AN EVALUATION OF ACCEPTED METHODS IN THESIS WRITING

-by-

Donald B. Reitz

Submitted in partial fulfillment of the requirements for the degree of Master of Religious Education in The Biblical Seminary in New York.

New York City

1931

CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

a. Interest and Importance of the Problem.

b. Method of Procedure.

c. Sources of the Investigation.

CHAPTER I. INTRODUCTION.

a. Interest and Importance of the Problem.

Since the thesis has come to be one of the accepted requirements in securing a graduate degree from American Colleges and Universities, every graduate student should know what a thesis is, why a thesis is required, and how to write a thesis.

As the number of students seeking advanced degrees has increased, more attention has been given by the institutions of higher education to the techniques of thesis writing. Professors have written pamphlets to guide their students in writing a thesis under their supervision. Many universities publish guidebooks or mimeographed instructions for the students who are writing theses.

A study and evaluation of accepted methods in thesis writing has as its field of investigation these directions mentioned above. Its interest lies in the measuring of the uniformity and variety of these directions and in revealing just how great an emphasis is put upon thesis requirements by the Colleges and Universities of the United States. Its importance is two-fold: the first is the contribution the evaluation can make to students who will be writing theses in the future and who will be endeavoring to find accepted

methods of procedure in carrying out their work; the second is that this evaluation may clarify and emphasize requirements suitable for a definite technique of thesis writing with a view to establishing a "thesis consciousness" in the minds of college and university students.

b. Method of Procedure.

The method to be used in this report will be a combination of the historical and survey methods. An historical background of thesis writing will be laid, using the development of the scientific method as a basis. The scope and methods of thesis writing will be set forth in the light of the general tendencies of modern educational theory. Finally the methods actually in use today in the Colleges and Universities of the United States will be analyzed and gathered together in a simple statement. In the light of the first two phases of the problem, the third will be evaluated.

c. Sources of the Investigation.

To secure the historical background, the methods of the scientists of past generations will be examined. Biography and stories of science will be called upon. For setting forth the scope and methods of thesis writing, prominent educational authorities will be employed. In discovering the actual methods in use today, the materials of a survey covering one hundred fifty three leading

graduate schools of the country will be used. These materials will form the basis of an analysis and will make possible the gathering of conclusions about present practices in thesis writing.

CHAPTER II

AN HISTORICAL STANDARD FOR THE METHODOLOGY OF THESIS WRITING.

CHAPTER II

AN HISTORICAL STANDARD FOR THE METHODOLOGY OF THESIS WRITING.

a. The Scientific Method.

b. Men Who Have Contributed to the Scientific Movement.

(1) Herodotus
(2) Archimedes
(3) Hipparchus
(4) Copernicus
(5) Kepler
(6) Tycho Brahe
(7) Galileo
(8) Gilbert
(9) Paschal
(10) Bacon
(11) Newton

c. Present Day Emphasis on the Scientific Method.

d. Relation of This Scientific Background to Thesis Writing.

CHAPTER II. AN HISTORICAL STANDARD FOR THE METHODOLOGY OF THESIS WRITING.

a. The Scientific Method.

The first step in an evaluation of accepted methods in thesis writing is the investigation of the background of the subject. Writing a thesis as a requirement for a university degree is comparatively new. The method the student uses in writing his thesis is not new. The process is called the scientific method and takes its name from its first and greatest field of development, the inductive sciences. The history of the scientific method, then, is largely the history of the inductive sciences.

The purpose of this chapter is to show how the scientific approach to problems has developed into the popularly recognized scientific method, and how this scientific method is the background as well as the foundation of present day thesis writing.

The advance of science, according to Whewell,

> "consists in collecting by induction true general laws from particular facts, and in combining several such laws into one higher generalization, in which they still retain their truth".[1]

This is shown clearly in the progress of astronomy. Hipparchus established the first actual law. Copernicus established other laws, and Kepler added to them. Newton put them all into a generalization.

---

1. Whewell, William, History of the Inductive Sciences, p. 47

b. Men Who Have Contributed to the Scientific Method.

(1) Herodotus

Before Hipparchus made his great inductive contribution to astronomy, we have the interesting scientific attempts of the early Greeks. The schools of Greece took the world as the province of their research and attempted to discover all there was to know. They ventured forth on the broad expanse of epistemology and entered into the work of speculation upon the physical world with vigor and confidence. Their spirit was fresh and free from the discouragements of reversal in labor. They left to later ages the secret that man has to acquire knowledge of the world about him very slowly and in a partial manner. The answers of nature are not revealed on a printed page. Not only is the manuscript in many sections, but the key which unlocks their message is not the same. The Greeks wanted to know everything at once. They speculated in particular on the origin and principles of the universe. Thales thought water was the origin of all things. Anaximenes thought the key was air, while Heraclitus considered fire as the universal principle of unity.

A very interesting inquiry into the appearances of nature, showing the Greek bent toward physical investigation is in Herodotus' speculations over the floods of the Nile and their causes. He writes,

> "Concerning the nature of this river, I was not able to learn anything, either from the priests

> or from anyone besides, though I questioned them very pressingly. For the Nile is flooded for a hundred days, beginning with the summer solstice; and after that time it diminishes, and is, during the whole winter, very small. And on this head I was not able to obtain anything satisfactory from any one of the Egyptians, when I asked what is the power by which the Nile is, in its nature, the reverse of other rivers".[2]

We have to concede to this Greek at least a passion for learning the "why" of things around him, which was in those days, an interest peculiar to a few.

Herodotus goes on to prove his own explanation of this phenomenon, but is not very successful. He believes that the sun goes closer to Libya, the source of the Nile, than to any other part of the world, and hence in the summer dries up the sources of the river, and, since there is little rain on the Nile, as compared to other rivers, it is very small during the winter.

This incident we might consider typical of the beginnings of the scientific approach. Herodotus was faced with a problem; he began to gather facts about the situation. Then he interpreted the facts into a solution of the problem. Instead of testing his conclusion, he was satisfied with a rather inadequate solution. He fitted the facts to his notions rather than building notions to fit the facts. Nevertheless, he deserves attention for the way in which he attacked his problem.

---

2. Herodotus, II, 19. Quoted by Whewell in his History of the Inductive Sciences, p. 58.

(2) Archimedes

The story of Archimedes and the King's crown is almost classic. However, it will bear repeating, for its hero finds a place in our investigation. Hiero, King of Syracuse, intended to make an offering to the gods of a golden crown. He sent the gold to his artificer and the crown was delivered in due time. The weight of the crown was correct, but the artificer was suspected of keeping some of the gold delivered to him by the King. To Archimedes the King gave the problem of discovering if the crown were pure gold and if not, how much of the original weight of gold, delivered to the artificer, was lacking from the crown. One day Archimedes, pondering over the problem, was preparing to take a bath. He, absentmindedly, had let the water run to the brim of the tub. As he stepped into the tub, and the water poured out over the sides, the solution of his problem came to him like a flash. As the story goes, he sprang from the tub and in ecstatic enthusiasm ran through the streets crying, "Eureka, eureka".[3]

Proceding then to the solution of his problem, he made two balls, one of gold, one of silver, of weight equal to the crown. These he immersed in a basin of water. He marked the levels to which the water rose when each of the balls was placed in the basin. Of course,

---

3. "I have found it, I have found it".

the silver caused the water to rise considerably higher than did the gold. Then, placing the crown in the basin, he found that the water level was between the two marks made for the gold and silver balls. Thereby he discovered that the crown was part silver. How much silver it contained, he discovered by making a series of balls, all equal to the crown in weight, but of different proportions of silver and gold. When he found a ball which displaced the same amount of water as the crown, he was able to tell just how much silver had been used in making the crown. With this information, the King was able to accuse the maker of the crown.[4]

Archimedes did not stop at the solution of the King's problem. He proceeded to make principles from his findings. He drew up two laws:

(1) When a body is immersed in a vessel of liquid, it displaces its own bulk.

(2) Its loss in weight is equal to that of this displaced bulk of liquid.

We find Archimedes going a step further than Herodotus in his problem solving. He had the problem; he applied a solution when he discovered it. Then he tested to see if it worked. By a series of tests he was able to establish its validity. Then he drew conclusions in the form of principles, from his investigation.

These Greeks were only two from the several schools of philosophers who took the whole world as their province of learning. Says Whewell in tribute of their efforts,

---

4. Cf. Hart, Ivor B., Makers of Science, p. 42-45.

> "They were men of extraordinary acuteness, invention and range of thought; and above all, they had the merit of first completely unfolding the speculative faculty--of starting in that keen and vigorous chase of knowledge out of which all the subsequent culture and improvement of man's intellectual stores have arisen. The sages of early Greece form the heroic age of science. Like the first navigators in their own mythology, they boldly ventured their untried bark in a distant and arduous voyage, urged on by the hopes of a supernatural success; and though they missed the imaginary golden prize which they sought, they unlocked the gates of distant regions, and opened the seas to the keels of the thousands of adventurers who, in succeeding times, sailed to and fro, to the indefinite increase of the mental treasures of mankind".[5]

(3) Hipparchus

The third figure in early scientific achievement is Hipparchus and his field is astronomy, the study which has been foremost in developing the inductive processes of scientific research.

Previous to the time of Hipparchus all astronomical knowledge had been gathered as a matter of appearance. The Greek philosophers made some attempts to explain the phenomena of the heavens, the Chaldeans even predicted eclipses, but with no principle or generalization in view. Hipparchus' contribution to astronomy was really an inductive process. He assigned a place to the position of the sun, and a magnitude to the eccentricity of the earth, and an epoch at which the sun was at perigee, or at a certain definite place. From this he had a principle by which he could tell the motions and place of the sun at

---

5. Whewell, William, History of the Inductive Sciences, p. 79.

any time. He thereupon made solar tables. Next he worked out the moon's eccentric, or relative position to the earth at any specified time, from six eclipses previously observed and recorded. By these hypotheses of eccentrics, Hipparchus put numerical explanations on motions of the sun and moon, and made a great stride in the science of astronomy.

Delambre, the French astronomical historian says,

> "In Hipparchus, we find one of the most extraordinary men of antiquity; the very greatest in the sciences which require a combination of observation with geometry".[6]

The fundamental principle of Hipparchus' contribution was that of resolving the apparent motions of heavenly bodies into a group of circular motions as the basis of present astronomical knowledge. In this he assumed certain things, but his whole process of thinking illustrates the application of distinct and appropriate ideas to a real series of facts.

> "To make this step in astronomy, required diligence and care, exerted in collecting observations, and mathematical clearness and steadiness of view exercised in seeing and showing that the theory was a successful analysis of them."[7]

Following this Epoch of Induction, for it truly was the first great inductive period, came verification and testing of the great truth proposed by Hipparchus. Thus we see the beginning of the method of induction in science. Hipparchus, seeking to form a principle of operation in the universe, combined careful observation with appropriate

---

6. Delambre, Astronomie Ancienne, quoted by Whewell in his History of the Inductive Sciences, p. 150.
7. Whewell, op. cit., p. 154.

ideas and formed an hypothesis. It was corrected to some extent, but the basic part of it stands now as a tribute to Hipparchus and an evidence of the fruitful use of the scientific method.

(4) Copernicus

From the time of Hipparchus to the end of the Dark Ages, the scientific spirit lapsed into desuetude. Authority became the guide of thinking. Inductive investigation had no part in the acquiring of knowledge.

But out of this background arose men who refused to have others' opinions thrust upon them, and we see the true scientist reappearing. In Copernicus, we see one who could not agree with ideas concerning astronomy which were universally accepted. How he approached this problem, he wrote to the Pope,

> "Then I, too, began to meditate concerning the motion of the earth; and though it appeared an absurd opinion, yet since I knew that, in previous times, others had been allowed the privilege of feigning what circles they chose, in order to explain the phenomena, I conceived that I also might take the liberty of trying whether, on the supposition of the earth's motion, it was possible to find better explanations than the ancient ones, of the revolutions of the celestial orbs. Having then assumed the motions of the earth which are hereafter explained by laborious and long observation, I, at length found, that if the motions of the other planets be compared with the revolution of the earth, not only their phenomena follow from the suppositions, but also that the several orbs, and the whole system, are so connected in order and magnitude, that no one part can be transposed without disturbing the rest and introducing confusion into the whole universe."[8]

---

8. Copernicus' Defense of his theory to the Pope in 1543—thirty six years after he had formed the theory—quoted by Whewell in his History of the Inductive Sciences, p. 261.

Here we have a great example of induction. Copernicus, experiencing doubt about the existing ideas sought all the evidence, through observation of the tenability of new ideas. He was first stirred to action by his observations of Mars. That its brightness and its magnitude should vary so greatly at different seasons puzzled him. According to the Ptolemaic theory the distance of a planet from the earth varied only slightly. Copernicus, believing that the marked variations in brightness and magnitude which he observed in Mars and in other planets were all out of proportion to what might be expected from the Ptolemaic explanation of the universe, set about to explain the phenomena by means of a different hypothesis.[9] He took all thoughts and ideas of science previous to his day and built his hypothesis where these ideas failed. This is the method of science. And before accepting his hypothesis, he tested and validated it over many years and under all possible conditions. Copernicus' step was a bold one, an intellectual venture, but it was the distinct and appropriate idea applied to the facts he had secured through observation and previous views. Copernicus attacked his problem and carried it through to its ultimate conclusion. He revolutionized astronomical concepts and added a colorful page to the method of scientific research.

(5) Kepler

Another scientist who has given us a background of

---

9. Cf. Hart, Ivor B., Makers of Science, p. 72.

methodology is Kepler. Following up the work of Copernicus, he expanded and clarified the Copernican theory. Kepler knew that the six then known planets were at successively greater distances from the sun. He also knew that the farther a planet was from the sun, the slower its motion seemed. He felt that there was a simple scheme governing all this and he made his life work the unraveling of that problem. He said,

> "There were three things of which I pertinaciously sought causes why they are not other than they are: the number, the size, and motion of the orbits".[10]

In studying Mars, Kepler decided if its orbit were a circle, as Copernicus had thought, the sun could not be the center. He thought, however, that the sun was the center. He tested the applicability of an oval orbit, and finally found that an ellipse was the shape of the orbit. Kepler's method was to formulate hypotheses and then test their validity. He had a vivid imagination and could easily form hypotheses. He did not accept them till his observations and facts verified their truth. He was always seeking to connect and supplement the most remote parts of his knowledge. He sought to go further. He wanted to bring all his principles into generalizations. He was able finally, to establish the three laws of motion which bear his name. For perseverance through almost insurmountable obstacles, Kepler stands as an example to the research worker today. One of the lessons the scientists

---

10. Hart, op. cit., p. 89.

have to teach is that to discover truth is a difficult task. The process of research is one of patient labor.

(6) Tycho Brahe

Perhaps it was through Tycho Brahe that Kepler learned to free all his theories from the wonderings of imagination, by thoroughly testing them. Tycho Brahe had schooled himself rigidly in the method of observation, so that all his notations and observations are precise and accurate. They form data in present day generalizations in astronomy.[11] Brahe advised Kepler, when the latter was still very young, to

> "first lay a solid foundation for your views by actual observation, and then, by ascending from these, to strive to reach the causes of things".[12]

Kepler, using this as a criterion of procedure during the remainder of his life, was able to keep the fanciful out of his conclusions and finally built up real scientific principles.

(7) Galileo

Galileo Galilei has been called the "Founder of Experimental Science".[13] Because of his contributions to the methods of scientific approach, he is of vital importance to the historical study of thesis methodology. His experiment with the weights, dropped from the leaning

---

11. Brewster, Life of Newton, p. 117.
12. Ibid., p. 120.
13. Hart, Ivor B., Makers of Science, p. 104.

Tower of Pisa was the genesis of a spirit of experimentation that has grown into a part of our life. When he found by this experiment that the bodies fell with equal speed, he set up an hypothesis and began to gather observations toward the formation of a law. He worked by induction through observation to generalization. His work on the telescope shows the inductive spirit of the man. He heard that lenses had been used by a Dutchman to magnify objects and bring them closer to human vision. He at once saw that such an instrument would be a great boon to science, so he gradually built up a telescope. He added one lens after another till he had an instrument showing things almost a thousand times larger than to the naked eye. He discovered Jupiter's moons, the irregularity in the surface of the earth's moon, and was able to prove that Venus revolved around the sun, so that he thus established firmly the hypothesis of Copernicus. If we conclude, however, that just because Galileo had a telescope, he made these discoveries, we do him an injustice. It was only by careful observations, that the principles underlying the phenomena which the telescope revealed were developed.

(8) Gilbert

To the thesis writer William Gilbert, the English scientist who worked on magnets and magnetic forces, has given an excellent example. When he published his find-

ings, Gilbert wrote these words:

> "In the discovery of secrets and in the investigation of the hidden causes of things, clear proofs are afforded by trustworthy experiments rather than by probable guesses and opinions of ordinary professors and philosophers. In order, therefore, that the noble substance of that great magnet, the earth, hitherto quite unknown, and the exalted powers of this globe of ours may be better understood, I shall first of all deal with common magnets, stones and iron materials, and with magnetic bodies, and with the near parts of the earth, which we can reach with our hands and perceive with our senses. After that I shall proceed to show my new magnetic experiments, and so I shall penetrate for the first time into the innermost parts of the earth.....Whoever wishes to try the same experiments, let him handle the substance, not carelessly, but prudently and deftly, and in the proper way, and when the thing does not succeed, let him not in ignorance denounce my discovery, for nothing has been set down in these books which has not been many times performed and repeated".[14]

(9) Paschal

An interesting incident in the development of this method of scientific investigation is that of Paschal's proof that it was atmospheric pressure and not nature's horror of a vacuum that made the mercury rise in a Torricellian tube. Paschal wrote to his brother-in-law, who lived by a mountain,

> "You see that if it happens that the height of the mercury at the top of the hill be less than at the bottom (which I have many reasons to believe, though all those who have thought about it are of a different opinion) it will follow that the weight and pressure of the air are the sole cause of this suspension, and not the horror of a vacuum; since it is very certain that there is more air to weigh on it at the bottom

---

14. Quoted by Hart, Makers of Science, p. 98.

> than at the top; while we cannot say that nature abhors a vacuum at the foot of a mountain more than on its summit".[15]

The brother-in-law made the experiment and found a difference of three inches of mercury. Paschal's idea related to the facts at hand was appropriate, and when tested was shown to be true, thus establishing a scientific principle and destroying error. He had formulated an hypothesis for the solution of the problem, and by verification had made it into a generalization. This has been the story of science in the employ of real scientists through the centuries, and yet how few were able to write or speak even a line in that story.

(10) Bacon

Though not a scientist of the same eminence as Kepler and Galileo, Francis Bacon has contributed to the method of scientific approach and takes a place in the background of thesis methodology. He is sometimes called the "Founder of the Inductive Philosophy",[16] because he emphasized induction as the true method of scientific research.

Bacon reacted against the dependence with which the scholars of his day rested upon the thinking of Aristotle, so he wrote the "Novum Organon". In this

---

15. Whewell, William, History of the Inductive Sciences, p. 348.
16. Mill, John Stuart, System of Logic, p. 187.

book he proposes new ways of studying--a term which we are now calling the method of scientific approach to problems. Bacon explains his viewpoint as the establishment of progressive stages of certainty. The evidence of the senses he would use, but from the senses he would open up a direct route for the mind to proceed upon. He insisted that the sciences had made little progress up to his day because they did not have the proper goals.[17] Small wonder then, that men were confused and illogical in their methods.

Bacon also attacks the idea of authority in science. This he calls an "enchantment from progress by reverence for antiquity".[18] No one had arisen with enough purpose and conviction to cast aside all old theories and existing notions in order to make a new and fresh examination of all the particulars of knowledge, until the time of Bacon.

Bacon believed in experimentation. He felt, though, that it should be carefully guided and controlled by the ideas sought after instead of being carried on blindly. He attacked Aristotle on the matter of experiments. He affirmed that Aristotle had made up his mind before the experiment took place. The ancient Greek did not consult experience to work out principles and laws, but rather, after he had established a system of thought, twisted experience through experiments to blend with his

---

17. Cf. preface to Novum Organon in Spedding, Ellis and Heath's edition of Bacon's Works.
18. Bacon, Novum Organon, Aphorism 84.

system. Bacon insisted that Aristotle's position was worse than that of the Schoolmen who left experimentation out of their consideration entirely.[19]

Thus we see how Bacon was striving for the same things Hipparchus, Copernicus, and others had sought after; namely, the correct relation of facts with the right ideas and the gradual development of principles through tested and applied facts. He upheld an induction that would thoroughly analyze nature not only from a positive but also from a negative point of view. There must be rejections and exclusions in order to come to an affirmative conclusion. He suggested that there were successive floors of induction and that each one was built upon the rest. And in putting these ideas into words and statements, Bacon made his contribution. He was not a real scientist. He did not follow conscientiously his own precepts, nor has science been changed because of his studies. His basic ideas are those used by real scientists both past and present. His terminologies have come into common parlance now, giving Bacon more verbal influence than factual.

(11) Newton

As a scientist, Newton is pre-eminent. His principle of gravitation is undoubtedly the greatest single scien-

---

19. Cf. Bacon, Novum Organon, Aphorism 63.

tific achievement. Says William Whewell,

> "It is indisputably and incomparably the greatest scientific discovery ever made, whether we look at the advance it involved, the extent of the truth disclosed, or the fundamental and satisfactory nature of this truth".[20]

As a contributor to the method of scientific approach, Newton takes his place along with the others. In his work on gravitation, he took the idea of force which had been developing for some time in the minds of men and made it conform to the known realities. Though the step involved in the conception of universal gravitation, was exceedingly large, Newton traced the consequences and tested this concept with great inventiveness and sagacity. He was cautious in procedure and yet bold in making a step forward if testing had vindicated his ideas. He overlooked the insignificant and trivial and, eliminating the extraneous, he always pressed on to the center of the problem at hand and took over all the strongholds of the argument.

Newton based his discoveries on laws that had been previously established and taking those laws as a basis, inferred from them their interpretation of the universe. He used demonstration and experiment in addition. Then, with patience equal to his inductive genius he checked and tested the principle he had established. This is truly scientific.

---

20 Whewell, op. cit., p. 414.

c. Present Day Emphasis on the Scientific Method.

In this present era, the contribution to the method of scientific approach to problems comes from the American educator, John Dewey. His ideas hinge around his analysis of a complete act of thinking. The steps, he points out, which exist in each complete thinking process are (1) a felt difficulty; (2) its location and definition; (3) suggestion of possible solution; (4) development by reasoning of the bearings of the suggestion; (5) further observation and experiment leading to its acceptance or rejection.[21] Although Dewey has analyzed a thinking process, the steps which he has formulated may be applied as effectively to a problem of research as well as a specific problem of every day experience.

This analysis of Dewey's fits into the methods of research used by men of former times. First there is an observation and to this observation are attached ideas, which through inference, lead to the forming of an hypothesis. This hypothesis when tested is accepted as the conclusion of the problem or rejected as unsatisfactory. Dewey connects inductive discovery and deductive proof in this process. The induction moves toward a principle while deduction enters to test, confirm, refute or modify. As we use these two processes in rela-

---

21. Dewey, John, How We Think, p. 72.

tion to each other, we arrive at valid conclusions to whatever problem is at hand. Induction involves suspended judgment and a postponing of the conclusion. When a person is confronted with a problem, solutions or explanations come to the mind. This is inductive. The first solution is not accepted because a second solution presents itself. Through deduction or testing upon further observation, the two solutions are examined. The hypothesis which is related to further observation and successfully meets the tests of deduction is finally accepted.

The importance of observation in scientific thinking is paramount. The experiment is the scientist's chief resource, mainly because, through observation, patent facts may be selected out of a rather meaningless whole. That is, by observation the problem is focused, and through inference and suggestion, made into an hypothesis that it might be tested and verified.

Dewey contrasts scientific thinking with empirical thinking and shows how the scientific approach is on a basis of explanation and reason, as opposed to the uncertainty and blind acceptance of empirical thinking. Empiricism waits for nature. Science looks to the possibilities of the future by intentionally bringing about circumstances of natural phenomenon. Thus the scientific approach insures the attitude of progress.

d. Relation of This Scientific Background to Thesis Writing.

Gradually interest in the methods of science began to creep into other fields. Through the French Encyclopedists, the scientific spirit invaded literature. In education, Comenius and Pestalozzi approached their problems from the scientific viewpoint.

In institutions of higher education, the thesis as a form of research came to be required in order to get a degree. At first only the degree of Master of Science required a thesis. The statement in the University of Pennsylvania catalog for 1852 was as follows:

> "Such students as have received the degree of Bachelor of Science (of three years standing) are entitled to the degree of Master of Science, on presenting to the faculty a thesis, which shall give satisfactory evidence that the author has continued to devote himself with success to science".[22]

Undoubtedly the rapid spread of interest in natural science which took place about the beginning of the nineteenth century was an influence in this movement toward scientific research in higher education. Toward the latter part of the century (1876) Johns Hopkins University was founded. This was the first American institution featuring graduate study, research and the publication of research findings.

---

22. Almack, J. C., Research and Thesis Writing, p. 9.

Most of the leading universities of the United States at the beginning of the twentieth century required a thesis for graduate work. With this thesis was linked definitely the idea of research, upon principles of scientific procedure. An excerpt from the Register of Stanford University, in the year of its founding (1891), will illustrate this requirement.

> "The degree of Master of Arts will be granted on the completion of an additional year of advanced (graduate) work in residence at the university, accompanied by an approved thesis embodying the results of independent investigation and research. The degree of Doctor of Philosophy will be granted after the successful completion of not less than three years of work after the reception of the Baccalaureate Degree, on the presentation of an acceptable printed thesis which shall embody the results of original research. Such requirements are practically standard today and represent very well the commonly accepted distinction between the M. A. thesis and the Ph. D. thesis. Both require research."[23]

Today the thesis is regarded as a report of the methods and achievements of research based on a problem, and anticipating a generalization. Research is scientific inquiry or investigation based on original study of authorities or experiment. For procedure and technique in carrying out the research of a thesis, the men who have contributed to the scientific method form an excellent background.

---

23. Almack, op. cit., p. 10.

CHAPTER III

PURPOSE OF THESIS WRITING AND KINDS OF THESES

CHAPTER III

PURPOSE OF THESIS WRITING AND KINDS OF THESES.

a. Purpose of Thesis Writing.

b. Kinds of Theses.

(1) Historical
(2) Normative
(3) Experimental
(4) Case-Study
(5) Survey
(6) Questionnaire
(7) Comparative and Statistical

c. Summary of Research in General.

CHAPTER III. PURPOSE OF THESIS WRITING AND KINDS OF THESES.

a. Purpose of Thesis Writing.

The thesis as a requirement for a graduate degree has a twofold purpose. The primary purpose is the development of the individual. A corollary is the addition to the field of research which the thesis makes.

Writing a thesis brings the student first of all into the field of problem-solving. To undertake research upon a thesis topic is to set oneself definitely to the solution of the problem involved. Initiative, resourcefulness and independence are required to carry out the project. In examining the sources, assembling and arranging materials, analyzing and classifying data, and interpreting the results, the student is developing his powers of independent endeavor.

To solve a problem the student must use the scientific method. He must locate the problem. He must determine which plan of scientific attack he will use in solving the problem. After the completion of his attack of the problem, he must be able to draw his work together into a solution of, or conclusion about, the problem.

More than requiring the solving of a problem, the thesis involves a presentation of the problem, its attack and the solution. This presentation must be made in a

scientific fashion and yet in a readable form. Here is seen, as a part of the development of the individual, the ability to record his investigations and express his conclusions in clear concise English.

Graduate work is distinguished from undergraduate work largely through the thesis requirement. The graduate student is given more latitude of endeavor and should show intellectual independence. He should show progress in resourcefulness and initiative, because he is delegated more responsibility. Preparing a thesis should give a student intensive and scholarly training. If the thesis does not show evidence of increased capability in procedure and more independence in thought on the part of the student, the graduate work has been to little avail.

Making a contribution to its field is the second purpose of the thesis. The document prepared by the student, in order to be a thesis, should add to existing knowledge. The contribution may be made by discovering or analyzing new material through old or new methods or by treating old facts from a new angle or by means of a new technique.[1]

If the thesis makes a contribution to knowledge it may truly be considered a piece of research. As research it must, of necessity, be carried on along lines of scientific investigation. Research employs the scientific method. The steps of the scientific method stated in

---

1. Cf. Cole, Arthur H. and Bigelow, Karl W., A Manual of Thesis-Writing, p. 2.

a general fashion are (1) observation, (2) classification, (3) generalization. A list of the steps in the procedure of scientific research, developed by The Character Education Institution of Washington, D. C. is noteworthy. The six steps are:

> "1. Gather data on the problem or within a selected field according to some adequate plan, by means of numerous and accurate observations made with the human sense, assisted and corrected by instruments of precision.....Observations must be recorded in definite terms, and measurements, and in specific statements.
>
> 2. Classify data on the basis of similarities, variations, activities, processes, causes and results. Distinguish between the essential and superficial characters.
>
> 3. Generalize to get principles and theories into tentative form. Use constructive imagination, discernment, and known principles to formulate reasonable generalizations that solve the problem or explain the known facts in the selected field.
>
> 4. Verify generalizations by controlled experiments, by tested prediction of results, by repetition of experiments, and by the gathering of additional data. Appraise data.....Determine sources of error in method and apparatus.....
>
> 5. Report the research in full, and subject the results to criticism and verification by others competent to collaborate.
>
> 6. Announce the results to the general public for practical use." [2]

This list makes an interesting comparison to the methods used by scientists as Copernicus, Kepler, Galileo, and Newton which were brought out in Chapter Two. It

---

2. Quoted by Almack, Research and Thesis Writing, p. 64.

testifies to the continuity of the method of scientific approach to problems. In applying this method to all the fields of knowledge, the following statement is most significant. Its ideas should underlie our considerations in this study of the accepted practices in thesis writing.

> "There exists in the public mind much uncertainty as to the nature and purpose of research. The problem of research is the problem of searching for the truth—of searching for what is 'so', as the man in the street would probably express it. It is not a search for those fragments of the truth which have already been found and are now described in books, more or less scarce, or obscure, but a search for existing truth which has not yet been found by anybody. A professor engaging in research work is looking for what already exists. He does not invent the truth, he does not develop the truth, he does not do anything whatever to the truth except to uncover it or discover it, and expose it to the comprehension of his fellowmen....."

> "We must guard against a too narrow use of the words 'research' and 'science'. When a scientist is spoken of, most people have the chemist or biologist or astronomer or the modern farmer in mind. The chances are that they will leave out the student of Greek or of the history of religions; and that is frequently a mistake. A classical scholar who devotes himself seriously to the study of the evolution of the Latin language, or who searches for the forces which produced the wonderful Greek civilization, and for the other forces which later operated to destroy it, is as truly a scientist as he who studies X-rays or the decomposition of radium. If a professor of history endeavors to trace the effects of the continuous working of ethnic, economic, climatic, religious and other forces upon the development of nations and civilizations, he is a real scientist. A scientist is one who studies any subject with due and impartial regard to the facts, and always with reference to cause and effect."[3]

---

3. Campbell, W. W., "Universities and the Truth", School and Society, XX (1924), p. 294-295.

b. Kinds of Theses.[4]

Three specific methods of attack lie open as avenues of procedure in the general scientific method. These are (1) Historical, (2) Normative, and (3) Experimental. The thesis generally follows one of these modes of attack and hence is called a descriptive, or normative thesis, an historical thesis or an experimental thesis. In addition to three predominant types of theses, there are the questionnaire, the statistical investigation, the case-study, and the survey methods. A description of each kind of thesis follows.

(1) The Historical Thesis

The objective of the writer of an historical thesis is to report accurately and faithfully his observations of a given situation over a given period of development. In speaking of history, a person usually means the story of mankind. The historical thesis has a far larger field than the study of man's story. It extends into geology, zoology, botany, sociology, political science, education, biology, and psychology. It has importance in all phases of knowledge. To trace developments from their origins is to use the historical method of research.

The problems confronting a student intending to write an historical thesis center chiefly around the sources of

---

4. The kinds of these are discussed by Reeder, How To Write a Thesis; Almack, Research and Thesis Writing; and Good, How to do Research in Education. The following discussion is based on their interpretation of these types.

his material and their delineation. First of all, the writer of an historical thesis must establish the validity of his sources. His second step is to ascertain the reliability of his sources. Freeing his materials as much as possible from error, his third step is to bring his material together into writing. Fling says the historian should make clear three things,

"1. The original condition.
2. The action.
3. The novelty in the resulting conditions."[5]

To complete his work the writer of an historical thesis should, through the process of his research, reach a verdict of truth. This is generalization. This is the 'result' in history.

(2) The Normative Method[6]

To establish guides for thinking and for conduct by a study of present or actual conditions has not been in the past the method of progress. Authority and tradition have crowded out this scientific attack of current problems.

The name given this mode of scientific procedure is the normative method. By it, norms are established which constitute the basis for generalizations on which truth is formed. Norms are standards of comparison. They are established by collecting individual responses and placing them in comparison to a group response. A norm expressed in the vernacular is illustrated in the statement

---

5. Fling, Fred M., The Writing of History, p. 150.
6. This method is particularly well covered by Almack, Research and Thesis Writing, p. 114-139.

concerning any individual, "He is up to average".

When a norm is established, laws about group situations, whether the situation is the intelligence of children or the location of grocery stores, are derived. This is the value of such a method.

In the normative method are measuring devices by which materials are gathered for the establishment of the norms. One of the simplest and most widely known is the score card. In a score card all the characteristics to be judged are listed. Each thing judged is compared with a standard and evaluated. Public buildings are often studied by this method. A second device is the scale, which contains specimens of whatever is to be studied. Each specimen is given a value. The thing judged is compared to the scale and valued according to the specimen it most closely resembles. Color and handwriting are two subjects which might be studied this way. A third device is the test. As the scale measures quality, so the test measures quantity. Achievement tests in which each question is scored according to the completion accomplished, is an example of this device.

The first consideration in using the normative method is the validity of the measuring device. It must be checked accurately and adequately. A second is the verification of the norms established. Unless norms are thoroughly verified they will have little value. The last consideration is in the expressing of the value of

the norms established. A norm is defined as a central tendency in a distribution of data. Tables and monographs illustrating the norm in relation to the data are usually essential to a thesis following the normative method.

(3) The Experimental Method

Gilbert and Galileo, as has been pointed out in Chapter Two, started experimental science. Since the sixteenth century the experimental method of research has been increasing in popularity and use. Experiment and observation are closely linked. It is hard to mark them off in actual fact. Theoretically, when a person uses a microscope he observes. It is only when he heats an object or treats it chemically that he is beginning to experiment. The difference is brought out by Jevons.

> "When the earliest astronomers simply noticed the ordinary motions of the sun, moon, and planets, they were pure observers. But astronomers now select precise times and places for important observations. They make the earth's orbit the basis of a well-arranged 'natural experiment', and take well considered advantage of motions which they cannot control. Meteorology might seem to be a science of pure observation, because we cannot possibly govern the changes of weather as we record them. Nevertheless, we may ascend mountains, or rise in balloons and aeroplanes, and may thus so vary the points of observation as to render our procedure 'experimental'."[7]

The field of the experimental method quite naturally includes the experimental sciences. Chemistry, physics,

---

7. Jevons, W. S., Elementary Lessons in Logic, p. 400-401.

and biology are the chief fields of experimental research. Derivatives as botany, zoology, psychology, medicine, and engineering are included. Likewise geology and astronomy are closely allied to the experimental field.

The experimental thesis, like other forms of research, centers around a problem. Thesis contributions are made on a problem. The scientists of history have made their contributions because they were working on a problem. "Nature, like the Sphinx, will not speak until she has been asked a direct question".[8] Through hypothesis, analysis, and experiment the research worker attacks his problem. The attack is shown by Mill's canons of experimentation. They are (1) the method of agreement, (2) the method of difference, (3) the joint method of agreement and difference, (4) the method of concomitant variation, and (5) the method of residues.[9] Correlation and equation of results usually are a part of the experimental method.

If a person is writing an experimental thesis, he should bear in mind the difficulties of carrying on some experiments. Apparatus is a requirement of laboratory experiments. The experimenter should not fail to recognize the importance of recording all facts and results pertaining to his method and his procedure. The thesis is written from the notes and records of the experiment. The goal of an experimental thesis is the establishment

---

8. Almack, Research and Thesis Writing, p. 151.
9. Mill, John Stuart, A System of Logic, p. 224-233.

of law. Unless law results, the experimental thesis might as well be classed as a failure so far as a contribution to knowledge is concerned.

(4) The Case-study Method

This method takes an individual and makes a thorough study of him and his characteristics. Law, medicine, psychology, sociology, are the chief fields for the case-study. As a method of research it can hardly be termed scientific. As a step in a research of larger significance, it would be scientific. By itself it does not admit of far-reaching generalizations. Methods similar to the case-study, with slightly different emphases are (1) the case history thesis which studies the origin and development of the individual, (2) the genetic method, which seeks to discover the why of development in an individual, as well as the process of development, and the present manifestation. In some genetic studies the method becomes normative, and thus tends to have more scientific significance.

(5) The Survey Method

The survey is made by collecting facts about certain definite things within definite boundaries. Poverty in New York City would be an illustration of a survey field. All the available facts are collected under divisions of information and then compared or worked into norms. The

survey tends to lack the real principles of scientific research. Its chief value lies in the field of application. The survey may be used satisfactorily as the basis of a thesis for the master's degree. It is rarely suitable for the doctorate.[10]

(6) The Thesis based on a Questionnaire

The questionnaire is more of a device than a thesis method. It is important, however, first because it has been emphasized as one of the ways of going about a thesis and second because there is practical value in it. It must be remembered that the device is only a tool. It is not a method of research. The questionnaire as a device has values and disadvantages. In the normative sciences the questionnaire is certainly valuable. At times it is almost indispensable. It is, of course, usable only in the early stages of research. Sometimes it may be used as a criterion of judgment in certain fields. Too often the validity and reliability of a questionnaire are doubtful. Inadequate preparation, poor sentence structure and lack of unity, make some questionnaires utter failures. Almack says, "Avoid a questionnaire study for a thesis, except as a last resort".[11]

---

10. Cf. Almack, Research and Thesis Writing, p. 210.
11. Ibid., p. 217.

(7) The Comparative and Statistical Methods

The comparative method is suggested by some writers as a thesis procedure. It is practically synonymous with the normative method. The statistical method is also given popular accord. It should be noted that all research involves statistical methods. Scientific methods cannot be used without some statistical emphasis.

c. Summary of Research in General.

The Normative, which is sometimes called the Descriptive, the Historical, and the Experimental may be considered the three main types of theses. Other methods usually fall under this general classification. Sometimes the thesis may contain different methods of approach. In each method, though, the fundamental precepts of scientific procedure remain the same. The following characteristics of research should be paramount in the mind of the thesis writer:

"1. It centers around a problem.
2. It involves original work.
3. It rests upon a mental attitude of curiosity.
4. It requires an open mind.
5. It rests on the assumption that everything is subject to law and order.
6. Its object is to discover laws and generalizations.
7. It is a study of cause and effect.
8. It is based on measurement.
9. It involves a conscious technique."[12]

---

12. Crawford, Claude C., Methods of Study, p. 155.

CHAPTER IV

ANALYSIS OF THESIS TECHNIQUES NOW IN USE IN COLLEGES AND UNIVERSITIES OF THE UNITED STATES

CHAPTER IV

ANALYSIS OF THESIS TECHNIQUES NOW IN USE IN COLLEGES AND UNIVERSITIES OF THE UNITED STATES.

a. The Survey of Thesis Methods.

- (1) The Method Used
- (2) Replies Which Contained No Thesis Material
- (3) Replies Which Contributed to the Survey

b. Analysis of the Survey Materials.

- (1) Elements in Thesis Writing
- (2) Analysis of the Elements
  - (a) Kinds and sizes of paper
  - (b) Title page
  - (c) Margins
  - (d) Bibliography
  - (e) Footnotes
  - (f) Table of contents
  - (g) Number of copies
  - (h) Approval and Acceptance dates
  - (i) Typing and ribbon color
  - (j) Numbering pages
  - (k) Subject
  - (l) Development of the thesis
  - (m) Quotations
  - (n) Graphs
  - (o) Required reading
  - (p) Composition
  - (q) Summary
  - (r) Binding
  - (s) Introduction
- (3) Miscellaneous Elements

c. Conclusions of the Survey.

- (1) Preparing for and Carrying out the Research
- (2) Writing the Thesis
- (3) Preparing the Manuscript
- (4) Miscellaneous Considerations

CHAPTER IV. ANALYSIS OF THESIS TECHNIQUES NOW IN USE IN COLLEGES AND UNIVERSITIES OF THE UNITED STATES.

a. The Survey of Thesis Methods.

(1) The Method Used to Gather Material.

To gather the materials for the investigation at hand required some sort of a survey. The one used was simple. Four hundred sixteen College and University catalogs were examined with the view to discovering those schools requiring thesis work.[1] Letters were sent to two hundred seventeen universities and graduate schools whose catalogs gave evidence of thesis requirements. Each school was requested to send a copy of the statement used to direct students in the mechanics of thesis writing.[2] One hundred fifty three replies were received. Of these replies, one hundred twelve were in the form of statements used to direct students.

(2) The Replies which Contained no Survey Material.

The reasons given by the forty-one other schools for submitting no statement were various. A few, contrary to

---

1. Five hundred seventy five institutions of higher education are listed in the World's Almanac for 1930. The four hundred sixteen schools whose catalogs were studied include the larger universities and thoroughly accredited colleges.
2. A copy of the letter is contained in the Appendix.

the information in the catalog, stated that they gave no advanced degrees. Others declared that they had no single statement covering all the departments of their school.[3] The majority, however, replied that no statement was given to the students by the school, but that the professors and the students worked the matter out together.[4]

(3) The Replies which Contributed to the Survey.

The one hundred twelve replies which gave statements concerning the information and direction given to students contain the material of our survey. The statements vary as to source, comprehension, and content. Some of them are contained in a paragraph of the school's catalog. Some take the form of general writing requirements. Others, more thorough-going, require pamphlets or small booklets to accommodate their materials. The majority of the statements find their place between the paucity of the

---

3. The following is typical of this class:
"Replying to your letter of April twenty-eighth, I regret to say that on account ofthe different requirements of various subjects, we do not have any single statement which we use to direct students in the mechanics of writing theses".

4. These replies are divided into two groups. The two specimens given below are typical of the groups from which they are taken.
(1) "We have no mimeographed instructions that we give to students writing a master's thesis. Our students are referred to the files of master's theses for particulars as to form".
(2) "Our Graduate School does not possess a printed form for the guidance of graduate students in the mechanics of writing theses. Such guidance where necessary is supplied in personal conference with the advisor of each student concerned".

first two types and the all-inclusiveness of the latter.

The methods by which the statements are made available to the students are shown in the table below. The majority of the statements fall under the 'Special sheet' and 'Pamphlet' classifications, showing that considerable attention is being given to this phase of graduate work.

TABLE I. Sources of Thesis Information.

Source of Information	Number of Schools
Special Sheets (mimeographed)	52
Catalog	27
Pamphlets and Booklets	15
General Campus Requirements for Writing	6
Reeder, Ward G., How to Write a Thesis	4
Oral Instruction	2
Library Regulations	2
Century Collegiate Handbook	1
Style Manual of the American Society of Mechanical Engineers	1
Trelease, S. F. and Yule, E. S., The Preparation of Scientific and Technical Papers	1
Cole, A. H. and Bigelow, K. W., A Manual of Thesis-Writing	1
	112

In order to secure a basis for comparison of all the elements of thesis writing as it is given in the statements, the analysis method was used. Large sheets ruled for vertical and horizontal columns were prepared. On the sheets the names of the one hundred twelve schools sending statements were placed in consecutive order, horizontally. The statement of the first school was taken up for consideration, and each piece of information in it

was placed in a separate vertical column. The next statement was taken in a similar way and the information noted. Where there was an agreement of information with the first statement, the same column was employed, of course. Thus, as the information of all the statements was placed on the charts, certain definite columns grew out of the study. They make up the topics listed in Table Two on the next page. By this means a comparative study of the requirements and emphases of the different schools was made possible. The findings of the analysis are shown under the second division of this chapter.

b. Analysis of the Survey Materials.

(1) Elements in Thesis Writing.

The information found in the survey statements as a whole covers practically all the phases of thesis writing. Not all of these are given equal importance. Details are omitted in many of the statements. In a way the requirements reflect the standards ofthe school or the bent of the professor at the head of the department. Many stress only mechanical features as kind of paper, the width of margins, and the binding. On the other hand quite a number lay importance solely upon selecting the thesis topic and developing the material.

The elements in thesis writing mentioned by twenty or more of the statements are given in the table. The only universal requirement shown by the survey is that the manu-

scripts shall be typed. A general inference, but by no means universally stated, is that the thesis shall represent a thoroughly scholastic endeavor on the part of the student.

TABLE II. Elements in Thesis Writing.

(a) Kinds and Sizes of paper
(b) Title page
(c) Margins
(d) Bibliography
(e) Footnotes
(f) Table of contents
(g) Number of copies
(h) Approval and acceptance dates
(i) Typing and ribbon color
(j) Numbering pages
(k) Subject
(l) Development of the thesis
(m) Quotations
(n) Graphs
(o) Required reading
(p) Composition
(q) Summary
(r) Binding
(s) Introduction

(2) Analysis of the Elements in Thesis Writing.

(a) Kinds and Sizes of Paper

Reference to this phase of the mechanics of thesis writing is made in eighty-one statements. This is the largest percentage given any single element in the survey. Seventy-two statements contain references to the kind of paper to be used. Seventy-one include requirements regarding the size of the paper. An analysis of the division of the material is illustrated by the table on the following page.

TABLE III. Kinds and Sizes of Paper Recommended.

A. Kinds of Paper	Number of Schools
Bond	14
Good	12
Standard	9
Crane Japanese Linen	6
Twenty pound bond	6
White Bond	3
White	2
Paragon Linen	2
Hammermill bond	2
Firm texture	2
Medium	2
Thesis paper	2
Regulation	2
Swan Linen	1
Best bond	1
Best to be had	1
Official	1
Special stock	1
Uniform	1
Embassy bond	1
Whiting's linen	1
	72

B. Sizes of Paper	Number of Schools
8 1/2 x 11	64
8 x 10 1/2	4
8 1/2 x 10	1
8 x 10	1
Folio Size	1
	71

In the matter of size there is almost a uniform requirement for the 8 1/2 x 11 inch size sheet. In the matter of quality, if the kinds designated by "bond", "good", "standard", "white bond", and "regulation", were all placed in one group (for they all might easily refer to the same quality paper) the majority requirement for kind of paper would be largely uniform. The requirement for the kind of paper would be affected somewhat by the number of copies of the thesis to be made.

(b) Title page

Seventy-five statements allude in some way to a title page. Forty-eight of these include a sample title page. As the table shows, there are several elements on which nearly all of the statements agree, giving quite a degree of uniformity.

TABLE IV. The Title Page.

Parts of the Title Page	Number of Schools
Title of thesis	68
Name of author of thesis	68
Statement of submission[5]	67
Date or year	66
Degree sought	64
Name of University	41
Place of University	21
Department in University	19
College attended by author	12
Degrees held by author	4

In spite of this uniformity there is very little agreement in the arrangement of the page. For the most part little differences, governed apparently more by whim than by effectiveness in style, keep each title page in a separate category. Apart from details the general arrangement of the title page would follow this scheme: (1) at the top of the page, the title of the thesis; (2) a little below the title, the author's name; (3) slightly below the middle of the page, the statement of submission with the degree sought; (4) at the bottom of the page, the name of the University and the year. Some of the differences in arrangement of the title page may be noted in the sample

5. By this term is meant a statement similar to this, "A thesis submitted in partial fulfillment of the requirements for the degree of ....."

sheets contained in the Appendix.

In connection with the title page it should be noted that five schools suggest a title fly-page to precede the regular title page. On this fly-page appears only the title of the thesis.

(c) Margins

Margins are mentioned in sixty-eight of the statements. Here, there is great variety. The only margin approaching a majority requirement is the 1 1/2 inch left.

TABLE V. Margins of the Thesis Page.

Margins	Number of Schools
General	
1 inch	3
1 1/4 inch	2
Adequate	2
1 1/2 inch	1
Uniform	1
Red border of thesis paper	1
Medium	1
Ample	1
Generous	1
Left	
1 1/2 inch left	33
1 1/4 inch left	9
2 inch left	3
1 3/4 inch left	2
1 3/8 inch left	1
1 inch left	1
Others [6]	
1 inch others	20
3/4 inch others	7
1/2 inch others	2

6. Includes right, top, and bottom margins classed as a group.

TABLE V. (con't.)

Margins	Number of Schools
Right	
1 inch right	6
1 1/2 inch right	2
1/2 inch right	2
1 1/4 inch right	1
3/4 inch right	1
Top	
1 1/2 inch top	5
1 1/4 inch top	3
1 inch top	3
1 3/4 inch top	1
Bottom	
1 1/2 inch bottom	4
1 inch bottom	4
1/2 inch bottom	2

It should be noted that there is some uniformity of requirement in margin suggestions. Eighteen schools suggest in the statements, 1 1/2 inch left margins and 1 inch margins for the other sides of the pages. Aside from these, however, the requirements are quite varied.

(d) Bibliography

The table below shows the distribution of the emphasis regarding the bibliography as recorded in the statements. Sixty statements contain information on this phase of thesis writing.

TABLE VI. Data Concerning the Bibliography.

The Bibliography	Number of Schools
Alphabetical	20
Complete	13
At end of thesis	8
Classified	5
Consistent	4

TABLE VI. (con't)

The Bibliography	Number of Schools
Should be included	4
Annotated	4
Books and Magazines in separate sections	3
Primary and secondary sources noted	2
Any standard form	2
Logical	2
Numbered to references	2
Exact references	2
Magazines in quotation marks	1
Formal	1
Systematic	1
Carefully worked out	1
Full	1
Library procedure	1
Showing familiarity with material	1
Names of author	1
Contained on first page after title	1

To illustrate their requirements in regard to bibliographies, twenty-seven schools include samples in their statements. The classes and their distribution are given in the table.

TABLE VII. Distribution of Bibliography Samples.

Classes	Schools
A.	8
B.	6
C.	5
D.	3
E.	3
F.	1
G.	1

Illustrations of the samples of these classes are given as follows:

A. Ballance, C. A., Essays on Surgery, I, 15-16, New York, The Macmillan Co., 1930.
Eddy, Walter H. "The Stalking of the Vitamines"; Teacher's College Record, XXII, 149-168, May 19..

B. Burton, Records and Letters of the Apostolic Age, Scribners, New York, 1895.

C. Judd, Charles Hubbard. Genetic Psychology for Teachers, pp. 265-96, New York: D. Appleton & Co., 1902.
Anderson, C. J. " The Use of the Woody Scale for Diagnostic Purposes", Elementary School Journal. XVIII (June, 1918), 770-81.

D. Comstock, John Henry.
1924. An Introduction to Entomology.
Comstock Publishing Company, Ithaca, New York.
Baker, Charles Fuller.
1919. A Contribution to Philippine and Malayan Technical Bibliography.
The Philippine Agriculturist, VIII:32-37.

E. De Koven, Mrs. Reginald, The Life and Letters of John Paul Jones. 2 Vols. New York, 1913
Eddy, Walter H. - "The Stalking of the Vitamines"; Teachers College Record, XXII, 149-168.

F. A. Marshall, Principles of Economics, 8th ed., London: Macmillan & Co., 1920.
J. G. Smith, "Measurement of Time Valuation", American Economic Review, June 1928, pp. 227-47

G. Fleming, W. L., The Civil War and Alabama. The Pan American Union (January 1923), Vol XII, 175.

(e) Footnotes

Fifty-five statements contain references to footnotes. Some refer to the purpose of the footnotes, others denote the place on the page the footnote is to take, and some deal with the arrangement of the footnotes in the thesis as a whole. The following table illustrates the distribution.

TABLE VIII. Use of Footnotes.

Purpose	Number of Schools
Quotations and citation of facts	6
For Scripture references	1

TABLE VIII. (con't.)

Purpose	Number of Schools
Urged not to use	1
Special footnotes permissible	1
Footnotes may be used	1
Use with care	1
Position on Page	
Bottom of page (line across bottom - 2)	21
Body of page (set off with lines - 2)	6
According to a regular scheme	1
Interleaved	1
According to standard journals	1
Arrangement in Thesis	
Placed in series (end of thesis - 2) (end of chapter - 2) (consecutively - 2)	7
For each page	2
Numbered	2

In addition to the above information twenty five of the statements include samples of the form the footnotes are to take. These samples fall into four general classes, A, B, C, and D. Their distribution is given in the table.

TABLE IX. Distribution of Footnote Samples.

Classes	Schools
A.	12
B.	8
C.	5
D.	1

The following samples are illustrations of the above forms of footnotes:

A. Fleming, W. L., The Civil War and Alabama, p. 195.
The Pan American Union (January 1923), Vol XII, 175.

B. Ballance, C. A., Essays on Surgery, I, 15-16, New York, The Macmillan Co., 1930.

C. Burgess, Reconstruction and Constitution, 284-286.

D. A. Marshall, Principles of Economics, (8th ed., London: Macmillan & Co., 1920), p. 129.
J. G. Smith, "Measurement of Time Valuation", American Economic Review, June 1928, pp. 227-47.

(f) Table of contents

There are references to a table of contents in fifty-four of the statements. In some cases the only instruction given is provision for one. Other statements are more specific in referring to an index, a table with page references, one that is analytical or one that is systematic. The table discloses all the various requirements.

TABLE X. Suggestions and Requirements for the Table of Contents.

Requirements	Number of Schools
Must have page references	14
Must have chapter divisions	13
Must be analytical	9
Thesis must have a table of contents	9
Should be in form of index	9
Should be in form of outline	4
Should come after title page	3
Should be capitalized	2
Should be systematic	1
Should be "on the third page of thesis"	1
One is desirable	1

(g) Number of Copies

Fifty-four statements contain a requirement for the number of copies of the thesis to be made. The table on the following page shows the distributions of the number required.

TABLE XI. Distribution of the Number of Copies.

Number of Copies	Number of Schools
2	31
3	15
1	6
4	1
5	1
	54

(h) Approval and acceptance dates

Fifty statements set a final date for the acceptance of theses. Ten statements mention an approval date. The dates for approval and acceptance are shown in the table.

TABLE XII. Approval and Acceptance Dates.

A. Approval dates	Number of Schools
February 1	1
March 15	3
May 1	2
Ten weeks before commencement	1
One month before commencement	1
Three weeks before commencement	1
Monthly conferences	1
	10

B. Acceptance dates	Number of Schools
March 1	1
March 15	1
April 15	3
April 25	1
April 30	2
May 1	8
May 2	1
May 3	1
May 10	1
May 15	6
May 25	1
May 27	1
June 1	1
Six weeks before commencement	1
Four weeks before commencement	3
Three weeks before commencement	5
Two weeks before commencement	5

TABLE XII. (con't.)

Acceptance dates	Number of Schools
One week before commencement	4
Fifteen days before commencement	1
Ten days before commencement	1
Tuesday before commencement	1
Before commencement	1

(i) Typing and ribbon color

The requirements for this phase of the mechanics of thesis writing are summed up in a short, self-explanatory table.

TABLE XIII. Typing and Ribbon Color Requirements.

Requirements	Number of Schools
The manuscript shall be double spaced	48
The typing of the manuscript shall be done with black ribbons	28
The machine used in typing the manuscript shall be equipped with standard type	5

(j) Numbering pages

Relative to numbering of the pages, the majority of the forty-two statements having requirements on that phase of thesis writing, placed the number in the upper right hand corner of the page. Other emphases and their relation to the total requirements are shown in the table.

TABLE XIV. Requirements of Page Numbering.

Numbering	Number of Schools
In upper right hand corner (3/4 inch from corner - 1) (1/2 inch from corner - 1)	24

TABLE XIV. (con't.)

Numbering	Number of Schools
In arabic numerals	17
In middle of page at top	7
Roman numerals for introduction, tables and title page	5
Pages numbered	3
Thesis properly numbered	2
Thesis properly paged	1
Thesis carefully numbered	1

(k) Subject of the thesis

Over one third of the statements mention the subject of the thesis. Its selection is naturally one of the most important phases of thesis writing. The usual procedure is for the student to select some phase of his major work. That faculty approval is considered advisable is evident from the table below.

TABLE XV. Suggestions on the Subject of the Thesis.

The Subject	Number of Schools
To be approved by the Professor or Head of the Department	22
To be limited to the field of research	6
To be capable of original investigation	5
To be chosen by the student himself	4
To be of vital interest to student	4
To be suitable	3
To be selected early	1
	45

The faculty or departmental approval is handled in various ways. The major professor may simply put his approval on the subject chosen by the student; the dean's approval in a similar way may be required; or the student

may secure approval through a conference with the professor, by defending his choice or showing his particular interest in that field. Although an early selection is mentioned specifically by only one statement, it is implied in several others by the progress expected of the writer.

(1) Development of the thesis

About one third of the statements have some information about the progress of development in the working together of the thesis. The main points emphasized by the forty-one statements are revealed in the table.

TABLE XVI. Progress in the Development of the Thesis.

Elements in the Development	Number of Schools
Preparation of a Working Bibliography	15
Carrying out the investigation	14
Conferences with the Professor	12
Logical arrangement	10
Outline of thesis	8
Re-writing and revision	5
Attacking the problem	4
Interpretation and summary	3

A glance at the figures of the table shows that some statements have included more than one of the elements. Several statements trace through a logical method of procedure in the development of the thesis. The examples below reflect the emphases of this group of statements.

(a)
(1) Collect material
(2) Report progress
(3) Sift data
(4) Summarize

(b)
(1) Collect data
(2) Experimentation
(3) Rewrite material
(4) Inform professor of progress

(c)
(1) Conferences
(2) Outline
(3) Organization
(4) Interpretation

(m) Quotations

The table reveals the analysis of thirty-seven requirements about the matter of handling quotations in a satisfactory thesis.

TABLE XVII. Suggestions for Quotations.

Quotations	Number of Schools
Single space (In long quotations - 2)	25
Indented ("over two or three lines" - 1) ("more than four lines" - 1)	14
Accuracy	10
Reference to authority	6
Quotation marks	6
No marks in long quotations	1
Freely but briefly	1
All omissions indicated	1
Set off from rest of page	1

As may be noted by examining the table in comparison to the total mentioned above, the element of single spacing in quotations is well over a majority requirement. To indent or to single space gives the same general impression of setting apart. In some cases both of these methods are suggested. As in other elements, the emphasis here is on the mechanical features of the problem rather than on the importance of quotation selection.

(n) Graphs

Thirty-four statements give information about the use of graphs in the thesis. In the majority of the statements the use of graphs is assumed, and the information deals with the methods of using them. From the table it is noted that fitting the graph to the dimensions of the thesis is one of the chief problems in their use.

TABLE XVIII. Suggestions on the Use of Graphs.

Graphs	Number of Schools
Folded to size of thesis paper	18
Numbered and labeled	7
Same margins as thesis	3
Suitable size for binding	2
Fully and clearly described	2
Use of India ink	2
A list of graphs	2
Made in scale	1
Very simple	1
Drawing paper	1
Cross section paper	1
Use encouraged	1

In the statements a great variety of terms is used in reference to this subject, including, "blue-prints", "photos", "diagrams", "tables", "illustrations", "photo-stats", "graphs", "charts", "plates", "maps", and "drawings".

(o) Required reading

Taking up the element of required reading, it is noted that this phase, in some instances, is for the purpose of insuring a background for the investigation. The larger number of requirements are to establish a good

understanding of the mechanics of writing. Two institutions provide special instruction to take the place of reading. The accompanying table illustrates the division of the requirements.

TABLE XIX. Requirements for Preliminary Reading.

Requirements	Number of Schools
Reeder, Ward G. How to Write a Thesis	10
University of Southern California Style Manual	2
Special course	2
Trelease, S. F. and Yule, E. S. The Preparation of Scientific and Technical Papers	1
Trelease and Yule, and Reeder	1
Reeder, and Almack, J. C. Research and Thesis Writing	1
Reeder, and Morize, Andre Problems and Methods of Literary History	1
American Society of Mechanical Engineers Style Book	1
Reeder, and Good, C. V. How to do Research in Education	1
Cole, A. H. and Bigelow, K. W. A Manual of Thesis Writing	1
University of Chicago Press A Manual of Style	1
Wann, Preparation of Course Papers in the field of Literature	1
Northwestern Style Bulletin	1
Schluter, W. C. How to do Research Work	1
History of Philosophy	1
Science of Education, History of Philosophy, Educational Philosophy	1
Knowledge of French or German	1
Knowledge of one or more foreign languages	1
Knowledge of two languages	1
	30

(p) Composition

In the statements are twenty-six references to the composition of the thesis. The requirements are for the most part simple, but are regarded by these twenty-six schools as very important. An analysis of the suggestions is shown by the accompanying table.

TABLE XX. The Composition Used in the Thesis.

Composition	Number of Schools
Punctuation	10
Good English	8
Spelling	7
Abbreviations	4
Grammatical construction	4
Readable form	1
Pronouns	1
Good usage	1
"A primary requisite"	1
Special attention	1
Consult grammar guide	1
Assumed	1
Revision for inaccuracies	1
Clarity	1

(q) Summary

The idea of a summary occurs in twenty-one statements. The variety shown in the table indicates that the emphasis is a wide one as to use of terms, but rather narrow in respect to content of the summary.

TABLE XXI. Contents of the Summary.

Summary	Number of Schools
Not a rehash of the thesis	4
Conclusion	4
Few simple words about accomplishment	4
Resume'	2

TABLE XXI. (con't.)

Summary	Number of Schools
Integrated view of thesis	2
Comprehensive	2
Practical results of study	1
Carefully phrased	1
Desirable	1

(r) Binding

The statements reveal a variety of requirements for binding the thesis. There are twenty-one different requirements out of the fifty schools represented by the statements. It must be noted that some statements make two requirements; e. g., black cloth and gold letters. The accompanying table reveals the distribution of the statement material.

TABLE. XXII. The Binding of the Thesis.

Binding	Number of Schools
Manila covers	8
Substantial	7
"To b e bound"	7
Black cloth	6
Gold or gilt letters	5
Spring binders	4
Title on outside	3
Black board covers	3
Bound by school	2
"Do not bind"	2
Plain cloth	2
Buckram	2
Red leather back	1
Green silk	1
Half Morocco	1
$2 fee	1
Usual laboratory binding	1
Suitably bound	1
"Two copies bound"	1
Temporary	1
Book form	1

(s) Introduction

An introduction to the thesis is recommended by twenty statements. Ideas of what the introduction should contain are manifested in the table.

TABLE XXIII. Contents of the Introduction.

Contents	Number of Schools
Foreword or preface	11
Statement of problem	7
(a) Interest	
(b) Correlation	
Acknowledgments	6
Purpose of thesis	5

(3) Miscellaneous Elements.

In addition to the elements of thesis writing which we have been analyzing, the statements mention other phases which cannot be overlooked, even though less than twenty schools require them. The table gives the subjects mentioned and shows the number of schools requiring them.

TABLE XXIV. The Distribution of Miscellaneous Elements.

Miscellaneous Elements	Number of Schools
Length	9
Purpose	8
Approval sheet	8
Appendix	7
"Vita"	6
Definition of thesis	5
Abstract	4

All of these elements have a place in thesis writing.

That only a few statements mention them is not indicative of their importance. The definition and purpose of the thesis has been given consideration in the more complete statements. They are basic to writing a thesis, and have been treated in the preceding chapter. That more schools believe the thesis should adequately cover its subject than fall within certain "word" or "page" limits is evident from the survey. The nine suggestions as to length are shown in the table.

TABLE XXV. The length of the Thesis.

Length	Number of Schools
10,000 words	5
25,000 to 60,000 words	1
7,500 words	1
5,000 words	1
100 pages	1

The abstract is generally about five hundred words in length. For certain types of theses it is valuable. The "Vita" is a short biographical sketch of the author. The Appendix is brought into a thesis when a great deal of illustrative or explanatory material is available, which would be burdensome in the body of the thesis.

c. Conclusions of the Survey.

The present practice in thesis writing according to the survey materials will be determined by examining the majority emphasis in each of the nineteen elements. In drawing this material together, the findings from each of the elements in the foregoing analysis will be set

down in simple fashion under four headings.

Writing a thesis is an important part of graduate study. The value of the graduate work is measured largely in terms of the quality of the thesis. Every student doing graduate work should endeavor to put forth his best effort on his thesis. To do this, he must be acquainted with certain fundamental techniques in the procedure of thesis writing.

(1) Preparing for and Carrying out the Research.

In order to secure a general idea of thesis writing the student is urged to read, How to Write a Thesis, by Ward G. Reeder. With an idea of what a thesis means and the kind of work and the amount of endeavor it requires, the second important thing is to decide on a definite subject for the thesis. Quite naturally, the subject will be in the field in which the student is doing his graduate study. To make the thesis a living thing, the student should be responsible for the selection of the subject. To insure proper emphasis and to avoid useless investigation, the subject must be approved by the student's major professor or by the head of the department in which the thesis is being written. Oftentimes the student will find it advisable to select his subject in conference with one of these. At all times the student should remember that he is responsible for the thesis and should be ready and able to defend it.

With the subject of his thesis decided, the student should start his investigation at once. The first step is the formulation of a working bibliography. A very unsatisfactory method used by some students is to survey rapidly the thesis field, keeping only mental notes of important books. Bibliography cards help in the classification of material. Some record should be made of everything read. From time to time the student will find it convenient and helpful to confer with the Professor, to report his progress, exchange ideas, and receive suggestions as to further study. As the student collects his material he should keep in mind organization and classification. As materials are added they will fit into different part of his outline. As the student starts in on the actual writing of the thesis, he should not expect the first draft to be the final copy. Revision and re-writing both have a place in thesis writing.

(2) Writing the Thesis.

In gathering the materials of the investigation into the form of a thesis, naturally the argument of the research would be placed in the body of the thesis. Usually this is presented in several logical divisions, or chapters.

To present the body of the thesis, an introduction, giving the aim and scope of the thesis, should preface the general argument of the thesis. To give the thesis the unity of a thorough treatment, a summary should be

included. It should not review what has been said in the thesis, but should draw the study to a few definite conclusions.

To portray the materials of the investigation more adequately, the student may wish to use tables, graphs or illustrations of various types. These devices will form a valuable part of the thesis. The student should use care in preparing them. If tables, they must be accurate. If figures or graphs, they should be drawn in India ink. They should be folded to fit the size of regular thesis paper. A list of the graphs or tables should follow the table of contents.

The table of contents should give, in outline form, the main points of the thesis, with page references. It is sometimes advisable to include an index, although the table of contents usually is sufficient.

In the thesis all quotations or references to authority should be clearly indicated by footnotes.

Included after the conclusion, should be a carefully prepared bibliography. It should be more than a list of the sources used in the research of the thesis. It should indicate primary and secondary sources. It also should list the authors in alphabetical order. Some bibliographies are arranged chronologically. Although there are several ways of presenting the items of the bibliography, an accepted method is illustrated by the forms below:

Ballance, C. A., Essays on Surgery, I, 15-16, New York, The Macmillan Co., 1930.

Eddy, Walter H. "The Stalking of the Vitamines"; Teacher's College Record, XXII, 149-168, May 19..

The thesis may contain an appendix to accommodate relevant material which does not find a place in the thesis report.

Too often the materials of the thesis are given primary importance. It must be impressed upon the mind of every graduate student that facts are valuable in a thesis, only as they are presented in a clear and forceful way. The matter of composition should be paramount in any consideration of thesis writing. Good English is the first requirement of a satisfactory thesis. Unless the accepted rules of spelling and punctuation are observed, a thesis cannot be expected to represent a scholarly piece of research.

(3) Preparing the Manuscript.

After the thesis has been put into writing, it is necessary to give it a final form which shall insure both uniformity and permanency. The first requirement of this kind is that the thesis shall be typed. It is preferable to use a machine with standard type and with a black ribbon. The text of the thesis should be double spaced.

The thesis should be typed on white paper. The quality should be sufficiently good to prevent the typing

of the next page from showing through. A light-weight bond paper is recommended. The size of the sheet should be 8 1/2 x 11 inches. Margins of 1 1/2 inches on the left and 1 inch on the right, top, and bottom should be made.

The title page should contain the title of the thesis, the author's name, the degree requirement together with the degree sought, and the name of the University and the year. These elements should be arranged on the page in an artistic fashion and in a way to facilitate reading.

In the use of quotations, quotation marks should set the quotation apart. In addition, if the quotation is more than five lines, it should be indented and single spaced. Footnotes should be made at the bottom of the page, a line separating the text from the footnotes. It is preferable to number the footnotes consecutively for each chapter, although the scheme of numbering them consecutively through the entire thesis may be used. Consistency in all forms is essential. For the individual footnote, a form similar to the one used for the bibliography may be used, although in footnotes, the name of the publisher and the date of publication are not necessary.

The pages of the thesis should be numbered in the upper right hand corner of the page with arabic numerals. It is correct to number the title page, introduction and table of contents in small roman numerals instead of the arabic, but not necessary.

(4) Miscellaneous Considerations.

At least two copies of the thesis should be made. It is desirable to have a copy for the degree committee and one for the school library. The author should make a third copy for himself.

The thesis should be ready at least a month before graduation. It may be approved at an earlier date, but most schools require the final copies some time during April or May.

The binding of the thesis is the last consideration. The black cloth spring binder is most satisfactory. This gives semi-permanence and yet does not involve a special process of binding.

CHAPTER V

CONCLUSION

CHAPTER V. CONCLUSION.

Thesis writing has grown up out of a specific approach to problems. It has found its root in the method of scientific approach. The methodology of thesis writing is based directly on the standards set up by the scientists of past generations—Archimedes, Copernicus, Galileo, Kepler, and Newton—and the emphases stressed by contemporary thinkers and philosophers, typified by John Dewey. This methodology begins with facts accumulated by accurate observation; it proceeds upon classification and analysis of these facts into groups of correlated knowledge; it looks to the establishment of a generalization or law which will contribute to the world's knowledge.

The thesis writing requirement in the Graduate Schools of the United States has grown up in order to train students in the very thing which its methodology incorporates. A student who is not capable of carrying on an independent investigation of a certain field of knowledge with the view to establishing a definite contribution to existing knowledge, is not entitled to recognition as a scholar. In writing a thesis in any of the fields of research, particularly the historical, normative, or experimental, the person seeking a graduate degree is acquiring the methods and attitudes which must characterize all fruitful problem

solving. He is also preparing himself for a thorough and adequate command of clear, concise English expression, essential to significant scholarship.

We come now to the evaluation of the present practices in thesis writing methods now in use in the Colleges and Universities of the United States.

The materials of the survey show quite conclusively that the majority of directions for thesis writing, given to students, is on the mechanical side. The kind and size of paper, margins, the title page, the typing, the form of the bibliography and footnotes, are the outstanding elements in the statements of the survey. On the other hand, little or nothing is mentioned about the application of the scientific method in thesis writing. It must be remembered, though, that the material sought was that of the mechanics of thesis technique. At the same time, it is worth consideration that the statements sent are, in most cases, all that is published at that particular school about thesis writing, whether as to mechanical features or methods of attack.

If then, the survey of present methods shows a decided emphasis on the mechanical side of thesis writing, how can statements as to the importance of the thesis as a piece of research embodying the scientific method be valid? The explanation lies in the fact that only a few of the leaders in the field of thesis writing have stressed the latter. Reeder in his book, How to Write a

Thesis, and Almack in his work, Research and Thesis Writing, along with others, give importance to the implications of the scientific method in thesis writing.

The great bulk of the graduate schools emphasize only the mechanical features. While this is important, it is only a half-truth about thesis writing. If only the mechanical features of thesis writing are stressed, the work produced will tend to be superficial. If certain standards of form are the only requirement to be met, thoroughness in research will be sacrificed for perfection in style.

This study leads to two definite predictions. The first comes from the schools represented in the survey which did not send statements of thesis requirements. Because of an expression of a need on the part of these schools, it is predicted that even greater attention will be given in the future to the mechanics of thesis writing. In view of the fact that a few leaders are now placing an emphasis on the other phase of thesis writing, the research involved, and the scientific method of procedure, it is also predicted that thesis directions, in the future, will increasingly contain reference to this important subject and advice to students concerning its fullest use.

BIBLIOGRAPHY

BIBLIOGRAPHY

Source Material

The one hundred fifty three replies of the survey constitute the source material of this investigation. These include pamphlets and mimeographed instructions for thesis writing.

Secondary Material

Alexander, Carter, Educational Research, New York, Bureau of Publications, Columbia University, 1929.

Almack, J. C., Research and Thesis Writing, Cambridge, Houghton Mifflin Co., 1930.

Bacon, Francis, Novum Organon, in Works of Francis Bacon, edited by Spedding, Ellis and Heath, Part I, Boston, Houghton Mifflin Co.

Ballantine, Wm. G., Inductive Logic, Boston, Ginn and Company, 1896.

Bixler, H. H., Check Lists for Educational Research, New York, Bureau of Publications, Columbia University, 1928.

Brewster, David, Life of Sir Isaac Newton, New York, J. and J. Harper, 1834.

Cole, A. H. and Bigelow, K. W., A Manual of Thesis-Writing, Cambridge, By Authors, 1928.

Dewey, John, How We Think, Boston, D. C. Heath, 1910.

Good, Carter V., How to Do Research in Education, Baltimore, Warwick and York, 1929.

Hart, Ivor B., Makers of Science, London, Oxford Press, 1923.

Merz, John Theodore, A History of European Thought in the Nineteenth Century, Part I, Chicago, Chicago Uni- Press, 1923.

Mill, John Stuart, A System of Logic, Ratiocinative and Inductive, New York, Harper and Brothers, 1856.

Reeder, Ward G., How to Write a Thesis, Bloomington, Ill., Public School Publishing Company, 1925.

Se Boyar, G. E., Manual for Report and Thesis Writing, New York, F. S. Crofts and Co., 1929.

Tyler, Samuel, A Discourse of the Baconian Philosophy, Frederick City, (Md.), Ezekiel Hughes, 1844.

Whewell, William, History of the Inductive Sciences, From the Earliest to the Present Time, New York, D. Appleton and Co., 1866.

Withers, John W., Standards for Written Work, New York, New York University Press Book Store, 1930.

Appendix I. The Letter of the Survey.

(C O P Y)

April 28, 1930.

Dear Mr. Doe:-

I am writing to ask if you will be willing to send me a copy of the short statement which is ordinarily used to direct students in the mechanics of writing theses. We are making a study of the various emphases of the different colleges and universities on this point.

Thanking you for the consideration which this request demands, I am

Sincerely yours,

Registrar.

Appendix II. Samples of the Title Page.

THE PREDICTIVE VALUE OF THE
THURSTONE PSYCHOLOGICAL EXAMINATION;
RESULTS OBTAINED WITH THREE FRESHMEN CLASSES
OF THE UNIVERSITY OF ARKANSAS

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science

By

JOHN HENRY JONES
(University of Missouri, B.S., 1926)

1929
University of Arkansas

BOSTON UNIVERSITY

SCHOOL OF RELIGIOUS EDUCATION AND SOCIAL SERVICE

The Religious Education Movement

A Thesis

Submitted by

John Edwards Smith

(A. B. Upper Iowa University, 1918;
S. T. B. Boston University, 1920)

In partial fulfillment of
requirements for the degree
of Master of Religious Education.

1927

THE CHICAGO THEOLOGICAL SEMINARY

THE RELATION OF PHILO-JUDAEUS TO GREEK PHILOSOPHY

A DISSERTATION
SUBMITTED TO THE FACULTY
OF THE CHICAGO THEOLOGICAL SEMINARY
IN CANDIDACY FOR THE DEGREE OF
BACHELOR OF DIVINITY
DEPARTMENT OF NEW TESTAMENT

BY
ADAM DANIEL BEITTEL

CHICAGO, ILLINOIS
JUNE, 1925

THE COMPARATIVE VALUE OF EXTRA-CLASSROOM STUDY IN THE LEARNING OF EDUCATIONAL PSYCHOLOGY

LESTER D. CROW

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Education of New York University

1927