

Spring 1958

United States Diplomatic Relations with Mexico, 1910-1916

Donald E. Chipman
Fort Hays Kansas State College

Follow this and additional works at: <https://scholars.fhsu.edu/theses>



Part of the [History Commons](#)

Recommended Citation

Chipman, Donald E., "United States Diplomatic Relations with Mexico, 1910-1916" (1958). *Master's Theses*. 597.

<https://scholars.fhsu.edu/theses/597>

This Thesis is brought to you for free and open access by the Graduate School at FHSU Scholars Repository. It has been accepted for inclusion in Master's Theses by an authorized administrator of FHSU Scholars Repository.

THE ATTITUDE OF HAWTHORNE TOWARD SCIENCE
COMPARED WITH THE ATTITUDES OF
ROUSSEAU, WORDSWORTH, GOETHE, AND POE

being

A Thesis presented to the Graduate Faculty
of Fort Hays Kansas State College in
partial fulfillment of the requirements for
the Degree of Master of Science

by

Doris Chipman, A. B.

Fort Hays Kansas State College

Date May 21, 1958

Approved

Verna Parish
Major Professor

Ralph J. Coder
Chairman Graduate Council

ABSTRACT

A comparative study of the references to science in the works of Nathaniel Hawthorne and those of Jean Jacques Rousseau, William Wordsworth, Johann Wolfgang von Goethe, and Edgar Allan Poe revealed Hawthorne's attitude toward science and scientists was similar to that of these Romantic writers. The popular attitude toward science during the late eighteenth and early nineteenth centuries had an effect on the portrayal of science in the writings of the period. Although the Romantics, like others of their time, hoped science would lead to an improved life for man, they were skeptical of the disastrous effects of new scientific discoveries.

Hawthorne shared the Romantics' dislike for science meddling with nature and destroying nature's beauties and causing evil. Science was also accused of destroying man's individuality and of destroying man's love of beauty. According to Hawthorne and the other Romantics, by delving deeply into the study of science, scientists became so absorbed in their work that they lost their love for humanity. No sacrifice, not even a loved one's life, was too great if it would add to the store of scientific knowledge. The Romantics did not portray all scientists as cold, inhuman monsters, but implied that even those with good intentions harmed mankind through errors resulting from too little knowledge.

Research for this paper was largely confined to the works and autobiographical material of each of the five writers. Biographies and critical analyses of these authors' works were helpful for interpretation and background material.

TABLE OF CONTENTS

CHAPTER	PAGE
INTRODUCTION	
I. POPULAR ATTITUDE TOWARD SCIENCE	1
A. General Scientific Trends	1
B. Pseudo-Science and the Supernatural	15
II. REFERENCES TO THE STUDY OF SCIENCE	21
A. Evils or Benefits of Scientific Study	21
1. Rousseau	22
2. Wordsworth	25
3. Goethe	28
4. Poe	30
5. Hawthorne	32
B. Scientific Study as Opposed to Nature	33
1. Rousseau	34
2. Wordsworth	35
3. Goethe	37
4. Poe	37
5. Hawthorne	38
III. MEN OF SCIENCE	41
A. Portrayal of Alchemists	42
1. Rousseau	42
2. Goethe	43
3. Poe	45
4. Hawthorne	45

CHAPTER	PAGE
B. Portrayal of Mineralogists	51
1. Wordsworth	51
2. Goethe	52
3. Hawthorne	53
C. Portrayal of Botanists	53
1. Rousseau	53
2. Wordsworth	55
3. Goethe	56
4. Hawthorne	57
D. Portrayal of Doctors	63
1. Rousseau	63
2. Wordsworth	66
3. Goethe	67
4. Poe	69
5. Hawthorne	72
CONCLUSIONS	84
BIBLIOGRAPHY	90

INTRODUCTION

Nathaniel Hawthorne lived and wrote during a period characterized by several schools of writing such as the Puritan, Transcendentalist, and Romantic. Because each school of writing probably had an effect on Hawthorne, critics find it difficult to place him in any one school of writers. Randall Stewart, an outstanding authority on Hawthorne, suggested that Hawthorne leaned toward the Puritan view of life, although he felt the Puritans needed more charity, tolerance, and common sense.¹ Much of Hawthorne's life was spent in Salem, Massachusetts, stronghold of the early Puritans from whom he was descended. As a boy he heard many tales of the Puritans' terror of the "Black Man" and their trials of witches. After reading many manuscripts and sermons, Hawthorne became well-versed in the history of the Puritans who believed man's exterior behavior was not always indicative of his true feelings. Norman Holmes Pearson believed Hawthorne was no strict Puritan in religion, but had the Puritan instinct in his writing² as shown in the themes of "The Grey Champion," "The May-Pole of Merry Mount," "The Gentle Boy," and The Scarlet Letter.

Hawthorne's references to self-reliance, each man living

¹Randall Stewart, Nathaniel Hawthorne, A Biography (New Haven: Yale University Press, 1948), p. 244.

²Norman Holmes Pearson (ed.), "Introduction," The Complete Novels and Selected Tales of Nathaniel Hawthorne (New York: The Modern Library, 1937), p. x.

according to his own nature, and compensation, every action causing reward or punishment, caused John Erskine to refer to Hawthorne as a Transcendentalist. The Transcendentalist movement, organized in New England during the early part of the nineteenth century, was characterized by idealism, self-reliance, individualism, and social reform.³ Hawthorne was acquainted with leading Transcendentalists, Henry David Thoreau, Ralph Waldo Emerson, and Margaret Fuller. The Blithedale Romance was based on Hawthorne's experiences at Brook Farm, an experimental community founded by Transcendentalists. Warren Austin believed this book, reflecting Hawthorne's disillusionment with life at Brook Farm, was indicative of Hawthorne's anti-Transcendentalism.⁴

Hawthorne's role as a Romantic was suggested by Vernon Louis Parrington who included Hawthorne in his book, The Romantic Revolution in America, 1800-1860.⁵ The purpose of this paper is to present a comparative study of the references to science in the works of Nathaniel Hawthorne (1804-1864) with those of Jean Jacques Rousseau (1712-1778), William Wordsworth (1770-1850), Johann Wolfgang von Goethe (1749-1832), and Edgar Allan Poe (1809-1849) in an effort to

³John Erskine, "Hawthorne," A Short History of American Literature based upon The Cambridge History of American Literature, ed. William Peterfield Trent, and others (New York: G. P. Putnam's Sons, 1922), p. 122.

⁴Austin Warren, "Introduction," Nathaniel Hawthorne (New York: American Book Company, 1934), p. xl.

⁵Vernon Louis Parrington, The Romantic Revolution in America, 1800-1860 (New York: Harcourt, Brace and Co., 1927), pp. 442-450.

show that Hawthorne's attitude toward science was in accord with that of other Romantics of the late eighteenth and early nineteenth centuries. These writers were chosen for this study because they are outstanding Romantic writers of their countries, representing France, England, Germany and America, and all lived within a century of Hawthorne's life span. The Romantics' views on science were obtained by study of their works and autobiographical material. Biographies and critical analyses of their writings gave valuable background information and were helpful in interpretation. Because the attitude which the writers held toward science was partially a reflection of the popular attitude of their times, the first chapter of this paper deals with the popular attitude toward science in Western Europe and America during the late eighteenth and early nineteenth centuries.

Acknowledgement is made to Verna Parish for her many helpful suggestions, proofreading, and encouragement and to the other members of my committee, Marion Coulson, Edwin Martin, Alice Morrison, and Raymond Welty for their constructive criticism. Special acknowledgement is made to my husband who offered suggestions and helped proof-read the initial copies.

CHAPTER I

POPULAR ATTITUDE TOWARD SCIENCE

A universal desire for knowledge during the early years of the nineteenth century led to a general interest in the development of science.¹ Several factors peculiar to the time affected the public's attitude to the new advances in scientific endeavor. A period of world unrest, characterized by the American and French Revolutions, existed just prior to the turn of the century. This unrest, continuing in Europe because of the Napoleonic Wars, caused a transformation of old customs. Scholars, during the eighteenth century, had been supported by wealth and patronage; only England followed this means of support after the beginning of the nineteenth century. In France, Germany, and Scotland, state institutions were becoming research centers.² Placing research in the realm of state support gave the common man a sense of sharing the progress of science.

The Industrial Revolution, which began in England and spread to the Continent of Europe and America, turned the public's attention to practical applications for science. All discoveries were considered

¹Edward Salisbury Dana and others, A Century of Science in America with Special References to the American Journal of Science 1818-1918 (New Haven: Yale University Press, 1918), p. 16.

²Frederick B. Artz, Reaction and Revolution 1814-1832 (New York: Harper and Brothers, 1934), pp. 184-187.

advantageous if they made man more comfortable, more moral, or more religious. Science was good and desirable only as it contributed to the improvement of civilization.³

Religion exercised an influence on the attitude people had toward achievements in science. Many firmly believed the primary purpose of science was to praise God by showing the wonders of his universe more clearly. Few questioned the proposition that the facts of nature were in agreement with God's word. Any apparent discrepancy between the two was interpreted as an error of science or a misinterpretation of the Bible. Individuals varied from deriding scientific findings which differed from Biblical accounts to making elaborate interpretations of the Bible to explain points of difference.⁴

The greatest scientific development at the turn of the century was in France, with Paris recognized as the scientific center of the world. In 1793, as a result of the French Revolution, many scientists were guillotined; however, by 1795, the government recognized the need for scientists, and reopened the Académie.⁵ The Collège de France, the Faculté des Sciences, Musée

³Robert R. Riegel, Young America 1830-1840 (Norman: University of Oklahoma Press, 1949), p. 335.

⁴Ibid., pp. 325-326.

⁵Sir William Cecil Dampier, A History of Science and Its Relations with Philosophy and Religion (Cambridge: At the University Press, 1942), pp. 309-312.

d' Historie, and the École Polytechnique were Europe's outstanding research centers.⁶

Long after the Paris academies began practicing exact scientific methods, the German universities, although good in philosophical and classical studies, were teaching a Naturphilosophie, which derived conclusions from doubtful philosophic theories rather than by patient study of natural phenomena. After 1830, the influence of Naturphilosophie disappeared, partly because of the work of Carl Friedrich Gauss in mathematics and the chemical discoveries of Justus Liebig, who opened a laboratory at Giessen in 1826. From that time Germany carried the systematic organization of research farther than any other country.

An individualistic spirit characterized English science, and often brilliant work was done by men with no academic position. Complaints were often voiced that the state of English science was low and needed the introduction of continental mathematics in the universities to give a broader scientific background. Not until the 1850's were Oxford and Cambridge reformed to become centers for scientific study.⁷

American achievements in pure science during the early years of the century were limited by the rarity of money and leisure. The

⁶Artz, op. cit., pp. 184-187.

⁷Dampier, op. cit., pp. 309-312.

only people who could afford to devote themselves to scientific study were wealthy amateurs who could afford to stay away from business, and professors who sandwiched research into their busy schedule. The development of technological science, which was more consistent with the American pattern of life, manifested itself in a flood of practical mechanical inventions. The American could see little use in devoting time and money to research which produced no immediate practical use. The development of oxygen, for example, was considered a novel discovery, but the invention of a diving suit would have been more practical in terms of dollars and cents. In many cases, Americans were content to leave the scholarly research necessary in science to the Europeans and apply themselves to the technological aspect.⁸

Philadelphia could claim the title of America's scientific center, with the most learned of societies, the American Philosophical Society, which had been founded in 1743.⁹ Harvard and Yale led American universities in scientific development, but schools were handicapped by lack of facilities. Libraries were separate buildings in a few schools, but many institutions had not discovered their usefulness. Scientific equipment ranged from fairly adequate to only a small cabinet of minerals.¹⁰

⁸Riegel, op. cit., pp. 324-335.

⁹Ibid., p. 38.

¹⁰Carl Russell Fish, The Rise of the Common Man 1830-1850 (New York: Macmillan, 1927), pp. 212-214.

Learned societies and academies were formed in France, Germany, Italy, and America before and during the nineteenth century. It is probable that the public took pride in the learned societies and the advances made by the scientists who were members, but the masses did not participate in the societies, nor were the societies' journals easily understandable to those not well-versed in science. Lay interest in science manifested itself in the museums of natural history, public lectures, lyceums, and school and college courses.

An attempt to publish a scientific journal which would find an audience among people who previously had had little interest in science led to Benjamin Silliman's American Journal of Science and Arts. E. S. Dana has surmised that this journal was one of the greatest factors in furthering the interests of science in America. Silliman, professor of geology at Yale, began his journal in 1818, and in it included natural history (mineralogy, botany, zoology) with an emphasis on American natural history, chemistry, natural philosophy, mathematics, agriculture, and fine and liberal arts.¹¹ Silliman invited outstanding men in each scientific field to contribute articles and serve as associate editors. The prominent place given applied science gained much public interest. Papers were submitted dealing with the cotton gin, steam engine, steamboat, first submarine, and the prospect of aerial navigation.¹²

¹¹Dana and others, op. cit., pp. 23-28.

¹²Ibid., pp. 44-47.

During the nineteenth century, the interest in scientific research changed from matter in motion to the composition of matter. This resulted in a shift of major emphasis from physics and astronomy to botany, zoology, and geology. Advances were made in the physical sciences although many had deserted them for the biological fields. Organic chemistry became a separate field early in the century, and the public was especially interested in its applications to agriculture.¹³ The most outstanding chemists were Jons Jakob Berzelius of Sweden, Humphrey Davy of England, Gay-Lussac of France, and Robert Hare and Benjamin Silliman of the United States.¹⁴

Mathematics was important in scientific development because the work in astronomy and physics was based on mathematical concepts. Benjamin Silliman expressed the belief that mathematics would be interesting and important to man as long as ". . . ships shall traverse the ocean, . . . man shall measure the surface or heights of the earth, . . . or calculate the distances and examine the relations of the planets and stars . . ." ¹⁵ During the nineteenth century, many new departments of mathematics came into existence, among them the theory of numbers, and further development in trigonometry, geometry, and algebra. Application of these new mathematical methods to physical problems led to new advances in the physical sciences.¹⁶

¹³Riegel, op. cit., p. 325.

¹⁴Dana and others, op. cit., pp. 289-290.

¹⁵As quoted in Dana and others, ibid., p. 32.

¹⁶Dampier, op. cit., p. 219.

The work of William Herschel of England stimulated the study of astronomy. Herschel, having perfected a more powerful telescope, studied double and multiple stars, star clusters, and the sun. After long observation, he concluded that the sun was actually a dark, solid planet with inhabitants, surrounded by two cloud layers, the outer hot and luminous, and the inner a screen to protect the planet. His most important discovery, however, was the planet Uranus, the first planetary discovery to be recorded, since Mercury, Venus, Mars, Jupiter and Saturn had been known since prehistoric times. C. F. Gauss of Germany produced new, improved methods of calculation in mathematical astronomy and in 1809 published his method of computing the orbit of a planet or comet from only three observations of its position. Through use of mathematical methods, the orbit of Uranus was plotted, and it was discovered that Uranus had been recorded as a "fixed star" as early as 1690. If the orbit calculations were correct, it had deviated from its orbit during the years. Some astronomers believed inaccurate observations explained the deviations, but others such as U. J. J. Leverrier and J. C. Adams believed a planet beyond the orbit of Uranus might be the cause of the deviations. These two men did independent work in determining, from the observed deviations of Uranus, the location of the disturbing planet, a problem requiring great skill in mathematics. As a result, the planet Neptune was discovered in 1846, and the discovery of planets

by mathematical plotting was firmly established.¹⁷ During the 1830's, the meteor showers and the appearance of Halley's comet contributed to amateur interest in astronomy, and created an expectation of the imminent end of the world.¹⁸

The new theories advanced concerning the formation of the earth made geology interesting to the public. Geological study had begun in Germany with the sixteenth century work of Agricola whose critical study of minerals was followed until the end of the eighteenth century. In 1795, James Hutton of Edinburgh, Scotland, advanced his theory that the earth was hot internally, and in the past large masses of molten material, the granites, had been intruded into the earth's crust. The work of erosion, Hutton believed, was responsible for changes in the earth's appearance.¹⁹ Sir Charles Lyell published Principles of Geology in 1830, in which he stated his belief that the earth's appearance was due to causes which had been at work for centuries and were still at work.²⁰

Public acceptance of modern geology was a slow process partly because of the multitude of theories advanced. It was hard to determine which of the ideas were true; consequently, many people accepted the

¹⁷Peter Doig, A Concise History of Astronomy (New York: Philosophical Library, 1951), pp. 115-133.

¹⁸Dana and others, op. cit., pp. 336-338.

¹⁹Ibid., pp. 61-65.

²⁰Ferdinand Schevill, A History of Europe (New York: Harcourt, Brace and Company, 1926), pp. 529-532.

one which seemed most logical to them. One of the theories was that of Symmes who contended that the earth was composed of five hollow, concentric spheres, each inhabited on both the concave and convex sides with entrances at the Poles.²¹ More logical were the Neptunist and Plutonist theories which were at odds for several years. The Neptunist school, headed by Abraham Gottlob Werner of Germany believed all original rocks had derived from layers of sediment left by a universal ocean, the waters of which had disappeared inside the earth. James Hutton, whose theory of internal heat in the earth has been mentioned, headed the Plutonists who contended rocks such as basalt were formed by fire.²²

Interpretation of the Biblical account of the creation posed another problem to the geologists. As late as the middle of the century it was believed that fossils, suggesting that the earth was older than Biblical chronology, had been hidden in the ground by God, or the Devil, to test man's faith.²³ The flood was explained by Benjamin Silliman who, realizing no downpour would account for such a flood, argued that water must have come from inside the earth at the rate of one foot every two minutes to cover the highest mountains

²¹Riegel, op. cit., p. 325.

²²O. D. Engeln and Kenneth E. Caster, Geology (New York: McGraw-Hill Book Company, Inc., 1952), pp. 20-23.

²³Dampier, op. cit., pp. 288-290.

in forty days and nights.²⁴ Scientific explorations by men such as Alexander von Humboldt of Germany, who made geography a science, did much to erase old superstitions.²⁵ News of such explorations stimulated interest and led other Europeans and Americans to continue the work.

The Biblical account of the flood was one of the factors which stimulated interest in botany and zoology. Because of the great number of plants and animals in the world, people realized Noah's ark would have been overcrowded had all species been aboard. Interest in the classification of species also resulted from the knowledge of the importance flora and fauna played in man's life and a desire to learn more about them.²⁶

Of importance in botanical classification was the work of the Swedish scientist Carl Linnaeus who developed a systematic method of classification based on the structure of the various parts of plants. Several years after Linnaeus's work, Antoine de Jussieu advanced the system whereby cotyledons were used as the basis of classifying the vegetable kingdom, a justifiable system since the plant came from the seed, the most vital part of which was the cotyledon. Robert Brown of Scotland, though he did not present a system of classification, became well-known for work based on both the Linnaeus and Jussieu systems.

²⁴Riegel, op. cit., p. 326.

²⁵Erik Nordenskiöld, The History of Biology, A Survey, trans. Leonard Bucknall Eyre (New York: Tudor Publishing Company, 1946), pp. 314-316.

²⁶Riegel, op. cit., p. 326.

Perhaps the mastery of the whole field of botany was best accomplished by Augustine De Candolle who was a reformer in the realm of classification.²⁷

Georges Cuvier of France who has been called the father of modern comparative zoology also founded vertebrate paleontology and comparative anatomy. His system of classification was based on conformity of organs, and correlation of the separate body organs representing the animal's habits of life.²⁸ A number of Europeans followed him in zoological studies, but none except Sir Richard Owen of England had his background of anatomy on which to base research. Germany and France had large deposits of fossil mammals which afforded excellent fields of study. America's outstanding zoologist, Louis Agassiz, did much work with marine life. Before immigrating to America from Switzerland, Agassiz had studied with Cuvier and obtained an excellent background in his field.²⁹

Perhaps medicine was the scientific field of greatest interest to the public. Lack of knowledge on the part of medical men was illustrated by the world-wide cholera epidemic which began in Asia in 1844 and spread over Europe and into America by 1848. Doctors knew

²⁷Nordenskiöld, op. cit., pp. 435-438.

²⁸Ibid., pp. 331-337.

²⁹Dana and others, op. cit., pp. 219-221.

few treatments for it, and were unable to take preventitive measures since they could not determine the cause of the disease. Some attributed it to a fungus, others to lesions of the brain affecting nerves leading to the bowels, and others to electricity since the body of a dead girl had given off sparks; and the telegraph at St. Petersburg, Russia, had been deranged during the epidemic.³⁰

Modern medicine had its beginning in the nineteenth century even though it was not yet effective in healing. In Europe several causes united to give medicine impetus: Napoleon's army, which was defeated in part by disease, carried disease to all parts of the Continent; the Industrial Revolution led to overcrowded cities, poor housing, and lack of sanitation; a new social responsibility that health was the concern of the state as well as the individual manifested itself in public health movements.

Paris had almost an excess of brilliant surgeons and physicians during the period after the French Revolution and the Napoleonic Wars. As it had been the leader in pure science, so it was in medicine.³¹ Ireland and England also produced doctors who did outstanding research at this time. Europe's most outstanding medical schools were those of

³⁰Raymond Postgate, Story of a Year 1848 (New York: Oxford University Press, 1956), pp. 226-229.

³¹Ralph H. Major, A History of Medicine, II (Springfield, Illinois: Charles C. Thomas, 1954), pp. 640-644.

Paris, Dublin, Edinburgh, London, Leyden, and Vienna.³²

American medicine had severed some of its ties with Europe, but most of the renowned American physicians still studied abroad. The majority of the American practitioners were poorly trained since there were few laws requiring professional standards. Most aspiring young doctors learned by apprenticeship to a practicing physician where for two years they swept floors, rolled pills, read a few books, and were ready to begin their practice. The public felt little respect for doctors who were those men " . . . too weak or too lazy for farm or shop, too stupid for the bar, and too immoral for the pulpit . . ." ³³

Public opinion often placed obstacles in the way of new medical developments. While the discovery of anaesthetics should have been hailed as one of the greatest medical discoveries of all times, there was opposition to it in some cases. When James Young Simpson of Edinburgh, Scotland, introduced the use of chloroform to prevent pain during child-birth, many eminent male citizens protested allowing women to forego the traditional agony, quoting from Genesis, "In sorrow thou shalt bring forth children." Simpson, too, was apparently a student of the Bible, for he quoted from Genesis the passage recording

³³Riegel, op. cit., p. 303.

the first use of anaesthesia: "And the Lord God caused a deep sleep to fall upon Adam, and he slept; and he took one of his ribs and closed up the flesh instead thereof." Not until several years later was the matter settled when Queen Victoria was given chloroform during childbirth.³⁴

Aseptic medicine coupled with anaesthetics made possible safe surgery. Before the discovery of aseptic medicine, measures taken to keep bacteria from entering a wound, many surgical patients died as a result of infection received during the operation or during the convalescent period in the hospitals, notorious as breeding grounds for disease because of lack of cleanliness. The beginnings of aseptic medicine came when it was realized that many diseases were caused by microbes. Louis Pasteur proved the presence of bacteria could be traced to the entrance of germs from outside the body, or the growth of those already present in the body. Joseph Lister, hearing of the experiments of Pasteur, began applying the findings to surgery. He first used carbolic acid but later found cleanliness was an effective aseptic treatment.³⁵

The public greeted new medical trends with acclaim, probably because the systems in use seemed inadequate. One of the most popular of these new systems was homeopathy which was introduced to Europe

³⁴Patrick Pringle, The Romance of Medical Science (New York: Roy Publishers, 1953), pp. 110-117.

³⁵Dampier, op. cit., pp. 282-283.

and America by a German, Samuel Friedrich Christian Hahnemann. After studying the use of quinine for some time, he brought forth his theory that disease could be cured and destroyed by a remedy which had a tendency to produce a similar disease. He advanced three assumptions: drugs are artificial diseases in themselves; medicines increase in potency by dilution; and the itch caused countless disorders which were considered nervous weakness including gout, jaundice, asthma, dropsy, rickets, and cataract.

Homeopathy had some supporters, but more opponents, among French and German doctors. The movement still spread as five homeopathic journals appeared in France, and homeopathic physicians increased in France, Germany, England, and the United States. The assumptions of Hahnemann were later proved untrue, but homeopathy was a benefit during the time it was used, for it deemphasized the practice of blood-letting and the use of calomel.³⁶

Medical advances, and those of pure science, of this period were both laughable and pathetic. In the light of present knowledge, some of the assumptions were humorous in their simplicity, but they were pathetic in that they could not advance quickly enough to give people the richest, fullest life possible. The work of the true researcher was made no easier by the undisciplined interest of the public. Always looking for some new innovation, the people made

³⁶Major, op. cit., pp. 694-698.

quackery and the pseudo-sciences more lucrative than true progress.³⁷

Some of the pseudo-sciences were not new to the nineteenth century. Alchemy was believed to have begun in Alexandria, Egypt, about the first century A. D., and from there it spread to Greece, Italy, and finally to Western Europe. The alchemists searched for the Philosopher's Stone considered the necessary ingredient to change baser metals to gold. They believed that all metals were striving to be gold, and the chief difference in metals was color which the Stone would change.³⁸ The love of gold was later replaced by a love of life, and alchemists turned their search for the elixir vitae which would cure all ills and give long life. Here again the Philosopher's Stone was needed and since they never found the stone, this was their explanation for failure.³⁹

Astrology, a pseudo-science which had its beginning during the days of early Greece and Rome, remained popular during the nineteenth century. Astrologers still found believers in the influence of the stars on human activities and their ability to look into the future by the study of stars. Casting horoscopes gave employment to many "seers of the stars."⁴⁰

³⁷Fish, op. cit., pp. 244-245.

³⁸Dampier, op. cit., pp. 79-80.

³⁹A. C. Eycleshymer, "Growing Old and the Search for an Elixir of Life," The Scientific Monthly, 26 (May, 1928), 400-411.

⁴⁰"Astrology," Encyclopedia Americana (1955 ed.), II, (New York: Americana Corporation, 1955), p. 402.

One of the most popular of the "newer" pseudo-sciences was mesmerism. People from all walks of life were attracted to this new discovery by a graduate of the Vienna medical school, Franz Anton Mesmer. Mesmer studied the "magnetic attraction" theory for several years, and was called upon to determine the validity of the work of a priest, Johann Joseph Gassner, who was able to lay his hands on a diseased person and force the "Devil-induced" disease to leave. Mesmer believed the cure was not miraculous but a result of animal magnetism.

In the winter of 1777-1778, Mesmer, in two weeks, supposedly cured Maria Pardies of blindness suffered since the age of three and one-half. Attacks by Austrian physicians following this "wonder cure" caused Mesmer to leave for Paris. Although the learned societies of France would not accept him, he had crowds of patients from every class, but mostly rich, neurotic ladies. The patients would sit in a circle, and Mesmer would generate magnetism to them. A commission appointed to investigate Mesmer's work found no evidence of electrical activity and believed the whole effect was caused by imagination. Such an unfavorable report did not hurt Mesmer's tremendous popularity, however.⁴¹

The extent of interest in mesmerism was illustrated by the work done in the subject. In 1815, a committee in Russia investigated "animal magnetism", and a magnetical clinic was established near

⁴¹Major, op. cit., pp. 623-626.

Moscow. Prussia and Denmark allowed only doctors to practice mesmerism, and they were required to submit reports to a royal commission. A clinic was established in Holland in 1835, and Swedish universities accepted theses on the subject for doctorates. Interest in America and England became equally intense.⁴² Mesmerism was the beginning of hypnosis and would have been valuable for medical purposes if used correctly. Unfortunately it fell into disrepute when mesmerists began claiming supernatural powers such as clairvoyance and ability to commune with Christ and the angels.⁴³

Phrenology was another popular European-born pseudo-science. While a medical student, Franz Joseph Gall was impressed by an apparent relation between his fellow students' features and their mental abilities. After studying physiognomy and craniology and becoming dissatisfied with them, he turned to cerebral physiology to prove his theory. Upon making a study of skulls, he decided men's talents and mental characteristics depended upon the functions of the brain, and these characteristics caused variation in the development of certain areas of the brain's surface which could be determined by a study of the skull's exterior.

⁴²Sidney E. Lind, "Poe and Mesmerism," PMLA, 62 (December, 1947), 1077.

⁴³Riegel, op. cit., pp. 328-330.

Lectures by Gall and his pupil Johann Caspar Spurzheim spread the popularity of the new idea. Emperor Francis II of Austria complained: "Many are losing their heads over this phrenology which leads them into materialism and also seems to contradict the first principles of morals and religion."⁴⁴ Gall left Austria, made a two-year lecture tour, and reached Paris where his ideas were well received as they were in Holland, England, Germany, Scotland, and America.⁴⁵ The general public liked the novel theory, and elaborate charts were made of the skull showing the location of each attribute. As with the other pseudo-sciences, phrenology fell into disrepute when it was taken over by unscrupulous persons looking for an easy means to make money.

Phrenology and mesmerism faded into the background during the eighteen forties when spiritualism became popular. The spirit healing of disease, "clairography," became lucrative and was closely followed by such distinguished persons as James Fenimore Cooper, Horace Greeley, and Elizabeth Barrett Browning. The most popular of the early mediums, those who relayed messages from the spirit world, were Margaret and Catherine Fox of Wayne County, New York. The messages were transmitted by mysterious rappings which a committee, sent to investigate, reported were caused by muscular movements of the legs and feet.⁴⁶ The girls,

⁴⁴As quoted in Major, *op. cit.*, p. 679.

⁴⁵*Ibid.*, pp. 677-80.

⁴⁶In later years, Margaret admitted this was true. The girls had started the rappings as a childish prank on their nurse.

however, were too popular to be hurt by the report. Many former mesmerists became mediums, and the fad spread to Europe.⁴⁷

Pseudo-sciences may seem rather ridiculous to twentieth-century thinking; however, they did have a decided value in that they caused people to think and led scientists to new investigations in an attempt to prove or disprove their validity. Although the people of the early nineteenth century desired new scientific discoveries which would improve their way of life, they were hesitant to accept new innovations with no reservations. Science was seemingly invading what heretofore had been the realm of God and nature, and what the outcome would be was rather doubtful. Science and its progress interested men engaged in other fields of study who presented their views on science to the public through their work, thereby helping mold public opinion.

⁴⁷Patrick Kearney, "The Fountain of Spiritualism," The American Mercury, 4 (March, 1925), 331-336.

CHAPTER II

REFERENCES TO THE STUDY OF SCIENCE

The advances in science during the late eighteenth and early nineteenth centuries were of interest to people in all walks of life. People eagerly looked to medicine and doctors to bring a longer, more comfortable life. Although new scientific discoveries were eagerly accepted, failure of these discoveries caused people to view science with more skepticism than before. The writers of the period viewed science as did their contemporaries, hoping it would lead to improvement of life, but skeptical of its methods and sometimes fatal results. These views were expressed in their writings, for often the literature of a period reflects the trends of the time and the popular attitude toward new innovations, thereby giving writers the role of reporters of life. Not only did the writers express the popular attitude, but often they led the way in advocating public acceptance of new discoveries.

One important group of writers during this period was the Romantics. These writers denounced the narrow intellectual outlook on life in favor of a wider, more creative view. Science was necessarily an intellectual pursuit; consequently scientific study was often not compatible with the Romantic beliefs. The Romantics believed it was their right to attack any wrongs in society; therefore any aspects of science which they considered detrimental to man they denounced in their works.

One of the early Romantics, Jean Jacques Rousseau, first received recognition as a writer by means of a discourse on the question "whether the restoration of arts and sciences has had the effect of purifying or corrupting morals?" This question, proposed by the Academy of Dijon in 1750, illustrated the growing concern with the role of science in society. Contending that he was defending virtue, not attacking science, Rousseau stated that ". . . a scientific jargon, more despicable than mere ignorance . . ." had taken the place of knowledge, and, even worse, had placed an almost insurmountable obstacle in the way of the restoration of knowledge.¹ Further he charged that the arts and sciences ". . . stifle in men's breasts that sense of original liberty, for which they seem to have been born; cause them to love their own slavery, and so make of them what is called a civilized people."² Rousseau, as a Romantic, had faith in the instinctive goodness of man. This belief was a departure from the previously accepted idea that man had to be trained to be good. Because man was good and would instinctively choose the right way, Rousseau believed man should have liberty, not the slavery he must endure to fit into his little niche in "civilization."

Originally man had enjoyed liberty, but the disappearance of

¹Jean Jacques Rousseau, The Social Contract and Discourses (London: J. M. Dent & Sons Ltd., 1930), pp. 129-130.

²Ibid., p. 130.

the free, natural man was due to the arts and sciences. Rousseau explained:

Before art [and science] had moulded our behavior, and taught our passions to speak an artificial language, our morals were rude but natural; and the different ways in which we behaved proclaimed at first glance the difference of our dispositions. . . .³

The arts and sciences had made man more urbane, but in so doing had caused him to lose his individuality, making him exactly like all other men in his thoughts and actions. Rousseau felt life would be much more happy and simple if man's outward actions were a true indication of his feelings. True friendship was no longer possible for man's behavior, made artificial by the arts and sciences, did not show his true feelings. Under man's artificial exterior often lay evil thoughts toward his fellow man.

Rousseau questioned that the arts and sciences had really improved man's way of life, for was he better governed, more numerous and flourishing, and more formidable because science had now taught him what insects reproduce in an extraordinary manner, what planets would support life, and how the soul and body correspond? Rousseau did not believe man was truly helped by such knowledge and gave another reason for not respecting the teachings of science:

. . . Astronomy was born of superstition . . . geometry of avarice; physics of an idle curiosity . . . Thus the arts and sciences owe their birth to our vices; we should be less

³Ibid., p. 132.

doubtful of their advantages, if they had sprung from our virtues.⁴

Following this early attack on science for its corruption of man's morals, Rousseau became somewhat more receptive to the study of science, but he had definite ideas on how the study should be undertaken. In Émile, a novel containing his ideas concerning education, Rousseau advised that the student Émile be taught science by practical application because ". . . the scientific atmosphere destroys science."⁵ This was a continuation of his earlier belief that students should be taught ". . . what they are to practice when they come to be men; not what they ought to forget."⁶ Rousseau advocated that only science which would be useful and beneficial to man be taught. Much science could be learned through practical experiments, and since that science which could not be comprehended easily would be of no use to man, he need not worry about learning it. He proclaimed the inadvisability of study with a learned society or academy because ". . . every one knows that the learned societies of Europe are mere schools of falsehood, and there are assuredly more mistaken notions in the Academy of Sciences than in a whole

⁴Ibid., p. 140.

⁵Jean Jacques Rousseau, Émile (New York: E. P. Dutton, 1948), p. 139.

⁶Rousseau, Social Contract and Discourses, p. 148.

tribe of American Indians."⁷ Man would be better versed in science if he let nature teach him only the practical aspects of science. The learned societies were responsible for the scientific teachings which corrupted morals and pressed man into society's conventional mold.

Romantics in other countries held beliefs, similar to those of Rousseau, concerning the relation of science to education and nature as is illustrated by a comparative study of the references to science in the works of Rousseau, William Wordsworth, Johann Wolfgang von Goethe, Edgar Allan Poe, and Nathaniel Hawthorne. Having an intense love for nature and a belief in its goodness, William Wordsworth of England, like Rousseau, questioned the truly beneficial power of science. In "The Prelude," Wordsworth exposed the shallowness of mind of those who were wholly satisfied with scientific findings:

. . . Thou, my Friend! art one
 More deeply read in thy own thoughts; to thee
 Science appears but what in truth she is
 Not as our glory and absolute boast,
 But as a succedaneum, and a prop
 To our infirmity. No officious slave
 Art thou of that false secondary power
 By which we multiply distinctions, then
 Deem that our puny boundaries are things⁸
 That we perceive, and not that we have made.

⁷Rousseau, Emile, p. 167.

⁸William Wordsworth, The Complete Poetical Works of William Wordsworth (London: Macmillan and Company, 1905), p. 246.

The man who thought clearly was not a slave to science, a power secondary to nature. The consequence of too much faith in science was that man felt that he was able to control all he saw, not just the things he had created, thereby stepping into nature's area of control.

According to Wordsworth, the role of science as a "false secondary power" had occurred because:

. . . Even Science, too, at hand
 In daily sight of this irreverance [Folly and Falsity]
 Is smitten thence with an unnatural taint,
 Loses her just authority, falls beneath
 Collateral suspicion, else unknown.⁹

Although science originally had "just authority," it had fallen to a position where it was viewed with suspicion. Man's folly and his ready acceptance of false teachings had made it impossible to separate scientific truth from error. Wordsworth felt, as had Rousseau, that the study of science should be undertaken by a man of virtue:

And feeling the Sage shall make report
 How insecure, how baseless in itself
 Is the Philosophy whose sway depends
 On mere material instruments;-- how weak
 Those arts and high inventions, if unpropped
 By virtue . . .¹⁰

⁹Ibid., p. 254.

¹⁰Wordsworth, "The Excursion," Works, p. 515.

Had a man no virtue, he would have no basis for the study of science because he would have no standards by which to judge the value of his discoveries and their worth to mankind.

The difference between science and poetry Wordsworth explained in the "Preface to the Lyrical Ballads." He believed poetry, the image of man and nature, to be the epitome of all knowledge. Should science create a new way of life as it was attempting to do, poetry would need to be coupled with science to carry human feelings into the work. Science would have to ". . . be ready to put on . . . a form of flesh and blood," and poetry would give of its divine spirit ". . . to aid the transformation and . . . welcome the Being thus produced as a dear and genuine inmate of the household of man . . ."¹¹ Science which was "high on her speculative tower"¹² would have to be leagued with poetry to become a study which would gain a place of respect and trust among men. In a later poem, Wordsworth, who had once shamed "the degenerate grasp of modern science,"¹³ voiced his praise of science in an Ode written in 1847 to commemorate the installation of Prince Albert as Chancellor of Cambridge:

. . . in the Collegiate bowers,
Where Science, leagued with holier truth,
Guards the sacred heart of youth,
Solemn monitors are ours.¹⁴

¹¹Works, p. 856.

¹²"The Eclipse of the Sun," Works, p. 590.

¹³Wordsworth, "The Egyptian Maid," Works, p. 682.

¹⁴Works, p. 795.

This change in Wordsworth's attitude toward science apparently meant that he believed science had thrown off the taint of suspicion by leaguering itself with truth; consequently, it was acceptable to mankind.

Perhaps one of the most outstanding German Romantics was Johann Wolfgang von Goethe who believed, as had Wordsworth, in the futility of scientific study without first attempting to learn from nature. Goethe probably had a greater interest in science than the other Romantics since he had studied medicine and had worked in experimental science. This interest, however, did not prevent him from painting science's dark side. The search for knowledge necessary in the study of science was often most unrewarding according to a speech by Dr. Faust, who after years of study realized:

All that philosophy can teach,
The craft of lawyer and of leech,
I've mastered, ah! and sweated through
Theology's dreary deserts, too;
Yet here, poor fool! for all my lore,
I stand no wiser than before.¹⁵

Faust's young assistant Wagner also realized the near futility of the search:

How hard it is, almost beyond belief
To get at knowledge in its fountainhead!
And ere a man is halfway on the road,
He's very sure, poor devil, to be dead.¹⁶

¹⁵Johann Wolfgang von Goethe, "Faust," The Works of J. W. von Goethe, I, ed. Nathan Haskell Dole (New York: Bigelow, Brown & Co., Inc., 1902), p. 25. (Italics are mine).

¹⁶Ibid., p. 33.

Although man studied diligently, truth was so elusive that even though he began study as a young man, he would not have a long enough life-time to reach his goal of real truth.

Man had little use for knowledge even after he found it.

Faust, in his years of searching, discovered:

In all my poring, year by year,
On books by thousands, but to learn
That mortals have been wretched everywhere,
And only one been happy here and there!¹⁷

Knowledge did not bring happiness, only a realization of the wretchedness of life. The happier persons were those who early in life, realized that ". . . all theory is gray,/ And green life's golden tree."¹⁸ Happiness came to those who realized it was more important to enjoy life than to search among "gray" theories for obscure truths. It was actually of little use for man to devote his entire life to the study of science because:

You simply study through and through
The world of man and nature too,
To end with leaving things to God,
To make or mar them. 'Tis in vain
That you go mooning all abroad
Picking up science grain by grain;
Each man learns only what he can.¹⁹

Man, for all his study, had no control over his world or nature. God created all things and He determined what man should know of His creations. Since God could give or withhold knowledge, it was

¹⁷Ibid., p. 37.

¹⁸Ibid., p. 91.

¹⁹Ibid., pp. 90-91.

useless to devote a lifetime to study.

Goethe seemed to be struggling between his Romantic beliefs involving the love of nature and freedom, and the interest he felt for scientific endeavor. His respect for science appeared in the witch's advice to Faust:

Science is light!
 But from the sight
 Of all the world 'tis hidden.
 Who seeks it not
 To him 'tis brought
 Unnoticed and unbidden.²⁰

Science and truth were the same, but they were not revealed to all who sought them. These gifts were given to those who did not seek them, but would use such knowledge wisely. Goethe called science which was ". . . rightly known/. . . the strength of life alone."²¹ Science, if understood and used wisely, was the basis for life. Those men who understood science had received it as a gift from God rather than making a life-long search for it.

In America, as in Europe, the interests of science often came into conflict with lovers of beauty. Evident in the works of the American writer, Edgar Allan Poe, was a love of nature similar to that expressed by the earlier European Romantics. This love of beauty gave rise to Poe's objections to science, for he believed science destroyed

²⁰Ibid., p. 123.

²¹Goethe, "The Tame Xenia," Works, III, p. 322.

beauty and leisure. His objection was expressed in "Sonnet- To Science," one of his earliest poems:

Science! true daughter of Old Time thou art!
 Who alterest all things with thy peering eyes.
 Why preyest thou thus upon the poet's heart,
 Vulture, whose wings are dull realities?
 How should he love thee? or how deem thee wise
 Who wouldst not leave him in his wandering
 To seek for treasure in the jewelled skies,
 Albeit he soared with an undaunted wing?
 Hast thou not dragged Diana from her car?
 And driven the Hamadryad from the wood
 To seek a shelter in some happier star?
 Hast thou not torn the Naiad from her flood,
 The Elfin from the green grass, and from me
 The summer dream beneath the tamarind tree?²²

The poet in his search for beauty could not admire science which sought out nature's secrets with its "peering eyes," and reduced beauty to "dull realities." As the poet searched for beauty in life, science was present to remind him of life's sordidness. The Hamadryad who had been driven to "some happier star" to find a haven from science, if successful, was probably envied by the poet who had lost his dream of the beautiful. In the poem "Al Aaraaf," Poe questioned, as had Rousseau, Wordsworth, and Goethe, the advisability of studying science:

Spirits in wing, and angels to the view
 A thousand seraphs burst th' Empyrean thro',
 Young dreams still hovering on their drowsy flight-
 Seraphs in all but 'Knowledge,' . . .

²²Edgar Allan Poe, The Poems and Three Essays on Poetry, Narrative of Arthur Gordon Pym, Miscellanies (London: Oxford University Press, 1938), p. 61.

.
 Sweet was that error-even with us the breath
 Of science dims the mirror of joy --
 To them 'twere the Simoon, and would destroy --
 For what (to them) availeth it to know
 That Truth is Falsehood - or that Bliss is Woe?²³

"Young dreams" lacked knowledge, but dreamers were happy in their ignorance. Those who were studying science in search of truth found only a force which destroyed joy.

The love of life and beauty, even at the cost of foregoing some knowledge, was important to the Romantics. Nathaniel Hawthorne was in accord with Poe and Goethe in the belief that the study of science destroyed joy, for in Septimius Felton he wrote: ". . . to the deep pursuit of science we must sacrifice a great part of the joy of life . . ." ²⁴ In sacrificing his joy in living, the scientist did not gain true knowledge in exchange, for as Dr. Portsoaken told Septimius: ". . . I will tell you what I know [of science] in the sure belief . . . that it will add to the amount of dangerous folly now in your mind, and help you on the way to ruin. . . ." ²⁵ The search for knowledge ultimately led to danger and ruin, not happiness. Hawthorne apparently believed that man was not advancing rapidly enough in his moral nature to know how to use his intellectual achievements wisely.

²³Ibid., pp. 69-70.

²⁴Nathaniel Hawthorne, Septimius Felton: or, The Elixir of Life (Boston: Houghton Mifflin, 1899), p. 113.

²⁵Ibid., p. 86.

In agreement with Wordsworth who felt science needed a form of "flesh and blood," Hawthorne disliked the coldness and aloofness science maintained from human nature. This dislike was illustrated in his reference to ". . . science or astronomy, or some such cold-hearted people . . ." ²⁶ In order to be beneficial and acceptable to man, science needed to assume a more personal, human relation to man, not a cold, speculative attitude. Perhaps Hawthorne's opinions regarding the advancements in science occurring during his lifetime were those presented by Miles Coverdale in The Blithedale Romance:

. . . It was a period when science (though mostly through its empirical professors) was bringing forward anew, a hoard of facts and imperfect theories, that had partially won credence in elder times, but which modern skepticism had swept away as rubbish. . . . ²⁷

Hawthorne was apparently one of the "modern skeptics" for, as seen in his writings, he believed that the theories and facts of science were imperfect.

The love of nature and faith in its religious significance was a part of Romantic thought. Because nature was so directly tied to God, the Romantics viewed with displeasure any attempt to change or control nature, considering it an affront to God. When scientists began encroaching on nature's realm, the Romantics voiced their

²⁶ Nathaniel Hawthorne, Passages from the French and Italian Notebooks, II (Boston: Houghton Mifflin, 1899), p. 58. (Italics are mine.)

²⁷ Nathaniel Hawthorne, The Blithedale Romance (Boston: Houghton Mifflin, 1880), p.214.

disapproval. Rousseau first made accusation against too much freedom with nature's secrets:

. . . what are we to think of the herd of textbook authors, who have removed those impediments which nature purposely laid in the way to the Temple of the Muses, in order to guard its approach . . . Those whom nature intended for her disciples have not needed masters . . . ²⁸

Nature, according to Rousseau, was the guard of higher learning, and had placed obstacles in the path of those unworthy to secure knowledge. Those who wrote text-books had tampered with nature, for they removed the barriers to the temple of knowledge for the ignorant. Had the masses been supposed to receive this learning, they would have needed no teachers, but would have found their own way. The secrets of nature were only evils from which nature kept man, especially uneducated man.

The evil of allowing uneducated men to gain knowledge which nature originally intended to withhold from them came when man, with his small amount of knowledge, began meddling with nature.

God makes all things good; man meddles with them and they become evil. He forces one soil to yield the products of another . . . He confuses and confounds time, place, and natural conditions . . . He destroys and defaces all things; he loves all that is deformed and monstrous; he will have nothing as nature made it, not even man himself. . . .²⁹

²⁸Rousseau, Social Contract and Discourses, p. 152.

²⁹Rousseau, Emile, p. 5.

Man, in attempting to change God's works, created much of the evil in nature. With his limited knowledge, man was not able to regulate nature correctly; consequently he caused destruction and defacement.

Man's meddling nature was as disturbing to William Wordsworth as it had been to Rousseau. Wordsworth, who wrote many of his poems praising the beauty of nature, deplored the scientist's analysis of nature. He even considered this analysis destructive. This attitude he expressed in his poem "The Tables Turned":

Sweet is the lore which Nature brings;
 Our meddling intellect
 Mis-shapes the beauteous forms of things: --
 We murder to dissect.

Enough of Science and of Art;
 Close up those barren leaves;
 Come forth, and bring with you a heart
 That watches and receives.³⁰

The man who listened to nature, the true teacher, learned more than the scientist who spent his life poring over books searching for ways to analyze nature's secrets. In analyzing nature's works, the scientist who dissected them to study each part singly "murdered", for he could never know the whole, so immersed was he in the study of each single part. Beauty had been destroyed and the scientist was no wiser for all his efforts. The scientist needed to take an active part in nature and be receptive to her teachings by listening with his soul:

³⁰Wordsworth, Works, p. 85.

To her fair works did Nature link
 The human soul that through me ran;
 And much it grieved my heart to think
 What man has made of man.³¹

The deplorable state of mankind was the fault of men who had strayed too far from close association with nature. Man needed only to realize that nature was the best friend of genius:

Long time in search of knowledge did I range
 The field of human life, in heart and mind
 Benighted; but, the dawn beginning now
 To re-appear, 'twas proved that not in vain
 I had been taught to reverence a Power
 That is the visible quality and shape
 And image of right reason; that matures
 Her processes by steadfast laws; . . .

 . . . provokes no quick turns
 Of self-applauding intellect; but trains
 To meekness, and exalts by humble faith.³²

Nature, as she gave true knowledge, made man humble toward his fellow men.

Wordsworth recognized the progress of science in his later poems, but continued to question that it held superiority over nature:

. . . True it is Nature hides
 Her treasures less and less. -- Man now presides
 In power, where once he trembled in his weakness;
 Science advances with gigantic strides;
But are we aught enriched in love and meekness?³³

³¹Wordsworth, "Lines Written in Early Spring," Works, p. 83.

³²"The Prelude," Works, p. 324.

³³Wordsworth, "To the Planet Venus," Works, p. 764. (Italics are mine).

Man knew more of nature, and in some cases ruled her, but Wordsworth felt that man was not more loving and meek as a result of the new knowledge.

Love of nature was apparent in the writings of Goethe who believed that man, in his search for scientific knowledge, delved too deeply into nature's secrets. In Faust, Goethe questioned man's desire for more knowledge for " . . . we long to use what lies beyond our scope, / Yet cannot use even what within it lies."³⁴ Man would be wiser to study and attempt to understand that available to him rather than to pry into nature's secrets. The desire to gather the mysteries of nature was futile because:

Nature lets no one tear the veil away,
 And what herself she does not choose
 Unmasked before your soul to lay,
 You shall not wrest from her by levers or by screws.³⁵

Nature kept her secrets well-hidden and man could not learn them no matter how he tried.

The advance of scientific progress against the laws of nature was opposed by Poe who felt man's greatest error was in his attempt to set himself above the rest of nature:

. . . we are madly erring, through self-esteem, in believing man, in either his temporal or future destinies, to be of more

³⁴Goethe, Works, I, p. 52.

³⁵Ibid., p. 37.

moment in the universe than that vast 'clod of the valley' which he tills and contemns, and to which he denies a soul for no more profound reason than that he does not behold it in operation.³⁶

The "clod in the valley" was as important in the sight of nature as was man. Man felt himself superior because he had a soul, and since he could see none in the clod, assumed it had none. Those who realized man's true place in nature began to doubt that man's so-called "improvement" was true progress. Man's soul, yet in an infant state, was not ready for too much knowledge and caused evil:

. . . Alas! we had fallen upon the most evil of all our evil days . . . Man, because he could not but acknowledge the majesty of Nature, fell into childish exultation at his acquired and still-increasing dominion over her elements. Even while he stalked a God in his own fancy, an infantile imbecility came over him . . . Yet this evil sprang necessarily from the leading evil, Knowledge. Man could not both know and succumb. Meantime huge smoking cities arose, innumerable. Green leaves shrank before the hot breath of furnaces. The fair face of Nature was deformed as with the ravages of some loathsome disease. . . .³⁷

Man, realizing his inferiority to nature, became obsessed with his desire and ability to control her elements. His knowledge, however, was not sufficient to enable him to use his power wisely; therefore nature's beauty was destroyed.

Science and its relation to nature were of concern to Hawthorne

³⁶Edgar Allan Poe, "The Island of the Fay," The Works of Edgar Allan Poe, II. (New York: Harper and Brothers, n.d.), p. 240.

³⁷Poe, "The Colloquy of Monos and Una," Works, V, pp. 19-20.

as they had been to the other Romantics. He felt that the revealed mysteries of nature had caused a furthering of interest in science:

. . . In those days when the comparatively recent discovery of electricity and other kindred mysteries of Nature seemed to open paths into the region of miracle, it was not unusual for the love of science to rival the love of woman in depth and absorbing energy. The higher intellect, the imagination, the spirit, and even the heart might all find their congenial aliment in pursuits which . . . would ascend from one step of powerful intelligence to another, until the philosopher should lay his hand on the secret of creative force and perhaps make new worlds for himself. . . .³⁸

Scientific study which became all absorbing was not really admirable. The scientist, seeking the secret of creation of new worlds for himself, had a selfish motive since he thought only of his betterment, not that of mankind.

Although man had discovered some of the mysteries of nature, his work was limited because ". . . our Creative Mother . . . is . . . severely careful to keep her own secrets, and, . . . shows us nothing but results. She permits us . . . to mar; but seldom to mend, and, . . . on no account to make."³⁹ Those who attempted to delve too deeply into nature's secrets found ". . . she [Nature] would thus hold the desired thing seemingly within our reach; but . . . we miss it just as much as if all the ingredients were hidden from sight and knowledge in the centre of the earth. We are the playthings and fools of Nature . . ."⁴⁰ Scientists, therefore,

³⁸Nathaniel Hawthorne, "The Birthmark," Mosses from an Old Manse, I (Boston: Houghton Mifflin, 1882), p. 42.

³⁹Ibid., p. 49.

⁴⁰Hawthorne, Septimius Felton, pp. 94-95.

learned only what nature wished them to know, but in their attempts to learn more than they were destined to, often exposed themselves to danger. Hawthorne believed, as had Rousseau, that the secrets of nature were evils from which nature protected men. It was necessary that man realize that he must be content with useful knowledge, and that God had revealed to him all the mysteries which he was capable of comprehending.

The pursuit of true scientific study was in opposition to many of the beliefs of the Romantics who, therefore, could not give their support to science. Science tampered with nature and her secrets, while the Romantics loved nature and felt it had a religious significance. The Romantics believed in man's instinctive goodness and his right to individuality while science, they believed, forced everyone into a common mold. The destruction of beauty, joy, and happiness by science caused Romantic disapproval. The personal interest the Romantics may have felt for science was over-shadowed by their Romantic philosophy and fear of the harm science would do humanity.

CHAPTER III

MEN OF SCIENCE

A study of these five Romantic writers reveals that their attitude toward science affected their conceptions of the men who devoted their lives to scientific study. The writers based their ideas regarding science upon reading and work previously done in scientific fields. For example, Rousseau had studied science and met would-be scientists while working with his patroness Madame de Warens; Wordsworth had, as a young man, read widely and mentioned his knowledge of Pliny's Natural History; Goethe, who had studied several phases of science such as medicine, anatomy, alchemy and geology, was well able to write concerning scientific work; Poe, although most interested in new scientific trends, had knowledge of older scientific fields such as mathematics, alchemy, and medicine; and Hawthorne who had manifested no outstanding interest in science as a student at Bowdoin College had done some work in the field, for the college curriculum required a certain amount of study in science for each student. Therefore, it would seem that the Romantics had a background in which to base their evaluation of scientists. In many cases the writers made only passing references to scientists, but often scientists were used as outstanding characters in their works. Faust, a dedicated doctor, is perhaps Goethe's most well-known character. Nathaniel Hawthorne, too,

used scientists as prominent characters such as Roger Chillingworth in The Scarlet Letter, Dr. Rappaccini in "Rappaccini's Daughter," the scientist Aylmer in "The Birthmark," and Dr. Dolliver in The Dolliver Romance. The portrayal of these and other men of science by these Romantics indicates their attitude toward scientists.

Alchemists were referred to frequently in the Romantic writings. The alchemists had, by the early nineteenth century, begun to use their energies in more practical applications of their science, the forerunner of modern chemistry. Although many of the alchemists were no longer searching for gold and the elixir of life, several of the Romantics chose to portray the alchemist in this fashion. Jean Jacques Rousseau had had opportunity to meet several alchemists through his patronness, Madame de Warens, because ". . . her [de Warens'] house was never clear of quacks, contrivers of new manufactures, [and] alchemists . . . whose discourse began by a distribution of millions, and concluded by a request for a crown-piece. . . ." ¹ Madame de Warens was interested in many phases of science, but no branch of science was able to ". . . eradicate the fondness she had imbibed from her father for empiricism and alchemy; she made elixirs . . . while quacks and pretenders who

¹Jean Jacques Rousseau, The Confessions of Jean Jacques Rousseau, II (London: Gibbings and Company, 1901), pp. 43-44.

beset her . . . dissipated on their furnaces and chemistry those talents and charms which might have formed the delight of the best society."² Rousseau used the term chemistry, but many of the Romantics made no distinction between the terms chemistry and alchemy.

Rousseau's work in Madame de Waren's laboratory and the influence of a professor of physic who did work in chemistry caused Rousseau to try an experiment:

. . . I attempted to make some sympathetic ink, and having for that purpose more than half filled a bottle with quick-lime, orpiment, and water, I corked it tightly. The effervescence immediately became extremely violent; I ran to unstop the bottle, but had not time to effect it, for during the attempt it burst in my face like a bomb, and I swallowed so much . . . that it nearly cost me my life. I remained blind for six weeks, and by the event of this experiment learned to meddle no more with experimental chemistry while its elements were unknown to me.³

Rousseau apparently had no objections to the study of chemistry if the researcher understood the elements and was not a foolish amateur. He placed the alchemist, however, in a class with "quacks" and deplored their continuous begging for money to further schemes which supposedly involved making millions of dollars.

The alchemist in search of gold was portrayed by Goethe who linked alchemy with astrology because the alchemist believed each

²Ibid., I, p. 71. (Italics are mine).

³Ibid., II, p. 68.

of the planets represented a specific metal which could be changed to gold. In Faust the astrologer explained the properties of the planets of which Saturn represented the lowliest of the metals, small in value, but large in size, the sun representing gold, and the moon, silver.⁴ Faust expressed his disbelief in the wisdom of the astrologer's teaching:

An idle tale -- jest worn and stale!
 Star gazer's dreams -- alchemists' schemes!
 Things oft told to us -- devised to do us!
 For all his coaxing, merest hoaxing!⁵

"Alchemists' schemes" were considered hoaxes because people realized the alchemists had not found the Philosopher's Stone, the vital ingredient needed in transmuting baser metals to gold. Even if they were to find the Stone, Goethe believed:

How merit's coupled with success
 Is what your fools can never guess;
 If they the wise man's stone possessed,
 With wisdom they would not be blest.⁶

The possession of the "wise man's stone" (Philosopher's Stone) would not give the alchemist wisdom, a necessary attribute if he was to do his work well.

Perhaps transmutation of gold was not just an "alchemist's

⁴Johann Wolfgang von Goethe, The Works of J. W. von Goethe, I, ed. Nathan Haskell Dole (New York: Bigelow, Brown & Co., Inc., 1902), pp. 243-244.

⁵Ibid., p. 244.

⁶Ibid., p. 247.

scheme." In the short story "Von Kempelen and His Discovery," Edgar Allan Poe wrote about a Dutch alchemist who was accused of being a counterfeiter. In a trunk under Von Kempelen's bed, the police discovered what they thought were pieces of brass. It was found that these pieces were actually pure gold, with no trace of an alloy. Von Kempelen's garret contained a closet fitted with chemical equipment, a furnace, and two crucibles connected by a tube, one containing lead in a state of fusion, and the other a liquid passing into vapor. The results of Von Kempelen's work apparently meant:

. . . That he has actually realized, in spirit and in effect, if not to the letter, the old chimera of the philosopher's stone, no sane person is at liberty to doubt . . . up to this period, all analysis has failed; and until Von Kempelen chooses to let us have the key to his own published enigma, it is more than probable that the matter will remain, for years, in statu quo. All that can yet fairly be said to be known is, that 'pure gold can be made at will, and very readily, from lead, in connection with certain substances, in kind and in proportions unknown.'⁷

That Poe really believed gold could be made from lead is doubtful, but he presented a strong case in favor of the operation. His interest in the studies of the alchemists and knowledge of their work was apparent in this story; however, he expressed no personal judgment on Von Kempelen and his alchemy.

The alchemist's search for gold was referred to in Nathaniel Hawthorne's short story "The Birthmark." The scientist Aylmer

⁷Edgar Allan Poe, The Works of Edgar Allan Poe, I (New York: Harper and Brothers, n.d.), p. 233.

explained to his wife, Georgiana, the history of alchemists who had spent ages looking for the solvent which would make possible the extraction of gold from all materials. ". . . Aylmer appeared to believe that, by the plainest scientific logic, it was altogether within the limits of possibility to discover this long-sought medium." He felt, however, that one who could obtain this wisdom would never stoop to use it, but devote himself to higher purposes than gaining wealth.⁸ Hawthorne's words "Aylmer appeared to believe," might imply Hawthorne's skepticism of this marvelous power of the scientist who could unlock all secrets. Perhaps he did not fully appreciate the value of "plainest scientific logic" as Aylmer did. The devotion of man to the search for the secret of transmutation was expressed by Hawthorne through Roger Chillingworth in The Scarlet Letter. Bent on discovering Hester's lover, Roger promised his search would be intense, for he would seek him as ". . . I have sought truth in books; as I have sought gold in alchemy . . ." ⁹

The alchemist not only searched for gold, but also hoped to discover the elixir of life, a potion to prolong man's life indefinitely. Hawthorne apparently placed little faith in the possibility of an alchemist discovering the elixir for in the novel,

⁸ Nathaniel Hawthorne, Mosses from an Old Manse, I (Boston: Houghton Mifflin, 1882), pp. 52-53.

⁹ Nathaniel Hawthorne, The Scarlet Letter (New York: Rinehart & Co., Inc., 1956), pp. 70-71. (Italics are mine).

The Dolliver Romance, Dr. Dolliver remarked that ". . . as for his [alchemist's] nonsense . . . about a medicine of long life, it is a thing I forget in spite of myself, so very empty and trashy it is. . . ." ¹⁰ Dr. Portsoaken in Septimius Felton confessed that:

. . . it was my folly in youth . . . to be in quest of certain kinds of secret knowledge, which the fathers of science thought attainable . . . I heard of a certain recipe which had been lost for a generation or two, but which, if it could be recovered, would prove to have the true life-giving potency in it. . . . ¹¹

Portsoaken realized the search was futile but excused his youthful folly because originally men of science had believed such a potion actually existed. Aylmer, however, did not consider it impossible to distill the elixir for:

. . . he more than intimated that it was his option to concoct a liquid that should prolong life for years, perhaps interminably; but that it would produce a discord in nature which all the world, and chiefly the quaffer of the immortal nostrum, would find cause to curse. . . . ¹²

Aylmer, believing it was in his power to concoct an elixir of life, realized such a liquid would produce harmful effects contrary to nature. Nature had not destined man to live forever, and the scientist had no right to oppose nature's laws.

¹⁰Nathaniel Hawthorne, The Dolliver Romance and Other Pieces (Boston: Houghton Mifflin, 1904), p. 45.

¹¹Nathaniel Hawthorne, Septimius Felton; or, The Elixir of Life (Boston: Houghton Mifflin, 1899), pp. 91-92.

¹²Hawthorne, "The Birthmark," Mosses from an Old Manse, I, p. 53.

The alchemist, whether his search was for gold or the potion to extend life, spent much of his time bending over his furnace, thereby causing him to appear different from other men. Wagner, in Goethe's Faust, after beginning his studies, secluded himself in his room for months and allowed no visitors. Devotion to his work caused a change in his appearance:

The meekest of all learned men,
 He looks like demon in his den,
 Begrimed from ears to nose, his eyes
 With blowing up the furnace red;
 So day and night his tongs he plies,
 And never thinks to go to bed.¹³

" . . . pale as death, anxious and absorbed, and hung over the furnace as if it depended upon his utmost watchfulness whether the liquid which it was distilling should be the draught of immortal happiness or misery.

. . ."¹⁴ It was because the alchemist spent so much time hanging over the furnace that his appearance was altered. When Aylmer decided to go in search of a wife, he " . . . cleared his fine countenance from the furnace-smoke, [and] washed the stain of acids from his fingers. . ."¹⁵ The outcome of a life devoted to alchemy was illustrated by Hawthorne in his description of Dr. Cacaphodel, in "The Great Carbuncle," who:

¹³Goethe, Works, I, p. 313.

¹⁴Hawthorne, "The Birthmark," Mosses from an Old Manse, I, p. 58.

¹⁵Ibid., p. 42.

. . . had wilted and dried himself into a mummy by continually stooping over charcoal furnaces, and inhaling unwholesome fumes during his researches in chemistry and alchemy. It was told of him, whether truly or not, that, at the commencement of his studies, he had drained his body of all its richest blood, and wasted it, with other inestimable ingredients, in an unsuccessful experiment -- and had never been a well man since. . . .¹⁶

Hawthorne no doubt felt this devotion to the study of alchemy resulting in a loss of the love of life was the highest degree of folly.

Alchemists used different methods and obtained different results in their work. Hawthorne expressed his skepticism of the soundness of their methods:

. . . chemists had strange ideas of the virtues of plants, drugs, and minerals, and equally strange fancies as to the way of getting those virtues into action. They would throw a hundred different potencies into a caldron together, and put them on the fire, and expect to brew a potency containing all their potencies, and having a different virtue of its own. Whereas, the most likely result would be that they would counteract one another, and the concoction would be of no virtue at all; or else some more powerful ingredient would tincture the whole.¹⁷

Even Hawthorne, who was inexperienced in the methods of scientific research, could recognize the weaknesses in the alchemists' work and was amazed by their lack of basic knowledge.

The results for which Wagner, the young assistant of Dr. Faust, was striving in his alchemical studies were above the scope of man's power, for Wagner was attempting to produce a man. Wagner felt this great accomplishment would be possible because:

¹⁶ Nathaniel Hawthorne, Twice-Told Tales (Boston: Houghton Mifflin, 1907), p. 175.

¹⁷ Hawthorne, Septimius Felton, p. 93.

What men call Nature's mystery, we dare
 By mind to probe and analyse,
 And what she organised whilere,
 We now contrive to crystallize.¹⁸

Goethe, like the other Romantics, expressed a disapproval of the scientist encroaching on the realm of nature in his work; therefore he surely did not approve of Wagner's probing and analyzing nature in an attempt to create man, one of nature's highest productions. Whether Wagner realized it or not, he was bound to fail, for nature, according to Goethe, allowed man only a small knowledge of her secrets.

Dr. Cacaphodel did not aspire to anything as difficult as creating a man; but, if his plan succeeded, he would have destroyed an object of beauty. Cacaphodel, a European doctor, was one of a party searching the White Mountains of New Hampshire for "the great carbuncle," a red, precious stone. Nearly every member of the party desired the stone for a selfish purpose. Cacaphodel did not want the stone to gain wealth, but desired it because:

. . . the prize [carbuncle] is reserved to crown my scientific reputation -- I shall . . . employ my remaining years in reducing it to its first elements. A portion of the stone will I grind to impalpable powder; other parts will be dissolved in acids . . . and the remainder I design to melt in the crucible, or set on fire with the blow-pipe. By these various methods I shall gain an accurate analysis. . .¹⁹

¹⁸Goethe, "Faust," Works, I, p. 321.

¹⁹Hawthorne, "The Great Carbuncle," Twice-Told Tales, pp. 178-79.

Cacaphodel was as selfish as the rest of the party for he wished to destroy an object of beauty by reducing it to mere elements, thereby depriving others of the pleasure of viewing the beautiful stone. Hawthorne's denunciation of Cacaphodel's scheme was in line with Romantic thought because the love of beauty was an important tenet of the Romantics, and they opposed anyone who tampered with nature's beautiful creations and ultimately caused their destruction.

The Romantics' interest in science included not only the older scientific fields such as alchemy, but some of the newer sciences. Mineralogy was changing into the broader field of geology through recent discoveries. William Wordsworth wrote of the mineralogist in "The Excursion":

Nor is that Fellow-wanderer, so deem I
 Less to be envied, (you may trace him oft
 By scars which his activity has left
 Beside our roads and pathways, though, thank Heaven!
 This covert nook reports not of his hand)
 He who with pocket-hammer smites the edge
 Of luckless rock or prominent stone, disguised
 In weather-stains or crusted o'er by Nature
 With her first growths, detaching by the stroke
 A chip or splinter -- to resolve his doubts;
 And, with that ready answer satisfied,
 The substance classes by some barbarous name,
 And hurries on; or from the fragment picks
 His specimen, if but haply interveined
 With sparkling mineral, or should crystal cube
 Lurk in its cells -- and thinks himself enriched,
 Wealthier and doubtless wiser than before!²⁰

²⁰ William Wordsworth, The Complete Poetical Works of William Wordsworth (London: Macmillan and Company, 1905), p. 442.

The mineralogist could be traced by the scars he and his hammer left on the rocks along the roads, each chip of rock being analyzed and classified by some "barbarous" name. Wordsworth questioned that this work made the mineralogist wealthier or wiser than before, for Wordsworth apparently believed nature had covered the rock to protect it from peering eyes. That the mineralogist destroyed beauty was evident in Wordsworth's thankfulness that the mineralogist had not found his "covert nook."

Although the study of mineralogy was of personal interest to Goethe, he referred to it as ". . . the strangest and loneliest of all pursuits."²¹ Like Wordsworth, Goethe explained that mineralogists could be traced easily because:

. . . mineralogists . . . keep striking to the right and left; from every stone, from every rock, breaking off a piece, as if gold and silver were hid in them. One has but to follow this trace; and, where any corners shows a fresh breakage, there some . . . have been . . .²²

Goethe seemingly did not object to the mineralogist's destruction of beauty as strongly as Wordsworth had, probably because he was interested in any scientific findings which might result. He implied the need for dedicated study in mineralogy when he wrote of Count Borck's work in the mineralogy of Sicily:

²¹Goethe, "Wilhelm Meister's Travels," Works, VI, p. 34.

²²Ibid., p. 41.

. . . the industry of the count seems to me to have been greater than his knowledge. He appears to have gone to work with a certain reserve, which is altogether opposed to that stern earnestness with which grand objects should be treated.²³

If a man devoted time to scientific endeavor, Goethe demanded that he feel "stern earnestness" for the study, not reserve. This attitude differed from most Romantics' references to science in that he did not deplore complete dedication to the study.

The mineralogist, a "man with a destructive hammer," Hawthorne described as a". . . scientific, green-spectacled figure in black, bearing a heavy hammer, with which he did great damage to the precipices, and put the fragments in his pocket"²⁴ The mineralogist's black dress and green spectacles suggested a certain oddness, and his work with his hammer caused destruction to the beauty of the landscape. Therefore Hawthorne was in line with Wordsworth and Goethe in their portrayal of the mineralogist, a man who roamed the countryside with his hammer, gathering specimens of rock often at the expense of beauty.

Although the Romantics were interested in botanical classification, many of their references to this new science were in their description of herbalists, who were searching for herbs with medicinal

²³Goethe, "Letters from Italy," Works, II, p. 373.

²⁴Hawthorne, "The Notch of the White Mountains," Mosses from an Old Manse, II, p. 199.

value. Rousseau's recognition of the difference between an herbalist and a botanist was evident in his description of Claude Anet:

. . . she [Madame de Warens] had taken him [Anet] into her service for his knowledge of drugs, finding it convenient to have an herbalist among her domestics. Passionately fond of the study of plants, he became under her guidance a real botanist, and, had he not died young, might have acquired . . . fame in that science . . .²⁵

Evidently the botanist had a more profound knowledge of plants than did the herbalist who was primarily interested in those plants with medicinal qualities. Early in his Confessions, Rousseau gave his feelings toward studying botany:

. . . I had no inclination for botany, nay, I even despised and was disgusted at the idea, considering it only as a fit study for an apothecary . . . botany, chemistry, and anatomy were confounded in my idea under the general denomination of medicine, and served to furnish me with pleasant sarcasms . . .²⁶

Although botany was ridiculed by Rousseau early in life, he later wrote in praise of botany of which he ". . . began to become passionately fond, [for it] was precisely an idle study proper to fill up the void of my leisure . . ."²⁷ Rousseau became especially interested in Linnaeus's system of botanical classification, for he believed only Linnaeus considered botany as a naturalist and philosopher would.²⁸

²⁵Rousseau, Confessions, II, pp. 2-3.

²⁶Ibid., p. 8.

²⁷Rousseau, Confessions, IV, p. 241.

²⁸Ibid., p. 484.

Wordsworth portrayed the herbalist as a wanderer who remained rather aloof from life:

The wandering Herbalist, - - who, clear alike
 From vain, and that worse evil, vexing thoughts,
 Casts, if he ever chances to enter here,
 Upon the uncouth Forms [Man's works] a slight regard
 Of transitory interest, and peeps round
 For some rare floweret of the hills, or plant
 Of craggy fountain; that he hopes for wins,
 Or learns, at least, that 'tis not to be won:
 Then, keen and eager, as a fine-nosed hound,
 By soul-engrossing instinct driven along
 Through wood or open field, the harmless Man
 Departs, intent upon his onward quest! - -²⁹

In one respect Wordsworth perhaps envied the herbalist who was free from "vexing thoughts" and showed little interest in man's works. It is doubtful, however, that he approved of the "soul-engrossing instinct" which made the herbalist like a "fine-nosed hound," for this would have made him too aloof from his fellow men. In a later reference to the search for plants, he wrote of a man, who:

. . . being crazed in the brain
 By unrequited love, he scaled the rocks
 Dived into caves, and pierced the matted woods
 In hope to find some virtuous herb of power
 To cure his malady!³⁰

Perhaps Wordsworth was implying that it took someone "crazed in the brain" to dedicate himself so exclusively to a life of scientific

²⁹Wordsworth, "The Excursion," Works, p. 442.

³⁰Ibid., p. 484.

study. Botanists were responsible for the destruction of nature's beauty. Wordsworth, in describing a Moss Campion, a beautiful and rare plant in England, wrote:

Botanists will not, I hope, take it ill, if I caution them against carrying off, inconsiderately, rare and beautiful plants. This has often been done, . . . till the species have totally disappeared, to the great regret of lovers of Nature living near the places where they grew.³¹

The botanists destroyed beauty because they were lovers of science rather than "lovers of Nature." If a botanist was a true lover of nature, he would conduct his work so that he would not destroy any natural beauties.

The Linnaean system of botanical classification was known to Goethe who was as interested in botany as he was in other fields of science. During his Italian trip, Goethe met Dr. Tura who had passionately devoted himself to botany and laid out a botanical garden. Eventually Dr. Tura's medical practice caused him to give up his botanical studies and ". . . the botanic garden is again rationaly planted with cabbages and garlic."³² Perhaps Goethe implied that passionate devotion to a study was often short-lived and was replaced by a more rational pursuit of knowledge. In "Elective Affinities," Goethe wrote of an old gardener's reaction to botany:

³¹Wordsworth "Notes," Works, p. 799. (Italics are mine).

³²Goethe, "Letters from Italy," Works, II, p. 138. (Italics are mine).

" . . . He had a kind of shyness of the endless field of botany, which had lately been opening itself; and the strange names humming about his ears made him cross and ill-tempered. . . ." ³³ Some people, like the old gardener, were reluctant to see a change occur in their old settled pattern and became ill-tempered until they accepted and adjusted to the new trends.

Hawthorne portrayed scientists who worked with herbs although he made no mention of any of the trends in botany such as the Linnæan system. One of the herbalist-scientists in Hawthorne's works was Dr. Roger Chillingworth who:

. . . in his Indian captivity . . . had gained much knowledge of the properties of native herbs and roots; nor did he conceal . . . that these simple medicines, Nature's boon to the untutored savage, had quite as large a share of his own confidence as the European pharmacopoeia, which so many ³⁴ learned doctors had spent centuries in elaborating . . .

Hawthorne believed the uneducated Indian had as much knowledge of herbs and their medicinal value as did the doctors of Europe. As the people of Boston grew accustomed to Chillingworth, they believed him to be:

. . . a man of skill . . . he gathered herbs, and the blossoms of wild flowers, and dug up roots, and plucked off twigs from the forest-trees, like one acquainted with hidden virtues in what was valueless to common eyes. He

³³ Ibid., VI, p. 369.

³⁴ Hawthorne, The Scarlet Letter, p. 112.

was heard to speak of . . . famous men, -- whose scientific attainments were esteemed hardly less than supernatural, -- as having been his correspondents or associates. . . .³⁵

Although the people considered Chillingworth skillful in his work with herbs, they looked with disfavor on his former associations with men who were considered somewhat supernatural in their scientific work. This association cast a shadow on his character and caused feelings of distrust.

Dr. Giacomo Rappaccini, in Hawthorne's "Rappaccini's Daughter," cultivated a garden of exotic plants. The townspeople believed Rappaccini used the plants to distill medicines which were "potent as a charm." Their distrust of the value of the plants was heightened as they observed that, for all his knowledge of the plants, Rappaccini avoided close contact with them as though they were evil. Rappaccini was shunned by the townspeople who did not trust him, believing he was a worker for the devil.³⁶

Dr. Jabez Portsoaken was interested in herbs and was advised by Septimius to talk with his Aunt Keziah who had ". . . a native and original acquaintance with their virtues, and can save and kill with any of the faculty. . . ." ³⁷ This statement indicated the danger of using herbs, for they would either "save or kill." Aunt

³⁵ Ibid., pp. 113-114.

³⁶ Hawthorne, Mosses from an Old Manse, I, pp. 103-105.

³⁷ Hawthorne, Septimius Felton, p. 85.

Keziah was an uneducated woman who had learned her trade in herbs from her Indian ancestors. Hawthorne's references to the herbalists illustrated his distrust of this branch of science. Chillingworth and Rappaccini, both dedicated scientists, were more interested in experiments than in human life, and Aunt Keziah was uneducated and unable to handle knowledge successfully.

Some scientists, in their search for truth, devoted themselves to several aspects of science rather than only one. In his early writings, Wordsworth described a young man who, having studied science since early youth, went into the world hoping for recognition for his achievements, prepared for all adversities except neglect. When the world failed to receive him, he indignantly turned away and sustained himself in solitude and pride. Wordsworth felt this young man with all his knowledge was not truly wise because he had too much pride, and Wordsworth warned:

If Thou be one whose heart the holy forms
 Of young imagination have kept pure,
 Stranger! henceforth be warned; and know that pride,
 Howe'er disguised in its own majesty,
 Is littleness; that he, who feels contempt
 For any living thing, hath faculties
 Which he has never used; that thought with him
 Is in its infancy. The man whose eye
 Is ever on himself doth look on one
 The least of Nature's works, one who might move
 The wise man to that scorn which wisdom holds
 Unlawful, ever. O be wiser, Thou!
 Instructed that true knowledge leads to love;³⁸

³⁸Wordsworth, "Lines," Works, p. 34.

The young scientist's fault was that his excessive self-pride made him little and unable to use all his abilities because of his self-complacency. A man who viewed himself with so much pride was one of nature's lesser works. True knowledge led to love, not a feeling of superiority over fellow man or the works of nature. Another of Wordsworth's scientists had given up his deep pursuit of science when love entered his life, but when he realized his love was unreturned:

To books, and to the long-forsaken desk,
 O'er which enchained by science he had loved
 To bend, he stoutly re-addressed himself,
 Resolved to quell his pain, and search for truth
 With keener appetite (if that might be)
 And closer industry. Of what ensued
 Within the heart no outward sign appeared
 Till a betraying sickliness was seen
 To tinge his cheek; and through his frame it crept.³⁹

The sincerity of men of science might be questioned if they applied themselves to the study only as a substitute for some unhappiness in life.

Aylmer, the scientist in Hawthorne's "The Birthmark," was somewhat like Wordsworth's character. For years Aylmer had devoted himself to science, having little to do with the rest of the world.

. . . He had made discoveries in the elemental powers of nature that had roused the admiration of all the learned societies of Europe . . . the pale philosopher had investigated the secrets of the highest cloud-region and of the

³⁹Wordsworth, "The Excursion," Works, p. 484.

profoundest mines; . . . the causes that kindled and kept
 alive the fires of the volcano; and had explained the
 mystery of fountains, and how it is they gush forth . . .⁴⁰

Aylmer, even though he had discovered some of nature's secrets, was
 pale and sickly because of his intense study. His contact with nature
 had not caused him to have good health, for he wanted none of nature's
 healthful gifts, only her deepest secrets.

The all-powerful desire for knowledge led the scientist on in
 his work, often alienating him from life. Wordsworth described a
 scientist who had a deep devotion to his study:

. . . The bowels of the earth
 Enriched with knowledge his industrious mind;
 The ocean paid him tribute from the stores
 Lodged in her bosom; and, by science led,
 His genius mounted to the plains of heaven,
 --Methinks I see him -- how his eye-balls rolled,
 Beneath his ample brow in darkness paired, --
 But each instinct with spirit; and the frame
 Of the whole countenance alive with thought,
 Fancy, and understanding; while the voice
 Discoursed of natural or moral truth
 With eloquence, and such authentic power,
 That, in his presence, humble knowledge stood
 Abashed, and tender pity overawed.⁴¹

Wordsworth did not condemn the knowledge the scientist gained through
 his study, but implied that with all his great knowledge, the scientist
 showed no respect for those with less knowledge, and did not have
 "tender pity" for his fellow man.

⁴⁰ Hawthorne, Mosses from an Old Manse, I, p. 48.

⁴¹ Wordsworth, "The Excursion," Works, pp. 504-505.

The scientist's desire for great knowledge and power was a favorite subject of Hawthorne. In "The Intelligence Office," Hawthorne spoke of the strange wishes of men who had reached a high intellectual plane in their scientific pursuits to contend with nature and learn the secrets which she kept from mortals. Nature liked to delude these men and keep the mysteries just beyond their reach. The man of science, according to Hawthorne, would like to ". . . concoct new minerals, to produce new forms of vegetables, to create an insect, if nothing higher in the living scale . . ."

Hawthorne counted these desires and that of the astronomer who wished to see the opposite side of the moon as frivolous as that of the child who wished to have the stars for toys.⁴² This comparison showed that Hawthorne felt the scientists' aims were not truly valuable since they were no better than the wishes of a child. Often the scientist's avid desire for knowledge produced disastrous results. Aylmer, after his marriage to Georgiana, became obsessed with the desire to remove a small birthmark from her cheek. To please him, Georgiana allowed him to attempt his experiment which he believed would be his greatest scientific triumph, correcting what nature had left imperfect. After much experimentation, he concocted a potion that he was sure could not fail. The potion successfully effected the removal of the birthmark, but it also caused Georgiana's death. No

⁴²Hawthorne, Mosses from an Old Manse, II, p. 100.

doubt Aylmer was dismayed over his wife's death, but probably part of his grief was the result of his scientific failure.⁴³

The work of most of the scientists did not seem to the common people to have a great effect on their daily life. However, the work of doctors and their medicine was of interest to the common people, for they could see the effects of the doctor's work in their own health. If one may judge by the number of references to doctors in their writings, it would seem that the Romantics, like others of their century, had a greater interest in medicine than in other scientific fields. Some of these doctors not only applied themselves to medicine but also did experimental scientific work.

Perhaps doctors were not really necessary. Rousseau, a lover of nature, believed that if man lived close to nature, he would have no use for medicine or doctors. He argued that the animals' cures ". . . were not the less perfect for their not having been tortured with incisions, poisoned with drugs, or worn out by diet and abstinence. . ."⁴⁴ The "natural man" would have better care if he left himself to nature rather than doctors. In regard to treatment for smallpox, Rousseau declared:

⁴³"The Birthmark," Ibid., I, pp. 42-63.

⁴⁴Jean Jacques Rousseau, "A Discourse Upon the Origin and the Foundation of the Inequality Among Mankind," French and English Philosophers, Descartes, Rousseau, Voltaire (The Harvard Classics, ed. Charles W. Eliot. New York: P. F. Collier and Son, 1910), p. 176.

. . . let nature inoculate him herself, she will choose the fitting occasion better than we . . . but if he catches it naturally, it will have kept him out of the doctor's hands. . .⁴⁵

This passage indicated a definite distrust of doctors who, in tampering in nature's realm, were harmful to mankind.

The profession of medicine was not respected by Rousseau who wrote: "Medicine is all the fashion in these days . . . It is the amusement of the idle and unemployed, who do not know what to do with their time . . ." ⁴⁶ If only those who had nothing else to do and desired amusement practiced medicine, it is not likely that the best men entered the field, for good doctors need higher aims in their work. Rousseau also believed that people placed too much faith in doctors.

. . . They fail to see that against one life saved by the doctors you must set a hundred slain, . . . The science which instructs and the medicine which heals are no doubt excellent, but the science which misleads us and the medicine which kills us are evil . . . if we did not want to be cured in spite of nature, we should not be killed by the doctors . . . I do not deny that medicine is useful to some men; I assert that it is fatal to mankind.⁴⁷

The few who were saved by doctors were far out-numbered by those who were killed. Rousseau indicated his belief that people were killed by doctors because they were trying to find means to live longer than nature

⁴⁵Jean Jacques Rousseau, Emile (New York: E. P. Dutton, 1948), p. 96.

⁴⁶Ibid., p. 21.

⁴⁷Ibid.

had intended them to.

Doctors and their medicine were accused by Rousseau of undermining man's bravery and faith in himself. They made men feel cowardly, timid, and fearful of death, robbing them of both their physical and mental strength. In order to find a truly brave man, Rousseau advised:

Seek him where there are no doctors, where the results of disease are unknown, and where death is little thought of. By nature a man bears pain bravely and dies in peace. It is the doctors . . . who debase the heart and make us afraid to die.⁴⁸

The good works of doctors were far outweighed by the harm they did, and Rousseau felt society would be improved if there were no doctors to rob man of his joy of living. The man was wise who would:

. . . Live according to nature; be patient, get rid of doctors, you will not escape death, but you will die only once, while the doctors make you die daily through your diseased imagination; their lying art, instead of prolonging your days, robs you of all delight in them . . . True, the doctors cure some who would have died, but they kill millions who would have lived . . . Suffer, die, or get better; but whatever you do, live while you are alive.⁴⁹

For all Rousseau's complaints concerning doctors, he did consult them during his illnesses. Apparently the doctors' treatments did little to improve his physical well-being because he related that physicians ". . . without alleviating my sufferings, exhausted my

⁴⁸Ibid., p. 22.

⁴⁹Ibid., p. 46.

strength, and destroyed my constitution . . . [and] I determined to recover or die without the aid of physicians and medicine . . . "⁵⁰

Rousseau did continue to consult doctors, however, and they continued to terrify his imagination, offering him only the prospect of continued sufferings until death. His own experience with doctors was a major factor in causing Rousseau to denounce medicine so strongly, but to some extent he was probably expressing the popular opinion regarding doctors.

Rousseau's distrust of doctors was shared by William Wordsworth who perhaps was acquainted with a doctor who was too fond of alcoholic spirits. In "A Poet's Epitaph," he wrote:

Art thou a Man of purple cheer?
A rosy Man right plump to see?
Approach; yet Doctor, not too near,
This grave no cushion is for thee.⁵¹

Such a doctor, unable to perform his work well, would inspire no admiration. Perhaps the poet in the grave had been the victim of a liquor-loving doctor's carelessness. Also, in "A Poet's Epitaph" perhaps appears Wordsworth's most severe condemnation of doctors:

Physician art thou? one all eyes
Philosopher! a fingering slave

⁵⁰Rousseau, Confessions, III, pp. 67-68.

⁵¹Wordsworth, Works, p. 116. There is no note by Wordsworth to prove conclusively that "purple cheer" refers to alcoholic spirits. This is the writer's opinion based on other Romantic references to doctors, Wordsworth's belief in temperance, and his use of the theme of drunkenness in "The Waggoners."

One that would peep and botanise
Upon his mother's grave?⁵²

In his insatiable search for knowledge, the physician held nothing sacred and would study "his mother's grave" if he felt he would gain knowledge by doing so. Wordsworth seemed to object strongly to the prying and meddling in which the doctors engaged.

The idea of becoming a doctor had appealed to Goethe who had studied medicine as a young man. In his early school days he was impressed by the knowledge of the medical men at his school, considering them the most learned of all teachers. The early interest which Goethe had had for medicine supplied background material for his writings, but, oddly enough, he painted a gloomy picture of the doctor. In "Torquato Tasso," Goethe referred to "the leech," and hoped ". . . that I may ne'er/ The censure of the cruel leech incur."⁵³ In Faust, Goethe presented his most outstanding remarks concerning doctors and their profession. Faust declared that as a doctor his life had not been concerned with nature and life but:

. . . things dead
And drear alone encompass you - -
Smoke, litter, dust, the skeletons
Of birds and beasts, and dead men's bones!⁵⁴

The doctor's life was not close enough to nature or to other human

⁵²Ibid.

⁵³Goethe, Works, II, p. 111.

⁵⁴Goethe, Works, I, p. 27.

beings but too wrapped up in his studies and experiments.

The praise of an old peasant, who told how Faust and his father bravely ministered to the ill, caused Faust to tell his assistant Wagner:

Oh, could you look into my soul and read
 How little worthy son or father was
 Of such repute as they to us decreed!
 My father was a good man, not too bright,
 Who, by strange notions of his own deluded,
 In all good faith, with patience infinite,
 Of Nature and her sacred circles brooded;
 Who shut himself with his adepts away
 In a laboratory, black, grim, and mystic,
 And fused and fused, by rule and recipe,
 Things that by nature are antagonistic.

 This was the medicine; the patients died,
 And no one thought of asking who recovered.
 So 'mongst these hills and vales our hell-broths wrought
 More havoc, brought more victims to the grave,
 By many, than the pestilence had brought.
 To thousands I myself the poison gave;
 They pined and perished; I live on, to hear
 Their reckless murderers' praises far and near.⁵⁵

Goethe presented a rather sympathetic view of the doctor who, in trying to do good, created evil. The elder doctor Faust had been hampered by false ideas and lack of intelligence. In his honest attempt to create a medicine to cure, he had made one which killed more people than did the disease he was attempting to fight. The younger Faust had to listen to the people's praises although he felt himself a murderer. Wagner was more realistic than Faust,

⁵⁵Ibid., p. 51.

because he realized no man could do more than to work as conscientiously as possible, learning from the errors of others, and handing knowledge on to succeeding generations. In this way doctors would learn correct procedures and be able to save more lives.⁵⁶

Medicine was not a difficult field, according to Mephistopheles; "any simpleton" could learn medicine "with ease." He continued, with advice applicable to modern times, that the secret of a doctor's success was believing in himself, thereby inspiring others to have confidence in him, and finding a way to manage the women with their chronic ailments.⁵⁷ Mephistopheles also expressed his lack of respect for medicine by claiming that because the witch was a doctor in her way, she must "some hocus-pocus play" as other doctors did.⁵⁸ If Goethe represented his own views through Mephistopheles's speeches, it would appear that he did not have a high regard for doctors.

As medical practices changed and improved, people hoped for more help from doctors. Poe's interest in new medical trends was evident in his portrayal of doctors who did work in homeopathy and mesmerism. In the short story, "Never Bet the Devil Your Head," Poe wrote that Mr. Dammit who lost his head ". . . did not long survive this terrible loss. The homeopaths did not give him little enough

⁵⁶Ibid., pp. 51-52.

⁵⁷Ibid., pp. 90-91.

⁵⁸Ibid., p. 122.

physic, and what little they did give him he hesitated to take.

. . ."⁵⁹ In blaming the homeopaths for Mr. Dammit's death, Poe was being satirical since a man with no head was beyond the doctors' help. Dr. Templeton, in "A Tale of the Ragged Mountains," had become a convert of Mesmer while in Paris and, by means of magnetism, had reduced his patient's pain. The patient had become so confident of the doctor's goodness that his will easily bent to that of the physician.⁶⁰ Such a hold as Dr. Templeton had over his patient could easily have been used for an evil purpose as Poe realized.

The desire to do experiments on the human body often led doctors to resort to unscrupulous practices. In "Loss of Breath," the hero, who was alive but in a state where he seemingly did not breathe, was sold, as a corpse, to a surgeon for ten dollars. The surgeon, taking the body to his rooms, began operations. After cutting off the ears, he detected signs of life and sent for an apothecary with whom to consult. Before the apothecary arrived, ". . . in case of his suspicions with regard to my existence proving ultimately correct, he, . . . made an incision in my stomach, and removed several of my viscera for private dissection. . . ."⁶¹ The unfortunate patient had little chance of life even if his breath returned since he was minus several of his vital organs as a result of the doctor's mania

⁵⁹Poe, Works, III, p. 218.

⁶⁰Ibid., pp. 84-85.

⁶¹Poe, Works, X, p. 35.

for research. A similar case was that of Mr. Edward Stapleton who had died of typhus fever but had strange symptoms which aroused the doctors' curiosity. Mr. Stapleton's friends had refused to allow a post mortem, but ". . . as often happens, when such refusals are made, the practitioners resolved to disinter the body and dissect it at leisure, in private. . . ."62 In the short story, "The Fall of the House of Usher," the narrator on first arriving at the House of Usher met Lady Madeline's physician whom he thought had a look of "cunning and perplexity." After Lady Madeline's death, her brother Roderick put her coffin in a vault for a fortnight before burial, being led to do so by:

. . . consideration of the unusual character of the malady of the deceased, [and] of certain obtrusive and eager inquiries on the part of her medical men, and of the remote and exposed situation of the burial ground of the family. I will not deny that when I called to mind the sinister countenance of the person whom I met upon the staircase, on the day of my arrival at the house, I had no desire to oppose what I regarded as at best but a harmless, and by no means unnatural precaution.⁶³

The physician's "cunning" look was probably due to his expectation of Madeline's death and a plan to exhume her body for dissection. Obviously physicians had no qualms about obtaining bodies for their experiments in this manner. Poe did not approve of such methods of getting bodies for research, and did not excuse the doctors from blame even though they might do excellent experimental work. Poe

⁶²Poe, "The Premature Burial," Works, II, p. 200.

⁶³Ibid., p. 163.

considered the doctor a genius, but this was not actually a compliment:

. . . Your geniuses are all arrant asses -- . . . and to this rule there is no exception whatever . . . The creatures are always going off at a tangent into some fantastic employment, or ridiculous speculation, entirely at variance with the 'fitness of things', . . . If you ever perceive a man setting up as a . . . physician . . . you may set him down at once as a genius, and then, according to the rule-of-three, he's an ass.⁶⁴

Personal experience with doctors led Hawthorne to portray them, for the most part, in an unpleasant manner as the other Romantics had mentioned. In The English Notebooks, however, Hawthorne described doctors whom he considered worthy of trust such as a doctor from Pennsylvania ". . . who seems to be a man of very active intelligence, interested in everything, especially agriculture. . . ." ⁶⁵ and a surgeon who was ". . . a brisk, cheerful, kindly sort of person . . ." ⁶⁶ Hawthorne's dislike for the medical profession had evidently begun when, as a young man, he was trying to choose a profession. In a letter to his mother concerning his life work, he wrote:

⁶⁴Poe, "The Business Man," Works, X, p. 60.

⁶⁵Nathaniel Hawthorne, Passages from the English Notebooks, I (Boston: Houghton Mifflin, 1870), p. 202.

⁶⁶Ibid., p. 158.

. . . A physician, then, seems to be 'Hobson's choice'; but yet I should not like to live by the diseases and infirmities of my fellow-creatures. And it would weigh very heavily on my conscience, . . . if I should chance to send any unlucky patient . . . 'to the realms below'⁶⁷

After this early denunciation of doctors, who lived by the diseases of others, Hawthorne saw many medical practices which confirmed his distrust of doctors. While Consul to Liverpool, Hawthorne, in visiting a hospital, noticed that ". . . some young medical students stood about the bed [of a dying sailor] watching death creep upon him, and anticipating, perhaps that in a day or two they would have the poor fellow's body on the dissecting table. . . ." ⁶⁸ The medical students, apparently interested in the dying man only as a future object for dissection, felt no grief as did Hawthorne. During his final illness, Hawthorne refused to see a doctor partly because of his distrust of medical science, and especially because of his horror of the medical treatment given his friend Ticknor who had had pneumonia. Despite the treatments of a physician who ". . . 'belabored with pills and powders, and then proceeded to cup, and poultice, and blister, according to the ancient rule of that tribe of savages. . . .'" ⁶⁹ Ticknor had died.

⁶⁷As quoted in George Edward Woodberry, Nathaniel Hawthorne (Boston: Houghton Mifflin, 1902), pp. 15-16.

⁶⁸Hawthorne, English Notebooks, I, p. 341.

⁶⁹As quoted in Randall Stewart, Nathaniel Hawthorne, A Biography (New Haven: Yale University Press, 1948), p. 236.

Doctors who devoted too much time to liquor were used as characters in Hawthorne's writings. The country doctor described in The American Notebooks was:

. . . a stout, tall, round-paunched, red-faced, brutal looking old fellow, who gets drunk daily. He sat down . . . looking surly, and speaking to nobody; then got up and walked homeward, with a surly swagger, and a slight unevenness of track . . .⁷⁰

This doctor, whom Hawthorne had actually known, was the model for the doctor in his short story "Ethan Brand":

. . . a purple-visaged, rude, and brutal, yet half-gentlemanly figure . . . Brandy possessed this man like an evil spirit, and made him as surly and savage as a wild beast . . . but there was supposed to be in him . . . such native gifts of healing, beyond any which medical science could impart, that society caught hold of him, and would not let him sink out of its reach. So . . . he visited all the sick-chambers for miles about . . . and sometimes raised a dying man . . . or quite as often . . . sent his patient to a grave that was dug many a year too soon.⁷¹

Whether the doctor's love for brandy often caused him to send men to early graves, or whether it was the inadequacy of his training was not made clear. Surely had he been free of the effects of liquor he might have thought more clearly and avoided some fatal mistakes.

⁷⁰Nathaniel Hawthorne, The American Notebooks, ed. Randall Stewart (New Haven: Yale University Press, 1932), p. 44.

⁷¹Norman Holmes Pearson (ed.), The Complete Novels and Selected Tales of Nathaniel Hawthorne (New York: Random House, Inc., 1937), p. 1190.

Dr. Jabez Portsoaken was another of Hawthorne's doctors who had an over-fondness for liquor, living up to his name. Although he was devoted to "port," he was also fond of medical science and experimented in new techniques.⁷²

Doctors were quite often important characters in Hawthorne's novels and short stories, but seldom were they given sympathetic treatment. Perhaps one of the most diabolical of Hawthorne's doctors was Roger Chillingworth in The Scarlet Letter. Chillingworth:

. . . was small in stature, with a furrowed visage . . . There was a remarkable intelligence in his features, as of a person who had so cultivated his mental part that it could not fail to mold the physical to itself, and become manifest by unmistakable tokens. Although . . . he had endeavored to conceal or abate the peculiarity, it was sufficiently evident . . . that one of this man's shoulders was higher than the other. . . .⁷³

Chillingworth's physical peculiarity seemed to have been indicative of a like peculiarity in his mind since the two were so closely related. This fact, however, was not evident until later in the novel. In his observation of Hester, his wife, Chillingworth's look:

. . . became keen and penetrative. A writhing horror twisted itself across his features, like a snake . . . His face darkened with some powerful emotion, which, nevertheless, he so . . . controlled by an effort of will, that

⁷²Hawthorne, Septimius Felton, pp. 83-89.

⁷³Hawthorne, The Scarlet Letter, p. 56.

save at a single moment, its expression might have passed for calmness. . . .⁷⁴

It was Chillingworth's "keen and penetrative" look which Hawthorne objected to, for the doctor was able to pry too deeply into the human soul.

In spite of Chillingworth's physical oddity, he was well received in Boston for his medical knowledge. Not only had he studied in Europe, but he had also learned from Indians the value of medicinal herbs. Men of his medical skill were rare in the colony perhaps because in their studies of the human body they lost the spiritual view of existence in their fascination of the intricacies of the body. The only medical treatment had been that of an old deacon and apothecary whose godly actions were better recommendations than any diploma. The barber did surgery as a side-line, so to such a "medical group" Chillingworth was an outstanding addition.⁷⁵

Chillingworth became obsessed in his desire to find Hester's lover and to get revenge. Noticing the extreme nervousness of the Reverend Mr. Dimmesdale, Chillingworth soon installed himself in Dimmesdale's home, supposedly to care for him. He became intensely interested in Dimmesdale's background for:

⁷⁴Ibid., p. 57.

⁷⁵Ibid., p. 112.

. . . he deemed it essential, . . . to know the man, before attempting to do him good. Wherever there is a heart and intellect, the diseases of the physical frame are tinged with the peculiarities of these . . . A man burdened with a secret should especially avoid the intimacy of his physician. . . .⁷⁶

Hawthorne felt that physicians in their desire to cure physical ills needlessly pried too deeply into their patient's mind and heart. No guilty secret would long be hidden from the prying of a physician.

The townspeople soon became prejudiced against Chillingworth through rumors of his skill in "black art," and the change which had come over him since he began his care of Dimmesdale. ". . . At first his expression had been calm, meditative, scholar-like. Now, there was something ugly and evil in his face. . . ."⁷⁷ Hawthorne feared the physical and mental domination which the doctor might gain over his patient. Not only could the doctor use the patient for evil purposes, but the power had a demoralizing effect on the doctor himself. Chillingworth had never been affectionate, although originally he had been a kind, calm man. As his desire for revenge against Dimmesdale grew, all his kindly attributes disappeared and he became cruel and cold-hearted. His whole life became centered upon revenge, and with Dimmesdale's death, he apparently had no more reason for living.

Hawthorne was almost obsessed with the idea of mental or moral subjection of one person to another such as had been Chillingworth's

⁷⁶Ibid., pp. 116-117.

⁷⁷Ibid., p. 120.

power over Dimmesdale.⁷⁸ A man who controlled a fellow human became too cold-hearted to retain his love for humanity. Hawthorne used human domination as the theme for "Ethan Brand." Brand, in a psychological experiment, had wasted, and perhaps destroyed, a young girl's soul. In making this experiment Brand committed what Hawthorne seemed to consider the Unpardonable Sin: ". . . The sin of an intellect that triumphed over the sense of brotherhood with man and reverence for God, and sacrificed everything to its own mighty claims! The only sin that deserves a recompense of mortal agony" ⁷⁹ Both Brand and Chillingworth had allowed their pride and intellect to conquer their sense of right and wrong. God had been forgotten and their intellect had taken His place.

Another man of science with a cold heart and powerful intellect was Dr. Rappaccini. He was:

. . . a tall, emaciated, sallow, and sickly looking man dressed in a scholar's garb of black. He was beyond the middle term of life, with gray hair, a thin, gray beard, and a face singularly marked with intellect and cultivation, but which never could, even in his more youthful days, have expressed much warmth of heart.⁸⁰

Rappaccini's dress and coloring, black and gray, gave him a somber aspect, and his scientific study seemed not to have shown him the way

⁷⁸"Note by Randall Stewart," Hawthorne, The American Notebooks, p. 295.

⁷⁹Pearson (ed.), Complete Novels of Hawthorne, p. 1189.

⁸⁰Hawthorne, "Rappaccini's Daughter," Mosses from an Old Manse, I, p. 105.

to good health. The lack of warmth felt for his fellow men was an indication that Rappaccini was not an admirable person. Dr. Baglioni, in response to his student Giovanni's query regarding Dr. Rappaccini, said:

Ill would it become a teacher of the divine art of medicine . . . to withhold due and well-considered praise of a physician so eminently skilled as Rappaccini . . . but there are grave objections to his professional character . . . he cares infinitely more for science than for mankind. His patients are interesting to him only as subjects for some new experiment. He would sacrifice human life, his own among the rest, or whatever else was dearest to him, for the sake of adding so much as a grain of mustardseed to the great heap of his accumulated knowledge.⁸¹

Perhaps Hawthorne was voicing his own opinions through Baglioni because he apparently objected to the scientist's love of science forcing out his love of mankind. The sacrifice of human life for a small amount of scientific knowledge was therefore a great sin.

Rappaccini believed that all medicines were present in vegetable poisons, and for that purpose he cultivated a garden of poisonous flowers from which he distilled medicines which sometimes effected miraculous cures. In order to test this theory, Rappaccini had used his daughter Beatrice to determine the effects of the poison. His devotion to science was so great that he:

. . . was not restrained by natural affection from offering up his child in this horrible manner as the victim of his

⁸¹Ibid., p. 109.

insane zeal for science, for . . . he is as true a man of science as ever distilled his own heart in an alembic . . .⁸²

No sacrifice was too great for the man of science who would forego all "natural affection" to carry out an experiment. When Giovanni fell in love with Beatrice, Baglioni warned him that he too was the subject of one of Rappaccini's experiments, for Baglioni avowed:

. . . I know that look of his. It is the same that coldly illuminates his face as he bends over a bird, a mouse, or a butterfly; which in pursuance of some experiment he has killed by the perfume of a flower; a look as deep as nature itself, but without nature's warmth of love.⁸³

Dr. Baglioni, a genial person, could not help disapproving of the experiments of Rappaccini since they were completely devoid of any natural love for other human beings. Upon the death of Beatrice, as a result of the experiment, Baglioni somewhat triumphantly asked the horror-stricken Rappaccini what he thought of the outcome of his experiment.

Hawthorne made further references to doctors who did unlimited harm. In The Marble Faun, Hawthorne referred to the doctor as a "privileged murderer."⁸⁴ The idea of doctors who murdered was also expressed by the photographer Holgrave in The House of Seven Gables: ". . . We . . . die of the same remedies with which dead doctors killed

⁸²Ibid., pp. 129-130.

⁸³Ibid., p. 117.

⁸⁴Nathaniel Hawthorne, The Marble Faun; or, The Romance of Monte Beni, II (Boston, Houghton Mifflin, 1888), pp. 209-210.

their patients"85 Those who consulted doctors chose their own executioner, according to Hawthorne, for a visit by the physician was usually the herald of a funeral.

Many doctors in Hawthorne's fiction were classified as "quacks." Septimius Felton told Aunt Keziah of Dr. Portsoaken: ". . . I judge this man to be a quack, but I judge the same of the most learned man of his profession . . ."86 According to this passage, no doctor was to be trusted for they were all quacks, more interested in themselves and their fees than their patient's welfare. Roderick Elliston who was afflicted with a serpent in his breast was the victim of quacks during his attempt to find a means of ridding himself of the reptile. One of these quacks claimed he had cured Roderick, but the ". . . cure had been a sham, the effect it was supposed, of some stupefying drug, which more nearly caused the death of the patient than the odious reptile that possessed him . . ."87 Too often the results of the quack's remedies was the death of the patient. This reflects the attitude the people held toward the medical profession in that many persons drew no distinction between trained physicians and quacks, considering one as

⁸⁵Nathaniel Hawthorne, The House of Seven Gables (Boston: Houghton Mifflin, 1904), p. 219.

⁸⁶Hawthorne, Septimius Felton, p. 87.

⁸⁷Hawthorne, "Egotism; or, The Bosom Serpent," Mosses from an Old Manse, II, p. 35.

harmful as the other.

The doctors who loved man and did their best to cure his ills but were still responsible for many deaths were treated more sympathetically by Hawthorne than those doctors who were motivated by revenge or a desire to experiment on man. Dr. Heidegger, who supposedly discovered the waters of the fountain of youth, had accidentally sent patients to an early grave while trying to cure them. One of his unfortunate victims had been his fiance with whom ". . . Dr. Heidegger had been on the point of marriage . . . but, being affected with some disorder, she had swallowed one of her lover's prescriptions, and died on the bridal evening" ⁸⁸ It was said that Dr. Heidegger consulted with a bust of Hippocrates when faced with difficult cases, but obviously Hippocrates did not always give sound advice for many of Heidegger's patients died. ⁸⁹ Hawthorne did not dislike doctors such as Heidegger as intensely as he did those such as Rappaccini, for the former, in attempting to help man, killed him only through error.

Dr. Dolliver was an apothecary and had never been a ". . . practitioner of the awful science with which his popular

⁸⁸Hawthorne, "Dr Heidegger's Experiment," Twice-Told Tales, p. 260.

⁸⁹Ibid., p. 259.

designation connected him. . . ."90 His practice, at one time flourishing, had contributed to the death ". . . of many an old acquaintance who had gone to sleep with the favor of Dr. Dolliver's tinctures and powders upon his tongue; it was the patient's final bitter taste of this world . . . "91 His work with drugs had caused Dr. Dolliver to help populate the nearby graveyard, but Hawthorne placed most of the blame on the physicians, not Dolliver, for he only filled the physicians' prescriptions. Hawthorne's attitude toward doctors, much like that of Rousseau, Wordsworth, Goethe and Poe , was distrustful. Either the doctor was too much interested in experimental work and used his patients as guinea pigs, or in his attempt to do good, he committed errors and caused his patient's death.

The Romantics did not actually approve of scientists and their work, for the beliefs of the Romantics seemed directly in opposition to many scientific methods. The Romantics loved nature and its beauty, but the work of scientists such as mineralogists and botanists, seemed to require them to destroy natural beauty. Scientific study fostered intellectual pride and caused scientists to lose their love for humanity while the Romantics advocated love of fellow men and an attitude of humbleness.

⁹⁰Hawthorne, The Dolliver Romance, p. 20.

⁹¹Ibid., p. 24.

CONCLUSION

The period during the late eighteenth and early nineteenth centuries when the Romantics did most of their writing was also the period of the development of modern science. Nations had won their independence and were ready to devote their energies to the improvement of man's life and happiness. Science with its many inventions and medical discoveries was expected to accomplish this better life. Because science was still in an experimental state, some of the new discoveries proved false, often at the cost of many lives. For this reason, science was viewed skeptically; people wanted to accept the new discoveries, but were afraid of the harmful effect they might have.

The popular distrust of science was reflected in the writings of the Romantics who were, for the most part, hostile to science. Scientific study was further distrusted because it was in opposition to many of the Romantic beliefs. The references to science in the works of Nathaniel Hawthorne as compared with those of Rousseau, Wordsworth, Goethe, and Poe show the five writers held similar attitudes toward science. The study of science, Hawthorne believed, destroyed joy and led man on the road to ruin. This belief was shared by Poe who felt science reduced life to dullness and dimmed its joy. Goethe, too, realized that those who devoted their lives to the search for scientific knowledge missed much of the happiness and enjoyment of life. The knowledge obtained served no purpose other

than to illustrate life's misery. Rousseau questioned that science helped improve man's lot, and like Hawthorne, seemed to feel science led man on the road to ruin since it was born of man's vices, not his virtues. Hawthorne felt science maintained a coldness and aloofness from human nature; therefore it could not be beneficial and acceptable to mankind. Wordsworth concurred in this opinion, for he believed science needed a form of "flesh and blood" before it would be accepted by man.

The love of nature and faith in its religious significance was evident in the works of Hawthorne and those of the other four Romantics. Each of the Romantics disapproved of scientists meddling in the secrets of nature. Hawthorne believed that nature allowed man knowledge of only a small number of her secrets and those secrets which she kept hidden were evil. Rousseau held a similar opinion for he believed the text-book authors attempted to destroy the barriers nature had placed to protect her secrets from those who would not use them wisely. Goethe believed that nature guarded her secrets so well man could not force her to reveal them. Man was learning more of nature's secrets, according to Wordsworth, but was no more enriched in love and meekness. Poe considered man's attempts to set himself above nature's other creations his greatest mistake.

Hawthorne declared that the scientists, in searching for nature's secrets, were not seeking the betterment of mankind but were motivated by selfish desires. In his scientific study, the scientist who meddled with nature had so little knowledge that

he marred or destroyed nature's beauty. This was in accord with Rousseau's belief that man, in meddling with nature, was responsible for nature's evil elements. Wordsworth wrote that the meddling scientists "murdered" nature's beauties by dissecting them to study each part singly rather than appreciating the beauty as a whole. Man's selfishness and intellectual pride caused him to want to learn nature's secrets, according to Goethe. Poe, too, concurred with Hawthorne in his belief that man was motivated by selfishness in his study of nature. Poe credited man with the destruction of nature's beauty because he could not, due to his pride, make himself acknowledge nature's superiority. In his attempt to control nature, man only destroyed or deformed her.

Because the study of science was contrary to Romantic beliefs, it is natural that they would not praise the scientist. Hawthorne's portrayal of the alchemist as a dedicated scientist who searched for the elixir of life or the secret of transmuting baser metals to gold was like that of Goethe. Neither writer placed any faith in the alchemist's ability to discover these secrets and questioned that he would be truly benefited by such knowledge. Rousseau also showed a skeptical attitude toward alchemists by placing them in a class with all other "quacks." Both Hawthorne and Goethe felt the work of the alchemist caused him to have an appearance unlike that of other men. The alchemist was either extremely pale, begrimed with smoke, or wilted and dried from bending over his fire. Hawthorne

believed the alchemists' experiments in reducing objects to mere elements were often destructive to beauty. Goethe wrote of the alchemist who attempted to create a man, an impossible task because of restrictions placed on his work by nature.

Hawthorne portrayed the mineralogist as did Goethe and Wordsworth. Armed with his hammer, the mineralogist roamed about the countryside collecting samples of rock to analyze and classify. Both Hawthorne and Wordsworth accused the mineralogist of destroying the beauty of the landscape, but Goethe made no such charge. The herbalists, according to Hawthorne, were usually dedicated scientists whose experiments with medicinal herbs often had a harmful effect on man. Unlike Wordsworth, who believed the herbalists destroyed beauty in carrying off rare plants for analysis, Hawthorne did not accuse them of destruction of natural beauties. Rousseau and Goethe, both interested in botany, wrote of the Linnaean system of classification, but Hawthorne mentioned none of the new botanical trends. Scientists who devoted themselves to several aspects of science were portrayed by Hawthorne and Wordsworth. The writers agreed that the scientists' search for great knowledge and power caused them to lose their love for mankind and their respect for nature's power.

The scientists most often referred to by the Romantics were the doctors. In only a few instances did Hawthorne speak favorably of doctors with whom he had been acquainted. During his final illness he had refused to see a doctor, partly because

of his distrust of the profession and because of treatment he had seen administered to a friend. Rousseau too, had disliked consulting doctors during illnesses because he believed their cures only weakened him, and their speculations kept him in constant fear of dying. Doctors who viewed dying patients as future objects for dissection were disliked by Hawthorne. Poe held a similar attitude, writing of doctors who brought or stole corpses for dissection. No amount of discoveries, he implied, could compensate for such unethical practices. Hawthorne was also acquainted with doctors who were overly fond of liquor. Perhaps the influence of liquor partially contributed to their sending patients to an early grave. Wordsworth's reference to a doctor, a man of "purple cheer", suggests that he, too, knew the doctor who cared more for liquor than his patient's welfare.

Doctors were used as some of Hawthorne's most diabolical villains. Roger Chillingworth, although a learned medical man, became obsessed with the desire to get revenge, causing him to become evil. In his attempt to cure the physical disease, Chillingworth deemed it necessary to pry into his patient's mind and heart, a practice which Hawthorne felt undesirable both for patient and doctor. Allowing the doctor to gain mental or moral domination over his patient caused him to become cold-hearted and lose his love for humanity. Poe, also, sensed that the mental power a doctor might gain over his patient could be used for evil purposes. Doctors, such as Hawthorne's Rappaccini, thought no sacrifice, not even a

loved one's life, was too great if it would add a little scientific knowledge. Hawthorne implied such a man, devoid of human affection, could do nothing to aid mankind. Wordsworth described a doctor who would not hesitate to "botanize" on his mother's grave for the sake of a grain of knowledge.

Hawthorne dealt more sympathetically with doctors who in trying to save man caused his death through some error. These doctors, although lacking in training and knowledge, were affectionate toward their fellow man and honestly attempted to help him. This was the case with Goethe's Dr. Faust who, in trying to concoct a medicine to cure disease, had brewed a draught which killed more than did the pestilence. Such a doctor could not be condemned too harshly for he was doing his best, and his error would add to the knowledge of future generations.

Hawthorne's references to science were, in the main, similar to those of the other Romantics. He did not appear to have the interest in new scientific discoveries that Rousseau and Goethe did as evidenced by the lack of references to new scientific trends in his works. The stifling of freedom and man's individuality for which Rousseau blamed science was not apparent in Hawthorne's writings. Hawthorne does, however, exemplify the distrust felt by the Romantics for the scientist's overwhelming zeal for knowledge at the cost of human affection and the destruction of natural beauties.

BIBLIOGRAPHY

PRIMARY SOURCES

- von Goethe, Johann Wolfgang. The Works of J. W. von Goethe. Edited by Nathan Haskell Dole. 7 vols. New York: Bigelow, Brown & Co., Inc., 1902.
- Hawthorne, Nathaniel. The American Notebooks. Edited by Randall Stewart. New Haven: Yale University Press, 1932.
- _____. The Blithedale Romance. Boston: Houghton Mifflin, 1880.
- _____. The Dolliver Romance and Other Pieces. Boston: Houghton Mifflin, 1904.
- * _____. Fanshawe and Other Pieces. Boston: J. R. Osgood, 1876.
- _____. The House of Seven Gables. Boston: Houghton Mifflin, 1904.
- _____. The Marble Faun; or, The Romance of Monte Beni. 2 vols. Boston: Houghton Mifflin, 1888.
- _____. Mosses from an Old Manse. 2 vols. Boston: Houghton Mifflin, 1882.
- * _____. Our Old Home; A Series of English Sketches. Boston: Houghton Mifflin, 1891.
- _____. Passages from the English Notebooks. 2 vols. Boston: Houghton Mifflin, 1870.
- _____. Passages from the French and Italian Notebooks. 2 vols. Boston: Houghton Mifflin, 1899.
- _____. The Scarlet Letter. New York: Rinehart & Co., Inc., 1956.
- _____. Septimius Felton; or, The Elixir of Life. Boston: Houghton Mifflin, 1899.
- * _____. Sketches and Studies. Boston: Houghton Mifflin, 1883.
- * _____. True Stories from History and Biography. Boston: Houghton Mifflin, 1878.

*Denotes material not cited in this paper.

- _____. Twice-Told Tales. Boston: Houghton Mifflin, 1907.
- Pearson, Norman Holmes (ed.). The Complete Novels and Selected Tales of Nathaniel Hawthorne. New York: The Modern Library, 1937.
- Poe, Edgar Allan. The Poems and Three Essays on Poetry, Narrative of Arthur Gordon Pym, Miscellanies. London: Oxford University Press, 1938.
- _____. The Works of Edgar Allan Poe. 10 vols. New York: Harper and Brothers, n.d.
- Rousseau, Jean Jacques. The Confessions of Jean Jacques Rousseau. 4 vols. London: Gibbings and Company, 1901.
- _____. "A Discourse Upon the Origin and the Foundation of the Inequality Among Mankind," French and English Philosophers, Descartes, Rousseau, Voltaire, Hobbs. In The Harvard Classics, ed. Charles W. Eliot. New York: P. F. Collier and Son, 1910.
- _____. Emile. New York: E. P. Dutton, 1948.
- _____. The Social Contract and Discourses. London: J. M. Dent & Sons Ltd., 1930.
- Wordsworth, William. The Complete Works of William Wordsworth. London: Macmillan and Company, 1905.

SECONDARY SOURCES

- *Abel, Darrel. "The Devil in Boston," Philological Quarterly, 32 (October, 1953), 366-381.
- *Adams, R. P. "Romanticism and the American Renaissance," American Literature, 23 (January, 1952), 419-432.
- *Allen, Hervey. Israfel, The Life and Times of Edgar Allan Poe. New York: Farrar and Rinehart, 1934.
- Artz, Frederick B. Reaction and Revolution 1814-1832. New York: Harper and Brothers, 1934.

- *Arvin, Newton. Hawthorne. London: Noel Douglas, 1930.
- "Astrology," Encyclopedia Americana (1955 ed.), II, 402. New York: Americana Corporation, 1955.
- *Barzun, Jacques. Romanticism and the Modern Ego. Boston: Little, Brown and Co., 1947.
- *Bostetter, Edward E. "Wordsworth's Dim and Perilous Way," PMLA, 71 (June, 1956), 433-450.
- *Curti, Merle. The Growth of American Thought. Second edition. New York: Harper and Brothers, 1951.
- Dampier, Sir William Cecil. A History of Science and Its Relations with Philosophy and Religion. Cambridge: At the University Press, 1942.
- Dana, Edward Salisbury, and others. A Century of Science in America with Special References to the American Journal of Science 1818-1918. New Haven: Yale University Press, 1918.
- Doig, Peter. A Concise History of Astronomy. New York: Philosophical Library, 1951.
- *Doubleday, Neal Frank, "Hawthorne's Hester and Deminism," PMLA, 54 (September, 1939), 825-828.
- *_____. "Hawthorne's Use of Three Gothic Patterns," College English, 7 (February, 1946), 250-262.
- *Engard, Charles J. "Poetic Scientist," The Scientific Monthly, 68 (May, 1949), 305-309.
- Engeln, O. D., and Kenneth E. Caster. Geology. New York: McGraw-Hill Book Company, Inc., 1952.
- Erskine, John. "Hawthorne," A Short History of American Literature based upon The Cambridge History of American Literature. Edited by William Peterfield Trent and others. New York: G. P. Putnam's Sons, 1922.
- Eycleshymer, A. C. "Growing Old and the Search for an Elixir of Life," The Scientific Monthly, 26 (May, 1928), 400-411.
- *Fairbanks, Henry G. "Hawthorne and the Machine Age," American Literature, 28 (May, 1956), 155-163.

* . "Sin, Free Will, and 'Pessimism' in Hawthorne," PMLA,
71 (December, 1956), 975-989.

Fish, Carl Russell. The Rise of the Common Man 1830-1850. New
York: Macmillan, 1927.

*Hall, Lawrence Sargent. Hawthorne, Critic of Society. New Haven:
Yale University Press, 1944.

*Harrison, James A. Life and Letters of Edgar Allan Poe, Vol. II.
New York: Thomas P. Crowell and Co., 1903.

*Havens, Raymond Dexter. The Mind of a Poet, A Study of Wordsworth's
Thought with Particular Reference to The Prelude. Baltimore:
The Johns Hopkins Press, 1941.

*Hawthorne, Julian. Nathaniel Hawthorne and His Wife, A Biography.
Boston: Houghton Mifflin, 1884.

*Henel, Heinrich. "Type and Proto-Phenomenon in Goethe's Science,"
PMLA, 71 (September, 1956), 651-668.

*Hosmer, Elizabeth Ruth. "Science and Pseudo-Science in the Writings
of Nathaniel Hawthorne." Unpublished Doctor's thesis, The
University of Illinois, Urbana, 1948.

*Hudson, William Henry. Rousseau and Naturalism in Life and Thought.
Edinburgh: T. & T. Clark, 1903.

*James, Henry. Hawthorne. London: Macmillan, 1902.

Kearney, Patrick. "The Fountain of Spiritualism," The American
Mercury, 4 (March, 1925), 331-336.

*Lange, Victor. "Goethe: Science and Poetry," The Yale Review,
38 no. 4 (June, 1949), 623-639.

Lind, Sidney E. "Poe and Mesmerism," PMLA, 62 (December, 1947),
1077-1094.

*Macy, John Albert. Spirit of American Literature. New York: Boni
and Liverright, 1913.

Major, Ralph H. A History of Medicine, Vol. II. Springfield, Illinois:
Charles C. Thomas, 1954.

- *Maclean, Hugh N. "Hawthorne's Scarlet Letter: 'The Dark Problem of This Life'," American Literature, 27 (March, 1955), 12-24.
- *Male, Roy R., Jr. "The Dual Aspects of Evil in 'Rappaccini's Daughter'," PMLA, 69 (March, 1954), 99-109.
- *_____. "Hawthorne and the Concept of Sympathy," PMLA, 68 (March, 1953), 138-149.
- *_____. Hawthorne's Tragic Vision. Austin: University of Texas Press, 1957.
- *Matthiessen, Francis Otto. American Renaissance; Art and Expression in the Age of Emerson and Whitman. London: Oxford University 1941.
- Nordenskiöld, Erik. The History of Biology, A Survey. Trans. Leonard Bucknall Eyre. New York: Tudor Publishing Co., 1946.
- *O'Conner, Evangeline Maria. An Analytical Index to the Works of Nathaniel Hawthorne with a Sketch of His Life. Boston: Houghton Mifflin, 1882.
- *Orians, G. Harrison. "New England Witchcraft in Fiction," American Literature, 2 (March, 1930), 54-71.
- Parrington, Vernon Louis. The Romantic Revolution in America, 1800-1860. Vol. II of Main Currents in American Thought. 3 vols. New York: Harcourt, Brace and Company, 1927-30.
- *Pattee, Fred Lewis. The Feminine Fifties. New York: D. Appleton-Century Company, 1940.
- Postgate, Raymond. Story of a Year 1848. New York: Oxford University Press, 1956.
- Pringle, Patrick. The Romance of Medical Science. New York: Roy Publishers, 1953.
- *Quinn, Arthur Hobson (ed.). The Literature of the American People, An Historical and Critical Survey. New York: Appleton-Century-Crofts, Inc., 1951.
- *Randall, John Herman, Jr. The Making of the Modern Mind, A Survey of the Intellectual Background of the Present Age. Boston: Houghton Mifflin, 1926.

- *Reid, Alfred S. The Yellow Ruff and The Scarlet Letter; A Source of Hawthorne's Novel. Gainesville: University of Florida, 1955.
- Riegel, Robert E. Young America 1830-1840. Norman: University of Oklahoma Press, 1949.
- Schevill, Ferdinand. A History of Europe. New York: Harcourt, Brace and Co., 1926.
- *Scudder, Harold H. "Poe's Balloon Hoax'," American Literature, 21 (May, 1949), 179-190.
- *Smyser, Jane Worthington. "Wordsworth's Dream of Poetry and Science: The Prelude, V," PMLA, 71 (March, 1956), 269-275.
- Stewart, Randall. Nathaniel Hawthorne, A Biography. New Haven: Yale University Press, 1948.
- *Van Doren, Carl Clinton. The American Novel. New York: Macmillan, 1921.
- *_____. "The Flower of Puritanism," The Nation, 111 (December 8, 1920), 649-650.
- *Van Doren, Mark. The Best of Hawthorne. New York: The Ronald Press Company, 1951.
- *Von Abele, Rudolph Radama. The Death of the Artist; A Study of Hawthorne's Disintegration. The Hague: Nijhoff, 1955.
- *Waggoner, Hyatt H. Hawthorne, A Critical Study. Cambridge: Harvard University Press, 1955.
- Warren, Austin. Hawthorne. New York: American Book Company, 1934.
- Woodberry, George Edward. Nathaniel Hawthorne. Boston: Houghton Mifflin, 1902.
- *Young, Philip. "The Earlier Psychologists and Poe," American Literature, 22 (January, 1951), 442-454.