( 4)	- - - -	-100 - (2)	(84) (24) 29	(80) (11) 14	(19) (2) 11	(183) (37) 20												
TABLE II A -- Animal Husbandry																			
An. Hub. 301 or 402 Animal Breeding	4 71 25 (69)	7 80 13 (30)	2 64 27 (11)	(19) ( 3) 16	(61) ( 7) 11	(10) (2) 20	(90) (12) 13												
An. Hub. 302 (202) Study of Breeds	7 78 15 (69)	- 78 22 ( 9)	60 40 4 ( 5)	(19) ( 1) 5	(82) ( 5) 6	(16) (2) 13	(117) (81) 7												
An. Hub. 304 B Applied Feeding	9 51 40 (70)	8 50 42 (26)	- 55 45 (11)	(18) ( 2) 11	(65) ( 4) 6	(10) (2) 20	(93) ( 8) 9												
An. Hub. 305 A Stock Judging	6 76 18 (62)	7 80 13 (15)	25 75 - ( 4)	(26) ( 3) 12	(76) ( 3) 4	- -	(102) ( 6) 6												
An. Hub. 311 Horse Breeding & Management	7 83 10 (40)	17 83 - ( 6)	100 - - ( 2)	(48) ( 5) 10	(85) ( 5) 6	(19) (1) 5	(152) (11) 7												
An. Hub. 312 Swine Breeding & Management	2 64 34 (47)	- 75 25 ( 4)	-100 - ( 1)	(41) (11) 27	(87) ( 1) 1	(20) (2) 10	(148) (14) 9												
An. Hub. 320 Meat Selection and Use	4 85 11 (45)	-100 - ( 2)	- -100 ( 1)	(43) (14) 33	(89) (15) 17	(20) (5) 25	(152) (34) 22												
An. Hub. 401 Advanced Animal Breeding	- 77 23 (13)	- - - -	-100 - ( 2)	(75) (35) 47	(91) ( 5) 5	(19) (3) 16	(185) (43) 23												
An. Hub. 405 Advanced Stock Judging	9 77 14 (35)	20 80 - (5)	- - - -	(53) (12) 23	(86) ( 1) 1	(21) (1) 5	(160) (14) 9												
An. Hub. 406 Meat Production	3 77 20 (40)	-100 - (5)	- - - -	(48) ( 6) 13	(86) ( 4) 5	(21) (1) 5	(155) (11) 7												
An. Hub. 407 Livestock Prod. and Management	2 66 32 (47)	- 50 50 (2)	- - - -	(41) ( 9) 22	(89) (10) 11	(21) (1) 5	(151) (20) 13												
An. Hub. 413 Sheep Breeding and Management	2 73 25 (40)	- - - -	- - - -	(48) ( 5) 10	(91) ( 1) 1	(21) (2) 10	(160) ( 8) 5												
An. Hub. 414 Beef Cattle Breeding and Management	8 43 49 (39)	- - - -	- - - -	(49) (12) 24	(91) ( 5) 5	- -	(140) (17) 12												
An. Hub. 415 Special Problems	5 81 14 (42)	- 75 25 (4)	- - - -	(46) ( 3) 7	(87) - -	- -	(133) ( 3) 2												
An. Hub. 424 Advanced Meat Selection and Grading	- 80 20 (10)	- - - -	- - - -	(78) (21) 27	(91) ( 5) 5	(21) (2) 10	(190) (28) 15												



Course Number and Course Title	Course Work Taken In College									Course Work Not Taken in College											
	Animal Husbandry			Dairy Husbandry			Poultry Husbandry			Animal Husbandry			Dairy Husbandry			Poultry Husbandry			Totals		
	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had	Number Not Taking Course	Number Wishing They Had	Percent Wishing They Had
TABLE III A - Dairy Husbandry																					
Dairy Hub. 230 Dairy Sanitation	- 100	- (3)			2 67 31	(39)			100	- - (1)			(85)	(9) 11	(52) (8) 15	(20)	- -	(157)	(17)	11	
Dairy Hub. 304 & B Market Milk	- - - -				5 87 8	(73)			- 100	- (1)			(88)	(6) 7	(18) - -	(20)	- -	(126)	( 6)	5	
Dairy Hub. 305 & A Ice Cream Mfrs.	- 100	- (1)			4 59 37	(46)			- - - -				(87)	(1) 1	(45) (1) 2	- - -		(132)	( 2)	2	
Dairy Hub. 306 Advanced Dairy Cattle Judging	20 73 7	(15)			3 74 23	(35)*			100	- - (1)			(73)	(9) 12	(56) (2) 4	(20)	(1) 5	(149)	(12)	8	
Dairy Hub. 309 Dairy Herd Operations	- 89 11	( 9)			4 64 32	(28)			- 50 50	(2)			(79)	(15) 19	(63) (6) 10	(19)	(2) 11	(161)	(23)	14	
Dairy Hub. 311 & A Dairy Cattle	33 67	-- (6)			26 57 17	(23)			--100	-- (1)			(82)	(11)13	(68) (6) 9	(20)	(2) 10	(170)	(19)	11	
Dairy Hub. 318 Advanced Dairy Products Judging	-- --100	(1)			3 74 23	(39)			-- -- -- --				(87)	(8) 9	(49) (7) 14	- - -		(136)	(15)	11	
Dairy Hub. 326 Laboratory Methods	-- -- -- --				8 77 15	(40)			-- -- -- --				(88)	( 3) 3	(51) (2) 4	- - -		(139)	( 5)	4	
Dairy Hub. 402 Butter Making	-- -- -- --				10 73 17	(41)			-- -- -- --				(87)	( 1) 1	(50) (1) 2	- - -		(137)	( 2)	1	
Dairy Hub. 404B Concentrated Milk Products	-- -- -- --				5 74 21	(38)			-- -- -- --				(88)	( 1) 1	(53) (5) 9	- - -		(141)	( 6)	1	
Dairy Hub. 405B Cheese Making	-- -- -- --				4 85 11	(26)			-- -- -- --				(87)	( 1) 1	(65) (8) 12	- - -		(152)	( 9)	6	
Dairy Hub. 411B Milk Production	--100	- 8			3 80 17	(29)			--100	-- (1)			(80)	( 7) 9	(62) (5) 8	(20)	(1) 5	(162)	(13)	8	
Dairy Hub. 412 Dairy Farm Mgt.	14 72 14	(7)			3 81 16	(32)			--100	-- (1)			(81)	(23) 28	(59) (5) 8	(20)	(2)10	(160)	(30)	19	
Dairy Hub. 415 & 416 Dairy Seminar	- 100	- (1)			5 78 17	(41)			-- -- -- --				(27)	( 3) 3	(50) (4) 8	- - -		(137)	(7)	5	
Dairy Hub. 421 Plant Management	- - - -				10 29 61	(31)			-- 100	(1)			(88)	( 2) 2	(60) (6) 10	(20)	-- -	(168)	(8)	5	
Dairy Hub. 423 Dairy Cattle Nu- trition.	-- 89 11	(19)*			14 76 10	(21)			-- 67 33	(3)			(69)	(24) 35	(70) (10)14	(18)	(1) 6	(157)	(35)	22	
Dairy Hub. 424 Advanced Dairy Technology	-- -- -- --				6 70 24	(17)			-- -- -- --				(88)	( 1) 1	(74) (6) 8	-- -- --		(162)	( 7)	4	
Dairy Hub. 431 Dairy Inspection and Ordinances	-- -- -- --				6 72 22	(32)			-- -- -- --				(88)	( 9) 10	(59) (12)20	(21)	(1) 5	(168)	(22)	13	
TABLE IV A -- Agricultural Economics and Farm Management																					
Econ. 211A, B, C. Ag. Econ.	26 65 9	(43)*			18 70 12	(51)			9 91	-- (11)			(45)	( 4) 9	(40) ( 6) 15	(10)	- -	(95)	(10)	11	
Econ 307 Personnel Mgt.	-- -- -- --				- 100	0 ( 4)			- - - -				(70)	(13) 19	(87) (26) 30	(21)	(3) 14	(178)	(42)	24	
Econ. 318 Money, Credit and Banking	100	-- -- (1)			46 27 27	(11)			67 33	-- ( 3)			(87)	(14) 16	(80) (21) 26	(18)	(2) 11	(185)	(37)	20	
Econ. 322 Agr'l. Mktng.	9 62 29	(21)			21 50 29	(14)			20 80	-- ( 5)			(67)	(14) 21	(77) (17) 22	(17)	(3) 18	(161)	(34)	21	
Econ. 323 Cooperatives in The Economy	27 50 13	( 8)			50 50	-- (4)			--100	-- ( 1)			(80)	(8) 10	(87) (15) 17	(20)	(1) 5	(187)	(24)	13	
Econ. 338 Marketing of Dairy Products	--100	-- ( 2)			-- 82 18	(22)			-- -- -- --				(86)	(6) 7	(69) (20) 29	-- -- --		(155)	(26)	17	
Econ. 343 Cooperative Business Management	--100	-- ( 8)			25 75	-- ( 4)			-- -- -- --				(80)	(10) 13	(87) (14) 16	(21)	(1) 5	(188)	(25)	13	
Econ. 446 Agr'l. Prices	17 66 17	(12)			-- 73 27	(11)			25 50 25	(4)			(76)	(14) 18	(80) ( 8) 10	(17)	(4) 24	(173)	(26)	15	
Econ. 450 National Agri- cultural Policies	33 50 17	(6)			20 60 20	( 5)			--100	-- (3)			(82)	(15) 18	(86) (12) 14	(18)	(3) 17	(186)	(30)	16	
Farm Mgt. 202 (302)	6 72 22	(53)			9 73 18	(34)			10 60 30	(10)			(35)	(1) 3	(57) (5) 9	(11)	-- --	(103)	( 6)	6	
Farm Mgt. 301	12 69 19	(16)			12 70 18	(17)			--100	-- (2)			(72)	(6) 8	(74) (1) 1	(19)	(2) 11	(165)	( 9)	5	
Farm Mgt. 303	33 67	-- ( 9)			-- 80 20	( 5)			-- -- -- --				(79)	(3) 4	(86) (3) 3	(21)	(1) 5	(186)	( 7)	4	
Farm Mgt. 404	--100	-- ( 7)			2 82 2	(11)			-- 75 25	(4)			(81)	(10) 12	(80) (6) 8	(17)	(2) 12	(178)	(18)	10	



Soils 114 & 216 Soil Science	2 91 7 (53)	-- 90 10 (39)*	8 <u>64</u> 8 (12)	(35) ( 4) 11 (52) ( 5) 10 ( 9) - - (96) (18) 19
Soils 306 Fertilizers	- <u>75</u> <u>25</u> (12)	6 88 6 (18)	- <u>100</u> - ( 1)	(70) (27) 39 (73) ( 7) 10 (20) (3) 15 (163) (37) 23
Soils 308 Soil Management	- <u>91</u> <u>9</u> (11)	- <u>80</u> <u>20</u> (10)	- <u>100</u> - ( 4)	(77) (22) 29 (81) (11) 14 (17) (3) 18 (175) (36) 21
Soils 404B Soil Fertility	<u>14</u> <u>86</u> 4 ( 7)	- <u>100</u> - ( 5)	- - - -	(81) (26) 32 (85) ( 7) 8 (21) (2) 10 (187) (35) 19



## APPENDIX C

QUANTITATIVE ANALYSIS OF ELECTIVE NON-TECHNICAL COURSES BY LIVESTOCK GRADUATES OF MICHIGAN STATE COLLEGE

Course Number and Course Title	Course Work Taken in College									Course Work Not Taken in College													
	Animal Husbandry			Dairy Husbandry			Poultry Husbandry			Animal Husbandry			Dairy Husbandry			Poultry Husbandry			Totals				
	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number: Washing They Had	Percent: Washing They Had	Number Not Taking Course	Number: Washing They Had	Percent: Washing They Had	Number Not Taking Course	Number: Washing They Had	Percent: Washing They Had		
TABLE IX A - Agriculture																							
Agriculture 201 Cooperative Extension Work	6	82	12 (17)	10	40	50 (10)	--	100	-- (5)	(71)	(11)	15	(81)	(6)	7	(16)	(1)	6	(168)	(18)	11		
Agriculture 205 Nutrition	7	70	23 (30)	10	81	9 (21)	--	100	-- (2)	(58)	(17)	29	(70)	(6)	9	(19)	(3)	16	(147)	(26)	18		
TABLE X A - Anatomy																							
Anatomy 305 A, B and C Gross & Microscopic Anatomy	40	60	-- ( 5)	--	--	--	--	50	50	---	(2)	(83)	( 7)	8	--	-	-	(15)	(3)	16	(102)	(10)	10
Anatomy 307 Avian Anatomy	--	60	40 ( 5)	--	--	--	--	--	57	43	( 7)	(83)	( 8)	10	(91)	(1)	1	(14)	(3)	21	(188)	(12)	6
Anatomy 308 Avian Embryology	25	75	-- (4)	--	--	--	--	33	67	-- (3)	(84)	( 2)	2	(91)	(1)	1	(18)	(5)	28	(193)	( 8)	4	
Anatomy 403 A Cytology and Histology	33	67	-- (6)	--	100	-- (1)	--	100	-	(2)	(82)	( 5)	6	(90)	(3)	3	(19)	(2)	11	(191)	(10)	5	
Anatomy 403 B	17	83	-- (6)	--	100	-- (1)	--	50	50	(2)	(82)	( 9)	11	(90)	(4)	4	(19)	(3)	16	(191)	(16)	8	
TABLE XI A - Animal Pathology																							
An. Path. 301 General Path.	11	67	22 ( 9)	--	100	-- (1)	--	100	-- (1)	(79)	(16)	20	(90)	(9)	10	(20)	(7)	35	(189)	(32)	17		
An. Path. 301 A General-- and Systemic Pathology	100	-- ( 6)	--	100	-- (1)	--	100	(1)	(82)	( 6)	7	(90)	(2)	2	(20)	(1)	5	(192)	( 9)	5			
An. Path. 301 B Systemic Path.	100	-- ( 6)	--	100	-- (1)	--	100	(1)	(82)	( 5)	6	(90)	-	-	(20)	(2)	10	(192)	( 7)	4			
An. Path. 412 and A	--	37	63 (27)	13	47	40(15)	--	80	20	(5)	(61)	(21)	34	(76)	(14)	18	(16)	( 4)	25	(153)	(39)	25	
TABLE XII A - Bacteriology																							
Bact'y. 201 C Applied Bacty.	12	70	18 (17)	6	81	13 (16)	--	100	-- (3)	(61)	( 4)	7	(75)	(7)	9	(18)	( 3)	17	(154)	(14)	9		
Bact'y. 304 A Antiseptics & Disinfectants	100	-- ( 3)	-	83	17	(12)	--	100	-- (1)	(85)	( 9)	11	(79)	(19)	24	(20)	( 3)	15	(184)	(32)	17		
Bact'y. 304 B Water & Sewage	100	-- ( 1)	-	80	20	( 5)	--	100	-- (1)	(87)	( 4)	5	(86)	(18)	21	(20)	( 2)	10	(183)	(24)	13		
Bact'y. 304 C Food Preservation & Decomposition	33	67	-- ( 3)	-	100	( 1)	--	100	-- (1)	(85)	( 8)	9	(90)	(23)	26	(20)	( 2)	10	(185)	(33)	18		
Bact'y. 304 F Pathogenic Bact'y.	--	80	20 ( 5)	-	100	- ( 3)	--	100	-- (1)	(83)	(10)	12	(88)	(10)	11	(20)	(2)	10	(191)	(22)	12		
Bact'y. 304 J Immunology & Serology	25	75	-- ( 4)	-	100	- ( 1)	--	100	-- (1)	(84)	( 7)	8	(90)	( 5)	6	(20)	(1)	5	(184)	(13)	7		
TABLE XIII A - Business Administration																							
Business Ad. 200 Intro. to Accting.	10	90	-- (10)	6	65	25 (31)	-	67	33	(3)	(78)	(19)	24	(60)	(26)	43	(18)	( 6)	33	(156)	(51)	33	
Business Ad. 203A B & C Principles of Accounting	50	50	-- ( 2)	10	90	-- (10)	-	100	-- (2)	(86)	(12)	14	(81)	(18)	22	(19)	(18)	95	(186)	(48)	26		
Business Ad. 236 Principles of Insurance	--	100	- ( 3)	--	67	33 ( 3)	-	--	-	--	(85)	( 8)	9	(88)	(16)	18	(21)	( 3)	14	(194)	(27)	14	
Bus. Ad. 445 A & B Bus. Law	14	57	29 ( 7)	18	64	18 (11)	-	100	- (3)	(81)	(18)	22	(80)	(28)	35	(18)	( 3)	17	(179)	(49)	27		
Bus. Ad. 448 Sales Admin.	100	--	-- ( 1)	100	-- ( 4)	-	100	-- (3)	(87)	( 5)	6	(87)	(25)	29	(17)	( 1)	6	(191)	(31)	16			





Course Number and Course Title	Course Work Taken In College												Course Work Not Taken In College												
	Animal				Dairy				Poultry				Animal				Dairy				Poultry				Total
	Husbandry				Husbandry				Husbandry				Husbandry				Husbandry				Husbandry				
	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Number Not Taking Course	Number Washing They Had	Percent Washing They Had	Number Not Taking Course	Number Washing They Had	Percent Washing They Had	Number Not Taking Course	Number Washing They Had	Percent Washing They Had	Number Not Taking Course	Number Washing They Had	Percent Washing They Had	
TABLE XIV A - Chemistry																									
Chemistry 207 Quantitative Analysis	30	70	--	(23)	30	66	4	(70)	<u>60</u>	<u>40</u>	--	( 5)	(65)	(9)	14	(21)	(3)	14	(16)	(1)	6	(102)	(13)	13	
Chemistry 208 Biological Chemistry	40	55	5	(55)	31	62	7	(70)	<u>30</u>	<u>70</u>	--	(10)	(33)	-	--	(21)	(2)	10	(11)	-	-	(66)	(2)	3	
Chemistry 221 Physiological Chemistry	<u>25</u>	<u>63</u>	<u>12</u>	( 8)	<u>10</u>	<u>80</u>	<u>10</u>	(10)	<u>17</u>	<u>83</u>	--	( 6)	(61)	(19)	23	(61)	(8)	10	(15)	(2)	13	(177)	(29)	16	
Chemistry 341 A, B and C Organic Chemistry	<u>25</u>	<u>50</u>	<u>25</u>	( 4)	11	72	17	(18)	<u>33</u>	<u>67</u>	--	( 3)	(84)	(8)	10	(73)	(6)	8	(18)	(1)	6	(175)	(15)	9	
Chemistry 353 Chemistry of Nutrition	4	73	23	(22)	9	55	36	(55)	<u>40</u>	<u>40</u>	<u>20</u>	(5)	(66)	(17)	26	(36)	(5)	14	(16)	(2)	13	(118)	(24)	20	
Chemistry 383, 384 385, 390 & 457 Physical Chemistry	-- <u>100</u>	--	( 1)	--	<u>100</u>	--	(4)	<u>50</u>	--	<u>50</u>	(2)	(87)	( 3)	3	(87)	(3)	3	(19)	(2)	11	(193)	(12)	6		
Chemistry 429B & C Biological Chemistry	-- <u>100</u>	--	( 3)	<u>17</u>	<u>83</u>	--	( 6)	-- <u>100</u>	--	(1)	(85)	( 9)	11	(85)	(7)	8	(20)	(2)	10	(190)	(18)	9			
TABLE XV A - Civil Engineering																									
Civil Eng'rg. 360 (Sen. Eng. 301) Water Treatment Technique	--	--	--	--	--	100	(1)	--	--	--	--	--	(88)	(1)	1	(90)	(9)	10	(21)	(1)	5	(199)	(11)	6	
Civil Eng'rg. 364 (Sen. Eng. 302) Sewage Treatment Technique	--	--	--	--	--	--	--	--	<u>100</u>	--	(1)	--	--	-	(91)	(9)	10	(20)	(1)	5	(111)	(10)	9		
TABLE XVI A - Conservation																									
Conservation 201 Introduction to Conservation	7	28	65	(29)	2	67	31	(39)	-	<u>67</u>	<u>33</u>	(6)	(59)	(13)	22	(52)	( 8)	15	(15)	--	--	(126)	(21)	17	
TABLE XVII A - Engineering Drawing																									
Eng. Drawing 204 C Mechanical Drawing	<u>14</u>	<u>71</u>	<u>14</u>	(7)	13	83	4	(24)	-	-	-	-	(81)	(10)	13	(67)	( 8)	12	(21)	(3)	14	(169)	(21)	12	
TABLE XVIII A - Entomology																									
Entomology 201 Introduction to Entomology	11	86	3	(28)	37	56	7	(27)	<u>12</u>	<u>88</u>	--	(8)	(60)	( 8)	13	(64)	( 1)	2	(13)	(2)	15	(137)	(11)	8	
TABLE XIX A - Forestry																									
Forestry 100 Development of Forestry	--	<u>75</u>	<u>25</u>	(4)	<u>14</u>	<u>43</u>	<u>43</u>	(7)	--	<u>100</u>	--	(1)	(84)	(1)	1	(84)	(2)	2	(20)	(1)	5	(188)	(4)	2	
TABLE XX A - Geology																									
Geology 208 Introduction to Geology	<u>20</u>	<u>70</u>	<u>10</u>	(10)	--	<u>80</u>	<u>20</u>	(5)	--	<u>100</u>	--	(3)	(78)	(15)	19	(86)	(4)	5	(18)	(2)	11	(182)	(21)	12	
TABLE XXI A - Hygiene																									
Hygiene & Public Health 403 Poultry Hygiene & Sanitation	<u>33</u>	<u>67</u>	--	(3)	--	--	--	--	--	<u>33</u>	<u>67</u>	(12)	(85)	(9)	11	(91)	(2)	2	(9)	(2)	22	(185)	(13)	7	
Hygiene & Public Health 412 A Livestock Hygiene & Disease Control	--	<u>27</u>	<u>73</u>	(11)	1	<u>50</u>	<u>50</u>	(4)	-	<u>50</u>	<u>50</u>	( 4)	(77)	(24)	31	(87)	(10)	11	(17)	(2)	12	(181)	(36)	20	

Course Number and Course Title	Course Work Taken In College								Course Work Not Taken In College							
	Animal		Dairy		Poultry				Animal		Dairy		Poultry			
	Husbandry		Husbandry		Husbandry				Husbandry		Husbandry		Husbandry			Totals
	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course	Too Much	Just Right	Too Little	Number Who Took Course
	Number Not Taking Course	They Did	Percent Washing They Did	Number Not Taking Course	They Did	Percent Washing They Did	Number Not Taking Course	They Did	Number Not Taking Course	They Did	Percent Washing They Did	Number Not Taking Course	They Did	Percent Washing They Did	Number Not Taking Course	They Did
<u>TABLE XXII A - Journalism</u>																
Journalism 302 Business Writing	12	79	9 (34)		2	79	19 (43)		<u>38</u>	<u>50</u>	<u>12</u> (8)		(54)	(7)	13	(48) (18) 38 (13) (3) 23 (115) (28) 24
Journalism 302 N and 318 Technical Writing	19	69	12 (16)		-	<u>40</u>	<u>60</u> (5)		--	<u>50</u>	<u>50</u> (2)		(72)	(7)	10	(86) (7) 8 (19) (2) 11 (177) (16) 9
Journalism 302 P and 321 Bulletin Writing	--	<u>67</u>	<u>33</u> (3)		-	---	---		--	<u>50</u>	<u>50</u> (2)		(85)	(9)	11	(91) (3) 3 (19) (2) 11 (195) (14) 7
Journalism 302 S and 319 Farm & Home Writing	--	<u>83</u>	<u>17</u> (6)		-	--	<u>100</u> (1)		<u>100</u>	--	-- (1)		(82)	(11)	13	(90) (6) 7 (20) -- -- (182) (17) 9
Journalism 305 Principles of Advertising	--	<u>71</u>	<u>29</u> (7)		7	<u>57</u>	<u>36</u> (14)		<u>50</u>	--	<u>50</u> (2)		(81)	(9)	11	(77) (17) 22 (19) (3) 16 (177) (29) 26
Journalism 309 Feature Article Writing	--	<u>100</u>	-- (3)		-	---	---		--	<u>50</u>	<u>50</u> (2)		(85)	(12)	14	(91) (10) 11 (19) (3) 16 (195) (25) 13
<u>TABLE XXIII A - Landscape Architecture</u>																
Landscape Architecture 101 & 102 A Elements of Landscape Architecture	24	40	36 (25)		21	42	37 (25)		<u>20</u>	<u>60</u>	<u>20</u> (5)		(63)	(8)	13	(67) (5) 7 (16) (2) 13 (146) (15) 10
<u>TABLE XXIV A - Mathematics</u>																
Math. 102 Trigonometry	9	82	9 (22)		20	80	-- (51)		<u>20</u>	<u>80</u>	-- (5)		(66)	(2)	3	(40) (1) 3 (16) (1) 6 (122) (4) 3
Math. 103 Analytic Geometry	<u>33</u>	<u>67</u>	- (3)		<u>23</u>	<u>77</u>	-- (13)		<u>100</u>	--	-- (1)		(85)	(1)	1	(78) (4) 5 (20) - - (183) (5) 3
Math. 204 Elementary Calculus	<u>33</u>	<u>67</u>	- (3)		<u>25</u>	<u>75</u>	-- (4)		<u>100</u>	--	-- (1)		(85)	(5)	6	(87) (5) 6 (20) (2) 10 (192) (12) 6
Math. 225 Statistics	-	<u>100</u>	- (4)		--	<u>29</u>	<u>71</u> (7)		<u>33</u>	<u>67</u>	- (3)		(84)	(8)	10	(84) (6) 7 (18) (3) 17 (186) (17) 9
Math. 308 G Elem. Statistics	-	<u>100</u>	- (4)		-	<u>75</u>	<u>25</u> (4)		<u>33</u>	<u>67</u>	- (3)		(84)	(4)	5	(87) (7) 8 (18) (3) 17 (189) (14) 7
Math. 325 Statistical Methods	-	<u>100</u>	- (2)		-	<u>100</u>	-- (2)		--	<u>100</u>	- (2)		(86)	(3)	3	(89) (4) 4 (19) (2) 11 (194) (9) 5
<u>TABLE XXV A - Mechanical Engineering</u>																
Mech. Eng. 209 Refrigeration																
Mech. Eng. 218 Plumbing & Fitting																
Mech. Eng. 320 and 321 Mechanical Equipment of Hotels	--	--	--		--	<u>80</u>	<u>20</u> (5)		<u>100</u>	--	-- (1)		--	--	--	(86) (2) 2 (20) (1) 5 (106) (3) 3
<u>TABLE XXVI A - Physics</u>																
Physics 158 General Physics	<u>20</u>	<u>80</u>	-- (10)		9	86	5 (43)		<u>50</u>	<u>40</u>	<u>10</u> (10)		(78)	(10)	13	(48) -- -- (11) -- -- (137) (10) 7
<u>TABLE XXVII A - Physiology</u>																
Physiol. 302 & 304 Physiol. of Domestic Animals	9	73	18 (44)		11	89	-- (18)		--	57	43 (7)		(44)	(7)	16	(73) (3) 4 (14) (5) 36 (131) (15) 11
Physiol. 310, 311, and 312 Adv. Physiology	-	<u>100</u>	-- (1)		--	<u>100</u>	-- (3)		--	<u>33</u>	<u>67</u> (2)		(87)	(5)	6	(88) (1) 1 (19) - - (175) (6) 3
Physiol. 314 & 414 Abnormal Physiol.	--	--	--		--	--	--		--	<u>100</u>	(1)		(88)	(3)	3	-- - - (20) (1) 5 (108) (4) 4
Physiol. 410, 411 and 412 Advanced Physiol.	--	<u>100</u>	-- (1)		--	--	--		--	<u>100</u>	(2)		(87)	(3)	3	(91) (1) 1 (19) (1) 5 (197) (5) 3
Physiol. 413 Internal Physiol.	--	<u>67</u>	<u>33</u> (3)		--	<u>100</u>	-- (1)		--	<u>75</u>	<u>25</u> (4)		(85)	(2)	2	(90) (1) 1 (17) (2) 12 (192) (5) 3

Course Number and Course Title	Course Work Taken In College			Course Work Not Taken In College				
	Animal	Dairy	Poultry	Animal	Dairy	Poultry	Totals	
	Husbandry	Husbandry	Husbandry	Husbandry	Husbandry	Husbandry		
Too Much				Number Not				
Just Right				Taking Course				
Too Little				Number Missing				
Number Who				They Had				
Took Course				Percent Missing				
				They Had				
Too Much				Number Not				
Just Right				Taking Course				
Too Little				Number Missing				
Number Who				They Had				
Took Course				Percent Missing				
				They Had				
Too Much				Number Not				
Just Right				Taking Course				
Too Little				Number Missing				
Number Who				They Had				
Took Course				Percent Missing				
				They Had				
Too Much				Number Not				
Just Right				Taking Course				
Too Little				Number Missing				
Number Who				They Had				
Took Course				Percent Missing				
				They Had				

TABLE XXVIII A - Political Science

Political Science 203 A National Government	<u>12</u> <u>88</u> -- (8)	-- <u>75</u> <u>25</u> (4)	-- <u>100</u> -- (1)	(80) (6) 8	(87) (10) 11	(20) (2) 10	(187) (18) 10
Political Science 203 B State Government	-- <u>75</u> <u>25</u> (4)	-- <u>100</u> - (1)	-- <u>100</u> -- (1)	(84) (5) 6	(90) (11) 12	(20) (2) 10	(194) (18) 9

TABLE XIX A - Sociology

Sociology 201 30 140 30 (23) 11 72 11 (7) -- 100 -- (2) (65) (3) 5 (84) (5) 6 (19) (1) 5 (168) (9) 5  
Principles of  
Sociology

TABLE XXX A - Speech

Speech 128 and 228 14 72 14 (14) -- 78 22 (9) -- 100 -- (1) (74) (14) 19 (82) (18) 22 (20) (6) 30 (176) (38) 22  
Parliamentary  
Procedure

Speech 303 A -- 100 - (22) -- 53 47 (17) -- 50 50 (4) (66) (11) 17 (74) (27) 36 (17) (7) 41 (157) (45) 29  
Business Speaking

TABLE XXXI A - Zoology

Zoology 207 & 208 Introductory Zoology	28 75 -- (16)	<u>44</u> <u>56</u> -- (9)	-- <u>67</u> <u>33</u> (3)	(72) (4) 6	(82) (2) 2	(18) (3) 17	(172) (7) 4
Zoology 313 Human Heredity	<u>9</u> <u>73</u> <u>16</u> (11)	-- <u>100</u> -- (8)	-- <u>50</u> <u>50</u> (2)	(77) (5) 6	(83) (4) 5	(19) (5) 26	(179) (14) 8
Zoology 333 & A Elem. Genetics	16 68 16 (19)	-- <u>83</u> <u>17</u> (6)	<u>11</u> <u>78</u> <u>11</u> (9)	(69) (3) 4	(85) (7) 8	(12) (2) 17	(166) (12) 7



175

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