THE EVOLUTION OF EDUCATIONAL PHILOSOPHY UNDERLYING THE MODERN PROGRAM OF INDUSTRIAL ARTS WITH PARTICULAR EMPHASIS UPON THE CONTRIBUTIONS OF JOHN LOCKE

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THE EVOLUTION OF EDUCATIONAL PHILOSOPHY UNDERLYING
THE MODERN PROGRAM OF INDUSTRIAL ARTS WITH
PARTICULAR EMPHASIS UPON THE
CONTRIBUTIONS OF JOHN LOCKE

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CHAPTER I

INTRODUCTION

The philosophical thinking and educational theories of Locke have possibly done more to influence modern education than have the efforts of any one man. Other thinkers and educators have made contributions in varying degrees, and no effort will be made in this study to minimize their efforts. Only the facts as found in the pages of history will be covered and the reader will be left to form his own conclusions.

The full meaning of any period of history can be more fully understood by people of modern times than it was understood by people living during the time that those particular events occurred. Looking from the present into the past, it is easy to conclude that man has struggled against the world. The world as it is today in its moral, economic, religious, philosophical, and educational aspects is the direct result of those struggles.

Many different institutions have been created as a result of man's struggle and sacrifice. All institutions are essentially the embodiment of different ideas, and in the structure of every institution there is a philosophy, an ideology, or an attitude of some aspect of life. To fully
understand the significance of any institution there must be an understanding of the ideals contained within it, and this calls for a complete study of the forces out of which these ideals have emerged.

From these forces, thoughts, attitudes, ideas, and philosophies of men, the world has grown. Man has labored for his institutions in order to protect the beliefs he established. Numbered among those beliefs established was the school. The school has existed in the world in one form or another among people of every social order known. More than any other institution, the school has reflected the life and attitudes of the people who established it, for it is in the school where all levels of society meet.

Philosophy and education can be dated back to the oldest forms of civilization. Many nations have made their contributions at various times. Not every nation has produced a philosophy that has remained effective throughout the years. Many nations have had saints, prophets, and religious reformers, but no one who could be called a pure philosopher. Of the people of older civilizations, apart from the Greeks, only those of India and China have come into much consideration and recognition. Scholars who are acquainted with the philosophical writings of the Chinese believe that their language is unsuited for real philosophy. The Chinese's finest system, the Taoism of Lao Tse, has more mysticism than philosophy. The great Kongtse admitted that
he was more of a transmitter of knowledge than a philosopher. He held firmly to religious teachings, and is considered by many a moral preacher who had no understanding of metaphysical questions. Confucius is regarded by some thinkers as a great wise man rather than as a philosopher.

The people of India have produced their various systems of philosophy, but these never did receive much recognition in the western world. The reason for the lack of recognition of Indian philosophy seems to be that the contact with religion was never lost long enough for it to become independent. There also appears to be little or no direct connection between the philosophy of the Chinese and the people of India, nor does there seem to be any close association of either of these two with the philosophy of the Greeks.

When scholars of western civilization refer to philosophy, it is generally concluded that they are referring to that of the Greeks. It is this philosophy that appears to have received the highest degree of perfection and development, and the one that produced the finest thinkers for civilization. Between the Greek philosophy of innate ideas and the modern philosophy of sense perception the world witnessed its greatest struggle. This struggle lasted throughout the world for several hundred years. It was the struggle of man to become a free individual. Writers have conveniently

1 Eduard Zeller, Outlines of the History of Greek Philosophy, p. 2.
divided man's struggle for freedom into ancient, medieval and modern periods of history. There is no exact date that can divide the three periods of history. No line of demarcation can be set, for there is no law that can be so well established as that of unbroken continuity.

The victory for individual rights was accomplished over a long period of time. Many philosophers tried to make victory a reality for man, but somehow they could not muster enough strength to make it successful. It appears that the approach they took was not the type that appealed to the people. The problem was left unsolved until the time of Locke. It was he who established a program that was acceptable to the world.

Statement of the Problem

The problem is a study of the evolution of educational philosophy underlying the modern program of industrial arts with particular emphasis upon the contributions of John Locke.

Delimitations

The problem is limited to the study of the philosophy and theories of Locke with a brief coverage of Greek, medieval, and modern periods of philosophy. It is impossible to cover in detail all the works of the three historical periods. Only the important general aspects which have a direct bearing on Locke and his influence upon industrial
arts will be discussed in detail in this study.

Method of Procedure

In Chapter II a brief study will be made of the contributions of the more important Greek philosophers from Thales to Aristotle, the Greek school systems, and Greek contributions to sculpture, painting, and architecture.

A short discussion covering the time from Alexander the Great to the sixteenth century A.D. will be covered in Chapter III. This will include the fall of the Empires of Greece and Rome, education in the monasteries, Mohammedan invasion of Spain, the rise of the universities, and scholasticism.

Chapter IV will cover the biography, philosophy, and educational theories of Locke with short discussions of the theories of Bacon, Comenius, and other of Locke's contemporaries.

The influence of Locke upon industrial arts will be discussed in Chapter V.

Chapter VI will include the summary, possible conclusions, and recommendations.

Source of Material

The sources of material utilized in this study were historical books on education, magazine articles on education, and books on art, sculpture, and architecture. These were obtained through the library at North Texas State College, Denton, Texas.
Definition of Terms

"Industrial arts" is a phase of general education designed to give the child exploratory experiences in the tools, materials, and processes of industry.

"Manual training" as used here means the training of the student in the various crafts by actual practice.

"Catechetical" is the term applied to teaching by the question-and-answer method. As used here, it is done by Christian teachers not teaching under the direct supervision of the church.

"Catechumenal instruction" refers to that teaching given under the supervision of the church.

"Empirical" is a term meaning "to be guided by experience."

"Sensationalism" refers to mental life which is constituted wholly by sensations.

"Frieze" is a decorative band or feature between the architrave and cornice.

"Entablature" is the part of an architectural order that rests horizontally upon the column.

"Architrave" refers to the lowest division of an entablature that rests immediately upon a column.

Related Studies

No dissertations or theses related to this study were found.
CHAPTER II

A DISCUSSION OF GREEK PHILOSOPHY,
GREEK SCHOOL SYSTEMS, AND THEIR
CONTRIBUTIONS TO ARCHITECTURE,
SCULPTURE, AND PAINTING

It is impossible to cover in detail all of the contributions made by individual Greek philosophers. Only a brief discussion of the more important philosophers and the school of thought to which they have been linked will be made. Time and space will not allow a thorough discussion of all the various educational systems employed by the Greeks, nor is it possible to go into great detail on all the things pertaining to architecture, sculpture, and painting. The time from Thales to Aristotle will be covered in order to give the reader a general picture of Greek life.

The earliest Greek philosophers belong to what is called the Ionic school of thought which is also referred to as the school of Miletus. Thales, Anaximandros, and Anaximenes are the principal representatives of this group and they lived in Ionia which is located near the coast of Asia Minor.

Thales of Miletus, generally referred to as the founder and father of all philosophy, was born about 624 B.C. and

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died about 550 B.C. These dates are approximate, and the same thing is true of the birth dates of all early philosophers. Thales is famous for two propositions. First, he believed that the principle of all things is water. Secondly, he taught that the earth is a flat disc that floats on water. In the opinion of many writers Thales was a great engineer. He caused the diversion of the river Halyss when Croesus and his army were unable to cross it.\(^2\)

After Thales, the school of Miletus passed into the hands of Anaximandros. Of the numerous contributions that are ascribed to him, the authority of many is uncertain. The invention of the sundial, the construction of the celestial globe, and the first map of the world have been credited to him. Anaximandros believed that the earth was shaped like a cylinder, the height being one third the size of its breadth, and that man inhabited the upper one third of this cylinder. Anaximandros is said to be the first to do research into the distances and relative size of the stars.\(^3\)

The last representative of the school of Miletus is Anaximenes who believed that the earth is supported by air. To the condensation of air he ascribed cold, and to its

\(^2\)Tbid., p. 21.

rarefaction he ascribed heat. He advanced the theory that if air is compressed to a high degree it will form clouds and rain is the result of the condensation of air. The most complete condensation, he believed, produced earth and rocks.

After the school of Miletus there arose another school of philosophic thought called the Pythagorean. Little is mentioned of any of the exponents of this school except the founder, Pythagoras, who was born on the island of Samos in the year 580 B.C. The spirit, principles, and practices of the Pythagorean order have their roots in the transmigration of the soul of man. Pythagoras is said to have discovered two great truths in geometry. One relates to the triangle inscribed in a semi-circle, and the other pertains to the square of the hypotenuse of a right triangle.

Existing at nearly the same time as the Pythagoreans was another group of thinkers called the Eleatics. Another philosopher who was not a member but who lived as a contemporary was Heraclitus. The members of this group were Xenophanes, Parmenides, Melissus, and Zeno. The ideas of this group are essentially the same. The philosophy of the Eleatics was twofold. It is the theory of knowledge as well as the theory of Being. Thought is dependent upon Being,

4Ibid., p. 44.

5B. C. Burt, A Brief History of Greek Philosophy, pp. 5-9.
but not Being upon thought. The Eleatics had the earliest theories of knowledge. Sense perception is the effect of an efflux of particles from external bodies entering pores corresponding in size to those in the body of the perciipient. This group of philosophers has also been called the nature philosophers.6

About the year 440 B.C. another school of philosophic thought began to flourish. The members of this group were called Atomists. Leucippus and Democritus were the founders. The Atomists developed the theory of indivisible particles. This group believed that atoms which are the constituents of matter are indivisible particles. The worlds are formed from the aggregation of atoms.7 Anaxagoras, a contemporary of the Atomists, was born in Clazomenae, Asia Minor, in the year 500 B.C. One of his greatest doctrines deals with the antitheses between mind and matter. He is also the first philosopher to introduce theology into philosophy. He believed that different particles come together to form different elements such as gold, silver, and iron. This teaching was in complete disagreement with the Atomists. The death of Anaxagoras closes the first period of Greek philosophy.8

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7Bertrand Russell, A History of Western Philosophy, p. 65.
The Sophists arose in Greece during the latter part of the fifth century B.C. The term "Sophists" was applied to anyone who was pre-eminent among men in the knowledge of human affairs. This group was composed largely of teachers rather than philosophers and they exacted large fees for their teaching services. Their philosophic teachings were simply the crystallization of impulses which governed the life of the people into abstract principles. The people were ready to abandon their gods and previously-built institutions. There was a growing demand for education of all the people. The chief Sophists were Protagoras, Gorgias, Hippias, and Prodicus.9

Protagoras is famous for his doctrine that "man is the measure of all things." Gorgias in his teachings emphasized three principles that give a good picture of Sophist philosophy. These principles are: (1) Nothing exists. (2) If anything exists, it cannot be known. (3) If it could be known, the knowledge could not be communicated. The Sophists also displayed great ability in the art of debate. 11

Probably the greatest and most influential group of Greek philosophers belong to what is called by some historians the Attic School. The members of this group were

9John Burnet, Greek Philosophy, pp. 118-19.

10Charles M. Bakewell, Source Book in Ancient Philosophy, p. 67.

11Ibid., p. 67.
Socrates and the Socratics, Plato, and Aristotle. The Socratics developed the Socratic schools after the death of Socrates. These schools were the Megarean, the Cynic, and the Cyreniac.

Socrates lived through the rapid transition of the fifth century B.C. He was born in the year 469 B.C. and died in the year 399 B.C. His prime of life coincides with the Periclean supremacy and the Peloponnesian War. Socrates believed that all virtue is knowledge. The man of virtue is not he who performs his duties to self and state, but he who possesses the exact conception of each of his relations to self and state. Character and deliberate choice were not regarded by Socrates as elements of virtue. The principal virtues were temperance, piety, friendship, courage, citizenship, justice, and wisdom. Socrates embarked upon his career at the age of thirty and at all times he regarded his calling as divine and thought of himself as the seeker of wisdom and caller of men. Because of his many teachings he was finally brought to trial and put to death.

Plato, a follower of Socrates, was born either at Athens or Aegina in the year 427 B.C. of a wealthy and

\[12\] Zeller, *op. cit.*, pp. 95-112.


aristocratic family, and doubtless received the highest educational advantages that any son of a wealthy family could have. Coming to Socrates at the age of nineteen or twenty, he remained a faithful disciple of the master for a period of nine years. This relationship was terminated only upon the death of Socrates. Plato's contributions are many, but his establishment of the Academy is probably the greatest. The parts recognizable in the philosophy of Plato are Dialectic, the theory of thought and being, Physics, the theory of nature, and Ethics the theory of the good. Plato's philosophy springs from a certain feeling which might be called divine. It springs from the very essence of the soul as an immortal being; it is the prophecy of the soul's return to the knowledge and enjoyment of eternal reality. Through philosophy alone the idea of the good can be represented among men and they become like God. Men are confined in a dark room where they can scarcely tell shadows from realities. Plato believed that ideas existed as patterns before anything could be made. The universe is a great system of ideas existent before all things, and the world is but a shadow of some pre-existent idea. Ideas control life, not by growing up with it, but by coming down upon it and surrounding it like a hoop surrounds a barrel and holds the staves together. Ideas, according to the Greek philosophies,

Ibid., pp. 72-79.
cannot be in the possession of everyone, but are given only to a special class. Men are able to get them by becoming able to see behind the appearance of things into the realities of life. This requires long discipline which is not less than thirty-five years of severe training.

Aristotle was the last of a great line of Greek thinkers. He was born at Stagira in the year 384 B.C. At the age of eighteen, he entered Plato's Academy and studied there for a period of twenty years. There is some claim that he disagreed with many of the principles set forth by Plato, but this is untrue to a great degree because he always referred to himself as a Platonist. Some of the disagreements are probably due to Aristotle's disappointment over not becoming president of Plato's Academy. Aristotle is famous for the establishment of the Lyceum in the year 335 B.C. His system is divided into logic, metaphysics, physics, ethics, and aesthetics.

Aristotle is difficult to understand. Part of the time it seems as if he is speaking like a person ignorant of philosophy, and the rest of the time he sounds like a person setting forth Platonism with a new vocabulary. It is impossible to put much stress upon any one single passage because there


is likely to be some correction or modification of it in a later passage. The easiest way to understand his theories of universals and matter is first to set forth his doctrines of common sense which make up half of his views, and then to consider his Platonic modifications to which he subjects them. Some say that Aristotle was too much and too little of a philosopher. He was a skillful dialectician, but he was neither deep nor original. His ability to teach and lecture has never been equaled, for he possessed approximately all the knowledge and ability of his time. The amount and variety of the systemized works of Aristotle along with the perfect art of presentation have given him a fine reputation among Greek philosophers.

The period in Greek history (480-400 B.C.) when this nation did its finest work in architecture, sculpture, and painting has rightfully been called the Golden Age of Greece. This period also covers the time of Pericles. In the fifth century B.C. the Greeks stopped Persia and saved the continent of Europe from coming under the influence of that country. The ruin made by the Persian invader was complete in many Greek towns, and the people returned to find their temples and works destroyed. Sculpture, paintings, and


other dedications had been thrown down and broken. All of this resulted in a new spirit of rehabilitation in which statesman, sculptor, painter, and architect all joined hands to replace with greater beauty the monuments of the preceding period. This effort produced fine workmanship, for the new monuments were built to commemorate the victory of Greece over Persia.

The architecture of the Greeks, in popular conception, was built upon the familiar and conventional orders of the Doric, Ionic, and Corinthian. Theatres, temples, and private homes all bear the trademark of expert planning. Examples of town building are also known. Cities with broad streets that are set at right angles to each other along with open squares were laid out toward the end of the fifth century B.C.

The Greek buildings that have survived in greatest numbers are the temples. The temples contained the images of the gods, and the people gathered there on festive occasions to offer sacrifice before the altars. The simplest form of a temple was an oblong hall with a porch at one end which was supported by columns. Sometimes a porch was added to the other end for the sake of symmetry. In the larger temples a colonnade was built on all four sides. The best example of this style is the Heraeum at Olympia. The columns

20 Ernest A. Gardner, Greek Sculpture, p. 214.
here were originally of wood and were replaced with stone as they deteriorated. The form of the stone column shows the whole development in the Doric style of architecture from the earliest bowl-shaped form to the latter types which were almost flat.

The columns of the Doric type do not taper as they appear to the eye, but they swell in the middle in order to counteract the diminishing effect of the light behind them. However, in the pure type of Greek work the diameter of the shaft is never greater than its base. The columns are not the same in thickness. The corner columns are made a little higher and thicker than the rest, and this is done to counteract the greater amount of light that shines through them. A stone beam was laid horizontally across the top of the columns. Above this was a frieze which represented the main roof beams that extended from wall to colonnade. The spaces between them were filled with ornamented panels. The gable roof was also characteristic of this type of architecture.

The Ionic order is distinguished from the Doric by the form of the column. Its column is smaller in diameter and usually rests upon a base which is richly ornamented. The usual Ionic entablature consists of an architrave divided

21 E. A. Gardner, Art of Greece, p. 11.

into three bands. A continuous frieze is above this and is often decorated with sculpture. The conventional form was by no means universal, for the architrave was sometimes plain and the frieze was omitted.

The Corinthian order is identical with the Ionic except for the use of the acanthus leaves used in decoration. The story goes that Callimachus, who originated the style, took the suggestion from an acanthus plant that had grown accidentally around a basket. A good example of the Corinthian type of architecture is the temple of Olympian Zeus at Athens. The Corinthian style was preferred by some architects because of a greater simplicity and ease in fitting some of the columns.

Greek sculpture during the Golden Age or the Age of Pericles has never been excelled. The greatest sculptors during that age were Phidias and his contemporaries Myron and Polyclitus. The most striking characteristic of Greek art is its closeness to nature, the dealing with types, the quality of repose, and its simplicity. The Greek instinct for pose is unfailing and unequalled. Standing or seated, the attitude is always graceful and lines always fine. A

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photograph made at any point of the work will always show lines of rhythm and beauty. The straight continuous line of brow and nose, the well moulded chin, the full lip, and small ear give the viewer a high degree of satisfaction.25

Many fine pieces of sculpture have been reproduced by present-day sculptors from the original Greek. Among these are: (1) Bust of Zeus, (2) Athena Giustiniana, (3) The Horseman from the Parthenon Frieze. The frieze consists of a series of panels about four inches in height which is set on the outer wall of the cells. It is lighted from below, and the lower part is cut in low relief while the upper part is cut in high relief. (4) The Bust of Hera, (5) The Discobolus, or disc thrower, which is the work of Myron. This is known as the severe style of sculpture. There are other Greek reproductions which are too numerous to mention.26

The art of the painter was as highly esteemed in ancient Greece as that of the sculptor and architect. The paintings of the Cretan and Mycenaean palaces are similar in character to the painted decorations on vases during the same age. Vegetable and floral designs are common in both. The palaces contain paintings of human figures, bullfights, and


26 Ibid., pp. 4-5.
processions. The human figures are usually drawn in a tinted outline with red being the color most commonly used to represent males and white for females. 27

Thousands of vases have been uncovered from Greek tombs. The Attic vase is an early specimen of the class of black figured vases. The objects represented were painted in black varnish upon red clay and then baked. Patterns were indicated by means of lines cut through the varnish with a sharp instrument.

Polygnotus must be ranked among the greatest of the Greek artists. He lived during the period 480-450 B.C. and was a contemporary of the sculptor Myron. Much of the theatre painting must be attributed to the efforts of Polygnotus. Zeuxis and Parrhasius followed the time of the theatre, and much of the easel painting carried on during the Golden Age must be credited to them. The majority of ancient wall paintings found during recent excavations in Rome were the work of Greek artists. Although these works show some deficiency in perspective, they are evidences of fine talent in coloring, in composition, and in expression. These findings have been attributed to the period of Zeuxis and Parrhasius. 28

Greek school systems are divided into two main types. One is the Doric form of education represented by Sparta, and the other is the type that belongs to Athens. Although both types were education for the state, in Sparta the individual was sacrificed completely to the purpose of becoming a good military man. The main differences can be seen in their relationships to the new-born infant. In Sparta, the child was brought before a board of elders who decided whether the child should live or be put to death; whereas, the father made that decision in Athens.

The Spartan boy, until he reached the age of seven, was taken along by his father to the men's club where he spent the day. The girls spent their day at home because there were no clubs for girls. At the age of seven, the boys were taken away from home and were organized into packs of sixty-four boys who lived and slept together. They slept on reed bundles, wore only one garment in winter or summer, and had to go barefoot always. They were at all times under the supervision of a superintendent who could call them together at any time and punish them. Professional floggers were always present to administer punishment. The older men stirred

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up quarrels among the boys and fighting was always encouraged. Stealing was encouraged when they collected food for their elders. This stealing was considered a valuable asset for Sparta. It was excellent training for scouting and for laying of ambush which the soldier must learn. 30

The entire educational system of Sparta was built around gymnastics. Spartans were not averse to literature because it was useful, but they read only the types pertaining to war. The boys had to learn gymnastics, dancing, swimming, horseback riding, or any other type of exercise that would build a strong body. After all, the whole objective of Spartan education was not intellectual acuteness and the accumulation of knowledge, but discipline, endurance, and victory in war.

The girls were organized into packs in much the same manner as the boys. They had to train their bodies in order to be able to bear strong children. They shared in gymnastics and in musical training. Among their sports were wrestling, swimming, and running. They went in procession at festivals and danced and sang in the presence of the boys. These girls would praise the brave and jeer the cowards. The Spartans deserve all credit in establishing what was later called the boarding school. 31

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30 Kenneth J. Freeman, Schools of Hellas, pp. 11-22.

31 Ibid., pp. 22, 32.
When men praise the education of the Greeks they are referring to the education that was common in Athens which is representative of education outside of Sparta and Crete. In the earlier days Athenian education was somewhat severe like that of Sparta. After the establishment of the Athenian democracy, both the spirit and method of education at Athens underwent change. It became the model for Hellas between the sixth and third centuries B.C. Athenian education was an attempt to equip each new generation for the task of attaining the Athenian ideal of life. It not only left out of account the large slave population but the wives and daughters of citizens. Therefore, it was concerned with only one out of every twenty-five people. 32

The Athenian state did not control education in the manner of the Spartans. It required only that fathers must see to the education of their sons and set down certain moral regulations in the code of Solon. The primary education in the schools was divided into three parts: instruction in letters, music, and gymnastics. The boys first learned the letters of the alphabet and then grouped them into words. They had the letters before them on clay plaques. Writing was learned by following models, sometimes by tracing these model letters cut in wood. Their writing materials were the

first wax tablets and a stylus stick that had at its upper end a flat surface which was used for erasing. Paper was unknown to the Greeks at that time. The teacher of gymnastics aimed at the development of beauty as well as strength and health of his pupils. He supervised exercises, diet, health regulations, endurance, courage, and self-control. The school day began with breakfast and lasted until dark. Music and the study of poems were the first studies after breakfast. Primary education occupied about nine years of the pupil's life.

Although there is no evidence of higher or secondary education in Athens until 460 B.C., every boy had to undergo a period of military training at the age of eighteen. His education during this period was both physical and moral. It was a period of training for hardihood, endurance, and loyalty to state and nation. This training was diversified by athletics, choral dancing, and reciting verses. These boys were kept under close surveillance. Despite the advances made by the Greeks in many fields, sculpture and drawing were not taught until about 300 B.C. Training in these fields was considered as a part of technical education; therefore, it was beyond the scope of cultural equipment for the Athenian citizen. The boys who studied these arts did so as apprentices to painters and sculptors.33

33 Ibid., pp. 26-30.
CHAPTER III

PHILOSOPHY AND EDUCATION FROM THE TIME OF
ALEXANDER THE GREAT TO THE
SIXTEENTH CENTURY A. D.

With the rise of the Macedonian Empire and the disruption of the Greek States, the civilization of Greece stepped out of its national boundaries and became the common civilization of all the nations on the shores of the Mediterranean. The change was not a mere accident of conquest. Man soon realized that culture should not be confined to the aristocracy of the large cities as Plato and Aristotle had done. If Plato and Aristotle had been able to read the signs of the times, they would have seen that education could not be confined within national and racial bounds.

The disruption of Greek cities had to take place before Hellenism could become a common civilization of the world. The downfall of Athens in 404 B. C. upset the balance of Greece, and this started a series of internal struggles that sent great numbers of exiles wandering throughout the world. It was a happy chance that gave the ascendancy at this time to a nation under the strong influence of Greece a victory that set Greek spirit free for world-wide influence. It was under the leadership of Alexander the Great that Macedonia
brought under subjection all leading nations of the East, and sought to make her empire permanent by planting Greek cities in every part of the conquered territory.

The city of Alexandria, Egypt, founded in the delta of the Nile river by Alexander the Great, contained citizens from all parts of the known world living under Greek institutions. So sound was Alexander's policy that his early death in 323 B.C. made no appreciable change in the development of the city. It is true that his empire crumbled to pieces early, but the process of Hellenization went on steadily for another century under Macedonian rulers. Even the victorious progress of the Romans in the second century B.C., which reduced Greece to a Roman province in 146 B.C., had to open a new sphere of influence for Hellenism. The Hellenism of the Roman world was different in many respects from the Greek cities in which it had its origin. In becoming the spiritual basis of Mediterranean life in the centuries immediately before and after Christ, Greek culture came into intimate relationships with the independent cultures of the Persians, Jews, Egyptians, and Romans. It was forced to come to some kind of terms with them all. Each nation took what it needed from the storehouse of Greek example and adapted it to its own civilization. This is

1 William Boyd, *The History of Western Education*, p. 43.
especially true with regard to Graeco-Jewish and Graeco-Roman education which forms the two main links between the education of Greece and the modern world.

Early Roman education was designed to prepare the citizen for the practical duties of life. Education was entirely a family affair in which the father trained the son for the duties of a man and a citizen and the mother trained the daughter for the duties of a woman and housekeeper. The result was that the Roman was distinguished by the homelier and sterner virtues of piety, manliness, courage, honesty, and prudence. The Roman child was taught to read, write, and count by his parent. In education biography had an important place, and the stories of heroes who had served Rome helped to build character. The laws of the Twelve Tables had to be memorized by every boy.

After the conquest of Greece in 146 B.C. the educational policies of Rome changed. The conquerors robbed Greece of many of her treasures in books and art and brought them to Rome. Greek teachers of grammar, rhetoric, and philosophy emigrated to the metropolis to teach. Naturally the system was borrowed from Greece, but it must be

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remembered that in doing this the Romans organized a system superior to that of Greece. The system of Roman education was divided into the following three classes: (1) elementary which included the ages seven to ten, (2) secondary for the ages ten to sixteen, (3) higher education for those above sixteen years of age. These schools grew up wholly under public auspices without government support or control. Vespasian inaugurated the practice of paying the salaries of teachers, and his successors continued it. Finally, Antonius Pius awarded some teachers the privileges of the senatorial class, especially exemptions from taxation and military service. These favors became the foundation of the privileges of the clergy under Constantine in 326 A.D. In this period education became more and more a privilege of the senatorial class; it no longer aimed to prepare man for the duties of life, but to prepare him to excel in society. This was the direct cause for the downfall of the education of this period. 

Christian education replaced the latter period of Roman education. The Graeco-Roman education never distinguished between the man and the citizen. The individual could have no interests other than those that served to benefit the state. Christ is the very foundation of all Christian

\[\text{Ibid.}, \text{ pp. 56-62.}\]
thinking. He brought forth the virtues of faith, hope, and charity. The coming of Christ marked a new era in both religion and education. To appreciate the magnitude of the early Christians it is necessary to recall the shameful conditions of Roman society. There were incidents of public child exposure, immoral public displays, and bloody gladiatorial shows. Rome was the city of sin, and people were looking for something tangible upon which to build their hopes. Christian teachings were centered around the belief that education is for the individual. The Christians taught that God is the common father, all men are brothers, marriage is divine, and children are the gift of God.5

The new Christian schools did not teach bodily training, art, literature, science, and other courses that had been offered in pagan schools. Instead, religious instruction was stressed along with moral training. Much of this was done under the catechumenal schools, for almost two centuries. Later, as Christianity spread from among the poor to the wealthy pagans, a new desire was created for a different type of school that would give Christian training. This resulted in the catechetical school. Many of the members were former teachers. They taught in private and were not directly connected with the church at first. Following this group,

Pantaenus, a converted Stoic philosopher, became head of the school at Alexandria, Egypt. He aimed at reconciling Christianity with Greek philosophy. Under him and his successors, Origen and Clement, grammar, philosophy, rhetoric, and literature were taught. At first scholars from all classes were admitted, but later it developed as a seminary for the training of future clergymen.

By the beginning of the fourth century A.D. the persecution of Christians had stopped. Christianity was legally tolerated by 313 A.D. and soon afterward became the state religion of most of the western world. The church had conquered the world, but in the conquest its members had lost much of the purity characteristic of early Christianity. It now was an advantage to be a Christian, and as a result many undesirable people joined the church. Up to this time the church fathers allowed reading of pagan literature. This caused more dissension in the ranks and as a result the Council of Carthage passed a rule that forbade the reading of pagan literature. This was in 401 A.D. and is contemporary with the barbarian invasion from the north.

The city of Rome was conquered by the barbarians in 410 A.D. The vandals conquered Africa and Spain. The

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6 Duggan, op. cit., pp. 63-72.

7 Ibid., pp. 72-73.
Roman Empire was corrupt, the population had declined, and the central government had become weak. Education became a form of amusement for those who could afford it. The church was emphasizing faith and conduct, not education. Western civilization had reached a turning point, the Dark Ages of the mediaeval period. The Roman Empire had vanished. Theodosius, the Emperor, fled to Constantinople where he opened a university. He was partly successful and Greek learning survived in the Byzantine Empire, but it was lost to Western civilization.

Education was carried on during the Dark Ages by the monasteries. It was in these monasteries that many of the Greek works were preserved. The main cause of the development of monasticism was due to the persecutions of Christians in the Roman Empire. Out of the ideas and practices of the religious sects of the East and the philosophical schools of the Greeks, monasticism developed naturally upon the soil of Egypt where religion and philosophy found its most ardent supporters. It was Anthony, who fled to the desert in the year 305 A. D., who caused the monastic movement to grow. Soon afterward, fourteen hundred more followers joined him under the leadership of Pachomius. Monasticism was then

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8 H. G. Good, A History of Western Education, p. 54.
transferred to Greece by Basil and to Rome by Athanasius and Jerome in the fourth century A.D.

The monasteries produced many monks who had leadership qualities. Among the greatest are St. Augustine, St. Jerome, and St. Benedict. The basis of St. Augustine's educational theory is found in his metaphysics. He accepted the Platonic position that the super sensible world of ideas is in the realm of goodness, truth, and wisdom. In the world of sense, the search for goodness and truth yields only fleeting delights which are debasing and full of error. Truth and goodness are possessed by those who are faithful to God. Augustine was among the first to question Platonic doctrines in the monasteries. St. Jerome taught that the life of sense is evil in itself. By listing the authoritative books of the Bible and by establishing Biblical scholarships, Jerome was instrumental in giving European scholarship the direction and emphasis it kept for several hundred years. St. Benedict established the best organized monasteries. The Benedictines were famous for their eminence in stock-breeding, agriculture, and handicrafts. They made reading and manual labor a part of monastic life.


10 Frederick Eby and Charles Arrowood, The History and Philosophy of Education Ancient and Mediaeval, pp. 641-654.
Translating, writing, and copying of books were the main duties of the monks. In addition to the various duties and contributions made by the monks, the establishment of the Seven Liberal Arts is among the greatest. It is the literary heritage of monasticism. Long before the fifth century A.D. all of these differentiations into subjects had occurred. It was reserved for the ecclesiastical tendencies of the Middle Ages to limit the sciences to seven. These were based on the trivium which included grammar, rhetoric, and dialectic. The last four were based on the quadrivium which included arithmetic, geometry, music, and astronomy.\(^{11}\)

The invasion of Spain by the Mohammedans was the most influential period in the history of Europe. The Mohammedans had preserved many of the writings of the Greeks. The Mohammedans had been ignorant to a high degree, hence when they came in contact with the outside world, their desire for knowledge increased. They conquered the whole Fertile Crescent, invaded Alexandria in 642, captured all of North Africa, and in the year 711 A.D. crossed the Straits of Gibraltar into Spain. The latest conquest became their finest province. Their entry into Western Europe brought the Dark Ages to a close. Along with them the Mohammedans brought the lost texts of Plato and Aristotle. The history of Mohammedan or Moslem

\(^{11}\) Monroe, \textit{op. cit.}, p. 268.
scholarship is divided into two main parts. The first part was to acquire the ancient learning of the Hindus, Persians, and Greeks. To this learning the Mohammedans gradually added their own achievements. The second part took place in the twelfth century which consisted of a period of translation from Arabic into Latin. Much of this translation consisted of Greek text lost during the Dark Ages.

The books of learning which made the translations possible were preserved in the Byzantine Empire which has been called the rear guard of European civilization. The schools of the Byzantine Empire were famous. When Justinian desired to make a definite code of Roman law, he chose the scholars of this school to carry out his project. The return of the forgotten knowledge through translations had a very stimulating effect upon the minds of the people of the West, and was one of the main influences in the rise of the mediaeval universities.

The thirteenth century was a period of remarkable progress in human history. The last of the pagan Teutons had accepted Christianity which gave Europe a period of peace in which to develop. The crusades destroyed the isolation of feudalism, stimulated the growth of cities and commerce,

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12 Good, loc. cit., p. 83.
13 Ibid., p. 84.
and broadened greatly the horizon of Western Europe. Contact with Saracen learning and the recovered copies of Aristotle's works gave a great impetus to intellectual pursuits. In some of the schools distinguished teachers began to lecture on the new interests that had arisen, and this attracted new students from different parts of Europe. There was a long time when no buildings were available to take care of the large enrollment. In this way the University of Paris, the greatest of mediaeval universities, was developed from the cathedral school at Notre Dame. Shortly before the University of Paris, a vigorous school of medicine was thriving near Naples, Italy. It was the first University that was established by Constantius Africanus, a monk, who had traveled extensively in the East and translated the best works of the Greeks and Arabic into Latin. Many cities soon followed in establishing universities.  

The curriculum of the University of Paris was based on the works of Aristotle. The great preponderance of Aristotle in the list is noticeable. Included among the studies was the old logic, the new logic, moral philosophy, natural philosophy, and metaphysics. All of these studies were necessary for a degree. This shows how completely Aristotle's works

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14 Duggan, *op. cit.*, p. 98.
were adopted by this time as a great authority of mediaeval Europe.

Scholasticism was introduced into the universities shortly after they were organized. Scholasticism was a movement having for its object the harmonizing of ancient philosophy, especially that of Aristotle and Plato, with the doctrines of Christianity. It was also a dissent from the teachings of St. Augustine and the ascetics. In earlier Christian times those favoring the merger of religion and philosophy were called Apologists. The scholastic movement covered a period from the ninth century to the time of the Renaissance. It became the philosophy of the Middle Ages and was at the zenith of its glory at the time of the Renaissance. The full influence of this doctrine was felt throughout the entire world.


16 Seeley, op. cit., p. 121.
CHAPTER IV

THE BIOGRAPHY, PHILOSOPHY, AND EDUCATIONAL THEORIES OF LOCKE

The combination of Christianity and Greek philosophy ruled the minds of men until the seventeenth century A. D. The doctrine of scholasticism was felt everywhere. Man was never considered an individual capable of solving his problems through reason. For a period of several hundred years the doctrine of innate ideas as set up by Plato served as the basis of education.

The seventeenth century A. D. is the beginning of modern philosophy; it is also called the century of new birth. Modern philosophy was not born suddenly. Men like Roger Bacon, Duns Scotus, and William of Occam advocated the separation of religion and philosophy. In this way these men claimed for philosophy the right of free and independent inquiry, and at the same time they recognized the practical value of theology. A modern system was first attempted by Giordano Bruno of Rome, Italy, in the year 1600 A. D. He was tied to the stake and burned as a heretic. This is one of the first cases of martyrdom for the cause of free science and knowledge. ¹

¹ Joseph A. Leighton, The Field of Philosophy, p. 163.
Many famous men of the past have made contributions to the cause of intellectual freedom. These contributions have been in varying degrees. Francis Bacon believed that the ultimate goal of education was to give man dominion over all things and to increase human power through scientific knowledge. He also believed that true knowledge comes through sense perception, and only through experience can it be verified. Comenius, who studied Bacon, believed in education as external happiness with God. He believed that such happiness and mode of living could be taught. So while Bacon would uncover and organize universal knowledge, Comenius would put it into a textbook and teach it to all children.

The first scientifically developed system is that of Descartes. His work was done in France and resulted in a broader view of life and education. Descartes had been educated in a college at LaFleche and found that his studies had left him without any certainty of belief. This resulted in his breaking away from the old authority altogether in matters of science and philosophy and leaning toward the power of judging aright, distinguishing truth from error, and applying sense and reason to all things. His method followed from the primary faith in reason: accept nothing as true that does not approve itself to the mind, reduce every problem to its simplest elements, and proceed step by step from assured knowledge.

3Boyd, op. cit., pp. 269-270.
Soon after Descartes developed his new system Hobbs worked out his doctrine of materialism. Soon afterward, the systems of Spinoza, Leibniz, and Berkeley were introduced to the public. The efforts of these educators were the beginning of things to come. Somehow they never were able to win the reputation necessary to make their names the most influential in history.

The philosopher who probably did more to rescue philosophy from barbarity and give it to the people was an Englishman named Locke. The science of mind was almost in hopeless confusion when he began to study it. The quest for truth was altogether abandoned by all orthodox thinkers for the enunciation of meaningless maxims and of dogmas for which no reliable authority could be given. Others before him had sought and continued to seek in his time a way to establish truth for the people. Descartes, his first master, had done much, but he had used his talents chiefly in the substitution of new and unproven dogmas for the old ones. Descartes limited his new method by trying to apply mathematical formulas to every new thought. His new ideas could not reach down and touch the common man. Others had contented themselves with shrewd guesses that drove away potential disciples. Locke gathered up all that he found to be good

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in the teachings of past thinkers and all that he considered good in the ideas of his contemporaries and made them his own. These he used as the basis of his teachings to establish a philosophy free from dogmatism.  

John Locke was born at Brighton, England, August 29, 1632. He was the son of a country solicitor and small landowner. His father was also a capable attorney of Puritan stock who made the necessary provisions for his son's education. At the age of fourteen young Locke was enrolled in Westminster school where he studied under the notorious flogger named Busby. Six years were spent here in the study of Latin and Greek which were designed to give the necessary preparation for college entrance. Apparently Locke did not enjoy his early school years, probably because of a political uprising against Charles I which happened during that time.  

At the age of twenty Locke left Westminster school and entered Christ Church College at Oxford which gave him a senior studentship there that lasted for almost thirty years. Along with his studies, most of his work here consisted of a tutorship in Greek, rhetoric, and ethics. After completing

5 E. H. Fox Bourne, Life of John Locke, p. 525.
the college requirements for the B. A. and M. A. degrees, Locke took up the study of medicine.

The years at Oxford were in many ways unhappy for Locke because there seemed to be something lacking in the philosophical thinking of the school. He preferred to learn from the philosophy of Descartes rather than from Aristotle. The reading of Descartes' writings led to a revolt against the scholasticism of Oxford and the narrow Puritan teachings of his family. The degree in medicine was not granted because of his refusal to take a required examination. Locke next used the money inherited from his father's estate to do experimental work in medicine. For a period of two years he practiced medicine in an amateurish way. It was during this period that he became acquainted with Lord Ashley, who later became the Earl of Shaftesbury.

This acquaintance with the Earl of Shaftesbury was accidental, and it also had a lasting effect upon the career of Locke. Without severing his connections with Oxford, he became a member of Shaftesbury's household. Here he was regarded as a person indispensable in all matters political and domestic. He once saved the statesman's life by performing a delicate operation, arranged a suitable marriage for his heir, and served as a tutor to the oldest son. Locke

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7 Boyd, op. cit., p. 289.
also assisted the Earl in all public business and followed him into government service. When Shaftesbury was made Lord Chancellor, Locke became his secretary for presentations, and in the following year was appointed to the board of trade. This relationship lasted for a period of nine years.

Locke's health was always delicate and he left England in search of good health. On his return to England in 1666, he refused an offer to serve his government in Spain, but returned to Oxford for a short time. The Earl of Shaftesbury persuaded him to serve in his household again until 1675. Soon afterward he went to France for pleasure and lived near Montpellier for several months where he did much of his writing.

After returning to England once again, Locke discovered that the Earl of Shaftesbury was involved in a scheme to overthrow the government. The blame was naturally placed on Locke, and he had to flee to Holland to escape the fury of King Charles. Locke had to keep moving continually in order to escape the police. This also afforded much time to think and write. At this time Locke's influence was particularly strong in England, France, and Holland. The reign of Charles II came to an end and Locke was allowed to return to England in 1689. The government offered him several positions of high

Sorley, op. cit., p. 106.
importance in its service. After declining several offers he finally agreed to become commissioner of appeals. This position was held for only a short period of time because of his rapidly failing health. After resigning as commissioner of appeals, he took up final residence in the household of Francis and Lady Masham in Essex, England, and remained there until his death on October 28, 1704. 9

Although Locke was a tireless writer who wrote many articles during his lifetime, his first work was not published until 1689. His writings cover a wide range of subjects which include economics, religion, education, and government. A Letter Concerning Toleration was the first published work in 1689, and it was soon followed by the Two Treatises in Government in 1690. Later there appeared a larger number of writings that Locke had prepared several years before he had them published. These included the famous writings on: Some Thoughts Concerning Education, Some Consideration of the Consequences of the Lowering of Interest and Raising the Value of Money, and The Reasonableness of Christianity. Locke's finest work is probably the Essay Concerning Human Understanding. It is upon this work that his reputation rests. This essay owes its inception to a discussion which Locke had with some intimate friends regarding the problem of knowledge in which he was vitally interested. From the interest that

9 Bourne, op. cit., p. 561.
was aroused Locke wrote the material which is contained in his famous essay.

Locke believed that nothing should be accepted unless it first stood the test of reason. His first step was to destroy the myth of innate ideas. The ideas and principles which philosophers had considered as innate consisted of several kinds. Some are purely abstract, such as the whole is greater than the parts, it is impossible for the same thing to be and not to be at the same time, and others dealing with practical life, including good, bad, right, and wrong. Finally, there are original mathematical axioms which possess a validity that transcends empirical experience and have a super-sensitive origin. If all of these ideas were innate, then all knowledge of any importance rests upon an innate basis. These were the problems that Locke faced.

If all of these ideas are innate, they must possess unique characteristics and must be found in the minds of children, savages, and idiots. The meaning of innate signifies that it is something inherent in the soul before birth. Innate ideas will then be found in the minds of people everywhere, and these ideas will be essentially the same in all minds. A child knows his nurse, his cradle, and his

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playthings better as he becomes older. The savage learns hunting from his fellow tribesmen, but the isolated savage does not know the finer points of hunting. The little child and the savage hunter showed little or no evidence of knowing anything before becoming rational. Locke also believed that even the idea of God cannot be found everywhere in the minds of primitive people. Even the people of various civilized nations did not hold the same conception of right and wrong. If they had the same opinion they would enact the same laws with which to govern themselves. There is not a single idea among man that can be classified as universal and therefore innate.

The ancient belief in human depravity was also associated with the doctrine of innate ideas. This doctrine was held with tenacity by most educators, and it had a marked influence upon their practices. Although Locke denied that knowledge is an innate possession of the human mind, he did not include in this denial all aspects of the mental life. He did not take the radical step that his followers later took of denying the existence of the soul or mind prior to the entrance of the first sensation. Not only did he assume the existence of the soul or mind, but he believed that it also possessed certain capacities. Locke in all of his discussions

12 John Locke, Concerning the Human Understanding, pp. 27-28.
took for granted that all of these capacities were present and refrained from discussing them directly. This assumption was of fundamental importance for his doctrines of Education later.

Locke initiated the famous Tabula Rasa theory. The mind of a child at birth is nothing but a blank piece of paper or a wax tablet. Man can write upon this blank paper whatever he wishes the child to know. The impressions left on the mind from teaching are much like the grooves left by a stylus upon a piece of wax. Such is the simple but lasting figure of speech that Locke used to explain the origin of ideas. Impressions are made upon the mind through the senses, and, as a result, images are formed on the mind. In this process the mind is receptive and can be likened to a piece of paper receiving the ink from a pen.

The mind as Locke pictured it may be compared roughly to a mill in which rock containing various metals is treated. The mill is purely receptive in that it must wait to have the raw materials poured into it before it can begin to work. By the process of crushing and separating, the different metals are refined. So the mind by discrimination, analysis, and association, separates and recombines the materials of sense.

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perception into concepts, abstractions, relations, and general principles. In this discussion of the higher mental process, Locke contributed greatly to psychological knowledge. It was this contribution that made possible the great systems of education for the two centuries that followed him.

The term idea as Locke uses it stands for whatever is the object of the understanding, when a man is thinking. All ideas spring from experience which has two sources: one is from the outer experience called sensation; the other is from the inner experience called reflection. Outer experiences arise when a stimulus or motion of any part of the body excites a perception in the soul. Inner experiences arise because the soul also receives the impression of the activity which is unfolded in the elaboration of the ideas given in the outer experience. By means of reflection men perceive their own activities, and by means of sensation they perceive the effects of other things. In the immediate perception of other things consciousness is entirely passive.

Locke also places ideas into two general classifications: one group of ideas is called simple and the other group complex. First comes the division of simple ideas, some of

15 Eby and Arrowood, op. cit. p. 395.

which come into our mind by one sense only, and these may include such things as color, odor, and taste. In receiving each of these the mind is mostly passive. Other ideas come from more than one sense which contain touch, sight, shape, and motion. The third group comes from the mind's operations about its other ideas such as ideas of perception and willingness which are derived by reflection. The last group comes from internal and external perception which includes pleasure, pain, unity, power, and existence. All subject matter whatsoever is due to simple ideas. In general, ideas are in the mind and qualities are in bodies, and these are due to modification of matter. The material modifications are classed as primary and secondary qualities. The primary include extension, motion, number, shape and solidity. The secondary deal with qualities of hard, soft, warm, cold, colors, sounds, and taste. The primary qualities are inseparable from the body; the secondary qualities are still material, but are more explicitly experienced by the perceiver. Primary qualities produce ideas by impulses, and secondary qualities produce ideas by the operation of insensible particles upon our senses.

Turning from simple to complex ideas, Locke considers how impressions, passively received, combine by aid of the

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Dresser, op. cit., p. 68.
mind's activity to yield understanding. The mind makes this advance by combining several simple ideas into one compound one. (Complex ideas fall into three types: modes, substances, and relations. The idea of an amount of anything or a score exemplifies a simple mode; whereas, ideas of beauty, running, fighting, and theft are examples of complex modes. Ideas of substances, single or collective, represent distinct particular things such as lead described with reference to its weight, hardness, ductility, and fusibility. Relation is derived by comparing one idea with another. Thinking is undoubtedly due to some action of the soul, but thought is not the soul's essence. When referring to gold, it is known that the yellowness is not in the gold, but it is the power of the object to produce that idea when the substance is in a certain light. In like manner is the idea of the soul as a substance that thinks and which has the power of exciting motion in the body by will or thought, although the essence of this substance is unknown.  

The mind has no other immediate object beside its own ideas. Knowledge can then be defined as the perception of the agreement or the disagreement of two ideas. This agreement involves a fourfold principle: identity which means that one color is not another, such as blue is not red; relation

which deals with the adding of equal parts; co-existence which can be connected to the fact that iron is susceptible of magnetical impressions, and real existence such as knowing that God is present. According to Locke, knowledge is of the intuitive, demonstrative, and sensitive types. Intuition is the perception of self-evident truths and has the highest degree of certainty. Demonstration aims at showing the connection between ideas which cannot be compared by simple intuition. It proceeds by constructing a bridge of intermediate ideas between those to be compared, and reveals the nature of the connection in this manner. Sensation is a knowledge of a particular existence that is known in the mind whether or not it corresponds to reality.

Having established sensationalism as the explanation of man's experience with nature, Locke injected the same reasoning into the moral sphere. He did this by showing that the pleasure of sensation gives the clue to goodness as the central consideration of that sphere. Experience shows that people possess simple ideas of pleasure and pain, and out of this experience naturally arises the idea of goodness connected with pleasure and the idea of evil with pain. Man is stirred by fear concerning future possible evil. Un-easiness is the sign of unhappiness, therefore, happiness

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should be an obligation. Locke also finds man capable of complying with the standards of rectitude in accordance with this program of the moral life. Moral liberty for him is not mere freedom of the will, but freedom of the moral agent and power to act or abstain from action according to preference. To prefer one action to another is the will to do it. Locke's whole philosophy reinforces the doctrine that pleasure and happiness constitute the good. He concludes from the doctrine of common sense that man is fitted for natural improvement and moral knowledge.

There is probably no one that shows a better balance of common sense than Locke. He was a man who considered every side of any controversy and always applied the test of reason first. This served him well in obtaining an impartial answer to all questions. Because of his doctrine of reason, atheists, materialists, and idealists try to trace their doctrine back to him. Many schools of education try to picture him as an advocate of formal discipline and a member of the utilitarian sect. There are others that call him an empiricist and a rationalist. It is the application of reason that probably describes his character the best, and it is summed up well in the following advice he gives in teaching a child:

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Dresser, op. cit., p. 72.
If he shew a forwardness to be reasoning about things that come in his way, take care, as much as you can, that nobody check this inclination in him, or mislead it by captious or fallacious ways of talking with him. For when all is done, this, as the highest and most important faculty of our minds, deserves the greatest care and attention in cultivating it: The right improvement, and exercise of our reason being the highest perfection that a man can attain to in this life. 21

As an educator, Locke represents the best English tendencies of his time. He declared that men, in the majority of cases, are formed by education rather than by heredity. This probably is interpreted to mean that the school can make of a man what it will much like a river that can be turned in a direction other than the course it had previously taken. It has already been noted that this stand on education by Locke gave rise to an optimism in regard to society which has led to a well defined theory of progress. 22

Locke was a firm believer in a strong body and in good health. His own frail body and poor health caused him to see the limitations placed on a man who did not enjoy good health. This requirement is placed high on his list of educational requirements and is stated very well in the following quotation:

A strong mind in a strong body is a short but full description of a happy state in this world. He that has


22 Good, op. cit., p. 184.
these two, has little more to wish for; and he that wants either of them, will be but little the better for anything else. Men's happiness or misery is most partly of their own making. He whose mind directs not wisely, will never take the right way; and he whose body is crazy and feeble, will never be able to advance in it. 23

The building of a strong body that is able to endure hardship has its beginning in the type and amount of clothing that the child wears. The following quotation gives a good account of the way parents should dress the school child:

The first thing to be taken care of is that children be not too warmly clad or covered, winter or summer. The face when we are born is no less tender than any other part of the body. 'Tis use alone hardens it, and makes it more able to endure the cold. And therefore the Scythian philosopher gave a very significant answer to the Athenian who wondered how he could go naked in frost and snow. How, said the Scythian, can you endure your face exposed to the sharp winter air? My face is used to it, said the Athenian. Our bodies will endure anything, that from the beginning, they are accustomed to. 24

The teacher must be a person having fine ability and an outstanding character. His work is much like that of a skilled worker building a carriage. It is the duty of the teacher to form the mind, settle in the pupil good habits, and to work in him a love that is praiseworthy. When carrying this out, the teacher should instill in the child vigor, activity, and industry. In teaching, he should try to dispose the mind of


24 Ibid., pp. 2-3.
of the pupil to his work, but always recognize the instability of a child's mind and be patient with him. To mistreat and punish is to instill a hatred of the lesson period. This confuses the child's mind so that he does not know what he is doing or what the teacher is saying to him. The responsibility of the teacher is to get and hold the attention of his pupil. As long as attention is held, the pupil will advance as rapidly as his abilities will carry him. To attain this, the teacher should make the child comprehend the usefulness of what is being taught and cause him to see that he can do something that he could not do before. Stubbornness and wilful neglect should be mastered at any cost, even if it takes whipping to do it. All other faults are to be corrected with a gentle hand and encouraging words. Most ill manners in the child result from the forwardness of the teacher and could have been avoided had the teacher exercised the proper amount of discretion. The many faults of childhood are not to be observed as wilful, but are to be dealt with intelligently and eliminated in time. The only true way to deal with children is through reason.

Locke in his teachings advocated training the boy to be a young gentleman. The essentials in the education of a young gentleman are virtue, wisdom, breeding, and learning.

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in the order named. Locke does not directly contemplate universal education, or suggest a system of education for the masses. Most of his precepts can be applied generally. It was at the end of his career that he became interested in a project for workhouse schools.

Virtue deals with a true notion of God and should be implanted early, and a plain form of morning and evening prayer should be adopted. Children should not be told about goblins or ghosts. The children will then be no more afraid of the dark than they are of the daylight. The teaching of prayer will build a firm and strong character. Under wisdom, the child should be taught to have true notions of things and not to be satisfied until he has them. The mind should be raised to high and worthy causes. This should keep him far from falsehood and cunning things. The teaching of these things will be the finest preparation of a child for wisdom. The essentials of good breeding are not to think of ourselves or to think evil of others. Bashfulness can be cured by a change and variety of company. Young people are to abstain from roughness, contempt, contradiction, lack of respect, and conceit. They should avoid interruption, magisterial correction, and wrangling. The effects of bad company sink in deeper than the skin. Learning is placed last and is a secondary matter. Latin and Greek or other distasteful things may be made easier through play.
Learning could be made a play and recreation for the child, and he can "play himself into reading and spelling." Young children love toys or anything they can own or dominate, whether to satisfy their own desires or to possess objects. The instruction should satisfy all wants of nature, but not all the wants of fancy. "Listen not to trivial complaints, but teach the children to love liberty instead of loving domination." Crying is to be discouraged, but a distinction should be made as to the reason for tears. The constant appeal is to common sense at all times. Curiosity is the desire for knowledge and should be encouraged at all times. "Require a boy to whip his toy so many hours a day, for this will expel extra energy," and he will then look forward to his book as a form of recreation.

Reading should be taught early, and writing reasonably follows the ability to read. The right position of the pen and body must be practiced. Tracing with black ink upon a large hand engraven paper in red ink is recommended. Exercises on a neutral shade of paper should follow. Drawing follows the art of writing. So much should be learned of perspective and drawing as to enable the pupil to represent anything on paper that he so chooses. "Do not harass the boy who has no aptitude for drawing." As soon as the boy can

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speak English fluently he should be taught some foreign language. French should be taught before Latin because it is a living language. As to Latin which follows a living language, Locke requires that it shall be learned through the use of conversation, if a qualified person can be found to teach it through that method. If the direct method is used the boy will learn more easily.

Next to being able to converse in Latin, Locke recommends the writing of a simple translation of a Latin story into English. The study of geography should first be confined to the study of the natural parts of the globe. Astronomy should include a knowledge of the constellations of the hemisphere, and then a study of the relationship of each planet to the other. Ethics may be taught by practice rather than by precept, and the child should be able to understand civil law, history, and the constitution of his country. Style may be set by teaching the boy to tell a story and correcting his faults as he tells it. Letter writing is so necessary that it must be practiced diligently, and Cicero's letters are the best for business and conversation. Greek is also necessary for the study of a young gentleman, and this should be studied in the order of historical events. Dancing is also necessary to give the

Compaye, op. cit., p. 205.
young man grace, but music is given the last place among accomplishments. The young gentleman should also learn a trade. This should include as many as two or three, one of which is to be learned well. This will provide recreation and pastime as well as something from which to earn a livelihood. Gardening and carpentry are the two trades preferred because they give skill and ample exercise. Recreation consists not in idleness, but in change of occupation.

Should there be any emphasis placed on memory work, or "learning by heart?" To this question Locke gives a negative reply. He sets out from the psychological idea that memory does not lend itself susceptible to progress. It is evident, according to Locke, that the strength of memory is due to a happy constitution and not to any habitual improvement gained through exercise. An impression made upon wax will not last as long as the impression made upon brass or iron. If it is renewed often, it will last longer and the mind will retain it automatically.

The last phase of Locke's educational program is contained in travel, which Locke maintains will broaden the young man's understanding.


30 Compayre, op. cit., p. 208.
The last part in education is travel, which is commonly thought to finish the work, and complete the gentleman. I confess, travel into foreign countries has great advantages; but the time usually chosen to send a young man abroad, is, I think, of all other, that which renders them less capable of reaping those advantages. Those which are proposed, as to the main of them, may be reduced to these two: first, language; an improvement in wisdom and prudence, by seeing men, and conversing with people of tempers, customs, and ways of living, different from one another, and from those of his parish or neighborhood.31

31 Locke, op. cit., p. 184.
CHAPTER V

THE INFLUENCE OF LOCKE'S TEACHINGS
UPON INDUSTRIAL ARTS

Locke became the chief exponent of the idea that education should fit a boy for life whether it be in a profession or in a trade. In discussing the last phases of the education of a young gentleman in his book Thoughts Concerning Education, Locke writes as follows:

"I would have him learn a trade, a manual trade—even two or three, but one particularly. Gardening and joinery are especially desirable, giving valuable skill and ample exercise. Recreation consists not in idleness, but in change in occupation." 1

Locke as commissioner of trades and plantations advocated a system of working schools for all pauper children between the ages of three and fourteen. In this school the children were to be taught spinning and knitting, or some other part of the woolen manufacture. This useful training, along with religious training, was a minimum educational training in accordance with the pedagogy of Locke, which insisted on individual exercise in habits of practical usefulness. The habits of thinking and forming tested judgments were considered

1 John Locke, Some Thoughts Concerning Education, p. 179.
more important educationally than instruction in subjects of the established curriculum.

Although Locke could not do much in his day to institute a wide program of manual training for school children, it remained for his followers and fellow educators to carry out the task. Among those advocating a program of manual training for school children were Rousseau, Pestalozzi, Fellenberg, Froebel, Dewey, and many other educators of modern time.

Rousseau was a close follower of Locke and was acquainted with many of Locke's writings, especially the book on *Some Thoughts Concerning Education*. Locke's influence was also felt in Germany later through Rousseau's *Emile* which sets forth his educational views. The German translator, Campe (1746-1818), who translated Locke's *Some Thoughts Concerning Education*, pays tribute to Locke and Rousseau by saying "They showed the way for the rest of us to follow."  

Rousseau believed profoundly that experience is the best teacher, and he would therefore have everything taught by actions and say only what cannot be done. The attitude of Rousseau toward manual training is clearly stated in *Emile*.

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If instead of making a child stick to his book, I employ him in a workshop, his hands labor to the profit of his mind, he becomes a philosopher but fancies he is only a workman.

This statement by Rousseau prepared the way for the educational methods of Pestalozzi and his contemporaries. Rousseau would have his student make his own choice of several trades. He would choose a trade that might have been useful to Robinson Crusoe on his desert island. Moreover, at the time of choosing a trade, the student would already have served one half of his apprenticeship in the exercises to which he has been accustomed. He is ready to turn his hand to whatever may be required of him, for he already knows how to use the spade, hoe, mallet, plane, and the file. All he needs to learn further is dexterity. Rousseau also believed that his student would learn more from one hour of manual labor than he would from a whole day of verbal instruction.

As to the method of learning a trade, Rousseau would have his student go to a joiner twice a week and spend the whole day in his shop. He would have him arise early enough in the morning to be in the shop when the joiner arrived, and all of the orders would have to be taken from the joiner. In this way the young man might learn several trades at once.

Rousseau was not a school practitioner himself; he was a theorist pure and simple. He never attempted to put into

\[\text{Bennett, op. cit., pp. 80-81.}\]
practice his own educational theories and principles which involved life situations for the child. It remained for others to carry out those principles in practice. Basedow and Salzmann in Germany took advantage of the general enthusiasm to organize experimental and model schools along the lines suggested by Locke and Rousseau.

The most successful of these new reformed schools was carried on in Germany under the direction of Basedow and Salzmann. The school was opened in 1784 on a farm near the Thuringian forest. The number of students was restricted to sixty in order to maintain the spirit of family life. In addition to providing for a certain amount of traditional school work, many of the more important ideas of Locke and Rousseau were carried out. A heavy schedule of physical training was carried out which included swimming and skating. The younger children spent three hours a day studying natural history. In addition, each child had his own garden plot for which he was responsible. This gave him experience in agriculture. In the same plan by Salzmann, there were several workshops provided for manual training. 5

In the latter part of the eighteenth century and the early part of the nineteenth century, the Swiss reformer Pestalozzi advanced a step further than his predecessors. He

based his instruction upon the object method and insisted that the mind be supplied with ideas through sense perception by observing and handling the objects themselves. He took up the "back to nature" slogan, and had the pupils engage in farming, spinning and weaving.

Pestalozzi was impressed by the writings of Rousseau and later became associated with a liberal group of students. This cause him to be regarded as a dangerous revolutionary. His liberal ideas spoiled his chances of any future appointment to public office, and this caused him to look in another direction for opportunity to help the poor whom he desired to serve. The first step in helping the poor, he reasoned, was to see that they were properly educated. Pestalozzi started his own career in farming but failed because of his own inexperience. In spite of his failure in farming and the heavy indebtedness that resulted, Pestalozzi was determined to begin to serve the great desire of his life by trying to lessen the misery of the poor through education. He believed that "the child's need for continual activity suggested utilizing that activity in useful work." If children were guarded against fatigue, "it would be possible not only to teach children to earn their bread but to cultivate their intellectual and moral nature at the same time." He thought,

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6 Samuel J. Vaughn, Content and Methods of the Industrial Arts, p. 23.
too, that "country life in which the cultivation of the land was combined with some sort of handicraft would provide the best means for teaching the poorest children."

Pestalozzi began to put his theories into practice in the winter of 1774. He brought into his home twenty children from poor families. Several of this group were undernourished. He clothed them, fed them, and treated them as his very own. The children were always with him sharing work in the garden, fields, and spinning cotton during the bad weather. Very little time was given to actual lessons, and the children were often taught while working with their hands. From an educational viewpoint, this experiment was a success, but it was a failure from the financial standpoint. This experiment received much publicity. Money was offered by many admirers to defray expenses and by 1776 all of the debt had been paid.

Pestalozzi met financial failure shortly afterward because of the added expense of a larger enrollment and poor business judgment on his part. Contagious diseases also played an important role in the bankruptcy. In spite of economic failure, Pestalozzi's educational theories proved to be sound. Later he took advantage of another opportunity to help the poor by opening a home for the homeless children.

Ibid.
of soldiers killed in combat. This project failed after
five months because the building was needed as a hospital
for wounded soldiers. Near the end of his successful career
in the field of education, Pestalozzi wrote his opinion on
the success of manual labor. He stated it as follows:

And I am more than ever convinced that as soon as
we have educational establishments combined with work-
shops, and conducted on a purely psychological basis,
a generation will necessarily be formed which, on the
one hand, will show us by experience that our present
studies do not require one-tenth part of the time or
trouble we now give to them. 8

Just as Pestalozzi was the new and vital force in edu-
cational philosophy during the early part of the nineteenth
century, so Fellenberg, applying in some measure the principles
of Pestalozzi, was the new force in practical school organiza-
tion during the same period. Fellenberg's father, a high
government official in Switzerland, was interested in Pesta-
lozzi's experiments. In this way Fellenberg became acquainted
with Pestalozzi while still quite young. His mother had
early directed his attention to the care of the poor.

Fellenberg's aim was to establish an institution in which
the poor would be trained to work and the rich would be trained
to appreciate the work of the poor. His aim was broader than
that of Pestalozzi because it included industrial education
of the poor, training of the wealthy, and the training of

teachers for rural schools. In 1799, Fellenberg purchased an estate of six hundred acres near Berne. Fellenberg then began the great work he had planned in the field of education.

Fellenberg and Pestalozzi became associated with each other shortly after Pestalozzi was obliged to vacate his school building for wounded soldiers. At the insistence of Fellenberg, Pestalozzi moved to a chateau near the school of Fellenberg. It was thought that the influence of Pestalozzi would help the new undertaking of Fellenberg. It soon became evident that the two were made to respect each other rather than to live together. There was as much difference in their characters and ways of thinking as there was in their habits and outward appearance. With Pestalozzi the heart was first, and with Fellenberg the mind came first. After four months, they decided to part and each go his own way. Shortly afterward they tried again to join their efforts, but this resulted in another failure.

Fellenberg's school expanded and later grew into several different schools which included the academy, farm and trade school, school for girls, and a normal school. In the academy a teacher was provided for every three or four pupils. The aim was to combine the advantages of private and class

9 Parker, op. cit., pp. 313-314.
instruction. Physical education was given an equal standing with intellectual education and it was under this heading of physical education that manual labor was classified in Fellenberg's academy. He believed that regular exercise through games, gardening, and the mechanical arts should be provided so there would be no time for indolence. In order to provide for such exercise, two small buildings of the academy were reserved for this purpose. In these buildings, the cabinet shop, bookbindery, and several rooms for instrumental music were located. Thus by keeping the students busy the vicious habits of idleness would be avoided. The philosophy of Fellenberg is well stated in the following quotation:

By turning their attention to agriculture and the mechanic arts; by inspiring them with a love of labour, or at least of a useful application of their strength and muscular activities; by exercising their ingenuity in the use of tools and instruments; by familiarizing them to an attentive observance of nature in her different kingdoms, and in the revolution of seasons—a foundation is laid for those more expanded feelings and generous sympathies, which bind the upper to the lower classes of the community, and eventually tend to exalt the condition of humanity.10

It was this point of view that was adopted by the advocate of manual labor in American schools, and it was the academy of Fellenberg that became the model school for the manual labor movement.

The direct heir to the educational ideas of Pestalozzi was Froebel. It was he who took the idea of organic

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10 Bennett, op. cit., pp. 129-135.
growth set forth by Pestalozzi and developed it into the doctrine of self-directed activity which he made the very center of his educational theory. He took Pestalozzi's practice of training in observation and sense perception and expanded and systematized it until he produced the kindergarten gifts and occupations.

While studying architecture at Frankfort-on-the-Main, Froebel became acquainted with the director of a model school who had been inspired by the teachings of Pestalozzi. His friend persuaded him to give up architecture and enter the teaching profession. From his very first experience in teaching he realized that he had found his life work and was happy.

In 1816, Froebel opened his school by taking care of the education of a niece and four nephews. The next year he moved his school from Griesham to Keilhau, another village near the Thuringian forest. This became the nucleus around which he built up an institution and an educational community that enabled him to demonstrate his ideas of education. Suffering from unjust religious persecution, he left Germany but returned in 1837 and established in the village of Blankenburg the first school known as the kindergarten.

It was in the kindergarten that Froebel did have an opportunity to put into practice forms of handiwork that were applicable in the training of young children. His gifts
and occupations were vital to success. The gifts were playthings consisting of various geometrical forms which were intended to give the children new aspects of the external world. These were given to the child to play with, build, and create without changing the forms. The occupations consisted of material like clay or paper which could be easily changed in form to fit the whim or fancy of the little builder. The gifts stood for law; whereas, the occupations stood for freedom. The gifts led to discovery and the occupations to invention. The gift gives insight, and the occupation gives power. The whole educational attitude of Froebel toward teaching can be better understood in the following quotation:

The activity of the senses and limbs of the infant is the first germ, the first bodily activity, the bud, the first formative impulse; play, building, modeling are the first tender blossoms of youth; and this is the period when man is to be prepared for future industry, diligence, and productive activity. Every child, boy, whatever his condition or position in life, should devote daily at least one or two hours to some serious activity in the production of some external piece of work. 11

Three countries preceded the United States in the recognition of manual labor as an educational instrument. These three countries were Finland, Russia, and Sweden. The first of this group to set up manual training on an extensive scale was Finland. In 1858 the Emperor of Russia

11 Bennett, op. cit., pp. 161-165.
appointed a man named Uno Cygnaeus to reorganize the primary schools of Finland. This reorganization took place along Froebelian lines. The curriculum was set up to include courses in woodwork, metalwork, pottery and basketry. In 1866 some form of manual work was made compulsory for all boys living in the rural areas. It was not made compulsory, however, in the cities, but it was required to be taught in the teacher training schools for men.

The second country to make handiwork a part of its educational system was Sweden. The work here started as the home sloyd system because of the long and dark winter evenings. It was designed to give the people something useful to do with their hands. The father and the sons would, with a few simple hand tools, make ax handles, rakes, pins, and yokes for farm use. The mother and daughters would spend their evenings weaving and knitting. As time went on the people were able to sell some of their homemade products. Later, each village became famous for a particular product. Every boy in the neighborhood was trained to carry on the type of handiwork of his own community. The introduction of power machinery caused the home sloyd system to decline until it finally went out of existence as a system.

12 Samuel J. Vaughn, and Arthur B. Mays, Content and Methods of the Industrial Arts, pp. 24-25.
Later, the sloyd system was introduced into the schools of Sweden as a part of general education at the elementary level. This was put into effect by Otto Salomon. People believed that in these schools sloyd instruction could be given economically and effectively. Many educators also believed that the main purpose was to contribute to general education. The method to use was left in dispute until Salomon decided to visit Cygnaeus in Finland and discuss with him the proper approach to putting the sloyd program into the schools. Cygnaeus agreed that the program should be placed on a pedagogic basis rather than on an economic basis. He also insisted that the teacher should be a school teacher rather than a skilled workman.

On his return from Finland, Salomon started a scientific study of sloyd in order to work out the details for a course of study. He arranged for courses covering a five-week period for folk teachers. This continued until the teachers were able to assume the full responsibility of a teaching program. Salomon believed that fifteen pupils constituted a large enough class for one teacher, and six pupils were assigned to a beginning teacher. He also believed that each child should be furnished a set of tools to use, keep sharp, and return to their proper place when the class period ended. Salomon also taught that the student should have experience with a large variety of tools; these were to be kept in a tool room where the teacher could check them
easily. Individual work benches were provided for each pupil. Salomon's method was very effective, and its influence has been felt not only in America, but also all over the world. Many educators from foreign lands went to study under Salomon during the summer months.  

The theory of the Russian system was "instruction before construction." This system undertook to give scientific tool instruction by a series of exercises that involved in a systematic way the fundamental tool processes. Bella Vos, the director of the St. Petersburg Imperial Technical School, believed that the way to do this was to analyze the tools, processes, crafts, and trades into their elements and to arrange these elements into methodical courses in instruction.

The course of instruction was divided into three parts. In the first of these parts the pupil was given the names of the tools, was told how to care for them, and was shown how to use them. In the second part the student learned to combine the exercises of the first part by making wood joints to be used in construction. Metal work was treated in the same way. In the third period the pupil made the whole or parts of various projects. During the course, the student learned to sharpen and set his tools, to care for valuable measuring instruments, and to work from drawings.

Under the Russian system each pupil was provided with a workbook in which he was required to record the successive steps of an operation. The books had to be kept clean and were stored with the tools at the end of each day. The teacher went from pupil to pupil, giving instruction individually. He often made his comments in a loud voice so that pupils near him might profit from the criticism. The teacher often demonstrated work with his own hands, and was obliged to follow the work of the student closely in order to prevent poor work habits. Each operation by the student had to be approved by the teacher before he was allowed to move on to the next step. Every effort was made to establish working independence in the student later. The Russian system gained popularity throughout the world through its various exhibitions. The system was adopted in many different countries of the world.

In 1876, at the Centennial Exposition in Philadelphia, there was an exhibition of the work done in the Russian technical schools. It showed the typical exercises used as a basis for tool construction in both wood and metal that had been devised by Della Vos. This exhibition attracted nation-wide attention and particularly impressed John D. Runkle of the Massachusetts Institute of Technology.

Ibid., pp. 19-43.
Technology and Calvin M. Woodward of Washington University, St. Louis, Missouri. In 1879 through the influence of Woodward, money was raised from private sources to build and equip a building for the St. Louis Manual Training School for Washington University. This school was opened in 1880, and took over the Russian system which had been devised for engineering students. In 1884 three other cities, Chicago, Toledo, and Boston followed the pattern set by St. Louis, but Baltimore holds the distinction of having established the first manual training school as an integral part of the public school system. The movement spread rapidly to other schools throughout the United States.

The development of manual training in the United States is classed into four major stages: The Russian stage which was patterned after the St. Louis Manual Training School, the Swedish Sloyd Stage which was introduced from Sweden by Gustav Larsson, the Arts and Crafts Stage which comes from England and was introduced by Ruskin and Morris, and the Industrial Stage advocated by American industrialists. In the beginning of the manual training movement there were two major purposes in the thinking of the founder in the United States: one was to enrich the general education of the schools and the other was to prepare boys

for industry. The prevailing prejudices of educators with references to any sort of vocational training in the public schools caused Woodward and other advocates to place emphasis upon manual training as a needed phase of general or cultural education. Woodward's plea often was to use the whole boy in school, "his hands as well as his head."

The manual training movement was modified from time to time in the United States through influences from other movements of the era. The two most important of these influences were the sloyd movement from Sweden and the arts and crafts movement from England, both of which served to enrich the aesthetic features of the work and to emphasize the importance of pupil interest in the activities provided in the shops. The most important movement was the gradual acceptance of manual training as an important phase of the high school program.

The program was broadened and enriched to include the junior high school, the elementary grades, and the kindergarten. The leaders of kindergarten instruction included prominent educators like John Dewey and G. Stanley Hall. In January 1896 Dewey started the operation of his experimental school at the University of Chicago. This

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school was operated from 1896 until 1903 and was strictly an experimental laboratory. This was also a place where educational ideas could be tested, criticized, and demonstrated. What Dewey wanted to do was to put into effect certain principles which Froebel was the first to set forth. The school was to prepare the children for life in that it produced the conditions typical for social living.

The children in Dewey's school varied from the ages of four to fourteen. They were divided into groups of ten, and no rigid scheme of grading was used. The procedure of the school followed in a less formalized way that practiced in Froebel's time. Every effort was made to find new and better methods. In the first six grades Dewey emphasized occupations, music, art, shop work, gardening and sewing—all of which were learned in the situations and problems that arose in connection with the activities of the children.

Among the things constructed in connection with woodwork were blocks, pencil boxes, match boxes, bookstands and similar objects. In relation to the school itself, many activities demanded cooperative action in constructing things the school needed, including bicycle stands, racks, and equipment for physical exercises. All of these activities and many others brought each child into active relationship with his fellow workers. In fact, the entire
work of the school was designed to make the child conscious of useful citizenship.\textsuperscript{17}

The success of Dewey's experimental school spread to many other areas where similar plans were put into effect. Among the men in the manual arts who acted quickly to it was Charles Richards, professor, then director of the manual arts department of Columbia University. He advocated that many other schools be operated along these lines. In 1904 Richards wrote an editorial in the \textit{Manual Training Magazine} and suggested that the term industrial arts be substituted for manual training. He contended that, owing to a change of viewpoint, "we are rapidly leaving behind the purely disciplinary thought of manual training. Now we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to civilization."

In 1913 Frederick G. Bonser of Columbia University contributed an article to the \textit{School Arts Magazine} that expanded the conception of industrial arts in the elementary school. The article considered industrial arts as both a subject and a method, an end and a means. He asserted that industrial arts, when considered as a school subject, must justify itself on the same basis as other subjects. Bonser states this well in the following quotation:

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From this standpoint, it will at once appear that primary emphasis will not be placed upon the production of industrial commodities, but rather upon intelligence and cultivated taste in their choice and use. In no single field will all of the children function as producers, but from every worthy field they will function as consumers. The largest problems are those of developing an appreciative understanding of industry as it is at the present time, realizing its social problems and cultivating intelligent judgment and appreciation in the selection and use of industrial products.

While the term industrial arts was first used to designate work that developed as a reaction against formalism, the term has become so popular in the United States that it is coming to include all instruction in handicrafts whether formalized or not. Its meaning is essentially the same as manual arts, although its connotations are different. In the term industrial arts, the word industrial is emphasized; whereas, in manual arts the word arts is the most important. To-day the term industrial arts is the most widely used term.

Locke's theory of sense perception can be applied to the learning of the industrial arts student. This learning takes place from birth to death. There are approximately twenty sense organs in the human body, but only the six senses of sight, smell, hearing, taste, touch, and muscular sense will be discussed in relation to industrial

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18 Bennett, op. cit., pp. 452-455, citing Frederick Q. Bonser, School Arts Magazine.

19 Ibid.
arts. The sense of sight would be impossible without the effect of light waves that come through the pupil of the eye. It is through this organ that the student sees the different colors in the shop.

The ability to hear ranks high in human behavior. Sound waves are complex and may be classed as tones or noises. The music of an instrument, or the voice of the teacher comes through the choice of sounds. The crash of a broken hand saw blade, or the ring of an anvil attracts attention because of intensity. A wide discrimination of noises is an ability that the student can develop. The ability to detect sounds with respect to the proper functioning of tools and machinery is a valuable asset for every shop student.

Pleasant or unpleasant feelings always accompany the sensation of touch. Scratching is a response to repel unpleasant stimuli. A feeling of roughness is repulsive and produces a desire to repel it; whereas, the feeling of smoothness is pleasant and evokes a desire to touch something smooth. The development of touch is very important in the shop, for the tiny little receptors in the finger tips carry many sensations to the reacting mechanisms which enable the student to judge better the character and correctness of his work.20

The organs of the sense of smell are found in the upper part of the nose. All bodies of matter that give off odor are surrounded by gas, which provides the stimulus which affects the nose. Smells are either agreeable or disagreeable. In cooking, in chemical laboratories and in the shop, the sense of smell becomes so developed as to enable the individual to recognize substances in the various stages of preparation. The student cannot recognize poor glue unless he knows what poor glue smells like. He must build up a poor glue percept. The same is true for the sense of taste.

Muscular sense is kinetic, and it is often confused with the sense of touch. The fine coordination of the violinist, the artist, and the craftsman is due to the superior development of the muscles. This development is necessary when accuracy and motor efficiency are desired. People do not realize that when they write, walk, and work, it is due to the fine muscular sense that has been developed through higher thought centers. For many, it is the cherished gift to get the hands to do what the mind directs.

The ability to discriminate also ranks high in importance in any shop because it requires the fine coordination of many of the senses working together. Responses seldom occur that do not involve cooperation of the senses in discriminating things and ideas. The process of education is
the development of discrimination. Learning to print well is a complex procedure, for it requires discrimination in respect to lines and the shapes of various letters. Training enables the workman to use the various senses in the selection of materials, operations, and tools. The student must decide whether one or several operations are necessary in performing a task. He must also decide which finish is best for a certain type of wood. The student must reason whether it is better to remove excess stock with a plane or with a saw. The difference between a crude and refined workman is the ability to discriminate. Successful teaching, in a large measure, is determined by the keenness of discrimination developed in the students.
CHAPTER VI

SUMMARY

The empire of Greece flourished for many years and its influence was felt in Western Europe for fifteen hundred years. In Greece mathematics, science, astronomy, and medicine reached a high degree of development. Greek philosophy has been divided into several different schools of thought which extended from the time of Thales to the time of Aristotle.

The Ionic, or School of Miletus, was the first to be founded. This group of philosophers introduced several theories as to the size and shape of the earth. The invention of the sundial and the first map of the world is also credited to them. The Pythagoreans came into being after the Ionics. They established many theories of knowledge, and their main doctrine is associated with the transmigration of the soul. The Atomists, who came later, are noted for establishing a doctrine that connected theology with philosophy.

The latter part of the fifth century B.C. is associated with Socrates and his contemporaries the Sophists. This is a period in Greek history when the nation concentrated its efforts upon teaching. Plato and Aristotle were the disciples of Socrates who carried on his work after his
death. The doctrine of innate ideas received full recognition in Plato's time. Much work was carried on in the academies of Plato and Aristotle.

The fifth century B.C. is also the time that Greece reached the zenith in the development of architecture, painting, and sculpture. This period is often referred to as the Golden Age of Greece. Education was carried on in Greece under the two general systems of Sparta and Athens. The schools of Sparta stressed physical development and military training; whereas, the schools at Athens were operated more along the lines of the present day. These schools failed because of too much emphasis on military training and lack of a program that included education for all the people.

The fall of Greece as a nation was followed by the rise of the Macedonian empire during the third century B.C. All the nations of the East were brought under the leadership of Alexander the Great who made Alexandria the common capital of the world. Here Greek culture flourished and continued to spread over all the world. The second century B.C. was greeted by the fall of the Macedonian empire and the rise of the Roman empire. The Romans took Greek culture back to Rome and here again the culture and the philosophy of the Greeks flourished as a conquered nation.

The birth of Christ, during this period, introduced into the world the virtues of faith, hope and charity. The
doctrines of Christianity were taught throughout the Roman empire. This period was marked with endless persecution, and resulted in the conquest of Rome by the Vandals. Christianity eventually took over the responsibility of education which resulted in the merging of Christianity with philosophy. The innate ideas of the Greeks still prevailed. Much of the work of education was done later during the Dark Ages by the monasteries. The Dark Ages drove the philosophy of Greece from the continent of Europe. Many of the works of Plato and Aristotle were preserved in the monasteries in Africa, and the remainder was carried by scholars to Greece where the Byzantine empire was established.

In 642 A. D. the Mohammedans started a series of invasions from the Fertile Crescent of the Nile westward to the coast of Spain. They carried many of the works of Aristotle with them and established an empire in Spain. Migrations went from Spain into central Europe, and with them went the works of Aristotle and Plato. Scholars from the Byzantine empire migrated westward and translated the writings of the Greeks. The philosophy of the Greeks once again rose to another zenith, which resulted in the establishment of many universities and the rebirth of scholasticism which was to rule the world again until the sixteenth century A. D.

The sixteenth century was the beginning of the Renaissance which is sometimes referred to as a new birth. This
is the time when a new philosophy was born. The movement was started by men like Duns Scotus, Bacon, and Descartes who emphasized individual freedom. None of the early thinkers was successful in establishing a new philosophy. It remained the task of Locke who lived during this period of history to establish a new philosophy for the people which would be acceptable. Locke was a commoner of English descent who had been displeased with the teachings of the past.

Locke, born in Wrighton, England, in 1682, received his education at the college level and later became a tutor. An acquaintance with the Earl of Shaftesbury resulted in a friendship that brought him into the Shaftesbury household as an advisor and teacher. He held various government positions during his lifetime, and for reasons of poor health he had to spend much of his time on the continent of Europe. It was in Europe that he wrote his famous book on *Some Thoughts Concerning the Human Understanding*. In this book he set forth his new philosophy. The innate ideas of the Greeks were successfully refuted, and the doctrine of reason and common sense became the new philosophy. Locke espoused the doctrine of sense perception which was accepted by people throughout the world. In his book, *Some Thoughts Concerning Education*, he set forth his views as to how a young gentleman should be educated. Emphasis was placed upon body training as well as upon the regular
academic subjects and the learning of one or more trades. The famous Tabula Rasa theory became the watchword of education.

The influence of Locke has been great upon industrial arts. His idea that a school be established for pauper children where they might be kept busy and earn an income was an idea that was carried down to the present time. The program of manual training was modified from time to time. The trend was from skill, as advocated by the Russian system and American industrialists, to the idea that industrial arts should be made a part of general education as advocated by the sloyd system of Sweden and the arts and crafts system of Finland and England. Today, in the twentieth century, industrial arts is a phase of general education which takes its place along with other subjects of the curriculum.

Locke's philosophy generally, and especially the doctrine of sense perception, fits well into the industrial program of to-day. There can be no doubt that the senses of sight, smell, hearing, feeling, taste, and muscular sense play an important part in the learning situations of an industrial arts shop class. This is probably to a higher degree than that found in other academic courses of the curriculum. It then sounds reasonable that all senses should be developed to the highest degree. If industrial arts then, gives this training, the conclusion is that industrial
arts should be a required subject from the very beginning of a child's education from pre-school education through elementary school, high school, and college, or even throughout life.
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